Clinical audit: more research is required

The widespread introduction of audit was based upon frequently quoted examples of good practice, support within the professions, and faith in the potential of audit to be widely effective when introduced routinely. Five years on, however, it is our experience that the support for audit displayed by the government and professional bodies may not be reflected in the attitudes of many clinicians. Audit has joined an already long list of responsibilities beyond direct patient care – responsibilities such as management, training of junior staff, advisory committee work, contracting, service development, and research. It is still regarded by some as an independent and burdensome addition to clinical practice, by others as repetitive and boring, and even those who support audit may regard it as too time consuming to be practical. Questions about the value of audit are being asked: the National Audit Office report is keenly awaited.

We, and others, have argued that fundamental research questions about audit require answers if it is to gain and retain credibility across the professions. It is not that audit is ineffective, but that the enormous financial and opportunity costs of routine audit have not yet been justified. Research is one of the key requirements to help maintain enthusiasm for audit, as well as enhancing its effectiveness. It is not easy to assess the direct costs of audit, let alone the opportunity costs, and it is still more difficult to disaggregate these costs of audit at different levels of organisation – for example the costs to a clinical department, a trust, a general practice, or a health authority. Without evidence that the benefits of audit exceed its costs, commitment will wane. As with research, audit needs a clear analysis of purpose, costs, funding and anticipated benefits to the NHS. So what should be included in the potential research agenda?

Potential research questions
Table 1 details some of the broad research questions (column 1), in which research is needed (column 2), and the research methods required (column 3).

<table>
<thead>
<tr>
<th>Research questions</th>
<th>Settings</th>
<th>Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can audit work?</td>
<td>Individual audit projects</td>
<td>Systematic literature reviews</td>
</tr>
<tr>
<td>Does audit work?</td>
<td>Audit programmes:</td>
<td>Surveillance of audit activities</td>
</tr>
<tr>
<td>How can audit be facilitated?</td>
<td>• Provider</td>
<td>Qualitative methods:</td>
</tr>
<tr>
<td>Is audit the most effective means of achieving quality improvement?</td>
<td>• Purchaser</td>
<td>• Unstructured and semi-structured interviews</td>
</tr>
<tr>
<td>How much does audit cost?</td>
<td>• Primary care</td>
<td>• Participant and non-participant observation</td>
</tr>
<tr>
<td>Is audit cost-effective?</td>
<td>• Secondary care</td>
<td>Cross-sectional surveys</td>
</tr>
<tr>
<td>Is another quality mechanism likely to be more cost-effective?</td>
<td>Audit as a national activity</td>
<td>Cohort and case control studies</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Intervention trials</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Economic analysis:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Costs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Cost effectiveness</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Cost benefit analysis</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Cost effectiveness of audit compared with alternative activities</td>
</tr>
</tbody>
</table>
patch. Furthermore, evidence of the factors that influence the effectiveness of audit or quality assurance activity in other countries or settings may not be directly applicable in the different culture and organisation of the NHS, thus emphasising the need for UK based research into such policy implementation issues.

Other fundamental research questions include: Is audit the most effective way of achieving quality improvement in clinical practice? Is it the most cost effective? Audit in its classic form should be seen as only one tool for quality improvement and needs to be compared with alternative approaches including contracting, continuing education, and total quality management. Although the value of audit has been questioned, to our knowledge only one research project in Britain has addressed its cost effectiveness. Establishing the cost of audit at each organisational level is a necessary component of cost effectiveness research.

There is obviously a huge agenda for research into audit and the methods employed will need to be correspondingly diverse, as indicated in table 1, and illustrated below. The range of methods in health services research is broad and often underutilised.

The diversity of audit research: an illustration of methods

We now illustrate the difficulties and the potential for research into audit with reference to questions which can be asked about the function of audit support staff. A series of questions could be posed ranging from "What do audit support staff do?" to "Are audit support staff cost effective?", and the questions can be addressed by a variety of methods. A register of audit support staff can allow routine surveillance of trends and activity and provide a sampling frame for cross sectional surveys. A self completion, postal questionnaire has been used to obtain data on audit support staff's knowledge, attitudes, and behaviour and to inform us about the difficulties and the challenges facing these staff.

Methods such as direct observation, self completion diary records, or focus groups could supplement and complement such data.

To examine whether and how audit support staff contribute to the success of audit would be much more complex. Initially there is a need to define "success" in audit. Having done so, the association between employment of audit support staff and the success of audit projects could be measured and adjusted with reference to confounding variables. Initial studies could use the case control or cohort design. A research literature on audit support staff is developing, and includes a trial, but much more is needed. A study design similar to that used by Fowkes could help to define what types of intervention are more effective in creating change within the audit setting. For example, it might be possible to compare the effects of the application of written guidelines in a specialty with or without audit support staff.

Economic studies of the role, potential, and effects of audit support staff are needed. For instance, what are the true costs and benefits of support staff to a project or programme? Are audit support staff the most cost effective means of supporting successful audit?

The assessment of clinical audit is not dissimilar in concept to that of patient care, as shown in table 2, which compares the evaluation of cardiothoracic units and of audit. The success of a cardiothoracic unit or audit programme will depend upon the effective dissemination and application of sound research into routine practice such as is promoted by the movement for evidence based medicine. For example, the appropriate investigation and treatment of symptomatic coronary heart disease can be defined with reference to clinical trials and other research results, and incorporated into evidence based guidelines. At present, the research base for audit is insufficient to do the same. All clinicians are being expected to undertake audit, because audit has been shown to have value in certain settings (predominantly in case studies), while all cardiothoracic surgeons would not be expected to undertake coronary artery bypass grafts on the basis of similar evidence!

Conclusions

There is both a need and considerable opportunity for further rigorous research into audit. While there is a growing and useful body of work in this area, it is still limited to a small number of research teams, using an understandably limited range of methods.

A programme of research should consider the organisational context, available support, the methods employed, and the application and impact of audit, including how change was achieved; the objective being to tease out the factors that are associated with success. Furthermore, there is a need to demonstrate the effectiveness of audit in creating quality improvement in patient care, including research into its cost effectiveness or cost utility compared with other strategies for quality improvement. Such research and evaluation studies are essential, both to answer questions concerning the present value of audit and to support the design and development of audit projects and programmes.

Much effort and money has already been expended in the introduction of audit within the NHS. In proportion, research and evaluation of audit has been limited. One and a half per cent of the NHS budget now supports a coordinated, strategic regional and national programme of research and development. Given the importance of audit, both financially and strategically, we believe there should be further major investment into its evaluation. Ideally, such work should be guided by a strategy and coordinated. The audit budget in the last year of explicit funding was £62.5 M. Some 1.5% of this budget (£940 000) would pump prime a strategic research programme on the evaluation of audit.

<table>
<thead>
<tr>
<th>Variables</th>
<th>CTU</th>
<th>Audit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structural variables</td>
<td>No and grade of staff employed</td>
<td>No and grade of staff employed</td>
</tr>
<tr>
<td>Activity measures</td>
<td>No and types of cases treated</td>
<td>No and types of projects undertaken</td>
</tr>
<tr>
<td>Process measures</td>
<td>Proportion of patients appropriately operated upon</td>
<td>Proportion of projects using standards or guidelines</td>
</tr>
<tr>
<td>Outcome measures</td>
<td>No/proportion of coronary artery bypass graft patients dying perioperatively</td>
<td>No/proportion of projects leading to improvement in the quality of care</td>
</tr>
<tr>
<td>Comparative outcomes</td>
<td>Intervention specific mortality rate compared with other units</td>
<td>Proportion of projects leading to improvement in the quality of care compared to other units/programmes</td>
</tr>
</tbody>
</table>
There are new opportunities to coordinate and enhance a programme of research into audit. The Department of Health funded National Clinical Audit Information and Dissemination Centre will have a key role in identifying priority research questions and perhaps in supporting or commissioning research. The Cochrane Collaboration Review Group on Effective Professional Practice and the NHS Centre for Reviews and Dissemination could both have an important role. Furthermore, the developing lead role of purchasers, both in commissioning audit and funding NHS R & D, offers potential for promoting research into audit.

Progress made since our previous call for research action is encouraging, but the pace and breadth of research on audit needs to be increased. Research into audit is both essential and urgent.

We thank Dr Bill Ennis and Dr Chris Holland for their important contributions to early thinking on this topic. Their views were invaluable in shaping our thoughts.

ANDREW BARTON
Plymouth Postgraduate Medical School
Derriford Hospital
Plymouth PL6 8DH
RICHARD THOMSON
RAJ BHOPAL
Department of Epidemiology and Public Health,
Nesste Medical School, Newcastle upon Tyne
NE2 4HH

*Member of the JECH Editorial Committee

1 Department of Health. Health service developments: working for patients. Medical audit in the family practitioner service. HC(P)93/8 HC(90)15.
4 Devlin HB. Professional audit; quality control; keeping up to date. Basilien’s clinical anaesthesiology 1968;2:290-294.
38 Foyles FGR. Medical audit cycle. Medical Education 1982;16:228-38.
Clinical audit: more research is required.

A Barton, R Thomson and R Bhopal

*J Epidemiol Community Health* 1995 49: 445-447
doi: 10.1136/jech.49.5.445

Updated information and services can be found at:
http://jech.bmj.com/content/49/5/445.citation

**Email alerting service**
Receive free email alerts when new articles cite this article. Sign up in the box at the top right corner of the online article.

**Notes**

To request permissions go to:
http://group.bmj.com/group/rights-licensing/permissions

To order reprints go to:
http://journals.bmj.com/cgi/reprintform

To subscribe to BMJ go to:
http://group.bmj.com/subscribe/