

A guide to economic assessment in nursing



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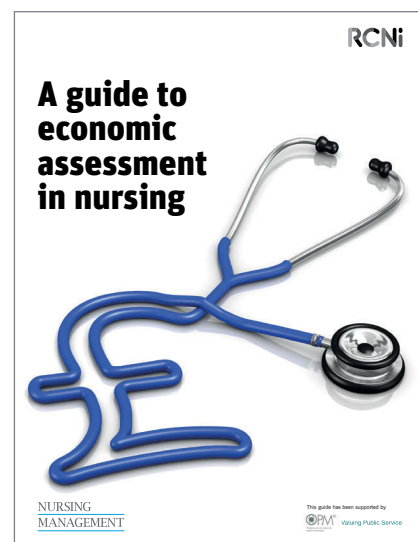
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The authors would like to thank the Burdett Trust for Nursing for its generous support in advancing this area of work

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January 2015
ISBN: 978-0-9571023-7-8
Price: £15

Cover: iStock

Registered at the Post Office as a newspaper

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Introduction to economic assessment

Abstract

This is the first in a series of four continuing professional development articles that explain some of the principles of economic assessment and describe the most commonly cited approaches; the fifth article discusses costs and benefits. The series aims to enable readers to critically examine economic assessments in the context of nurse-led service innovation. It introduces a tried-and-tested methodology, with associated tools and templates, used to conduct economic assessments in nursing. In this article, the principles of economic assessment are introduced and two case studies of nurse-led innovation are used to illustrate how they are applied in practice.

Aims and intended learning outcomes

After reading this article and completing the time outs, you should be able to:

- Understand the fundamental principles of economic assessment.
- Appraise an economic assessment of a service innovation.

Introduction

The Royal College of Nursing (RCN) Frontline First campaign website was launched in 2010 to provide nurses with a platform for reporting their experiences of front line nursing. Specifically, they were invited to report cuts in staffing levels and where they witnessed resources being wasted, but also where they were making improvements and saving money through innovation (RCN 2013).

The purpose of capturing nursing innovations was to demonstrate how front line nurses provide solutions to the austerity measures in the health service while improving care and services. However, while many nurses leading service innovations and improvements can demonstrate the effect they and their interventions have on patients' experiences, like colleagues across the public sector, few have the skills to demonstrate their value, and the value of what they do, in economic terms.

Marina Lupari, winner of the RCN Frontline First innovation award, is an exception (Bell 2011). The doctoral programme she undertook while redesigning services for older people with complex health needs enabled her to work with a health economist, to help her demonstrate the economic, as well as quality-related, effects of her innovation

(Lupari 2011, Lupari *et al* 2011). The Frontline First campaign has demonstrated that many nurses have the know-how and the can-do attitude to lead innovation and transform services. Examples can be found at tinyurl.com/rcn-innovations.

However, most nurses are not afforded the opportunity to work alongside a health economist to conduct rigorous economic assessments. In times of austerity, this arguably puts nursing innovation at risk, because persuading commissioners and health service managers to invest in such initiatives without compelling evidence of their value is a challenge.

Therefore, nurses who are innovating in practice need to understand and be able to apply the principles of economic assessment pragmatically. This first continuing professional development (CPD) article in a series of four is aimed at building this important capability in nursing by setting out some of the principles of economic assessment.

Principles of economic assessment

For an economic assessment to 'hold water' there are guiding principles that must be adhered to. These principles are fundamental to the credibility of an economic assessment, irrespective of who is conducting it, the approach they are taking, or the purpose they are seeking to achieve. So whether a fully qualified health economist is undertaking or supervising a randomised controlled trial or a nurse is undertaking a pragmatic analysis to, for example, demonstrate the value of a service innovation, the principles set out in the HM Treasury guidance, the Green Book must be adhered to.

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Keywords
Economic assessment, costs, innovation

Conflict of interest
None declared

This article has been subject to double-blind review and checked using antiplagiarism software. For related articles visit our online archive and search using the keywords

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This article was previously published in Nursing Management, volume 20, number 7, 2013.

According to HM Treasury (2003): 'The Green Book is HM Treasury guidance for Central Government, setting out a framework for the appraisal and evaluation of all policies, programmes and projects. It sets out the key stages in the development of a proposal from the articulation of the rationale for intervention and the setting of objectives, through to options appraisal and, eventually, implementation and evaluation. It describes how the economic, financial, social and environmental assessments of a proposal should be combined and aims to ensure consistency and transparency in the appraisal process throughout government.'

This CPD article explains some of the principles of economic assessment (Box 1) and discusses how they have been applied to two monetised nurse-led service innovations. The technical content of the series is based on a bespoke development programme designed by the Office for Public Management (OPM) to build the capability of front line nurses in economic assessment. This OPM programme is currently being delivered in partnership with the RCN to cohorts of nurses leading service innovations and improvements across Northern Ireland, Scotland and Wales. It is based on the OPM Economic Assessment Tool (EAT) methodology (Ryrie and Anderson 2011). The examples that we use to illustrate the principles that should be applied in any economic assessment are two case studies that were

Box 1 Principles of economic assessment

There must be clarity about:

- The true economic costs.
- Who incurs what costs.
- Whether benefits can be attributed to the service.
- Who benefits from what.

initially submitted through the innovation portal of the RCN Frontline First campaign website in 2010. Working in partnership with the nurse innovators and the RCN, OPM colleagues applied their technical expertise to demonstrate the value of these innovations in terms of quality, innovation, productivity and prevention (QIPP).

The first case study (Bradford and Airedale Community Health Services), was submitted by Carol Gill, a district nurse whose innovation sought to reduce the number of patients admitted to hospital from residential care with pressure ulcers.

The second case study (Central and Eastern Cheshire, page 6) was submitted by staff nurse Martin Heaps, who, at the time of his submission, worked for the primary care trust (PCT), and was part of a team, led by Alison Graham, providing a newly integrated respiratory care service. The case study focuses on one aspect of the service, management of oxygen therapy in the community.

Bradford and Airedale Community Health Services

This case study illustrates how supporting health care assistants (HCAs) to manage pressure areas can save up to £90,000 a year, reduce prevalence of pressure ulcers and improve quality of life for patients.

Context and change drivers

Both a local investigation and wider clinical research indicate poor understanding of pressure-ulcer prevention, identification, recording and treatment among care home staff, including both HCAs and managers. Residents of care homes, however, are among those most at risk of developing pressure ulcers, which are extremely costly in financial terms and in respect of the impact on patient quality of life.

This pilot innovation, therefore, was driven by a need to:

- Improve early reporting and recording of pressure ulcers.
- Improve care home staff's knowledge and management of pressure ulcers.
- Reduce the incidence of pressure ulcers in care homes.

Innovation summary

Participation in this initiative was voluntary. In participating care homes, HCAs were trained and supported by dedicated district nurses to better manage and treat pressure ulcers. Following a small-scale pilot in 2008 involving two care homes, six care homes in Shipley committed to participating in a six-month, second-wave pilot in 2010. The second-wave data inform this case study.

Impact summary

The pilot suggests that there are annual savings of approximately £90,000 to be made by reducing prevalence of pressure ulcers of all grades, and preventing pressure ulcers from occurring.

Return on investment

Available data suggest that, for every £1 spent, the service generates about £11.10 of benefits, during steady-state operation. This does not take into account the additional categorical benefits such as improvements to patient quality of life.

(Download the full case study report at tinyurl.com/rcn-casestudies)

Central and Eastern Cheshire

This case study illustrated how managing oxygen therapy in the community can save up to £1.1 million a year and improve quality of life for patients

Context and change drivers

The service integration programme was driven by a need to:

- Reduce high admission rates and length of stay (LoS) for chronic obstructive pulmonary disorder (COPD).
- Reduce the high cost of oxygen prescribing, on average £1 million a year, on the patch.

The planning phase was extensive and involved a group of cross-sector stakeholders including clinicians and other healthcare professionals, commissioners, as well as providers and managers of services.

Innovation summary

On April 1 2010, Central and Eastern Cheshire Primary Care Trust (PCT), responsible for a population of about 467,000, initiated a community-based oxygen assessment service. The service comprises a team of 13 specialist nurses and a physiotherapist, and forms part of a large, integrated respiratory service providing seven-day cover.

The team provides comprehensive in-reach and out-reach respiratory support for primary and secondary

care, which includes a comprehensive oxygen assessment service as well as COPD care training for clinicians across the whole of the PCT area.

Impact summary

The service saves about £1.1 million a year by:

- Reducing the monthly number of patients prescribed oxygen, on average, by about 20 per cent and, accordingly, reducing overall oxygen costs. Scaling-up available data suggests a cost saving of £163,079.63 over a year.
- 'Hospital avoiding' patients. Scaling-up available data suggests an annual cost saving of between £453,269 and £634,577 due to 'rapid response at home' provision, based on average LoS of between five and seven days.
- Supporting hospital discharge to reduce LoS. Scaling-up available data suggests an annual saving of approximately £481,162.

Return on investment

Available data suggest that, for every £1 spent, the service generates between £20.22 and £23.51 of benefits. This does not take into account additional categorical benefits such as improvements to patient quality of life.

(Download the full case study report at tinyurl.com/rcn-casestudies)

Full details of both innovations can be found on the RCN website, tinyurl.com/rcn-casestudies, and readers should download these as source materials to read alongside the article.

The purpose of economic assessment is to look at the benefits that arise from investments. There are, however, particular ways through which we need to account for and present the various 'costs' and 'benefits'. Applying 'commonsensical' understanding of costs and benefits can risk erroneous conclusions being drawn. The four principles to apply when documenting costs and benefits are described below. The first two relate to inputs or costs, and the subsequent two to outcomes or benefits.

Identifying cost

The first of these two principles is that economic assessment must reflect the true economic costs, and consider both direct and indirect costs. The second is that it should be clear who incurs what costs.

Further, it is essential to differentiate between what is incurred over and above the costs that would have been expended anyway through the provision of

routine care. This means being clear about additional costs incurred as a specific consequence of introducing an innovation into practice, and whether these represent additional investment or a diversion of resources that would normally have supported some other activity. Such 'additionality' is an important concept in economic assessment.

The OPM also recommends that it is helpful to delineate set-up costs from running costs.

Principle one When applying the first principle, it is necessary to account for all the resources required to provide a service innovation. Put simply, all of the inputs needed to provide a service should be identified, and can include staff, premises, materials, training and travel.

Direct costs are any resources required to provide the service that are funded directly from an identifiable budget specifically set aside for the service innovation.

We know, from experience, however, that services are often supported and sustained by wider sets of contributions that are not paid for out of a recognisable budget. For example, a service may benefit from

additional administrative support from another department or organisation. A service may be delivered on premises owned by a partner organisation and offered as an 'in-kind' contribution that incurs no direct financial costs to the service. This type of contribution often involves no direct financial transactions and can be invisible because it makes no direct demands on a service's specific budget. Such indirect costs should nonetheless be made explicit, because they are critical in ensuring that the service is implemented and supported. It is only when both direct and indirect costs are considered that the true economic cost of any service can be appreciated.

This does not mean that all indirect costs should be turned into explicit financial transactions. An important reason why it is good practice to show the true costs of a service is that it helps appreciate the wider system that is necessary for a service to function effectively. This can help with effective partnership management for example, because it can be risky simply to assume that partners will continue making 'in-kind' contributions when resources are shrinking. Another reason is that it informs anyone seeking to invest in or replicate a service of all the inputs required and the potential costs that might be incurred, which help to ensure that service design and implementation are more realistic.

To this end, the OPM advises that start-up and running costs are differentiated, and that both are identified in terms of direct and indirect costs. Doing so takes account of the fact that any service development and implementation goes through different stages that require different types of resourcing arrangements. The types of input incurred during a set-up phase can look different from those incurred when a service is running at a steady operational level. For example, to set up a service, new equipment may need to be purchased or a new building constructed, but such expenditure is necessary only at a certain point in time and is a one-off cost.

There might also be one-off costs during the steady operational phase, due, for example, to the need to replace worn-out equipment, but distinguishing start-up from running costs helps clarify why a cost was incurred and whether it is likely to occur again, perhaps on an ongoing basis. This allows commissioners to make informed decisions about the recurring costs associated with initial outlay for a service innovation.

Distinguishing start-up from running costs can also clarify the case for the type of investment being sought. For example, if the funding request is for an existing service, it would be misleading to include start-up costs because this would inflate how much is required. However, if requesting funding to replicate a service that is operational elsewhere, potential

fundors need to know how much it might cost to set up and run.

Principle two Making the different types of direct and indirect costs visible enables application of the second principle, which identifies who incurs what costs. This acknowledges and clarifies different contributions, and can highlight stakeholder groups within and beyond a service, even within and beyond the health sector, each of which may have a role in making a service work.

Being clear about who incurs what costs can inform commissioning discussions, particularly those involving many agencies. For existing services, it can help inform more effective partnership management and, for replicating services elsewhere, it can help inform planning, to ensure that services are designed with due regard to all the ingredients crucial to their success. Being clear about who incurs what costs becomes increasingly important with the move towards integrated, person-centred care, as the actors involved will extend beyond conventional healthcare partners to include, for example, those concerned with social care and housing.

Next step Once direct and indirect costs have been identified and presented according to the procedures described earlier, the next step is to clarify which of them can be quantified and monetised. It is rare to have monetary values for all the direct and indirect costs identified; it is more common to have identified types of costs, for which monetary values are not readily available. Returning to the example of an indirect cost incurred due to a partner organisation offering the use of premises, the monetary value of this indirect cost may not be immediately obvious. This should not trouble you unduly at this stage because we will deal with this issue in greater depth in a subsequent article. In the case studies, the figures are presented as a return on investment (ROI) ratio, which is one of a number of approaches to economic assessment that will also be explored in the next article in the series.

In both case studies, the costs have been calculated from the perspective of the commissioning organisation. They were both PCTs, which until March 2013 were part of the NHS England structure. These organisations were responsible for commissioning primary, community and secondary healthcare services from providers, and this role is now the remit of clinical commissioning groups. The reason for highlighting the perspective from which these assessments were conducted is because an economic analysis is never an end in itself. Its purpose is to influence decision makers.

Therefore, when seeking to implement or secure resources to sustain or develop an innovation in practice, the first step is to identify people who will

support and invest in the innovation. The second is to talk with them about the existing service or the proposed changes and find out what it would take to persuade them to invest. This engagement is crucial, because it informs the approach that should be taken and increases the chances of success. This may sound obvious, but it is a step that is often omitted.

Now do time out 1.

1 Direct and indirect costs

Time out

Consider the case studies identified on pages 5 and 6. Bearing in mind the first two principles of economic assessment, in each case, identify:

- All the inputs.
- Whether they are direct or indirect costs.
- Who incurs what costs.
- Whether there is differentiation between set-up and running costs.

In the first case study (Bradford and Airedale Community Health Services), the inputs required to provide the innovation were identified as:

- The district nurse innovator, namely Carol Gill.
- Ms Gill's line manager.
- The residential care home healthcare assistants (HCAs).
- The care home's administrative staff.
- Any materials required to standardise pressure ulcer recording and reporting.

It was estimated that, overall, Ms Gill spent the equivalent of one day a week (0.2 whole-time equivalent) on the project, which was recognised as time away from her substantive duties. This is an important point because it is acknowledges that Ms Gill would have been doing other nursing work, such as visiting patients, if she had not been enabled to ringfence time for this project.

The patients that Ms Gill was not visiting while she was working on the project would, of course, still need to be seen, so the project and the associated protected time was over and above her substantive role, and identified as an additional cost to the PCT. The time her line manager dedicated to supporting her with the project was also acknowledged as being over and above: it was estimated as one day over the six-month project period. These factors were both identified, therefore, as direct costs.

It was assumed that the time the HCAs spent focusing on learning and implementing evidence informed prevention, identification and management of pressure ulcers enhanced rather than detracted from their substantive caring role, and did not result

in care deficits. Engagement of HCAs in the project was not identified as over and above their routine responsibilities and so was not considered an additional cost to the service.

Had this not been the case and it was agreed that the HCAs' time spent in training, for example, was over and above their caring responsibilities, their time would have been costed and listed here as indirect costs. This is because these costs would have been absorbed by the care homes and, as stated above, the costs were calculated from the perspective of the commissioning organisation.

The stating of this assumption serves to illustrate the importance of making explicit any assumptions made in an economic assessment. Assumptions may be open to negotiation.

In addition, in this case study, any costs associated with materials required to introduce the standardisation of pressure ulcer recording and reporting were not identified as over and above, and therefore not included in the calculations. Equally, Ms Gill's travel costs for the project were not identified here as over and above her routine costs.

In the second case study (Central and Eastern Cheshire), the inputs required to introduce the initiative, in the context of a newly integrated respiratory service, were identified as:

- Staff.
- Training.
- Consumables.
- Premises.

Staff included nurses at bands 6 and 7, who provided five community-based clinical nurse specialist (CNS)-led clinics a week, a senior nurse who provided clinical supervision, and a band-4 administrator whose input was two hours of support at each of the clinics.

The staff, training and consumables identified were acknowledged as over and above routine care and, for the purposes of this project, were considered

Box 2 The pressure-ulcer prevention outreach project: benefits realised

- A 32 per cent fall in pressure-ulcer incidence.
- Improved patient comfort and associated quality of life.
- Better understanding of pressure-ulcer care among care home staff.
- Earlier completion of care planning and assessment.
- More consistent pressure-ulcer care in and between care homes.
- More recognition of the value and responsibilities of care home staff, particularly healthcare assistants (HCAs).
- Greater job satisfaction among HCAs.

direct costs. The buildings where clinics were run and patients assessed were deemed cost neutral because the service did not require any adaptation to these premises or additional opening times, and therefore no over-and-above costs were incurred.

While the direct costs of this innovation are clearly identified, start-up costs are not delineated. Such costs are usually one-off rather than recurring, which is why it can be helpful to separate them to avoid skewing the costs of running a service. In this case, it would have been considered whether time had been spent on developing training materials at the outset of the project, or whether the training materials were routinely revised and developed throughout the project.

Now do time out 2.

2 Service improvement

Time out

Consider a current service innovation in your organisation and:

- Write a paragraph to describe the service.
- Identify all the inputs required to provide the service, for example, consider staff, premises, materials, training and travel.
- Identify whether they will incur direct or indirect costs.
- Identify who incurs what costs.
- Determine whether you can differentiate set-up from running costs.

Identifying benefits

Principle three The third principle of economic assessment is to ascertain whether any of the identified benefits can be reasonably attributed to the innovation. In the absence of a controlled experiment demonstrating the statistical likelihood of a cause and effect relationship, attribution has to be stated as an assumption.

As discussed above, an assumption may be contested. It is therefore important to back up any stated assumption with as much evidence as possible. Several sources of evidence can be used for this, including data routinely collected in the system, data collected specifically to inform the evaluation of the innovation, or evidence published elsewhere. These sources are illustrated in the case studies and will be discussed in future articles.

Principle four The fourth principle is that it can be helpful to delineate who the beneficiaries of each of the identified benefits are. In service innovation, nurses often think about benefits in terms of patients and service users, but it is important to bear in mind that

there may be benefits for staff, the organisation, partner organisations, the NHS, and for the wider economy.

Just as it is not always desirable or feasible to place a monetary value on all identified inputs and incurred costs, this is also the case with benefits. It is essential to identify all of the possible benefits and who the beneficiaries are, but it is not always essential, desirable or feasible to attempt to put a monetary value on them in a pragmatic economic assessment.

Now do time out 3.

3 Evidence

Time out

In both case studies, identify the types of evidence that were used to demonstrate the benefits of the innovation:

- Data routinely collected 'within the system', for example, collected as a consequence of the service innovation.
- Evidence published elsewhere.
- New data collected to evidence the impact of the innovation.

In the first case study (Bradford and Airedale Community Health Services), the benefits were identified by comparing the incidence and impact of pressure ulcers during the six-month pilot phase with the pre-pilot model of care (Box 2).

All the assumed benefits must be listed and evidenced wherever possible, but it is not always necessary or feasible to place a monetary value on them. There should be a decision, based on discussion with relevant stakeholders, about which benefits can and should be monetised in a particular situation.

In this case, it was decided to focus attention on the cost implications of reducing the incidence of pressure ulcers. At the end of the six-month pilot, there was evidence of a 32 per cent reduction in pressure ulcer incidence based on data collected specifically to inform the evaluation. The costs of the actual numbers of pressure ulcers identified during the pilot phase were compared with the estimated number of pressure ulcers of each grade that it is assumed would have occurred in that timeframe without Ms Gill's intervention based on pre-pilot figures. In this case, it was the absence of pressure ulcers that was identified, measured, quantified and monetised.

Evidence published elsewhere, namely the Pressure Ulcer Productivity Calculator (Department of Health 2010), was used to inform this calculation.

The remaining benefits are listed as 'categorical' benefits, that is those assumed to arise from and be attributable to the intervention, but for which no monetary values are presented. For example, there was an increase in the HCAs' job satisfaction evidenced

Box 3 The oxygen therapy service: benefits realised

- More timely and effective use of oxygen therapy.
- Reduced length of stay resulting from supported hospital discharge.
- Reduced admission resulting from 'rapid response at home' provision.
- Reassurance for referring clinicians that patients are receiving the right advice and support.
- Improved quality of life for patients because they spend more time at home and less in hospital.
- Direct patient access to clinical advice and support, so patients can self-refer.
- Provision of community-based clinics to reduce outpatient numbers, and therefore associated outpatient costs.
- Less likelihood that patients will acquire infections by being in hospital.
- High levels of patient satisfaction with service.
- Better patient self-care and independence.

by pilot evaluation forms and 360° feedback. It is assumed that the intervention led to this increase in job satisfaction, but no monetary value has been placed against this assumed, attributable benefit.

In the second case study, the benefits, listed in Box 3, were identified through comparison of the new integrated respiratory service with previous services. The details of the old versus new include: an increase in the number and location of weekly oxygen clinics from three hospital-based clinics to five CNS-led community-based clinics, the introduction of a comprehensive respiratory service open seven days a week between 8am to 6pm to replace limited oxygen assessment services, and an increase in the number of pulmonary rehabilitation groups from four to seven.

In this case, it was decided that the first three benefits listed should be monetised and the remainder listed as categorical benefits. The benefits monetised were therefore the costs of the oxygen itself compared to the costs of oxygen use before the introduction of the new service and the efficiency savings realised from admission avoidance and early discharge. Once again, locally sourced data were analysed, in part, using external tools (Bank of England 2013) and complemented with external evidence such as that from the Audit Commission (2002) to inform the calculations.

Conclusion

This article introduces a number of principles of economic assessment as set out in the UK government's HM Treasury (2003) guidance, examines two case studies of monetised nurse-led innovations, and considers how the principles for accounting for costs and benefits can be used.

Economic assessment is not about measuring and monetising everything; it is about being clear which perspective on looking at costs and benefits is being adopted, and why, and prioritising accordingly.

Economic assessment is not only about the pound signs; indeed, benefits that are not monetised because of pragmatic considerations, or that cannot be monetised, should still be presented as 'categorical' benefits alongside those that can be and are monetised. This provides a holistic picture and does not assume that readers of an economic assessment will value only aspects that can be measured in financial terms.

The next article in this series examines some of the most commonly cited approaches to economic assessment in health care and considers how these have been applied in nursing.

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Introduction to economic assessment – part 2

Abstract

This is the second in a series of four continuing professional development articles that explain some of the principles of economic assessment (EA) and describe how they may be applied in practice by front line practitioners leading service innovations. It introduces a methodology, with associated tools and templates, that has been used by practising nurses to conduct EAs.

Our purpose is to equip readers with the knowledge to develop a technically competent, pragmatic EA that will contribute towards evidence-informed decision making and assure the best use of limited resources.

Each article in this series purposefully draws and builds on those that have gone before; the time out

exercises in the first article required you to access source material located on the RCN website and identify a service innovation in your workplace, the time out exercises in this article draw in these same sources.

We begin this article by recapping on the points covered in the first article before exploring the implications of the principles of EA and how to apply them in practice. In this article, we refer to and draw on a companion article (pages 31-34) that sets out the most commonly cited approaches to EA in health and social care. We aim to enable readers, along with those they seek to influence, to make an informed decision as to what may be an appropriate EA approach in any specific context.

Intended learning outcomes

After reading this article and completing the time out exercises, readers should be able to:

- Understand the implications of conducting an economic assessment (EA) in practice.
- Outline the complexities of attributing outcomes they have observed or measured to the service they have provided, within the 'mundane messiness' of everyday practice.
- Identify stakeholders in a service innovation, and their relevance for EA, in the workplace.
- Outline the benefits of identifying an organisational mentor when undertaking an EA.
- Appreciate the interplay between clarity of purpose, technical feasibility and investment of time and resources when negotiating how an EA will be conducted to achieve maximum impact.
- Describe the benefits of applying a pragmatic approach to EA in clinical practice.

In this article, we discuss the concept of stakeholders, with particular reference to those who can affect and those who are affected by a service innovation. This is an important step in order to be clear about who you want to influence with the findings from your EA and whose support you need to secure to complete an EA that will have an impact.

The need to demonstrate the value of health services, and for this to have tangible impact on service improvement, has never been more acute, particularly in the face of adverse economic conditions and the resultant spending cuts.

Recap

The technical content of this series is based on a bespoke development programme designed by the Office for Public Management (OPM) to build the capability in EA of front line nurses leading service innovations (McMahon *et al* 2014). The programme

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Keywords

Economic assessment, costs, benefits

Conflict of interest

None declared

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This article was previously published in *Nursing Management*, volume 21, number 4, 2014.

is underpinned by the principles of EA laid out in authoritative guidance produced by HM Treasury (2003). These include being aware of the definitions of and specific requirements for how information on costs and benefits should be presented and used, which differ significantly from the more intuitive, vernacular understanding of what 'costs' and 'benefits' mean in everyday usage.

We remind readers that 'cost' in EA refers to the true economic cost of a service; that is, all of the direct and indirect resources required to provide a service. This means that you have to look beyond direct-cost indicators. These are most often detailed in a service budget and incurred by the lead organisation. In addition, it is important to make visible the range of 'in-kind' contributions made by other stakeholders that do not take the form of direct financial transactions. This becomes increasingly important in the context of multi-agency working where you have to be clear about who incurs what costs.

Over and above the HM Treasury guidance, OPM recommends differentiating between set up and running costs. This makes explicit how costs may vary at different stages of a service's development, and also helps identify when costs are 'one-off' items of expenditure and when costs are recurring. This can be helpful for readers who may want to replicate a service elsewhere.

Similarly, you have to be clear about who experiences what types of benefit, directly and indirectly. We draw readers' attention to the fact that they should not think only about benefits to their patients and service users. We encourage them to think more widely about the types of benefits that may be experienced by staff, volunteers, other professionals, NHS organisations, and partner agencies. In terms of benefits, you also have to be clear as to whether benefits can be attributed to a service and, if so, in what proportion.

It cannot always be assumed that benefits can be directly attributed in their entirety to a service innovation, or that all outcomes are always positive. We examine the concept of attribution more closely in the next section.

Applying the principles in the 'mundane messiness' of everyday practice

From our experience working with front line nurses applying a pragmatic approach to EA, the concept of attribution sometimes requires unpacking. This section assumes that readers have no knowledge of this concept, so readers who have a strong research and evaluation base and understand the requirements around attribution may wish to skip to the next section.

There are powerful voices in sections of the health sector who remain wedded to the argument that the experimental method, and the randomised controlled trial (RCT) in particular, is the only legitimate form of evidence that can claim attribution. This can put nurses in a difficult position when trying to defend the value of their services that overwhelmingly are not designed and delivered according to experimental techniques. The lack of an experimental design to routine service design and delivery, however, should not prevent nurses from being able to persuade stakeholders about the value of their services, using other means.

In the context of a service innovation, the starting point is to ask: did this intervention (the service innovation) give rise to these outcomes? This question asks if there is a cause-and-effect relationship between the intervention and the outcomes. It asks if the outcomes can be attributed to the intervention, and the intervention alone and not something else. It is arguably easier to answer this type of question in a laboratory than it is in the world of everyday practice. The reason for this is that, in a laboratory, you can more readily control for extraneous variables; that is, other factors that might help or hinder the outcome and therefore potentially weaken the evidence of attribution.

Experimental research approaches are traditionally used to distinguish between cause and effect. They aim to increase certainty, or reduce uncertainty, as to whether a particular intervention leads to a clearly defined outcome by comparing one set of conditions with another. The RCT is regarded as the optimal experimental method for testing the effectiveness of clinical interventions, and is often held up as 'the gold standard' (Cartwright 2007). The RCT is widely used in health care to test the effectiveness of interventions such as new drugs.

A simple RCT compares an intervention group with a 'control' group. 'Research subjects' are seen as passive and selected based on clearly defined criteria. They are randomly allocated to one of two groups, namely a control and a treatment group. Random allocation is a method used to minimise bias. The treatment group receives the intervention under investigation while the control group may receive no treatment, which may take the form of a placebo, or 'standard treatment'. The same outcome measures are recorded for each group and any differences in outcome measures are analysed using statistical tests. The stronger the 'statistical significance' of the difference between the two groups, the stronger the argument that the difference (effect) is, or is not, attributable to the experimental intervention (cause).

A major goal in this type of research design is to decrease or control the influence of extraneous or confounding variables as much as possible. These are factors that may affect the outcome measures that are not the focus of the enquiry.

There are many circumstances, including contexts where there are layers of complexity and where control of variables may be neither feasible nor desirable, in which an RCT may not be appropriate. For example, Victora *et al* (2004) advocate moving beyond RCTs in public health, where statistical probability does not adequately inform decision making. They argue that non-randomised (natural) comparisons and evidence of trends are equally legitimate methods for demonstrating attribution. Grossman and Mackenzie (2005) note that it is not always possible or ethical to conduct RCTs in social settings and argue against awarding the RCT the privilege of being the 'gold standard'. The method applied should be fit for purpose.

What do these debates have to do with EA in routine nursing practice? Pawson and Tilley (1998) eloquently explain that, while an experiment might tell you if something works or not, it will not tell you why it worked or how you can make it work elsewhere. Service innovations are often based on evidence, based on RCTs of what has worked elsewhere, and they use this evidence in a specific context. Understanding the context, rather than trying to control it, and why an innovation works in a particular context clearly requires different approaches.

Service innovations take place in social settings where it is often neither desirable nor feasible to set up a controlled experiment formally. The reality of everyday practice is characterised by messiness, and this is a major challenge in efforts to understand impact and value. In the absence of an RCT, it is extremely important to make explicit all assumptions and to draw on as much evidence as possible to support any claims.

Indeed, the more that is known about the characteristics of the patients or service users who access the service, the better equipped you are to look for patterns or systematic differences between those who access your service and, say, those who access an alternative service. Recognising and offering an explanation for these differences can help you argue your case.

Now do time out 1.

It is not about measuring everything Official guidance is unequivocal: in an EA, all inputs and outcomes, whether positive or negative, must be identified (HM Treasury 2003). However, while

1 Evidence

Time out

In this time out exercise, we invite you to revisit the two case studies identified in our first article (pages 4-10).

- Consider the benefits listed in each case.
- Examine the evidence presented to support the assertion that each benefit was attributable, in whole or in part, to the innovation.
- Have all assumptions been made explicit?
- Can you identify different types of evidence drawn on in each case?
 - Evidence of 'what works'?
 - Evidence of context and why it works in this particular case?
 - Would you be able to adopt or adapt this innovation based on the evidence presented?

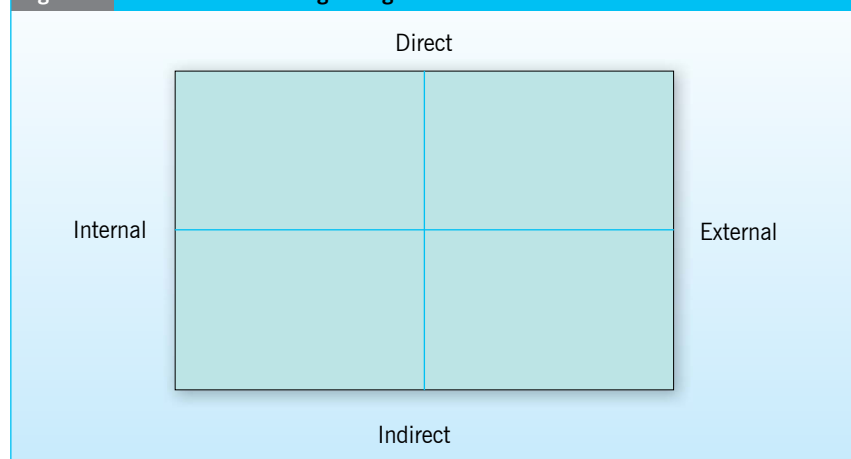
it is expected that all costs (inputs) and benefits (outcomes) are identified and made visible, there is no expectation that all are measured, quantified or monetised. EA is categorically not only about the items with financial values attached, even though this is often held as an assumption.

It is interesting that the National Institute for Health and Care Excellence (NICE) shifted its approach towards assessing the cost effectiveness of public health interventions in 2012 to encompass a wider range of techniques, including cost-consequence analysis, that does not require all outcomes to be expressed in monetary terms (see pages 31-34). In making this shift, NICE acknowledges explicitly that different methods allow for all relevant benefits, namely health, non-health and community benefits, to be taken into account and expressed more meaningfully (NICE 2012).

In our first article we referred to 'categorical benefits', namely those types of benefit that cannot be expressed in financial terms or cannot be 'reduced' to crude financial expression. We identified 'patient comfort' as an example of a 'categorical benefit' that cannot be expressed meaningfully in financial terms. Nevertheless, if the enhancement of patient comfort can be attributed to an intervention, this is a tangible benefit that clearly should not be overlooked.

The approaches described in the article on costs and benefits, pages 31-34, which we recommend you read now, are 'textbook' descriptors of approaches to EA. In this CPD series, we present a pragmatic approach to EA and, just as in our discussion on attribution, textbook definitions do not always sit

Figure 1 Framework for categorising stakeholders



comfortably with the mundane messiness of clinical practice. The same principle applies: the method, or methods, applied must be fit for purpose.

We recommend that, when undertaking a pragmatic EA of a service innovation, you should be guided by three things:

- Be clear about the reason you are undertaking the EA and what you hope to achieve by it.
- Ensure that what you propose to do is feasible.
- Ensure you can commit the necessary time and resources to complete the exercise.

Being clear what you hope to achieve should enable you to identify who it is you need to influence or convince.

We recommend that you conduct a quick stakeholder mapping exercise to help clarify (a) from whom or from where you need data, and (b) whom you need to influence. Understanding who your stakeholders are when designing, implementing and sustaining or scaling up an innovation is crucial. Broadly speaking, these are all of the people directly affected by your innovation and all of the people whose support you need to make it happen.

These stakeholder groups are by no means mutually exclusive but thinking beyond those who are directly affected may help you identify the wider circle of people you need to engage when undertaking an EA.

Equally, understanding who your stakeholders are in terms of those who may be able to support or facilitate your endeavour is also vital. Figure 1 provides a matrix that may be used to identify the stakeholders in an innovation and in the EA of an innovation in particular. On one axis are those who may be directly or indirectly affected by or associated with an innovation. Those directly affected may include, for example, service users and service providers. Those whom you may identify as 'indirect' stakeholders will include decision makers whose support you need to affect an innovation. This category may also include a group of people who may be referred to collectively as 'knowledge managers'. This will include people who handle data 'in the system' such as colleagues in finance or clinical audit departments. It may also include information specialists who can help you source pertinent external evidence if required. The other axis on the matrix differentiates between internal and external stakeholders.

This differentiation is important because it helps you think about possible sources of direct and indirect costs, as discussed above, and because it will help you assess the feasibility of sourcing data to support your EA, for example whether any external partners hold data that may be of use. It is important to remember that, for any EA, an individual seldom holds all the data needed. Neither will it be the sole responsibility of this individual to collect all relevant data.

Now do time out 2

A conversation with decision makers and stakeholders is essential at the outset so you are clear about what it will take to convince them of the merits of your proposal and what they would regard as useful evidence. It will also give you useful insight into the perspective you need to adopt when looking at costs and benefits. How are people looking at the issue of benefits? What do they value?

This conversation is a crucial strategic step that is frequently overlooked. We often make implicit, and untested, assumptions about what others are looking for. However, health service commissioners and planners are not all the same. Even when you think you know the answers already, it is essential that you test your assumptions and agree your approach before embarking on an EA.

The companion (pages 31-34) to this CPD article sets out the seven most frequently cited approaches to EA in health and social care and the requirements

2 Stakeholder innovation

Time out In this time out exercise, we invite you to identify a service innovation in your workplace and identify all of the stakeholders associated with the innovation. Think about direct, indirect, internal and external stakeholders. Populate a stakeholder matrix for your innovation. Looking at your matrix:

- Identify the stakeholders whom you are trying to influence with the results of your EA. Do you have direct relationships with them, or would you need other people to help broker relationships?
- Identify the stakeholders whom you think represent crucial sources of direct and indirect costs. Do you need to approach them for relevant data?
- Identify the stakeholders whom you think are direct and indirect beneficiaries of your service or innovation. Do you already collect relevant data on the types of outcome experienced by these different stakeholders?

Box 1 List of questions to consider when exploring the feasibility of conducting an economic assessment

1. How is your innovation currently funded?

- When did it start?
- How long will it go on for?
- Is it funded by one or more funder(s)?

2. How many key service staff are there?

- Who are they?
- Are they all from the same organisation?
- Do they work full time or part time and what proportion of their time do they work on the project?
- Are there any volunteers involved with the service?

3. What other organisations work with or support/facilitate the innovation? Do other organisations, for example, provide premises, travel, materials, staff?

- Who are they, for example, a charity or local authority?
- What is their role? For example, do they provide premises or do their staff contribute in some way?
- Do they keep a record of their contribution? For example, if staff contribute, do they record the amount of time they contribute to the service?
- If so, do you think you can get this data?

4. What else may be going on in your area in terms of supporting your clients? For example, is anyone else doing relevant or similar work that overlaps with yours?

- If applicable, who are these organisations?
- How similar are their activities?
- How similar are their client groups?
- What type of outcomes do they contribute towards?

Activities and outcomes

5. How do you identify your clients? What does referral look like?

6. Do you collect any data on client characteristics? What does this information look like?

- How long have you been collecting this for?
- Who collates it?

7. Do you collect any data on referral? What does this information look like?

- How long have you been collecting this for?
- Who collates it?

8. Do you collect any data on your activities? What does this information look like?

- How long have you been collecting this for?
- Who collates it?

9. Do you collect any data on outcomes for the different beneficiary groups? What does this data look like?

- Do you collect any data on non-clinical outcomes?
- Do you think there are any gaps to your outcomes data? What are these?
- Do you have data on outcomes that show a 'before' and 'after' picture?
- Do you have any data that help you compare the outcomes you have measured with 'something else', such as what happened before your innovation came into existence? What is happening with a similar service elsewhere?

Stakeholders

10. If applicable, do you think other organisations or partners will be willing to share their data or have someone agree to be interviewed?

11. Who else in your organisation or in partner organisations do you think it would be useful to talk to in order to secure relevant data?

12. Would you be willing, in principle, to do some primary data collection activity, such as sending out a survey to clients, going through patient records, if required?

for each approach. Armed with this knowledge, readers will be better placed to negotiate an approach to an EA with stakeholders.

We know, from experience, that most people undertaking an EA start with data. They often spend considerable amounts of time pondering over whether they have enough, and whether they should collect 'new' data. However, starting with data without a clear idea of what you are trying to achieve can often result in you getting 'lost' in data.

To facilitate negotiation and clarification of the purpose of an EA and the approach to be taken, it is helpful to write down your understanding of your service and what you hope to achieve from an EA and share this with your stakeholders. In the next

article in this series, we will introduce readers to a way of presenting a service innovation, and all of its complexity, succinctly. You may well have to refine your approach in the light of discussions with stakeholders and on the availability of data, which takes us on to our second requirement, that you ensure that what you propose is feasible. Consider the questions set in Box 1.

Now do time out 3

Our experience working with front line nurses suggests that, while they are often clear about the direct stakeholders in a service innovation, they may be less clear about who the indirect stakeholders are. In these cases we recommend that front line staff undertaking an EA ask

3 Test your knowledge

Time out

Use the prompts in Box 1 to test your knowledge of the innovation in your workplace you considered in time out 2.

Do not worry if you do not have all the answers. If you do not know the answers to specific questions, write down who you might approach to find out the answers you need.

If any additional stakeholders have been identified as a result of this exercise, add these to the stakeholder matrix for the innovation.

their executive director of nursing to help them identify a mentor working at a senior level in their organisation who can help them identify indirect stakeholders and navigate their way through the system. A mentor can also help to ensure that requests for data to support the EA are prioritised and provided in a suitable format.

As the feasibility of an EA and securing the data required to support a particular approach becomes clearer, it may require further negotiation with those you seek to influence as negotiating the terms of an impactful EA is an iterative process. For example, while a stakeholder, such as your manager, may voice a preference for a particular approach, in your discussions you can clarify that you share the same understanding of what the approach entails and whether it is feasible.

Our companion article (pages 31-34), for example, makes it clear that different approaches have different requirements and serve different purposes; many of which lay people may be unaware.

You also have to factor into these discussions a consideration of the amount of time and resource that can be committed to the EA. The benefit of conducting the EA must outweigh the cost. Some techniques can be data intensive, and require significant resourcing, for example in terms of specific skill set or timescale. It may not always be practical to conduct a specific form of technical assessment even when you have the right types of data. You need to make a pragmatic assessment of whether the output and its likely impact are commensurate with the resources you are investing.

EA is not about measuring everything. It is about prioritising the things that need to be measured, being clear about why you are measuring these and then measuring them well.

In conclusion, when planning to undertake an EA in clinical practice, there are three overarching considerations involved. The first relates to your purpose and being clear about what you want to

achieve. The second is the technical criterion, that is the specific data requirements necessary to support particular types of EA. However, even if a particular procedure is feasible, it does not mean that you should always undertake that procedure. You should also consider the desirability of doing so against the third consideration, which is about whether it is practical for you to conduct such a procedure. Whether or not it is practical depends on the time, resources, skills and capacity you have; as well as whether the procedure involves external stakeholders' time, resources, skills and capacity – and whether they are likely to agree to being involved.

Developing an EA and realising its impact require a blend of clarity of purpose, technical competence, insight into what is achievable within a specific timeframe with the capacity available to undertake the exercise, and strong negotiating skills. It is never an 'all-or-nothing' approach, and there is no single approach that is 'best' under all circumstances.

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Introduction to economic assessment – part 3

Abstract

This is the third in a series of four continuing professional development articles on economic assessment. The series aims to equip readers with the knowledge and skills to apply the principles of economic assessment in practice. The series describes a tried and tested methodology that has been used by practising nurses leading service innovations. In this article, we introduce tools and templates that have been developed specifically to support nurses applying the methodology.

Intended learning outcomes

After reading this article and completing the time out exercises, readers should be able to:

- Reflect on, consolidate and build on the learning in this series so far.
- Draft a pathways-to-outcomes (PtO) model of a service innovation.
- Know how to use a PtO model as the basis for negotiating with stakeholders.

Introduction

This third article in the series recaps and develops the points covered in the first two. It introduces a method of summarising and presenting complex interventions in a way that facilitates transparent and systematic approaches to determine the focus of economic assessments and how these should be conducted. This method involves using a systematic framework and process to conceptualise an intervention as a one-page visual representation. Readers should review the first two articles and ensure that the time out activities in them have been completed before progressing. This article builds on the first two articles in the series and their time out activities.

Recap

This series is based on a bespoke development programme designed by the Office for Public Management (OPM) to build the capability of front line nurses in economic assessment. The focus to date has been on nurses who are leading service innovations. The programme is underpinned by the principles of economic assessment laid out in authoritative guidance produced by the UK Treasury department (HM Treasury 2003).

The Treasury requires clarity, which means that all of the costs and all of the benefits of a service must be identified. To this end, we have discussed the need to be clear about:

- The true economic costs of a service.
- Who incurs what costs, directly and indirectly.
- The meaning of attribution with regard to claiming the benefits realised as a result of a service.
- Who experiences what benefits, directly and indirectly.
- The purpose of undertaking an economic assessment and what you hope to achieve.
- What will make a difference to the decision makers you seek to influence before you decide on your approach and start looking for data.
- The factors that affect the feasibility of the exercise and the approach, or approaches, you might take.

Pathways-to-outcomes framework

We introduce here an approach to help you 'tell the story' of your service in a way that can support economic assessment more effectively. It helps you to capture the complexity of a service innovation clearly and concisely. It can also help you communicate your service in a way that is more influential and more easily understood from the perspectives of those who are in decision-making roles involving resourcing and commissioning. Now do time out 1.

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Keywords
Economic assessment

Conflict of interest
None declared

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This article was previously published in *Nursing Management*, volume 21, number 6, 2014.

1 Service innovation

Time out

Identify a service innovation you have been involved in. This may be a new service or you may draw on an innovation you identified previously, for example when undertaking time out 2 in the first article in this series or in time out 2 in the second one. Take a few moments to consider how you would normally describe this service to a stakeholder you would seek to influence and write this down.

As nurses, we recognise the human body as a complex adaptive system. When focusing on outcomes, recognising a health service as a complex adaptive system can help us understand organisational complexity and how a relatively small change can have significant consequences that may be unintended, not just in our clinical environment or the organisation where we work but beyond this, into the wider health economy. A PtO framework (Figure 1) provides a way of seeing your service from a whole-systems and outcomes-focused perspective. It helps to clarify the purpose of the service. It gets beyond thinking purely about inputs and costs and, critically, moves the focus away from simply accounting for the things you do, your activities, and how you do them.

We are aware that, across public services, there can be a culture driven by the imperative to do good things, however well intentioned they may be should not be the guiding light in terms of service delivery and improvement. Instead, we must remind ourselves of the point of doing certain things.

A PtO approach concentrates the mind on certain questions: 'What does this all amount to?', 'How do the resources we have invested and the activities we

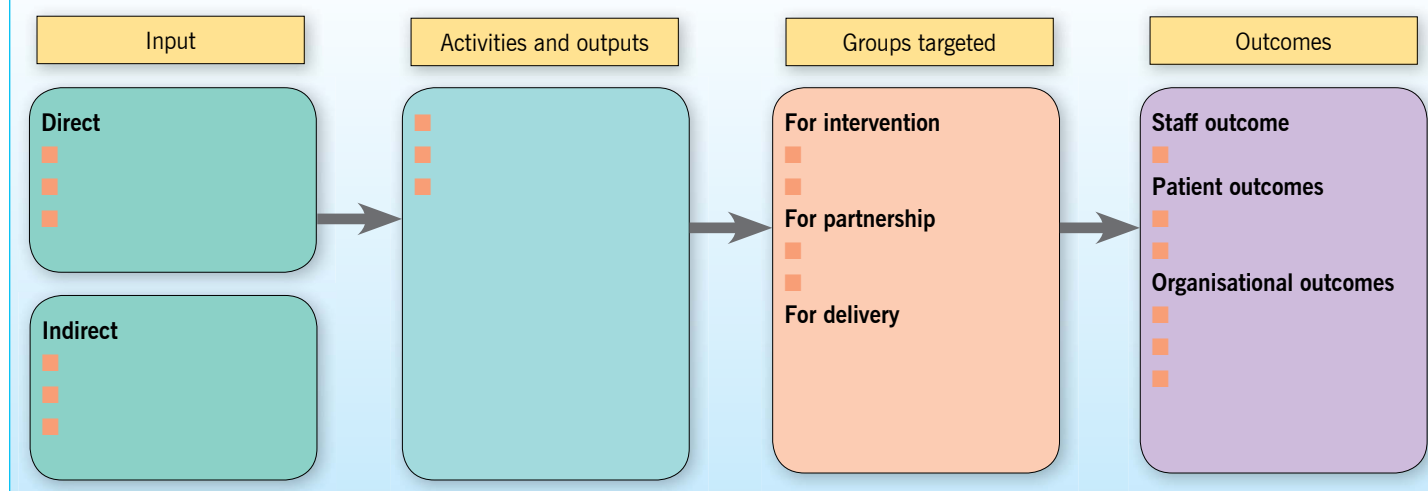
have undertaken contribute towards different types of outcomes?' This approach reminds us to stay focused on the outcomes we are seeking to achieve for patients and service users, for the workforce, for the organisation, for the health service and beyond. It can challenge us to be clear about the value of a service even before we reach the point of adding pound signs.

In the previous article in this series, we considered the range of stakeholders in an innovation. We offered a matrix as a tool for mapping the direct and indirect, and the internal and external, stakeholders. From experience, we know that people can have different understandings of what a service looks like and what it is for. Gaining consensus is an essential first step. We have stated previously that economic assessments are never about measuring everything; they are about knowing what to prioritise and why.

A PtO map can also provide a basis from which you can discuss and agree the approach you will take to place an economic value on your service. Box 1 (page 19) sets out some of the benefits from developing a PtO map.

Populating a PtO framework is a creative process. It is also an iterative process and a PtO inevitably will undergo a series of refinements before you are confident that it represents a shared understanding of your service that can be used as the basis for negotiating the format of an influential economic assessment. Box 2 (page 19) sets out an overarching set of prompts that may be used to inform a discussion. There is no right or wrong way to do PtO mapping. Some readers may be familiar with this approach already, or may be familiar with aspects of it. For these readers, the process of generating a PtO map may be straightforward. Readers who are unfamiliar with this approach may find the process slow as it makes you think about your service differently. While you may be unfamiliar with the

Figure 1 Your service: pathways to outcomes model



Box 1 What does a pathways-to-outcomes map do?

- Clarifies what is needed in terms of 'investments' to make an intervention happen.
- Specifies how these investments are deployed to deliver key activities.
- Identifies what these activities produce and generate.
- Articulates the 'logic' of why doing these things in a certain way brings about the outcomes intended.
- Identifies the types of evidence required to support an economic assessment.

process and with the ways of thinking, PtO modelling fundamentally is not difficult.

Nevertheless, you may find it challenging, particularly if you, or any of your colleagues, are personally involved or have a vested interest in a service. PtO mapping may require you to stand back from the service you are familiar with, and surface any assumptions you hold about the service, its value and possibly even your role in it. It is not therefore for the fainthearted.

The hardest part can be simply starting and, for some, deciding where to begin can be a hurdle. Feedback from nurses who have generated PtO maps for the first time indicates that this is often due to anxieties about not wanting to 'get it wrong'. Our advice is clear, it does not matter where you start, what does matter, is that you start somewhere.

By necessity in this article, we are guiding you through the process in a particular way, through time out sessions. We start on the left of the template in Figure 1. In practice however, it does not have to be this way. You can start on the right. You can start in the middle. The right place to start is what works for you and your colleagues. As stated above, it is most often an iterative and formative process, and you may find yourself going back and forth across the template refining your PtO map as you discuss your service and your thinking crystallises. A useful tip to get started is to start with the 'path of least resistance', that is: start where you find easiest.

From our experience, some nurses are tentative about sharing their first draft as they want it to be 'perfect' before they share. But if you think about it, this is illogical because achieving a shared understanding requires discussion, negotiation and refinement. When a service is provided by a team, developing a first draft of a PtO map in a team meeting can help to address these anxieties. Alternatively, presenting a first draft for discussion may speed up the process.

The template illustrated in Figure 1 may be downloaded from the OPM website (www.opm.co.uk/?attachment_id=2943). However, you may find you prefer a different layout. What matters in practice is that you include all of the elements of the framework, the format you use to present it is not the issue. However,

for the purposes of this exercise, we recommend you download the template, save it onto your computer and complete it.

Inputs

In time out 2, we invite you to look at your service and identify all the individuals, organisations and partners who are meaningfully involved in delivering the service. You will recall that this section links directly to the first principle of economic assessment set out in our first article: that the Treasury guidance (HM Treasury 2003) requires you to specify the true economic costs of your service. In previous articles, we recommend that you differentiate your set-up from your running costs.

Now it is time for you to think critically about this in terms of your own service. So, depending on what you are trying to achieve from conducting the economic assessment, you may need to account for those involved in setting up the service separately from those involved in the ongoing running of it. For example, if you are trying ultimately to understand the costs and benefits of a particular service model with the intention of replicating it elsewhere, you probably need to know how much

Box 2 Prompts of what you need 'to know' when developing a pathways-to-outcomes map

- Know **WHY** certain activities are needed and why doing something in a particular way is thought to bring about intended outcomes. This relates to the logic of the interventions.
- Know **HOW** to put a service innovation into practice. Knowing what should be done is not the same as being able to do it effectively. Successful implementation requires good understanding of processes and structures.
- Know **WHO** to involve and to target such knowledge involves understanding how activities require successful working with a range of potential stakeholders, and the stages at which they may need to be involved. It also requires clarity about who the intervention is targeting. This prompt forces us to be realistic about what might be achievable and where we may look for outcomes. For example, are we targeting all patients, or a subgroup of patients?
- Know **WHAT WORKS**, that is, what policies, strategies or specific activities will bring about desired outcomes with sufficiently few unwanted consequences. This prompt additionally involves questions about how outcomes may be measured robustly.
- Know **HOW MUCH**, that is, resource implications of interventions.

it may take to set up. On the other hand, if you are trying to understand the resource implications of continuing an existing service or expanding it to cope with more service users, accounting for the initial set up of your service may be irrelevant. This is why we offer no specific blueprint for economic assessment. What matters is that the principles are understood and applied appropriately in context. In time out 2 you must consider if, in your case, delineating set up and running cost would be useful.

Now complete time out 2

2 Inputs – set up and running costs

Time out

In terms of service set up, ask yourself:

- Was a facility built or adapted at the outset? If so, who made this happen?
- Were staff recruited? If so, who did this?
- Who was involved in setting up the infrastructure for the new service? For example, did you buy new equipment?

In terms of the running of the service, ask yourself:

- Who is involved in the direct ongoing running of the service, for example day-to-day delivery, management and communication?
- Who supports the ongoing running of your service, but may not be part of your direct service team?
- Are there any external partners involved?

Write down your assessment of your service in response to these considerations.

The next consideration links to the second principle of economic assessment set out in our first article, where Treasury guidance (HM Treasury 2003) requires you to be clear about who incurs what costs. Please note, at this stage, it is only about identifying the sources of different types of input. You are not expected to be able to quantify them or to assign monetary values to them; we will address these issues in our final article in this series. Remember, you should prompt yourself to think about the different possible categories of input and not simply rely on intuition as this may lead you to overlook particular types of input. You should also remember to ask yourself to think about 'direct' and 'indirect' inputs. Do others, such as people working in a different department, as well as external partners, contribute in any way that supports your service? Remember that indirect inputs are often invisible as direct financial transactions and are therefore often overlooked.

Now complete time out 3

3 Inputs – who puts in what?

Time out

This time out focuses on the inputs to the service you have identified and is aimed at clarifying who puts in what. Review the service inputs you identified in time out 2 and check to see if you have identified all that is financed directly through the service budget as well as all in-kind contributions. Check that you have identified:

- All direct or indirect staffing resources, including any volunteers involved in the service. Be clear about how much time each individual identified contributes to the service and express this as a whole-time-equivalent (WTE) percentage.
- Premises and overheads.
- Training.
- Materials.
- Travel.

Once you have completed time outs 2 and 3, you can draft the inputs section on your PtO map. We purposefully say draft because, as indicated above, it is likely that you will revisit this section of your PtO map and refine it.

Activities and outputs

Some people find it easier when developing a PtO map to identify the activities that constitute a service or intervention first, and then reflect on the resources that make this possible.

In the next time out session, we ask you to identify activities and outputs and to think through the connections between these activities and the inputs you have identified already. In so doing, you may think of additional inputs and start to refine your PtO model as a consequence. You may also clarify the targets of the activities you identify.

Now complete time out 4

Groups targeted

The next element of PtO mapping to consider is the groups targeted by the service. If the focus of the service is a client group, you need to be specific about its nature. So, for example, if the service seeks to address the needs of homeless people, is it all homeless people or does the service focus on those in a defined geographical area, or with specific needs? Equally you need to consider if there are groups targeted for intervention, for partnership or for delivery. So, if you are a specialist nurse you may work with and through other staff, carers or volunteers and not directly with patients in certain aspects of your work.

Now do time out 5.

4 Activities and outputs

Time out

In this time out, you will identify the activities and outputs of the service and think about their relationship to inputs and outcomes. You will also clarify the targets of the activities you identify.

Activities and outputs

Write down the key activities undertaken, but be clear about whether these are sequential or not.

Now write next to these activities the concrete outputs they produce, such as a training manual or a workshop.

Step back from what you have written and ask yourself:

- Are you clear which 'inputs' are used to resource different types of activities? Do you think that this distribution and use of resources is sensible?
- Reflecting on the vision and aims for the service, do you think there is a direct link between the activities and what you want to achieve? Are there different levels of priority? Are the activities realistic?
- Are there any specific dependencies or factors that influence how effectively a particular activity is conducted?
- Do you think the service is producing sensible outputs and using these to the best effect?

Once you have completed time outs 4 and 5, you can draft the sections of your PtO map concerning the groups targeted and the activities and outputs. In doing this, you want to be clear about the links between the inputs, the groups targeted and the activities and outputs. Thinking through these connections will help to identify gaps in the map and any underused resources.

Outcomes: short, medium and long term

Finally, the focus is on identifying the specific outcomes you are trying to achieve with your service. We encourage readers to specify clearly the intended benefits for patients but also to think beyond this and identify other intended or consequential benefits. These may be benefits to staff and to the organisation. Benefits to other organisations and wider societal benefits should also be identified where appropriate. This section links directly to the third and fourth principles of economic assessment set out in our first article, drawn from Treasury guidance (HM Treasury 2003).

5 Target groups

Time out

Next to each of the activities and outputs you identified in time out 4, write down the name or names of the group or groups at whom the activity is targeted.

Is it clear that the target groups have been identified based on an analysis of evidence or a good sense of needs?

If not, what has determined the groups being targeted? Are there specific groups or subgroups targeted for intervention, for partnership or for delivery?

Step back from what you have written and ask yourself:

- Is it clear which groups are being targeted with which activities and outputs?
- Do you think these activities are appropriate and likely to be effective for those groups? Are there any gaps?
- Are there any groups you now think the proposed activities and outputs may not target or engage effectively? Which are they, and what may be required to engage or target them more effectively?

You will recall that you are required to specify who benefits from what and to present evidence to support claims of attribution. We recommend that you start by itemising benefits and identifying any assumptions that you hold about the connections between inputs, activities, outputs and outcomes. Assumptions about any benefits identified resulting from your interventions need to be clearly stated and evidence based.

This issue of attribution was discussed at some length in our second article, and readers unfamiliar with this concept may find it helpful to read this article again at this point.

Now do time out 6

Once you have completed time out 6, you can draft the outcomes section of your PtO model. Now you might like to stand back from your service and look critically at your PtO map. Ask yourself whether it is clear that the activities and outputs are likely to contribute to the desired outcomes. Then, also assess the distribution of activities and the types of output generated against the service's desired outcomes.

Are some intended outcomes supported by lots of activities and outputs, while others are poorly supported? Is this distribution 'right'? With the information in front of you, might you do things differently, and if so how?

6 Service outcomes

Time out

This time out will focus on the outcomes of your service. List your service outcomes and identify who benefits from what. You may find it helpful to categorise your benefits.

For example, you may elect to do this in terms of short-, medium- and long-term outcomes.

If you do this, you should specify the timelines you ascribe to each category.

Review your list of outcomes and ask:

- Are these the specific outcomes this service was set up to achieve?
- Which ones are experienced in the short, medium and long term?
- What do you mean by short, medium and long term?
- Are you clear about who will benefit from what outcomes?
- Have you thought more broadly about outcomes beyond your specific service, organisation or sector? For example, the service may have benefits beyond the health sector for other professionals?
- Have you thought about possible outcomes under the headings of quality, innovation, productivity, prevention?
- Might there be unintended or even negative outcomes?
- Can you categorise your outcomes, for example in terms of health, economic, wellbeing, knowledge-based and wider outcomes?

Conclusion

We stated at the outset that developing a PtO map in practice is usually an iterative process. Each section of the framework relates to and affects other sections. We hope that, by completing the exercises in the article and developing your own PtO map, this has become apparent. Remember: it does not matter where you start. For example, many people find it easier to start with 'activities and outputs'. Regardless of where you choose to start, the prompts set out in Box 2 will always encourage you to draw links to the other components in the PtO map and to reflect on these links.

When discussing a PtO model, you have to be confident that you can demonstrate that the inputs identified are comprehensive and appropriate relative to the activities and outputs. Any assumptions made in this regard need to be made explicit. In turn, you also need to demonstrate how the activities and outputs lead to the intended outcomes for the intended groups. Again, it is imperative that any assumptions made about attribution are made explicit and as much evidence as possible is marshalled to make the arguments as compelling as possible.

Developing a PtO map is the first step in undertaking a pragmatic economic assessment. It clarifies what resources are required to make an intervention happen or to provide a service. It helps to make explicit how resources are deployed to deliver important activities and what these activities produce or generate. A PtO map serves as a model of a service innovation or an intervention against which it is possible to articulate the

logic of why it is argued that doing things a certain way will bring about an intended outcome.

As mentioned previously, it organises the relevant information in an outcomes-focused way that takes into account the wider system and links therein. It makes you appreciate how each component may be linked to something else in another part of the system. This will be particularly important for economic assessments as we cannot simply look at, for example, changing the way we resource particular interventions or activities without having thought through how this may be experienced in different parts of the wider system. Without this appreciation, it is easy to confuse and conflate 'cuts' with 'savings'. For example, there is compelling evidence that cuts to specialist nursing aimed at helping patients stay at home can lead to greater demands on hospitals (Lupari 2011, OPM 2011).

Before we conclude, there are two things we recommend you do. The first is revisit the paragraph you wrote in time out 1, where you wrote down how you would describe your service to someone you sought to influence. Ask yourself: now that you have systematically completed a PtO map of your service, would you do this differently? If so, how?

The second thing we would ask you to do is discuss your PtO map with other stakeholders in the service innovation. Does it reflect their understanding too?

Use your PtO map as a basis for negotiating a consensus on your service. The Royal College of Nursing is working with OPM to develop nursing capability in economic assessment. It is also supporting nurses to share their innovations and their learning, at tinyurl.com/ppd5mlr, where you can view a number of completed PtO models.

In the final article in this continuing professional development series, we will consider the types of evidence marshalled in an economic assessment and demonstrate how to use your PtO map as the foundation of an economic assessment.

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Introduction to economic assessment – part 4

Abstract

This is the final in a series of four continuing professional development articles on economic assessment (EA), more specifically EA in the context of nurse-led service innovation. The series aims to equip readers with an understanding of: (a) the main requirements of EA; (b) definitions of relevant terminology; (c) different EA techniques and their associated strengths and weaknesses; and (d) procedures to assign monetary values to costs and benefits. The series introduces a methodology, with associated tools and templates, that has been used by practising nurses to conduct EAs. The aim of this article is to show readers how to put monetary values on the types of cost incurred, and benefits generated, by a service innovation.

Intended learning outcomes

After reading this article and completing the time out exercises, readers should be able to:

- Set out costs and benefits in a format required by HM Treasury.
- Use different techniques for expressing benefits in monetary terms.
- Express costs and benefits 'in today's money', so that calculations are presented in 'constant prices'.

Introduction

In the first three articles in this continuing professional development (CPD) series, together with a companion article (pages 31-34), we introduced the principles of economic assessment (EA) and definitions of relevant terminology, discussed different approaches and took the reader through the first stage of undertaking an EA in practice. The reader will have learned that an EA is not simply a technical, data-driven exercise. Instead, a successful EA is founded on: (a) clarity of purpose, which requires engaging with stakeholders to understand their needs; (b) a clear understanding of the type of EA that can be supported by available data, which requires systematic assessment of the technical characteristics of data; and (c) pragmatic considerations, which require an appreciation that the 'costs' involved in conducting an EA should be proportionate to the likely 'benefits' generated.

After reading part 3, readers will have identified the inputs, activities, outputs and outcomes of a

service innovation in their workplace and presented this information on a one-page template, known as a 'pathways-to-outcomes' model. This model situates a service innovation in the context of the wider system in which it operates, and clarifies what is needed to make it work, whom it targets and involves, what it produces and, most critically, how all of these factors come together to produce a number of stated outcomes. The pathways must be underpinned by an understanding of the extent to which outcomes may be attributed to the innovation. The assumptions that connect the inputs of the service with the activities undertaken need to be stated clearly, as do the outputs produced and outcomes claimed.

The time out activities in this article build on those completed by the reader in the previous articles in the series. In this article, we discuss how readers can assign monetary values to the costs and benefits, and ensure that these values are expressed in a format required by HM Treasury (2003).

It is important to generate a pathways-to-outcomes model first, rather than jumping ahead and monetising costs and benefits (part 2). From experience, we know that if you have pre-identified the types of cost and benefit you are proposing to analyse without having first engaged with those whom you are trying to influence and persuade, you can easily be accused of cherry-picking the items you think may make your innovation more attractive (Sampson *et al* 2013). However, having a meaningful discussion with

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Conflict of interest
None declared

Keywords
Economic assessment

This article has been subject to double-blind review and checked using antiplagiarism software. For related articles visit our online archive and search using the keywords

Author guidelines
journals.rcni.com/tr/nm-author-guidelines

This article was previously published in Nursing Management, volume 21, number 8, 2014.

important decision makers and stakeholders about your innovation, with which they may not be familiar, can be challenging. This can be particularly so if your narrative is not couched in the 'vocabulary' with which service commissioners and planners are familiar. That is why a pathways-to-outcomes model performs an essential function in conveying the complexity of your innovation in an accessible way. It is important to note that, while your EA may end up being selective in focus, you need to have a clear rationale for why you focused on particular types of cost and benefit.

Costing inputs

It is usually easier to assign monetary values to inputs (costs) than to benefits; it is therefore more convenient to start here. According to HM Treasury (2003):

- 'Costs' in the context of EA refer to 'true economic costs'.
- 'True economic costs' include 'direct' and 'indirect' costs.
- It may be relevant to distinguish 'set-up' costs from 'ongoing running' costs, and to identify whether certain costs are one-off.
- You should include only those costs that meet the 'additionality' criterion, that is those that are over and above what would have been incurred anyway.
- Costs have to be expressed as 'constant prices', in today's money.

From experience, we know that people who are new to EA may find it challenging to remember all the above. There is a risk that unwitting omissions may cause costs to be under-estimated, by overlooking indirect costs, or over-inflated, for example by including types of costs that would have been incurred anyway as part of routine service.

Identifying the sources of cost outlined above is only the first step. It is rare that all the sources of cost you have identified come with readily affixed monetary values that are exact for the purposes of the EA. For example, it is common that, while you may know the cost of employing and deploying a member of staff, it may not be immediately clear how much of this cost you should include in your EA. The member of staff may not be spending all of his or her time delivering the innovation that forms the focus of your EA. Part of his or her time may be spent delivering or supporting activities that are unrelated to the innovation, and this proportion of the cost should be excluded from the EA. In addition, you may know only the salary of this member of staff, and it is important to appreciate that the salary, per se, is not the 'full cost' of employing and deploying him or her (HM Treasury 2003).

This may seem complicated, and it is easy to appreciate how costing can be undertaken ineffectively despite good intentions. There is, fortunately,

a systematic way to document cost. This may be described as follows:

- **Step 1: identify the sources of cost** (that is, direct and indirect, set-up and running) This concerns only naming the types of cost, and not being able to count them in any way.
- **Step 2: assess additionality** This involves looking at all the types of cost you have written down, going through each of them and asking yourself whether each meets the additionality criterion, that is over and above what would normally have been incurred anyway. It is important to be clear that what is 'over and above' depends on the perspective you adopt for your EA. The same category of cost may meet the additionality criterion for a particular EA but may not for another. For example, an out-of-hours service in a rural locality used to be run by GPs in the past, and a small fleet of cars was an essential part of the service-delivery model. Since the service became a nurse-led service, it has still relied on the use of cars but a number of modifications have been made to these. If you are conducting an economic assessment looking at the value of the nurse-led in comparison with the GP-run service, then the cost of cars is not 'over and above' and should therefore not be factored into the calculations. The cost of modifications is 'over and above' and it is this expenditure that should be included. If, on the other hand, you are looking at the value of a nurse-led service that relies on cars in comparison with one that does not rely on cars, the cost of cars should be included.
- **Step 3: apportioning** This involves looking at all the types of cost you have named and decided meet the additionality criterion, and asking yourself whether each of these should be included in its totality. In other words, should 100% of this cost category be included in your EA, or should only a proportion of it be counted? The answer to this question rests in what clarity you have about whether each of these types of cost were deployed in their entirety to deliver or support the innovation, and not some other activity. For example, rather than simply including the full salary of a member of staff who may be spending only a percentage of his or her time on the innovation, you may need to calculate an hourly or daily rate of pay, including on-costs (step 4), so that you include only the appropriate proportion of the member of staff's pay in your calculations, and the proportion of his or her time that is spent delivering or directly supporting the innovation.
- **Step 4: costing in full** For those items that should be included, and are being included in the right proportion, ask yourself whether the figures you

have for them represent the full cost. For example, the full cost for staff includes their salaries, but also on-costs such as National Insurance contributions, employer pension contributions, and other benefits and perks.

- **Step 5: costs in today's money** For all cost items, you need to be sure that they are all expressed 'in today's money'. This is particularly important if different costs are incurred at different times. For example, you may have purchased computers five years ago for about £3,000. The purchasing power of the same £3,000 today will be different.

We need to pay attention to how we set out the information on costs in a way that demonstrably meets the requirements of HM Treasury. Even if you are familiar with the types of cost and how you should handle them, it is still good practice to write things down in a way that allows you to maintain a clear audit trail of how you decide what to include, how much to include and why. While it may be obvious to you, it will not be to others. Furthermore, with the passage of time, you may forget some of the important steps you took and find yourself struggling to explain what you have done when someone challenges you on your figures a year later. To help you set out the data appropriately and to maintain a good audit trail, we have designed costing templates that may be downloaded for free from here: tinyurl.com/osl3fp6. You will find them helpful when undertaking time out 1.

Now do time out 1.

1 Documenting costs

Time out

The costing templates include one for 'set up' and another for 'ongoing running'. Within each, there are sub-sections for 'direct' and 'indirect' costs.

Follow the procedures for Steps 1 to 5 described in the article.

- **Step 1: identifying the sources of costs** Start with the 'set-up' phase and consider the following:
 - Define what you mean by 'set up'.
 - What period does this cover?
 - Be clear about the types of activity that have happened within this 'set-up' period.

Now think about the 'direct' costs relevant to the 'set up'. Under the column that says 'identify', simply write down the types of direct cost you can think of as being incurred during the set-up phase. This is only about 'naming' things, such as cost of recruitment and cost of purchasing computers, and not about needing to have numbers or pound signs against them. It is easy to omit things and include only things you think of

intuitively. To minimise the likelihood of this happening, prompt yourself to think through the following potential 'cost categories':

- Staffing.
- Premises and overheads, such as office rental, cost of utilities and phone bills.
- Training that is directly relevant for the delivery of the innovation rather than some generic training.
- Travel.
- Materials such as printing and information leaflets.
- Other costs such as license fees to use particular software and the cost of licensing and user registration for accessing and using validated measurement instruments such as the Short Form (36) Health Survey (SF-36).

For each of the types of direct cost you have written down, ask yourself whether you have any quantitative or monetary values against them. For example, you may have identified the cost of recruitment as a type of cost incurred during set up. In this column, you may be able to state that you recruited one full-time project manager ('quantified'), and that the role costs £45,000 per annum ('monetised').

Do not worry about getting all your figures exact at this stage. Here, you are prompted only to think whether you have any numbers or pound signs that come readily to mind in relation to the type of cost you have identified. There will be opportunities later for you to refine these numbers and pound signs.

Do not worry if you know that there are or should be relevant numbers or pound signs but you do not have them. Noting these can remind you to 'dig up' these figures, or to ask other people who may have the answers.

Once you have done this for 'direct' costs incurred for 'set up', go through the same process for 'indirect' costs incurred for 'set up'. Remember that 'indirect' costs are not incurred directly by you or your service. They are costs that are mobilised or levered in as a result of your service being in place. They can be incurred by others and can be 'in-kind' support for which no money changes hands, for example in the form of a partner organisation offering your staff free training that is essential to their effective delivery of your innovation, or free use of a meeting room.

While you are likely to be able to identify the sources of 'indirect' cost, it is less likely that you will have numbers or pound signs against them. As before, simply note these sources of indirect cost and remind yourself to clarify who you may need to ask for the relevant information.

Once you have filled in the 'direct' and 'indirect' costs at 'set up', continue to do the same for 'ongoing running'.

■ **Step 2: assessing additionality** Now you are clear that you have identified the sources of direct and indirect costs and have clarified the types of cost that were incurred during set up as opposed to ongoing running, the next steps involve ensuring that you count only the items that should be included. It is common that we can list different types of cost intuitively, but for the purpose of an EA, not all types of identified cost should be included in calculations. We need to ensure that the types of cost identified meet the 'additionality' criterion. This can sometimes mean that a number of costs that you have identified are discarded at this stage, or are only included in part. This is perfectly acceptable, as you would have maintained an audit trail that documents why certain costs are or are not included.

Look down the list of all the costs you have identified:

- For each item, ask yourself: 'Is this cost "over and above" what would have been incurred anyway in the absence of the innovation?' Remember, what is 'over and above' depends on the purpose of your EA.
- For the items that do not meet the additionality criterion, write down the reason why, and then exclude them from inclusion in subsequent calculations.

■ **Step 3: apportioning** Now that you are sure you have included only the items of cost that should be included, you need to ascertain whether you include each of these cost items in their entirety.

For each included cost item, ask yourself: 'Is 100% of this resource used to deliver or support the innovation, and not some other activity?' If not, estimate the proportion of this resource deployed for the innovation. Write down your assumptions underpinning this estimate (Box 1).

Remember that your answer about proportionality should always be in relation to the deployment of this specific resource over the duration of the specified or assumed period of time. For example, you may have deployed the same member of staff from the outset, when the innovation was being set up, right through to the ongoing running of the innovation. However, the contribution of this same member of staff to the innovation may have varied, with a higher level of contribution during the set-up phase compared with ongoing running. This is also true for anticipatory costing, for items of resource use in the future, where it is important to be clear about the assumptions you make about projected resource use and how this may change.

Similarly, this staff member's contribution during ongoing running, or into the future, if you are conducting anticipatory costing, may be variable, which necessitates some form of estimate of proportionality based on how you account for time during the ongoing running

phase: will it be done on a monthly basis, or quarterly, six-monthly and so on? This will be where you may need to decide about how you present ongoing running costs. Based on your conversations with those you are seeking to influence and what you are trying to achieve with your EA, it may be more appropriate for you to look at:

- Running costs for the entire duration of your innovation's existence.
- Average annual running cost.
- Annual running cost for the most recent accounting year.

It is up to you, based on clarity of purpose of the EA, to determine what is most appropriate, and you should write down the rationale for your decision.

■ **Step 4: costing in full** Once you have ensured that you have included the right types of cost, and in the right proportionality, you will need to ensure that the cost figures you use for each cost item reflects the full cost. This means that the cost of personnel, for instance, must include on-costs such as National Insurance and pension contributions, and all material must include any VAT paid.

■ **Step 5: cost 'in today's money'** Last but not least, there is a final step involving adjustments to be taken to ensure that the cost figures you use

Box 1 'Top-down' and 'bottom-up' approaches

When estimating costs, you can take a 'top-down' or a 'bottom-up' approach. A top-down approach is most commonly undertaken if you have access to published 'budget lines', which are often found in financial reports and account for different areas of expenditure, such as office rental. These budget lines should include some of your expenditure for the innovation, but cover more than just your specific spend. You then need to break down these overarching categories of expenditure to distil the amount that reflects your specific spend. Say, for example, your team occupies one tenth of an office space and the annual rent for the office is £100,000 per annum. Your 'share' of these costs would therefore be £10,000 for 12 months. It is, of course, not always so neat, and you will have to make estimates about proportion of spend that is attributable to your innovation.

A bottom-up approach can sometimes be called 'activity-based costing'. This involves 'lumping up' from individual activities and events to derive a figure for total expenditure. Say, for example, a member of staff contributes two hours per week to your innovation. Using the bottom-up approach you would need to calculate how many hours he or she contributes in a year and divide his or her annual salary, including 'on-costs', by this figure.

are all expressed in 'real terms' or 'constant prices', that is in 'today's money', as opposed to 'nominal terms' or 'current prices'. This recognises that different cost items may have been incurred at different points in time, or may be incurred at different points in time looking ahead if you are conducting anticipatory costing. Without adjustment, you may end up overlooking the 'real' values of different expenditure.

Over a long-term period, the Bank of England's annual inflation target, usually 2.5%, is the appropriate measure of prices to use as a general deflator (Bank of England 2013). This means that if your innovation has incurred types of costs that are not in the current accounting year, for example, if your set-up phase was five years ago, you will need to adjust your figures by the 2.5% figure for every year leading up to the current accounting year, that is, you must apply the rate cumulatively. Similarly, when trying to account for a prospective innovation, you may need to build in inflationary costs particularly when it comes to projected ongoing running costs.

In some situations, for example where particular prices have increased at a significantly higher or lower rate than general inflation, this 2.5% figure may not be appropriate. It may be more appropriate therefore to adjust these figures based on the relative price change.

Once you have completed the process in time out 1 and Box 1, it will be obvious what you have and what you need. The next step is to clarify who holds which data and be clear about your plan of action to secure the data you require to complete your economic assessment. If there are gaps in the data, make a note of these and decide whether you need to take action, such as collecting new data, to address the gaps. Remember that you do not have to put monetary values on everything. Pragmatic consideration encourages you to be clear about priorities. For example, you may know that your innovation levers in an indirect cost, for example, if a partner organisation lets you use its training facilities without charging you for its use, but this was a one-off incident, and the contribution is small against the context of overall costs. While you may ideally wish to be able to put a monetary value on this indirect cost, the effort involved may be disproportionate. You may therefore simply report that this type of indirect cost was incurred, but that you have not put a monetary value on it.

A worked example of a costing template being completed may be downloaded free from tinyurl.com/osl3fp6. As you will see, the way the template has been completed includes narratives explaining decisions or the way particular entries have been made. This provides a good audit trail.

Benefits

Once inputs have been costed, the next step is to do the same for the outcomes or benefits identified. Time out 2 builds on time out 6 in the previous article in the series. To undertake this exercise, you must first download the outcomes and benefits template from www.opm.co.uk/benefits-template

Now do time out 2.

2 Demonstrating value 1

Time out

Demonstrating value is underpinned by relationships and communication. Ask yourself the following questions:

- Who are you trying to convince or influence by demonstrating the value of what you do?
- What would they accept as evidence of value?
- Do you need to speak to specific groups to understand what 'value' means from their perspective?

Now consider what your data will support.

Look at the outcomes you have identified in time out 6 in part 3 of this series. Just as you did for the 'inputs' section, ask yourself which outcomes you can identify, quantify and monetise. Do this for each of the groups that 'benefit' from what you do. Think widely, as benefits can be experienced by groups other than the direct users of your service.

You may find it helpful to use the Quality, Innovation, Productivity and Prevention (QIPP) headings (www.evidence.nhs.uk/qipp) to think systematically through the different types of outcome: what may be a 'quality' outcome, for example, what may be an 'innovation' outcome, and so on.

Remember, just because something does not have a number attached to it, it does not mean that you do not record it. While you may not have the numbers, other people might – for example, through published research. You can, if necessary, use more than one template or produce your own table with additional columns. At the end of time out 2 you will have populated the first two columns of the benefits template.

By this stage, you will have listed direct and indirect benefits, considered if there are any negative outcomes arrived at or avoided, clarified who benefits from what and been challenged to think outside the health sector. Deciding which benefits to monetise, and how, needs to be an informed process and one that can be defended. Your decision will be informed by what you aim to achieve, the needs of those you are seeking to convince and what your data may support. You might, for example, try to monetise the achievement of a

positive outcome, the absence of a positive outcome or the avoidance of a negative outcome. These are all equally valid approaches and they are by no means mutually exclusive. Putting monetary values on outcomes is often trickier than doing the same for inputs, which is perhaps why so many decisions are taken on costs alone, which, as we know, can have unintended or negative consequences: cuts in front line staffing numbers, for example, and the impact this has on patient safety, as has been highlighted by the Safe Staffing Alliance (safestaffing.org.uk).

The following steps will help you to clarify the approach you may wish to use:

- **Step 1** Is there a known market value for your outcome? For example, if one of your important outcomes is 'bed days saved', do you know the value of a bed day in your specific context, or do you know someone who does? If you have access to such information, you should use it because it is the most direct and specific indication of the likely 'worth' of your specific outcome.
- **Step 2** If you do not have access to a known market value for your outcome, do a quick search to see if anyone else has published anything that may be useful, anything for example that you could use as a proxy in place of something that may be directly relevant. In the case of bed days saved, for instance, if you do not know the actual cost of a bed day in your context, would you be able to find published information about the cost of a similar bed day in other healthcare organisations? If so, it may be important to present the variation in values.
- **Step 3** If you do not have the required market values and no one else seems to have produced anything that may be relevant, should you try to generate the financial values through primary research? If so, who else needs to be involved and what are the resource implications?

This CPD series does not touch on Step 3, but directs readers instead to Annex 2 of the Green Book (HM Treasury 2003). It is not something that nurses on their own can do, but is an activity that needs to involve specialist technical know-how. This CPD series aims, instead, to equip nurses with the knowledge to make the best use of what is there, and to know with whom to work.

There is a lot of useful information that already exists and that can help nurses put monetary values on a range of relevant outcomes stemming from nursing innovations, that is, adopting Step 2. It is rare that nurses will actually have to undertake Step 3, as existing evidence may be 'good enough'. Readers are directed, in particular, to a number of repositories that bring together robust evidence on monetary values of a wide

range of health and social care outcomes, services and staff. A few of the key ones are listed in Box 2.

Using monetary values that have been published by others rather than having your own specific data is a process known as 'benefit transfer'. In practice, this usually involves searching the wider literature to identify studies that have put monetary values on outcomes similar to those in which you are interested. As you will effectively be 'borrowing' someone else's material, and applying it in a similar but not identical

Box 2 Resources to help with costing

- Unit Costs of Health and Social Care. An invaluable resource compiled by the Personal Social Services Research Unit that sets out the unit costs for different types of health and social care services, as well as different types of health and social care staff. The resource is updated annually. It can be found at www.pssru.ac.uk/project-pages/unit-costs/2013
- Savings and Productivity and Local Practice Collections. A growing set of diverse material available from the National Institute for Health and Care Excellence website that includes costing statements, costing templates and detailed information relating to a wide variety of conditions such as diabetes, obesity, pressure ulcers and breast cancer. It can be found at nice.org.uk/savingsandproductivity/collection
- The Global VALUE Exchange. An open source database of values, outcomes, indicators and stakeholders. It is a free platform for information to be shared enabling greater consistency and transparency in measuring social and environmental values. It contains a diverse and eclectic array of different valuations of outcomes, such as the value of a 'carer being able to carry out a hobby', 'cost per suicide', and so on. It can be found at globalvaluexchange.org/valuations
- Scottish Health Service Costs. A resource, specific to Scotland and published by the Information Services Division Scotland, that sets out on an annual basis the financial information from each board for hospital and primary care services. The primary care service is split into 'community services' and 'family health services'. It can be found at tinyurl.com/ocxobul
- Health in Wales. A Wales-specific resource maintained by NHS Wales that contains a variety of statistics and data on different conditions, populations and lifestyles, some of which include financial information. It can be found at wales.nhs.uk/statisticsanddata

context, you will need to be careful in explaining why you think this is applicable to your context, and whether there are any caveats to be considered.

One of the reasons it can be challenging to assign monetary values to outcomes is because some outcomes can be framed vaguely, or in ways that do not appear at first sight to be amenable to monetisation: 'wellbeing', 'choice', 'knowledge', and so on. A useful tip is to do the following:

- Could an outcome be 'broken down' into less abstract components? Always ask yourself what an outcome looks like in the context of the specific beneficiaries. The more definite and specific it is, the more likely you are able to find some way of putting a monetary value on it. For example, many innovations may lead to 'improved wellbeing'. However, what this looks like can vary from innovation to innovation, and from one beneficiary group to another. See Box 3 for an example of how Macmillan Cancer Support used a 'mental wellbeing' outcome in a way that lends itself to having a financial value assigned to it.

- Can you express your outcome in a way that spells out its implications for the use of services or the impact on time spent by various professionals, or both? We suggest this is because the evidence base is much stronger in terms of reporting the financial cost of different professionals and types of services. As much of health promotion and the prevention of illness strives to avoid negative outcomes, it may be easier for you to look at your outcomes from the point of view of negative consequences avoided as a result of your innovation. You may then elaborate on these in terms of the demands on services or staff time, or both, that otherwise would have been required to manage or treat them. See Box 4 (page 30) for an example of the Big Lottery Fund that looks at the issue of ascertaining the monetary value of outcomes generated by their Fulfilling Lives programme of preventative interventions.

Regardless of the approach you take, you must remember to set out the rationale and assumptions for how you have proposed to handle the various outcomes. Do not worry if you cannot express all your outcomes in a way that supports monetisation. You should still write down those that have no financial values attached to them. You may be interested to know that the National Institute for Health and Care Excellence (NICE) now assesses the cost effectiveness of various public health interventions using a combination of cost-utility assessment and cost-consequence assessment (NICE 2009), the latter accommodating the fact that not all outcomes may be expressed in financial terms as quality-adjusted life years.

Remember that, just as for costing inputs, you need to express all the relevant monetary values 'in today's money'. You should also count only the outcomes that meet the 'additionality' criterion, meaning only the outcomes that are 'over and above' what would have happened anyway in the absence of your innovation. As part of this, you must remember to have a story to tell around why it is plausible for people to believe that the outcomes you claim are direct consequences of your innovation and not otherwise. You may wish to revisit the first article in this series to remind yourself of the main requirements when it comes to accounting for and presenting benefits and costs.

Now do time out 3.

3 Demonstrating value 2

Time out

In this time out session, you will populate the remaining columns on your benefits template. You may start however by further refining your outcomes based on the points raised above. Once you have done that, consider the additional criteria.

- Are the benefits listed 'over and above' what would have happened anyway in the absence of your service innovation?
- If so, can you quantify these benefits?
- If so, can you monetise these benefits? Is it feasible? Is it desirable? Will it enable you to achieve your desired outcome?
- If so, can you place a monetary value on these benefits by drawing on local data or by drawing on published research as a proxy?
- If so, can you express these values in today's money?

Box 3 Putting a monetary value on mental wellbeing

The benefits and welfare advice services funded by Macmillan Cancer Support are all aimed at promoting better 'mental wellbeing' among people affected by cancer. Macmillan was able to define the type of mental wellbeing generated by their services as being related to a 'reduction in the anxieties and stress due to debt-related worries' (Macmillan Cancer Support 2012). In doing so, they identified a proxy value from an English and Welsh civil and social justice survey showing that the average cost to the NHS of 'difficult-to-solve' debt problems that led to physical or stress-related ill health was around £50 (£20 per debt problem in general) (Pleasence *et al* 2006).

Box 4 Costing preventative interventions

The Big Lottery Fund is being used to fund a major programme called Fulfilling Lives that involves preventative approaches with pregnant women, babies, and children under three. The monetary value of outcomes are considered through the lens of the 'cost of social ills' associated with poor outcomes in the domains that have been avoided as a result of the programme. For example, in the domain of 'nutrition', social ills evidenced as being associated with long-term negative outcomes in this area are identified. These include, for example, obesity, poor dental health, social problems such as bullying and low self-esteem, and health conditions such as diabetes. The wider evidence base is reviewed for cost estimates or monetary values associated with managing or treating these issues.

Conclusion

As we argued in previous articles in this series, developing an EA and realising its impact require a blend of clarity of purpose, technical competence, insight into what is achievable within a specific timeframe with the capacity available to undertake the exercise, and strong negotiating skills. It is as much a science as it is an art. Decisions are taken at each step of the way, some of which are more or less evidence based or definite than others. We understand that there is a common perception around EAs that they are purely objective and scientific, and that they are difficult to critique or to engage with because we may not be experts in the often-mystifying and opaque procedures involved. We hope that, through the course of the four CPD articles in this series, we have illuminated

certain aspects and procedures of EAs in a way that empowers the nursing workforce to feel able to engage with the issues. These articles do not pretend to have covered everything about EAs, or to have covered them at the level of detail that experts in this area may expect. Indeed, we are upfront in acknowledging practical limits, for example by relying on 'benefit transfer' rather than primary valuation studies to assign financial values to outcomes. Instead, the series is underpinned by an appreciation of the 'mundane messiness' of evidence from and for practice aims, and the need to navigate the often-complex organisational realities.

This series, as the title indicates, is meant as an introduction. We encourage readers who may be interested in finding out more to refer to the HM Treasury Green Book (HM Treasury 2003) or to contact us. We hope to inspire and engage with thriving communities of practice as nurses start to engage with economic assessments and to see these as useful tools to inform ways of transforming care.

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Making the economic case for nursing innovations: horses for courses

Chih Hoong Sin and Ann McMahon describe seven approaches to conducting economic assessments and debunk some jargon along the way

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Keywords
Economic assessment, costs and benefits

Conflict of interest
None declared

This article has been subject to double-blind review and has been checked using antiplagiarism software. For related articles visit our online archive and search using the keywords

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This article was previously published in *Nursing Management*, volume 21, number 4, 2014.

Abstract

In economic assessment, costs must be reviewed and expressed in monetary terms. Benefits, however, may be expressed differently depending on the specific approach. This article describes the techniques that nurses are likely to come across and use most often, while emphasising that there is no single 'best' approach. Different approaches serve different purposes and the choice of approach must be based on pragmatic decision making.

While all economic cases require the establishment of costs and benefits, there are different ways of doing so. Often, novices are unaware of the different techniques and may settle on a particular approach simply because it is the only one of which they are aware. The technical jargon and terminology further confuse people who are unfamiliar with economic assessments although, ironically, many have incorporated such terminology into everyday use.

This article introduces readers to seven approaches for conducting economic assessments (EAs): describing what these involve, and explaining their purpose. In doing so, this article is aimed at conveying two important messages.

First, one must be clear about the purpose of any EA: what you are trying to achieve, and what you are trying to demonstrate will fundamentally affect the approach you use. Second, clarity of purpose needs to go hand in hand with a realistic assessment of what you have and what may be possible within the time, skills and wider resource constraints under which you are operating. There is no single

'best' approach. The techniques described below are not exhaustive, but are likely to be the ones that members of the nursing workforce are more likely to encounter or to have at least heard of. It must be said, from the outset, that terminology can be used inconsistently and even interchangeably in some cases in the published literature.

Cost-benefit analysis

While most would have heard of 'cost-benefit analysis' (CBA), many may be unaware of what it involves. In lay usage, CBA has come to be the 'catch-all' terminology for anything and everything to do with demonstrating some types of 'cost' and some forms of 'benefit'. The fact that 'cost' and 'benefit' are terms used in common parlance can often mean that people may not realise that the vernacular use of those terms means something different from their technical definitions within CBA. 'Cost' in the way it is defined and operationalised in a CBA, for example, refers to 'true economic cost' and not simply the types of cost, such as staff costs, premise costs and so on, about which the finance departments of NHS organisations run routine reports.

As a technical exercise, CBA has specific requirements and components, requiring the identification of all relevant direct and indirect costs of a project or intervention and all relevant direct and indirect benefits. For the latter, we need also to capture positive and negative benefit, whether or not they are intended outcomes (HM Treasury 2003).

Identification of types of cost and benefit is simply the first step. CBA requires that all these costs and benefits are expressed in monetary terms. This is a

critical feature of CBA that is often poorly understood by those who use the terminology of CBA loosely. As is clear from the requirement to assign monetary values not only to costs but also to the various types of benefits, a CBA is not an easy undertaking. It is often data and resource hungry, and takes time.

There are many benefits, such as enhanced sense of choice and control among patients, that may be produced by nursing innovations and interventions that do not come with readily affixed monetary values. CBA may therefore involve a range of modelling and estimation procedures that attempt to arrive at such monetary values. Common techniques include 'willingness to pay', to express in monetary terms the amount someone would pay to enjoy a certain benefit that is not traded 'on the market', for example having a greater degree of control, and 'willingness to accept', to express the minimum amount in monetary terms that a person would accept as payment for him or her to abandon a 'good', such as having a choice of service, or to put up with something negative, such as treatment with more potential side effects, or both. These are not the focus of this article, and readers are directed to HM Treasury (2003) for relevant descriptions and explanations.

In addition to requiring monetary values to be assigned to all costs and all benefits, CBA also requires the following:

- All monetary values need to be expressed as 'net present value' (NPV), which crudely means 'in today's money'. This means that the types of costs and benefits that are not incurred or experienced currently, in the current financial year, will need to be adjusted to express them in NPV. For example, we know that £10 in 1990 has a different value in terms of what we can purchase with it compared to £10 in 2014.
- Sensitivity analysis, which means that we need to acknowledge often inherent uncertainties in some of the assumptions or evidence we use, and therefore to assess the extent to which these uncertainties may influence the results of our calculations. For example, we know that there is published information on the average cost of 'a bed day', and that there can be significant local variations in such cost. Taking a 'high' estimate will yield a different result when we calculate a benefit such as 'bed days saved' compared with taking a 'low' estimate. In addition, we need to check that we have not been overly optimistic in our assumptions about the types and levels of benefit achieved.

It should be clear, from the above, that when the term CBA is used in casual discourse; one should try to 'unpack' what the user means by it. It is not always

desirable or feasible to conduct a full CBA, particularly if we are looking at practice-based evidence generation. It may be that a fully fledged CBA is not required, but that there are particular emphases or foci that are required in different contexts.

Cost-effectiveness analysis

Like CBA, 'cost-effectiveness analysis' (CEA) is another term that has entered everyday use, again with variable levels of understanding. CEA shares a number of similarities with CBA, but also displays vital differences. By its definition, a CEA must always include comparison. This may be about comparing a new service with something that existed before its introduction, comparing a service to some other, similar service elsewhere and so on. A CBA, on the other hand, can be performed on one service with the intention of assessing the costs involved against the benefits generated by it.

While comparison is an integral characteristic, CEA requires a specific form of comparison. At risk of over-simplification, CEA essentially compares the relative costs and benefits of two or more courses of action that produce common outcomes (Phillips 2009). There needs to be clarity about what these common outcomes look like in terms of specific measures so that comparison may be performed consistently across the various interventions. For example, you may be comparing four different interventions that promote shared decision making. The specific form of shared decision making may look somewhat different but all aim to enhance patient empowerment, among other outcomes. How is patient empowerment being measured across the four interventions? Is one measuring it using the Patient Enablement Instrument, while another is measuring it using the Patient Activation Measure? How will this affect our ability to compare?

CEA compares costs associated with different interventions with their associated effectiveness in terms of the types and levels of outcome achieved. This may be visualised as a 'four-box' model based on the axes of 'cost' and 'effectiveness', as illustrated in Figure 1. While CEA, like CBA, involves assigning monetary values to costs, unlike CBA, CEA does not require monetary values to be assigned to benefits.

Cost-utility analysis

Many of those who work in healthcare settings would be familiar with decisions made on the basis of 'cost-utility analysis' (CUA). This was, up until recently, the main approach used by the National Institute for Health and Care Excellence (NICE) to assess cost effectiveness of various public health interventions (NICE 2009).

The first thing to be said about CUA is that it is a specialised form of CEA. This means that CUA, like any CEA, always involves comparison. Like any CEA, it involves comparing different courses of action, with associated costs, to achieve common goals. As a specialised form of CEA, however, CUA is unique in the way it handles and expresses the various benefits generated. Benefits are expressed as and measured in terms of years of full health lived, using a measure such as quality-adjusted life years (QALYs).

Like CEA and CBA, CUA requires all costs to be expressed in monetary terms. The critical distinction lies in the specific way it treats benefits.

Cost-minimisation analysis

Like CEA, 'cost-minimisation analysis' (CMA) always involves comparison. Unlike CEA, CMA performs comparison on a different basis. The benefits arising from different interventions have to be known to be identical. CMA is then conducted to compare costs of alternative interventions that produce that identical benefit (Haycox 2009). Like other economic assessment approaches, CMA also requires all relevant costs to be expressed in monetary terms. However, CMA often involves looking only at the types of cost incurred from the perspective of a specific organisation, usually one that is making the direct investment.

CMA is an approach commonly used in pharmacoeconomics to compare different drugs with equal efficacy and equal tolerability, concerning for example duration of therapy, side effects and so on. Outside the pharmaco-economics context, the application of CMA can be problematic. In routine nursing practice, many of the outcomes are not amenable to the same level of measurement and control as is practised in pharmacology. There may be a risk that CMA is conducted whereby the attention is only on achieving the lowest cost for delivering a specific benefit, without paying due regard to the possibility that doing so may negatively affect other benefits produced by this or other interventions.

Cost-avoidance analysis

'Cost-avoidance analysis' (CAA), unlike other approaches described above, does not require measurement of the specific positive outcomes achieved by a service or intervention in the way that the other approaches do. For example, while CBA and CEA will require us to measure 'wellbeing' if this is one of the benefits claimed, CAA does not require us to do so. Instead, CAA often involves looking at the positive benefits from the perspective of negative outcomes avoided.

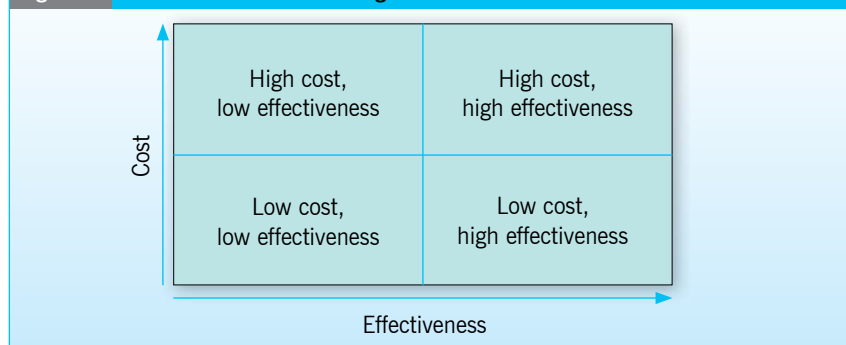
Going back to the case of 'wellbeing', CAA poses the question of what would not achieving positive wellbeing look like, especially in relation to the costs involved in managing and treating the effects that arise from the absence of positive wellbeing. It therefore makes the argument that by achieving positive wellbeing, we have helped to avoid the costs involved in having to deal with its absence. For example, by effectively supporting patients with heart failure to remain at home, heart failure nurse specialist Jill Nicholls demonstrated that the heart failure nurse liaison service in NHS Fife contributed towards cost avoidance of £454,928 per year by helping to prevent patients from being readmitted to hospital unnecessarily, by reducing the length of stay in hospital and by reducing demands on other professionals' time (Sin and Nicholls 2013).

This approach is well-suited to preventative interventions or those that generate abstract, high level outcomes that may be difficult to measure. It is important to note, however, that there is a difference between cost avoidance and cost savings, and the two should not be confused. Cost avoidance does not change current spending, but is about making the case that, had the intervention not been in place, the level of spending would have been higher. Prospectively, CAA seeks to demonstrate that an intervention can help to contain and control cost increment, thereby potentially creating cost savings over time.

Cost-consequence analysis

'Cost-consequences analysis' (CCA) is a procedure that does not aim to measure and present all of the costs and benefits in the same units. While costs are conventionally expressed in monetary terms, CCA acknowledges that benefits can sometimes be difficult to express in this way, as a CBA requires, but can also be difficult to measure and express meaningfully in the same units, such as QALYs in the case of CUA or other forms of consistent measure in the case of CEA. This recognises that different benefits may be measured

Figure 1 Framework for considering cost-effectiveness



more effectively and meaningfully using different units. For example, in some types of therapeutic intervention with children, practitioners may use the strengths and difficulties questionnaire, which includes 25 items on five scales, as well as 'distance travelled' along important outcome dimensions: measurements as reported in their so-called 'natural units', which basically means 'as they are', rather than seeking to transform them into a common measurement unit.

The various benefits generated by a service or intervention are listed individually, and are expressed as the 'consequences' of costs incurred. This approach is underpinned by the assumption that in making decisions based on a CCA, different decision makers will place their own emphases on the different benefits and on costs (Mauskopf *et al* 1998).

Social return on investment

'Social return on investment' (SROI) often confuses people, as the word 'social' in the name can be taken to imply that this is the only technique capable of assigning monetary values onto 'social' outcomes. Perhaps because of the way it has been badged and presented in the UK (Goodspeed *et al* 2009), others often assume mistakenly that SROI is only relevant to voluntary and community sector organisations. The SROI Network acknowledges that there are a number of myths surrounding SROI and sought to provide clarification. In an undated report, it states that the aim of SROI is to 'reduce social inequality and environmental degradation. It does this by revealing a broader value of an organisation's work'.

SROI involves assigning monetary values to all costs and all benefits. Many have therefore argued that SROI is basically CBA. The SROI Network, however, argues that SROI is not simply about putting monetary values on all costs and benefits arising from an intervention, but is fundamentally about changing the way we account for value so that we break the cycle of unsustainable development. Not only does SROI put monetary values on outcomes achieved, including those which do not come with a readily attached market value, it does so by taking a broad conceptualisation of value, encompassing social, economic and environmental factors.

SROI therefore is not simply a set of technical procedures. Instead, it has been called a principles-led approach underpinned by seven principles: involving stakeholders; understanding what changes; valuing the things that matter; only including what is material; not over-claiming; being transparent; and verifying the results (Goodspeed *et al* 2009).

Nor does the distinctive feature about SROI lie in its technical procedures; indeed the SROI Network acknowledges that practice can be variable. Instead, the main characteristic of SROI is its strongly values-driven perspective in the kind of transformation it is trying to accomplish. Unlike other economic assessment procedures, the end point of the exercise is not the numbers produced. Practitioners of SROI certainly caution against straightforward comparisons of any cost-benefit ratios derived from SROIs. Instead, the numbers can be used as a springboard for exploring how we value different things and why we value them in different ways.

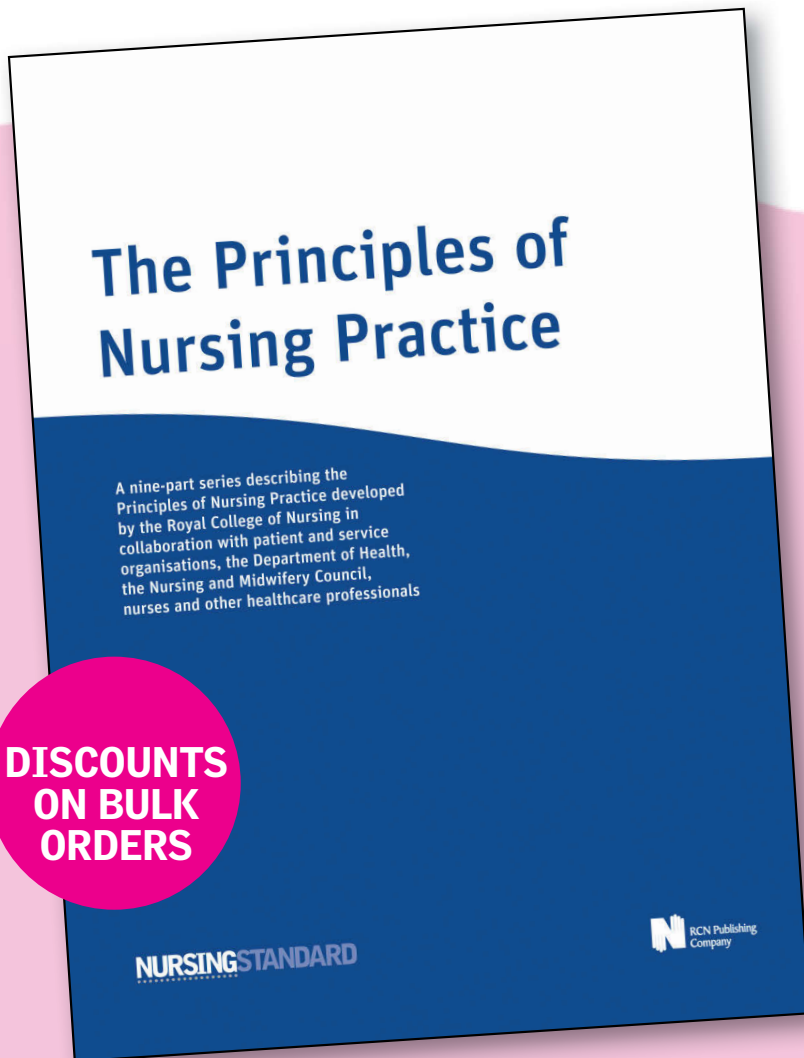
Summary

Regardless of the type of economic assessment being considered, the one constant is that costs must be assessed and expressed in monetary terms. Apart from this constant, different approaches diverge critically in terms of how they handle and express benefits. These differences relate to how benefits are measured and expressed.

In the case of CBA and SROI, all benefits must be expressed in monetary terms, although the latter takes a broader definition of what should go into the calculation of these monetary values. CUA requires all benefits to be transformed into QALYs. CEA requires the use of consistent measures for common benefits, but not their transformation into a common unit of measure. CCA, on the other hand, simply requires that benefits are listed individually 'as they are'. Some types of approach require comparison, while others do not. Different approaches serve different purposes. Ultimately, the choice of approach must stem from clarity of purpose aligned with a clear eye on what is pragmatic and achievable.

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