

GETTING RESEARCH FINDINGS INTO PRACTICE

Second edition

Edited by Andrew Haines and Anna Donald

BMJ
Books

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Contributors

David Armstrong, Reader in Medical Sociology, Department of General Practice, King's College, London, UK

Ione Auston, Librarian, National Information Center on Health Services Research and HealthCare Technology (NICHSR), National Library of Medicine, Washington DC, USA

Lisa Bero, Professor, Institute for Health Policy Studies and Department of Clinical Pharmacy, University of California, San Francisco, USA

David Braunholtz, Senior Research Fellow, Department of Public Health and Epidemiology, University of Birmingham, Birmingham, UK

Jiri Chard, Research and Development Project Officer, Department of Public Health and Epidemiology, University of Birmingham, Birmingham, UK

Neil Craig, Lecturer in Health Economics, Department of Public Health, University of Glasgow, Glasgow, UK

Tony Dans, Associate Professor, Clinical Epidemiology Unit and Section of Cardiology, College of Medicine, University of the Philippines, Manila, Philippines

Rumona Dickson, Lecturer, University of Liverpool, UK

Anna Donald, Evidence-based Strategies Ltd., London, UK

Vikki Entwistle, Programme Director for Participation in Health Care, Health Services Research Unit, Medical School, University of Aberdeen

David Evans, Dissemination Facilitator, London Region Research and Excellence, London, UK

Cynthia Fraser, Information Scientist, Health Services Research Unit, University of Aberdeen, Aberdeen, UK

Paul Garner, Professor in International Health, International Health Division, Liverpool School of Tropical Medicine, Liverpool, UK

CONTRIBUTORS

Julie Glanville, Information Service Manager, NHS Centre for Reviews and Dissemination, University of York, York, UK

J A Muir Gray, Programmes Director, UK National Screening Committee.
www.nech.nhs.uk/screening

Sian Griffiths, Director of Public Health, Oxfordshire Health Authority, Oxford, UK

Roberto Grilli, Senior Executive, Agenzia Sanitaria Regionale, Bologna, Italy

Jeremy Grimshaw, Director, Clinical Epidemiology Programme, Ottawa Health Research Institute, and Head, Center for Best Practice, Institute of Population Health, University of Ottawa, Canada

Gordon Guyatt, Professor of Medicine, Departments of Medicine and Clinical Epidemiology and Biostatistics, McMaster University, Hamilton, Ontario, Canada

Andrew Haines, Dean, London School of Hygiene and Tropical Medicine, London, UK

Margaret Haines, Director of Research and Knowledge Management, NHS Executive South East, London, UK

Emma Harvey, Research Fellow, Department of Health Sciences and Clinical Evaluation, University of York, York, UK

Brian Haynes, Professor and Chair, Department of Clinical Epidemiology and Biostatistics, McMaster University Faculty of Health Sciences, Hamilton, Ontario, Canada

Ellen Hodnett, Professor and Heather M Reisman Chair in Perinatal Nursing Research, University of Toronto, Toronto, Ontario, Canada

Rajendra Kale, Consultant neurologist, Inlaks and Budhrani Hospital Pune, India

R J Lilford, Professor of Clinical Epidemiology, Department of Public Health and Epidemiology, The University of Birmingham, Birmingham, UK

Theresa M Marteau, Professor of Health Psychology, Psychology and Genetics Research Group, King's College, London, UK

Ruairidh Milne, Scientific Director, Wessex Institute for Health Research and Development, Winchester, Southampton, UK

Mary Ann O'Brien, Senior Research Manager, Supportive Cancer Care Research Unit, and Associate Clinical Professor, School of Rehabilitation Science, McMaster University, Hamilton, Ontario, Canada

Graham Mowatt, Research Fellow, Health Services Research Unit, University of Aberdeen, Aberdeen, UK

Sandy Oliver, Research Fellow, Social Science Research Unit, London University Institute of Education, London, UK

Andy Oxman, Director, Health Services Research Unit, National Institute of Public Health, Oslo, Norway

S G Pauker, Professor and Vice Chair, Department of Medicine, New England Medical Center, Tufts University, Boston, Massachusetts, USA

Rodrigo Salinas, Neurologist and Director of the Health Technology Assessment Unit, Ministry of Health, Santiago, Chile

Trevor A Sheldon, Professor of Health Studies, University of York, York, UK

Liz Shirran, Research Fellow, Department of General Practice and Primary Care, University of Aberdeen, Aberdeen, UK

Helen Smith, Research Associate, Effective Health Care Alliance Programme, International Health Division, Liverpool School of Tropical Medicine, UK

Vivienne van Someren, Consultant Paediatrician and Senior Lecturer in Child Health, Department of Child Health, Royal Free and University College Medical School, London, UK

Amanda Sowden, Senior Research Fellow, NHS Centre for Reviews and Dissemination, University of York, York, UK

Sharon E Straus, Assistant Professor of Medicine, University Health Network, University of Toronto, Canada

Matthew Sutton, Senior Research Fellow, Department of General Practice, University of Glasgow, Glasgow, UK

CONTRIBUTORS

Paul Taylor, Lecturer, Centre for Health Informatics and Multiprofessional Education, University College, London, UK

Ruth Thomas, Research Fellow, Health Services Research Unit, University of Aberdeen, Aberdeen, UK

Jeremy C Wyatt, Reader in Medical Informatics; Director, Knowledge Management Centre, School of Public Policy, University College, London, UK

Lesley Wye, Senior Researcher, King's Fund, London, UK

Foreword

From the beginning one of the main driving forces behind biomedical research, both basic and applied, has been the desire to ultimately improve the health and health services of individuals and communities. Overall, some spectacular advances have been made during the twentieth century; yet it is sometimes said that we would be better off now concentrating on putting into practice what is already known rather than undertaking further research. Of course this would neither be right nor possible since much remains to be learned and it would deny our basic curiosity and inventiveness.

However, the point that is being made concerns the frustration felt by professionals, managers, and policy makers that best practice is not uniformly and universally applied. This is matched by the outrage felt by patients and the public whenever episodes of less than best practice are revealed, a seemingly increasing phenomenon.

This book *Getting Research Findings into Practice*, clearly sets out to tackle this problem head on and is an important contribution to the subject. It recognises the increasing pressure from all concerned to develop more effective dissemination of knowledge into practice. It further recognises that the issues are researchable in their own right and many contributions consider the knowledge base of their topic, often with the depressing conclusion that the studies are not numerous or are flawed methodologically. Readers who are currently in practice will be fascinated by the examples and case studies, which sometimes illustrate dramatically the contrast between success and failure.

But, as the book emphasises, there are no simple answers – if there were, research into practice would not be an issue. The theoretical basis of changing practice needs to be developed. Busy professionals need to know how to access relevant knowledge. Ways of packaging knowledge, including specialist analysis of research findings, need to be improved. Disseminators and the variety of methods at their disposal are important as is a supportive environment. Finally there must be recognition that the application of knowledge must be context dependent and this context might be individual, collective or both.

The theory is challenging, the practice difficult, but *Getting Research Findings into Practice* is both readable and rewarding. The subject will continue to develop and there is no doubt that further editions will be needed and welcomed in due course.

Professor Sir John Pattison
Director of Research, Analysis and Information

1 Introduction

ANDREW HAINES AND ANNA DONALD

Several factors have fuelled ongoing interest in promoting the uptake of research findings. First, in almost all countries there are well documented disparities between clinical practice and research evidence of effective interventions. Examples include secondary prevention of coronary heart disease; management of cardiac failure; atrial fibrillation; asthma; and pregnancy and childbirth.¹⁻⁴

Second, there has been growing awareness of the need to demonstrate that money spent on research and development benefits patients. In the United Kingdom, the advent of the National Health Service (NHS) Research & Development Programme has led to greater involvement of NHS personnel in setting priorities;⁵ establishing programmes capable of evaluating different methods of implementing research findings;⁶ and assessing the payback on research.⁷ Health service users are also increasingly expecting health professionals to demonstrate that they are up to date with advances in knowledge.

Third, there is growing awareness of global trends which will put more and more pressure on health systems to deliver high quality care within tight budgets. These trends include ageing populations; decreasing ratios of workers to dependants in a number of countries until well into the 2030s; and price inflation of medical technologies, which still runs at about double that of other goods and services.

Fourth, there is widespread awareness that passive diffusion of information to keep health professionals up to date is doomed to failure in a global environment in which around two million articles on medical issues are published annually.⁸ Most now understand that conventional continuing education activities, such as didactic conferences, courses, and guidelines lacking implementation strategies, have little impact on health professionals' behaviour. Yet health professionals⁹ are aware, as never before, of their need to plan for a rapid rate of change in knowledge throughout their lifetimes, which encompasses not only diagnostic techniques, drug therapy, behavioural interventions, and surgical procedures, but also ways of organising and delivering health services.

Many health professionals already feel overburdened and undersupported. The challenge remains to find new realistic approaches which enable health professionals to manage change¹⁰ rather than feeling like its victims. A number of steps are necessary.

Keeping abreast of new knowledge

Health professionals need valid and relevant information available at the point of decision making, without appreciable delay. Currently, despite extensive investment in information technology, such information is not widely available. Relatively simple prompting and reminder systems can improve clinicians' performance¹¹ and prices of useful information sources, such as Clinical Evidence, Best Evidence (which comprises *Evidence based Medicine* and the *American College of Physicians Journal Club* on CD-ROM) and the Cochrane Library are little more than those for journal subscriptions. There are an increasing number of evidence-based journals which summarise important papers in a rigorous fashion and present the results in a way which busy clinicians can rapidly digest. A growing number of organisations, such as the NHS Reviews and Dissemination Centre in York, compile systematic reviews relevant to clinicians and policy makers. While clinicians' access to the Internet is rapidly improving, many clinicians still do not have reliable or timely access to such information,¹² and more needs to be done to provide a wider range of high quality information which is usable in practice settings.

Librarians' roles have undergone enormous change. In North America, for example, some are involved in clinical practice through programmes such as "literature attached to the chart" (LATCH).¹³ In such programmes, hospital librarians participate in ward rounds and actively support clinical decision making at the bedside. Requests for information are documented in the notes in the articles, which are subsequently delivered to the ward. Such programmes could be introduced elsewhere with appropriate evaluation, but information support is also needed in primary care, which is still woefully undersupported. Moreover, in the United Kingdom, many health professionals, such as nurses, are still often barred from using library services, as they are not formally affiliated with the medical body that pays for them.

Implementing knowledge

Research findings can influence decisions at many levels – individual patient care; practice guidelines; commissioning of health care and research;

prevention and health promotion; policy development; education; and clinical audit – but only if we know how to translate knowledge into action. Acquiring database searching and critical appraisal skills should give health professionals greater confidence in tracking down and assessing quality of publications, and much attention has been given to the use of electronic information during the consultation with individual patients, using an evidence-based approach derived largely from epidemiological methods. This does not, however, necessarily help them apply new knowledge to day-to-day problems.¹⁴

First, many decisions require organisational change for their implementation.^{15–16} For example, even a step as simple as ensuring that all patients with a past history of myocardial infarction are offered aspirin requires a number of steps to be taken, including identifying the patient; making contact with them; explaining the rationale; checking for contraindications; and prescribing the drug or asking the patient to purchase it over the counter. Furthermore, health professionals have their own experiences, beliefs, and perceptions about appropriate practice. Attempts to change practice which ignore these factors are likely to founder.

This awareness has led to greater emphasis on the understanding of social, behavioural, and organisational factors which may act as barriers to change.¹⁷ Improved understanding requires insight from a number of fields, including education, psychology, sociology, anthropology, information technology, economics, and management studies. A wide spectrum of approaches and interventions for promoting implementation has been used that is underpinned by a number of theoretical perspectives on behaviour change, such as cognitive theories that focus on rational information seeking and decision making; management theories that emphasise organisational conditions needed to improve care; learning theories that lead to behavioural approaches involving, for example, audit and feedback; and reminder systems and social influence theories that focus on understanding and using the social environment to promote and reinforce change.¹⁸

Responses include increasing attention to quality improvement, particularly to the reduction of medical error rates and the monitoring of healthcare processes and outcomes. In the United Kingdom, concerns about quality improvement have led to “clinical governance”, which makes health professionals responsible as never before for the continuous evaluation and improvement of healthcare services. Another innovation, which is being watched by industry, healthcare providers, and governments worldwide, is England’s National Institute of Clinical Excellence (NICE), launched in 1999.²⁸ NICE is a government body charged with evaluating new technologies for clinical and cost effectiveness, and using this information in national purchasing decisions.

Second, it has become increasingly obvious that few practitioners have time or skills to search and appraise all the evidence in their own time. While the number and quality of information resources has increased a great deal during the past few years, few health professionals have all the information they need at their finger-tips during consultations. Information systems, including England's National Electronic Library for Health and *Clinical Evidence* have greatly improved in the past couple of years, and no doubt will continue to develop.

Clearly, these two approaches are not mutually exclusive. For example, the transmission of information derived from research to single practitioners or small groups of health professionals (educational outreach or academic detailing) has a strong educational component but may also include aspects of social influence interventions¹⁹ by, for example, pointing out the use of a particular treatment by local colleagues. The marketing approach used by the pharmaceutical industry to promote its own products depends on segmentation of the target audience into groups that are likely to share characteristics that can be used to tailor the message.²⁰ Such techniques might be adapted for non-commercial use within the NHS. The evidence for the comparative effectiveness of different approaches and interventions is still patchy and will be reviewed in Chapter 4. It seems likely that in many cases a combination will be more effective than a single intervention.²¹ It follows from the above that no single theoretical perspective has been adequately validated to guide the choice of implementation strategies.

The study of the diffusion of innovations, by which new ideas are transmitted through social networks, has been influential in illustrating that those who adopt new ideas early tend to differ in a number of ways from later adopters, for example having more extensive social and professional networks.²² However, much of the innovations literature has a "pro-innovation" bias with the underlying assumption that innovations are bound to be beneficial. In health care the challenge is to promote the uptake of innovations that have been shown to be effective, to delay the spread of those that have not yet been shown to be effective, and to prevent the uptake of ineffective innovations.²³

Although a range of actors can promote the uptake of research findings, including policy makers, commissioning authorities, educators, and provider managers, it is by and large clinicians and their patients who implement findings. Having demonstrated a gap between current/desired practice a number of steps need to be taken in order to get research findings into practice (Box 1.1). A number of characteristics of the "message" also need to be considered (Box 1.2) and may influence the degree to which it is taken up in practice.

The choice of key players will be dependent upon the processes to be changed, for example in primary care, nurses and practice administrative

Box 1.1 Steps to promoting the uptake of research findings

- Define the appropriate “message”, i.e. information to be used.
- Decide which processes need to be altered.
- Involve the key players, i.e. those who will implement change or who are in a position to influence the changes.
- Identify the barriers to change and how to overcome them.
- Decide on specific interventions to promote change, for example guidelines, educational programmes, etc.
- Identify levers for change, i.e. existing mechanisms which can be used to promote change (for example financial incentives to attend educational programmes, placing of appropriate questions in professional examinations).
- Determine whether practice has changed along the desired lines – the use of clinical audit to monitor change.

Box 1.2 Important characteristics of the “message”

Aspects of content:

- Validity
- Generalisability (i.e. settings in which it is relevant)
- Applicability (i.e. patients to whom it is relevant)
- Scope
- Format and presentation (for example written or computerised guidelines; absolute versus relative risk reductions).

Other characteristics:

- Source of the message (for example professional body, Department of Health)
- The channels of communication (i.e. how it is to be disseminated)
- The target audiences (i.e. the recipients)
- Timing of initial launch and frequency of updating
- The mechanism for updating the message.

staff should in many cases be involved in addition to the general practitioners, since their cooperation will be essential for effective organisational change. If the innovation involves the acquisition of specific skills, such as training in procedures, then those who organise postgraduate and continuing education are also key players.

Definition of barriers to change and the development of strategies to overcome them are likely to be of key importance in promoting the uptake

of research findings. Some examples of barriers to the application of research findings to patients are given in Box 1.3. Chapter 10 proposes a conceptual framework for analysing and overcoming barriers. Since some of the strongest resistance may be related to the experiences and beliefs of health professionals, the early involvement of key players is essential in trying to identify and, where appropriate, overcome such impediments to change.

Box 1.3 Potential barriers to change

These may include:

Practice environment

- Limitations of time
- Practice organisation, for example lack of disease registers or mechanisms to monitor repeat prescribing

Educational environment

- Inappropriate continuing education and failure to link up with programmes to promote quality of care
- Lack of incentives to participate in effective educational activities

Healthcare environment

- Lack of financial resources
- Lack of defined practice populations
- Health policies which promote ineffective or unproven activities
- Failure to provide practitioners with access to appropriate information

Social environment

- Influence of media on patients in creating demands/beliefs
- Impact of disadvantage on patients' access to care

Practitioner factors

- Obsolete knowledge
- Influence of opinion leaders
- Beliefs and attitudes (for example, related to previous adverse experience of innovation)

Patient factors

- Demands for care
- Perceptions/cultural beliefs about appropriate care.

Note: factors which in some circumstances may be perceived as barriers to change can also be levers for change. For example, patients may influence practitioners' behaviour towards clinically effective practice by requesting interventions of proven effectiveness. Practitioners may be influenced positively by opinion leaders.

Interventions to promote change must be tailored to the problem, the audience, and the resources available. For example, educational outreach may be particularly appropriate for updating primary care practitioners in managing specific conditions, because they tend to work alone or in small groups. Guidelines based on research evidence may be developed and endorsed by national professional organisations and adapted for local use as part of clinical audit and educational programmes. Barriers need to be reviewed during the process of implementation as their nature may change as the process develops.

Linking research with practice

There should be closer links between research and practice so that research is relevant to practitioners' needs and practitioners are willing to participate in research. While there is evidence that researchers can be product champions of their work,²⁴ in general the research community has not been systematically involved in the implementation of their own findings and may not be well equipped to do so. In the United Kingdom, the NHS R&D Programme has made an important start by seeking views about priorities for research through a broad consultation process,⁵ but better methods of involving users of research findings are needed to ensure that research questions are appropriately framed and tested in relevant contexts, using interventions that can be replicated in the conditions of day-to-day practice. For example, there is little point conducting trials of a new intervention in hospital practice if virtually all treatments are carried out in primary care settings. Contextual relevance is particularly important for studies of organisation and delivery of services²⁵ such as stroke units, hospital-at-home schemes, and schemes for improving hospital discharge. If unaccounted for, differences in skill mix and management structures between innovative services and most providers can make it difficult for providers to have a clear view of how they should best implement findings in their own units.

Interaction between purchasers and providers

Purchasers as well as providers should be involved in the application of research findings to practice.²⁶ Purchasers can help to create an environment that is conducive to change by ensuring that health professionals have access to information, libraries are supported financially, and continuing education and audit programmes are configured to work together to promote effective practice. Purchasers can also ensure that the organisation and delivery of services take into account the best available

research evidence. However, it is also clear that the degree of purchaser influence on provider practice is limited²⁷ and that priority must be given to helping providers to develop the capacity to understand and use evidence.

Making implementation an integral part of training

For many health professionals, involvement in implementation may be far more relevant to their careers and to the development of the NHS than undertaking laboratory research, yet pressures to undertake the latter remain strong. Greater emphasis should be given to encouraging clinicians to spend time learning to use and implement research findings effectively.

Conclusion

Enabling health professionals to evaluate research evidence and to use it in daily practice is an important part of lifelong professional development. This requires not only changes in educational programmes but also a realignment of institutions so that management structures support changes in knowledge and the implementation of changes in procedures.

Currently, there remain major structural difficulties which need to be overcome in the NHS, which everyone is working hard to address. For example better coordination is required between education and training, clinical audit, and research and development. This could be a priority for the National Institute of Clinical Excellence.²⁸ In addition, it has been suggested that financial considerations rather than potential for learning needs are affecting general practitioners' choice of continuing education courses.²⁹ Part of continuing education should be directed towards ensuring practitioners keep up with research findings of major importance for patient care and change their practice accordingly. Continuing education activities need to take into account the evidence about the ineffectiveness of many traditional approaches. To overcome fragmentation and develop a more integrated approach for promoting the uptake of research findings, health systems need to develop coordinated mechanisms to deal with the continuing evolution of medical knowledge.

The advent of research-based information³⁰ for patients and growing accessibility by patients to information of variable quality through the internet and other sources suggest potential for doctors to work as information brokers and interpreters with patients and to work in concert with user groups, a number of which have demonstrated an interest and commitment to providing quality, research-based information to their members.³¹ The pace of change in knowledge is unlikely to slow and as

health systems around the world struggle to reconcile such change with limited resources and rising expectations, pressure to implement findings of research more effectively and efficiently is bound to grow.

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2 Criteria for the implementation of research evidence in policy and practice

TREVOR A SHELDON, GORDON GUYATT, AND
ANDREW HAINES

Key messages

- Evidence of net benefit should be assessed by the evaluation of the methods used in different studies.
- The evidence should be put into perspective.
- The applicability of the research to practice settings should be assessed.
- Priorities should be set for implementation.

Introduction

There is increasing interest in “evidence based health care” where decisions made by healthcare professionals, provider management, purchasers, healthcare commissioners, the public, and policy makers consistently consider research evidence.^{1–3} Purchasers, for example, should be able to influence the organisation and delivery of care, such as for cancer,⁴ the organisation of stroke services,⁵ and the type and content of services (such as chiropractic for back pain⁶ or dilatation and curettage for menorrhagia).⁷ Policy makers should ensure that policy is consistent with evidence, that the incentive structure within the health system promotes cost-effective practice, and that there is an adequate infrastructure for producing, gathering, summarising, and disseminating evidence and for monitoring changes in practice. Clinicians determine the day-to-day care patients receive in healthcare systems and user groups are also beginning to play an important role in influencing broad healthcare decisions.⁸