Tool to assess the cost and quality benefits of nursing innovation

Iain Ryrie and Beth Anderson put forward a methodology that uses routinely documented data and builds on techniques widely used in clinical settings to enable nurses to evaluate the financial implications of their practice.

Summary
Understanding the economic value of nursing services in a time of unprecedented public sector cuts is a challenge. The economic assessment tool (EAT) (RCN 2011) has been designed by the authors of the article for this purpose and generates return on investment dividends for nursing innovations and services. The EAT, which is built on the discipline of improvement and uses many of its tools and techniques, involves four stages: mapping, costing, calculating and reporting. The nursing profession systematically captures a range of clinical data as part of routine care to which monetary values can be assigned. The EAT exploits these data and provides the profession with the economic evidence it might need to sustain quality nursing services in financially uncertain times.

Keywords
Economic assessment, nursing innovation, service improvement, return on investment

Understanding the cost of services and their outcomes in monetary terms is crucial to conducting business. In the current financial climate, such financial intelligence has become increasingly important to leaders of public services who are charged with driving efficiencies, absorbing budget cuts and achieving more for less. Front line health professionals are ideally placed to generate data to support improvements, and commentators have highlighted the critical role played by nursing (Gainsbury 2009).

The nursing profession has risen to the challenge of the quality improvement agenda through initiatives such as the chief nursing officer for England’s High Impact Actions (HIA) programme (NHS Institute for Innovation and Improvement (NHSI) 2009).

Nurses are motivated primarily to improve the lives of patients in their care, and understand that quality and efficiency are two sides of the same coin, so much so that nursing’s potential contribution to national efficiency saving targets is estimated at £9 billion a year (Gainsbury 2009).

Against this backdrop, the authors of this article have worked with a sample of pioneering nurses to assess the economic and quality returns of their innovations. The work involved testing a new methodology to evaluate the effect of nursing practice in financial terms: the economic assessment tool (EAT) (RCN 2011).

This article introduces the EAT, describes its origins, uses and methods, and demonstrates its application with reference to a case study. Development of the EAT was informed by the discipline of improvement (Berwick 1996), which comprises a range of methodologies that can be used to help increase the quality, efficiency and effectiveness of care in a given setting.

Historically, many of the tools and techniques used in service improvement derive from the fields of organisational development, business psychology and marketing (Bevan 2005, NHSI 2005). Examples include process mapping, the plan-do-study-act cycle and measurement for change (Langley et al 2009). The EAT capitalises on these tools and techniques to map and cost healthcare innovations.

The tool builds on the work of organisations that have published similar methodologies, including the Centre for Excellence and Outcomes in Children and Young People’s Services (2010) and the NHSI (2010a). It is also informed by, and compliant with, the central government framework for the appraisal and evaluation of all public sector policies, programmes and projects (HM Treasury 2003).

Common to all is the measurement of inputs, outputs and outcomes, and the EAT adopts
a targeted approach in its treatment of outcomes. While cost-benefit assessments might include all known costs and benefits, the EAT gauges cost effectiveness against specific indicators to which monetary values can be applied.

Wherever data are available, these indicators are supported with robust evidence of their cost implications for the short and longer terms, as well as for individuals, services and the public. This type of evidence is sourced from published literature and is necessary to support EAT methods.

As part of work for the HIA programme, we produced eight economic reviews, one for each HIA area.

**Uses**
The EAT is designed to assess targeted health interventions, which can be a whole programme to address complex conditions or a special project that targets specific areas of need. The tool lends itself to top-down analyses of service costs and outcomes through which managers can estimate the effectiveness of a service for a given population.

It can also be used by clinical practitioners for bottom-up or activity-based analyses that document individual patient journeys and cost interventions at different stages of the journey. However, the EAT is not intended for use with universal programmes, where there may be uncertainty in attributing outcomes to a specific intervention or innovation.

The strength of the EAT depends, in part, on the assessment of targeted interventions for which meaningful indicators are available. This requires the indicators to be valid markers for the effects of an intervention, the benefits of which can be assigned monetary values with confidence. The EAT evidence review of indicator costs and benefits provides this level of rigour.

Application of the EAT to the HIA programme provides useful examples of the type of interventions and innovations that are suitable for economic assessment. They include:
- A holistic wellbeing programme aimed at reducing sickness absence and improving physical and mental health among an acute trust’s workforce.
- An acute-based, nurse-led clinic aimed at promoting normal births and reducing the number of caesarean sections.
- A liaison service provided by specialist tissue viability nurses across local care homes to enhance skin care and to reduce associated admissions to acute services.
- A community-based nursing initiative to ensure person-centred end of life care.

The EAT proceeds through four stages: mapping and planning; costing; calculating; and reporting.

**Mapping and planning**
Users of the EAT are encouraged to process map the innovation in the first instance. This involves setting out in diagrammatic form the steps or stages taken to implement the innovation, who was involved at each stage, any resources used and the anticipated benefits for patients and others.

The NHSI (2010b) provides a range of process mapping tools that can be used for this purpose. Process maps indicate the type of data that will need to be collected to determine the costs and effects of an innovation. For example, it is necessary to attach monetary values to outcomes, length of stay or the presence of a specific condition. Selecting relevant indicators for the effects of an innovation, which can also have monetary values attached, are therefore important steps in the EAT methodology for which the evidence review of indicator costs and benefits is critical.

Time frames for the economic assessment need careful consideration in the planning stage. A 12-month period is recommended to take account of seasonal variations, such as increased risk of falls in winter months.

The time period across which costs are assessed has to be the same as the time period for which any benefits are measured. For example, a year’s worth of service costs must be compared against the benefits accrued by all patients seen during the same period.

It is also necessary to have indicator data for the period before the innovation was introduced to determine any benefits over and above what would have happened anyway. Ideally, this should be for an equivalent time span over which the innovation costs and benefits are calculated so, for example, the number of children born by caesarean section in the 12 months before and after the introduction of an innovation would be monitored.

In reality, however, we often work with incomplete data, and it might be necessary to scale up the figures recorded before and after to make the indicators compatible. Typically, this would mean extrapolating from several months’ data to a whole year.

As already indicated, there might be seasonal or other variations that mean results for four summer months, multiplied by three, would over- or under-represent benefits across a full year. There are no definite rules, although an understanding of the seasonal profile of a disease or condition in a locality is important. Fortunately, nurses are often experts in these respects.
Case study: Central and Eastern Cheshire Primary Care Trust

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 disease (COPD).
- The high cost of oxygen prescribing (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 health professionals, commissioners, and providers and managers of services.

Innovation summary
On April 1 2010, the primary care trust (PCT), which is 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 that provides seven-day cover. The team offers comprehensive in-reach and outreach respiratory support for primary and secondary care, including a comprehensive oxygen assessment service, as well as COPD care training for clinicians across the PCT area.

The service costs £55,000 a year, a figure that includes the cost of oxygen assessment team staff, delivering and participating in training, and consumables.

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 the available data suggests a cost saving of £163,079.63 over a year.
- Hospital-avoiding patients. Scaling up available data suggests potential annual cost savings to the trust of between £453,269 and £634,577 due to rapid response at home provision (based on average LoS of between five and seven days). Looking at the wider picture, evidence from a national study suggests that, if all NHS trusts and boards were able to prevent just two emergency COPD admissions a month, the overall cost savings would be £8.5 million (Youngusband 2008).
- Supporting hospital discharge to reduce LoS. Scaling up available data suggests an annual saving of £481,162.
- Additional, important benefits such as greater independence and quality of life for patients, and reductions in hospital outpatient appointments, have not been conferred monetary value.

Costing
In the costing stage, monetary values are assigned to all inputs and outcomes associated with an innovation. The EAT follows HM Treasury (2003) guidance and audits the process maps for all direct and indirect costs, and all direct and indirect benefits.

Direct costs include human, material and physical resources, and the EAT provides simple methods for systematically capturing the time dedicated to an innovation by different grades of staff and costing their input, including the application of additional employment costs such as pensions and national insurance contributions.

Indirect inputs or costs, also referred to as levered-in costs, result from using resources that are not funded by an innovation, but which are mobilised as a result of it. A community team that supports early discharge from hospital, for example, might activate a range of community services such as district nurses or meals on wheels.

The management of indirect costs in any calculation is contentious. On the one hand, they might be markers for ‘cost shunting’, while, on the other, they might be markers for an enhanced quality of care as patients gain access to the resources and support that they need.

The EAT calculations include only those costs over which services or interventions have control – that is, direct costs. However, additional, activated services should be documented and reported alongside any numerical results. Doing so supports understanding of the wider context in which results are achieved and with what amount of additional levered-in support.

Outcome costs depend on the indicators used and their monetary values identified through the evidence review of indicator costs. Monetary values can be applied only to those outcomes achieved over and above what would have happened without the introduction of the innovation.

For example, imagine 100 people were admitted to an acute hospital with a grade II pressure ulcer over the year before an innovation, and only 50 the year after. This is a reduction, or improvement, of 50. If it cost £4,000 to treat a grade II pressure ulcer, then the hospital has achieved a £200,000 efficiency saving.

The process maps will contain a number of benefits that cannot be expressed in monetary terms, as well as indirect benefits, such as the independence, wellbeing and quality of life that patients maintain as a result of an innovation to reduce the incidence of pressure ulcers. As with indirect costs, the EAT encourages the collation and reporting of these indicators alongside any numerical result.
Calculating
The EAT is designed to calculate return on investment dividends by numerically comparing all the costs of an innovation with the benefits achieved (savings).

For example, an initiative to reduce falls that cost £20,000 in staff time and materials saves £30,000 by reducing falls that would otherwise have happened. The return on investment dividend is £30,000 ÷ £20,000 = £1.50. This is usually reported as for every £1 spent, Anytown Trust has achieved £1.50 in efficiency savings.

Reporting
The EAT uses a reporting template that captures the economic result alongside other quality and effectiveness indicators not assigned monetary values, but which are nevertheless important markers of the benefits resulting from the innovation. This information is combined with a summary of the service context and innovation and presented as an economic case study (see opposite page).

Recently the authors have been conducting this work in partnership with the Royal College of Nursing as part of its Frontline First campaign (RCN 2011), and a synopsis of an economic case study from that work is presented opposite.

Conclusion
Over the past ten to 15 years there has been a revolution in measurement; clinical nurse leaders in partnership with colleagues have implemented systems to satisfy governance requirements and document the effect of innovations and system changes. Although the profession can always do better in its measurement practice, it generates a bounty of data on which economic assessments can be based.

In a time of unprecedented public sector cuts economic assessments of nursing care are needed, not only to find more efficient ways of delivering effective services but also to protect those that would otherwise be under threat. The EAT has been developed for this purpose and provides a pragmatic methodology that generates return on investment dividends for whole services or individual patient pathways.

The tool was designed by nursing staff and developed in partnership with front line colleagues who allowed the financial implications of their work to be scrutinised. The tool is being refined in light of these experiences and the intention is to offer it to a wider nursing audience, with cascade training materials to support spread and adoption.

The EAT methods build on the tools and techniques of service improvement, a discipline that many clinical nurse leaders are familiar with. It is not too big a leap, therefore, to apply monetary values to improvement indicators and conduct economic assessments of innovations and services. This type of evidence will be increasingly necessary for sustaining high quality nursing services in financially uncertain times.

Implications for practice
■ The economic assessment tool (EAT) gives nurse managers the potential to generate economic estimates of the value of nursing innovations.
■ It can use the wealth of clinical data that is already being generated.
■ The EAT builds on the discipline of improvement and provides a systematic approach to numerically comparing the costs of an innovation with the benefits achieved.
■ Nurse managers need this intelligence to inform business decisions and assure quality nursing services.

References