

Western University

From the Selected Works of Jennifer D. Irwin

1998

The Ontario Health Care Evaluation Network and the Critical Care Research Network as Vehicles for Research Transfer

William J. Sibbald

Jennifer D. Kossuth, PhD, *Western University*

- English: implications for the conduct of systematic reviews. *Lancet*. 1996;347:363–6.
23. Chalmers I, Dickersin K, Chalmers TC. Getting to grips with Archie Cochrane's agenda. *Br Med J*. 1992;305:786–8.
 24. Freemantle N. Dealing with uncertainty: will science solve the problems of resource allocation in the UK NHS? *Soc Sci Med*. 1995;40:1365–70.
 25. (http://hiru.mcmaster.ca/cochrane/reviews.htm#The_Cochrane_Library).
 26. Chalmers I. Improving the quality and dissemination of reviews of clinical research. In: Lock SP (ed). *The Future of Medical Journals: In Commemoration of the 150 Years of the British Medical Journal*. *BMJ*. 1997;127–46.
 27. Cook DJ, Guyatt GH, Ryan G, et al. Should unpublished data be included in meta-analyses? Current convictions and controversies. *JAMA*. 1993;269:2749–53.
 28. Moher D, Jadad AR, Nichol G, Penman M, Tugwell P, Walsh S. Assessing the quality of randomized controlled trials: an annotated bibliography of scales and checklists. *Control Clin Trials*. 1995;16:62–73.
 29. Sackett DL, Deeks JJ, Altman DG. Down with the odds ratios! *Evidence-based Medicine*. 1996;Sep/Oct:164–6.
 30. Jadad AR, Raina P, Cook DJ, et al. Selecting methods to display graphically the results of systematic reviews: where is the evidence? Abstract presented at the 4th Cochrane Colloquium, Adelaide, Australia, 1996.
 31. Egger M, Smith GD. Misleading meta-analysis. *BMJ*. 1995;311:753–4.
 32. Cook DJ, Reeve BK, Guyatt GH, Griffith LE, Heyland DK, Tryba M. Stress ulcer prophylaxis in the critically ill: resolving discordant meta-analyses. *JAMA*. 1996;275:308–14.

The Ontario Health Care Evaluation Network and the Critical Care Research Network as Vehicles for Research Transfer

WILLIAM J. SIBBALD, MD, CHE, JENNIFER D. KOSSUTH, MA

Facilitating the successful and consistent use of research results to support health care decisions is a formidable task. Barriers to effectively transferring the results of research into the decision-making process have been created between practitioners and researchers, who traditionally have worked in isolation from each other. The need for them to work cooperatively to break down these barriers is paramount as changes within the health care environment increase. The Ontario Health Care Evaluation Network (OHCEN) and the Critical Care Research Network (CCR-Net) have attempted to address these concerns by bringing together teams of researchers, practitioners, and administrative personnel with the purpose of equipping them with tools to meet oncoming health care challenges. *Key words*: research transfer; decision making; evidence-based medicine; systematic reviews; meta-analysis; education; informatics; Internet; communications. (*Med Decis Making* 1998;18:9–16)

Utilization review shows that variation exists in the delivery of health care services, thus contributing to the belief that “a substantial proportion of health care delivered is inappropriate.”¹ Paradoxically, this observation occurs at a time when there is an unprecedented wealth of information regarding the practice of clinical medicine. For example, it is estimated that there are over 150,000 published clinical trials to date, with 15,000 published since 1990, and this rate is doubling every five years.² From the decision maker's perspective, a compelling need therefore exists to both synthesize and transfer relevant research information, in a timely manner. Our collective awareness of the need to better understand and manage research transfer has resulted in an expanding knowledge base about the process of

research utilization. A common theme in this literature, however, is that current strategies to transform research data about best practices into activities that improve both the efficiency and the effectiveness of care have been variable in their success.

Research Transfer

Research transfer, also referred to as “research utilization,”³ is the transfer of specific research-based knowledge into practice through a systematic series of activities. There are a number of interrelated components in the research-transfer process, including evaluation of the scientific merit and clinical applicability of the findings, dissemination of research findings to decision makers, incorporation of research findings into practice, evaluation of research-based practice, and, finally, socialization of

the process of incorporating research findings into daily practice.⁴ Discussion of the need for research transfer is most apparent in the nursing literature, although other health care practitioners are becoming increasingly interested in this process.^{5,6}

Implementing research findings includes “the use of research findings for policy making as well as for tackling operational problems encountered at various levels of the health care system.”⁷ Lomas⁴ described three phases of research transfer:

- *Passive diffusion.* In this process, users of information actively seek out research information, select and appraise the information appropriately, and make research-driven probabilistic patient care decisions.
- *Active dissemination.* Here, organizations and groups that are ideally credible to both producers and consumers of research accurately synthesize and disseminate information and its implications for clinical practice (i.e., clinical guidelines).
- *Coordinated implementation.* This approach recognizes that information must not only be disseminated in synthesized form, but also must be carefully embedded in multiple routes of influence, thus creating pressure on practitioners to apply it to patient care.

The Ontario Health Care Evaluation Network (OHCEN)

The initial presumption that research results will impact health care decisions was based on the principle of *passive diffusion*. In this approach, it was assumed that if research were conducted, practitioners would actively seek it out, appropriately appraise it, and then apply the findings to their practices to improve patient care (the “build it and they will come” model). Lomas found that passive diffusion has not proven to be an effective research-transfer strategy. Indeed, although an impressive body of literature exists for a wide variety of health care situations, practitioners’ behaviors are only minimally influenced by the results of passively disseminated research findings.^{4,8}

In 1993, the Ontario Health Care Evaluation Network (OHCEN) was established from a funding partnership between the Ministry of Health and the Institute for Clinical Evaluative Sciences to promote communication and collaboration between researchers and decision makers, thereby to facilitate the effective use of health care research. Leaders of the OHCEN initiative understood that effective transfer of research results to decision makers is more effectively accomplished in a model of *active dissemination*. This approach entailed synthesizing relevant

information and then making it accessible, and subsequently available, with the targeting of a specific audience for whom information dissemination was designed through a respected and relevant body.⁴

To maximize the opportunity for ensuring relevancy of its activities, a Steering Committee was appointed to represent both the decision-maker community and researchers from the major academic health centers in Ontario. The mission statement adopted by OHCEN further emphasized the key role of decision makers in this activity:

The mission of OHCEN is to build partnerships among researchers and decision makers in order to enhance health care research in Ontario, ensure its relevance to health care problems, improve the accessibility of research evidence to decision makers and encourage the application of research evidence to health care decisions for the benefit of the citizens of Ontario.⁹

At the heart of OHCEN’s mission was the need to better understand the nature of research transfer and to use this knowledge to develop partnerships and research transfer between researchers and decision makers. Therefore, specific enabling objectives included:

1. enhancing health care research in Ontario by developing a network of researchers and decision makers;
2. facilitating the effective transfer of relevant research in a timely fashion to policy-making, planning, and practice environments by presenting research in usable formats and through educational outreach;
3. promoting an understanding of decision making and research environments among participants; and
4. encouraging the development of partnerships within the network.

An early step was to determine the current knowledge regarding research transfer, thus to answer the questions, “what are we doing now?” and “how well are we doing?” Before explicit direction or correction to existing activities could be attempted, the quality paradigm requires that we measure where we are to begin with. Here, OHCEN’s initial approach was to develop a bibliography of articles published in areas of research utilization and research transfer strategies. Three computerized databases of MEDLINE (1980–1995), HealthPlan (1985–1995), and Citations to Nursing and Allied Health Literature (CINAHL) (1982–1995) were searched. The search strategies and methods are described elsewhere.¹⁰ Over 700 relevant articles were retrieved and then categorized under five broad categories:

methods, tools, biases, barriers, and utilization. Twenty articles were selected, approximately four from each broad category, and were reviewed with the strength of the evidence evaluated.¹⁰ At present, this resource is being systematically organized to improve its availability to decision makers and researchers seeking transfer strategies relevant to their areas of interest (see OHCEN Internet site at its World Wide Web address: <http://hiru.mcmaster.ca/ohcen>).

From a review of this literature, the OHCEN Steering Committee confirmed old knowledge (and discovered some new knowledge) about the passive diffusion model for research transfer, including that it was the most frequently used method to disseminate research findings to decision makers. Not surprisingly, there were many examples of failure by the decision makers to adopt best practices when passive diffusion was the only mechanism used to disseminate research findings. Indeed, there are a number of barriers to successful research utilization, as summarized below:

- *Decision maker-related barriers.* To conceptualize our understanding of barriers to the use of evidence in medical decisions, we developed a framework to modify and add to Hunt's discussion of barriers to research utilization.¹¹ The framework identifies four levels or types of barriers to research transfer from the perspective of the decision maker: a nonsupportive environment, inability to operationalize research results, not believing research results, and inconsistent access to evidence. Problems at each level must be overcome if practitioners are to successfully and consistently apply research results to their practice settings (table 1).
- *Researcher-related barriers.* Although decision makers need to improve their acceptance of incorporating research findings into their practice decisions, researchers have a responsibility both to conduct clinically relevant research and to present their findings in a user-friendly format. This facilitates research application to clinical practice and consequently, works to break down research-transfer barriers at the level of the researcher (table 2).

Next, the OHCEN leadership conceived that a key strategy was the facilitation of easy communication between decision makers and researchers. A number of strategies were adopted to accomplish this objective, including the design and conduct of annual meetings and the development of an electronic method for providing pertinent information to clinicians, researchers, policy makers and health care

Table 1 • Barriers to Research Transfer at the Level of the Decision Maker

Issue	Comment
Does not appreciate importance of using research results	Anxieties about current health system redesign make it difficult for practitioners to focus on system-wide issues Knowledge gap since practitioners' training is weak in the health services research field
Inconsistent access to evidence (must be aware of research to apply results to practice)	Evidence often not easily accessible, particularly to those working in small hospitals (which may lack library facilities, journal subscriptions, or Internet access).
Does not understand research results (must understand what the research results mean in terms of significant findings and clinical relevance)	More of the knowledge gap problem—as practitioners' training is weak, in consistent ability to interpret the language of the researcher and determine clinical usefulness of the research
Does not believe research results	Practitioner needs to be taught how to perform critical appraisal to determine whether the research is methodologically sound
Cannot operationalize research results	Can be simple if decisions involve only individuals, but complex when groups are involved
Environment is not supportive	Can be accomplished by educating health care teams, and especially individuals, about the benefits of using research to inform health care decisions

consumers in a form that was both widely available and easy to search, understand, and use.

Through annual symposia in 1994–1996, OHCEN brought researchers and decision makers together to discuss barriers to successful research transfer and to promote the effective application of research to health care management issues. In addition to exhibits and abstracts, these annual meetings therefore included interactive workshops that focused on topics such as using an evidence-based approach to improve utilization management, finding evidence-based health care resources on the Internet, developing evidence-based pathways and care maps, crit-

Table 2 • Barriers to Research Transfer at the Level of the Researcher

Issue	Comment
Researchers not generally aware of the need to include a dissemination plan in their research plan	Focus must be shifted away from merely publishing findings (Lambo, 1995 ⁷) to also actively disseminating the findings Study results need to be effectively transferred to the medical decision makers, who, consequently, will use the information to influence their decisions, and, ultimately, improve patient care
Research topic does not often benefit researchers and decision makers	The research must be considered high priority by both partners—the researchers and the decision makers Research must contribute not only to the body of clinical information, but also to the body of scientific knowledge (Lambo, 1995 ⁷)
Communication must occur between researchers and decision makers	Medical decision maker can provide the researcher with feedback about patient care issues, which could serve as future research topics
Researchers generally prefer to conduct peer-reviewed rather than “contract” research	Research contracted by granting agencies emphasizing applied community issues must be promoted as “noteworthy”

ically appraising review articles, finding sources of health information literature, and the process of the purchase of health care products by small hospitals. Evaluation demonstrated that we provided the right learning opportunities, but evidence that behaviors were positively modified regarding the process of research transfer is not available.

Another key component of the OHCEN communication strategy was the *Informatics Project*, whose objectives are listed in table 3. Important features of this activity include the promotion of interaction among producers and consumers of health research, which was addressed through electronic mail and Internet newsgroup services. A central OHCEN e-mail address, (ohcen@fhs.mcmaster.ca), was created to support general consultation. Questions about health services are forwarded to a research librarian, who offers practical suggestions in a timely manner. A discussion list is supervised by

a health educator, who contributes regular bulletins about new information resources on the Internet, enhancements to OHCEN information services, upcoming conferences, and mini-tutorials about Internet-based information.

One of the more important achievements of the Informatics Project was the development of an Internet-based, distributed database of health services information; the “Ontario Health Inventory,” which includes 1) Ontario’s health services community, individuals and groups defined by common projects, interests, or expertise, and organizations; 2) “products,” which may be produced by the Ontario health service community or may be of interest to the community (products could be papers, journal articles, books, or other conventional and electronic resources); and 3) “relationships” between “people” and “products.” People may be related to one another through a variety of groupings and products may be related to one or more people.

In the form of demonstration projects, the principle of *coordinated implementation* for research transfer was also encouraged by the OHCEN leadership, to further promote collaboration between researchers and decision makers. One example illustrating OHCEN’s activities in this area included an annual grant competition. Guidelines for this process included the need to demonstrate innovative research transfer ideas in the proposal, together with meaningful input to the rationale and planning of the grant by a decision maker.

The Critical Care Research Network (CCR-Net)

Another example of success using coordinated implementation was the development of a research transfer vehicle for critical care medicine—the Critical Care Research Network (CCR-Net). The CCR-Net was formed in concert with OHCEN’s research transfer advocacy, and is a working example of what OHCEN set out to accomplish.

The CCR-Net is a model for overcoming research-transfer barriers. At this time, the CCR-Net represents critical care units across Ontario that are coordinated through the Victoria Hospital Research Institute and collaborate in the development and execution of research projects. The Network has a number of goals:

1. to establish and maintain a registry of the structures and activities of critical care facilities;
2. to establish and maintain a registry of the resources used and outcomes achieved in the same critical care facilities;

3. to develop data analysis and reporting mechanisms to describe, compare, and evaluate current activities and the case-types and peer hospital levels; and
4. to develop specific protocols designed to examine and improve patient outcomes and reduce resource utilization in critical care facilities.

BACKGROUND AND RELEVANCE OF THE RESEARCH

Critical care provides two unique services, life support of patients with life-threatening single or multiple organ systems failure using specialized technology, and close monitoring of patients considered at high risk of developing a critical illness, to reduce the likelihood of such an occurrence. Despite the fact that health care systems are being challenged to provide more effective and efficient health care, very little relevant information is available to describe structure, activity, and patient outcomes in critical care units, much less evaluate performance.¹² The question became, "How can we gather the data to describe current activities?" In collaboration with community hospitals, CCR-Net piloted a model of integrated research within a defined health system.

How did we engage the community hospitals and individual care workers in this activity, which fundamentally moved the research laboratory to the community and away from the teaching hospital? Initially, we went to the community to find out firsthand their needs and concerns in the field of health services research. They told us they needed to understand the "evidence-based" paradigm; design more participatory continuing education; understand the concepts of utilization review, quality improvement, and practice guidelines; and participate in clinical trials that would define effectiveness issues. At the academic health center, we had the expertise—but we needed to convince faculty of the merits of engaging the community hospitals as part of their research teams, from the earliest idea-generation phase to data interpretation and manuscript writing. We did this by beginning to link the academic teams' annual performance reviews to evidence of community participation. Next, this vision of working with the community resulted in a planning process, and a mission was developed with their active involvement:

... to provide a focal point for collaborative efforts by multidisciplinary researchers, government, health care providers and private industry to identify issues and pursue research into the effective and efficient provision of critical care services on a regional basis. The ultimate goal of this research is to establish and maintain a relevant foundation from which to de-

Table 3 • Objectives of OHGEN Informatics Activities

To configure and deploy high-speed Internet computers capable of managing large volumes of network traffic, databases, and multiple Internet services
To provide integrated electronic mail, discussion list, newsgroup, file transfer, and World Wide Web (WWW) services through a single, freely accessible, Internet address
To design simple document formatting and navigation protocols for the WWW so that OHGEN-related information would have a consistent, authenticated format
To develop methods for managing OHGEN-related Internet documents and hypertext links
To design an Internet-accessible database to support the collection, validation, storage, maintenance, and selective dissemination of information about people, projects, and products in health services research
To transfer knowledge and techniques to OHGEN clients so that they can become both information providers and consumers in an interdependent network
To monitor usage of OHGEN resources and solicit feedback from users using electronic surveys

velop guidelines and policies for the optimal management of critical care services.¹²

CCR-Net stressed a participatory approach to its research projects. The principle of participation was a key ingredient for successful research transfer—the importance of involving individuals who will be responsible for implementing research-based changes has been emphasized by many.^{13–16} Local participation encourages ownership in and advocacy for the research results by the individuals who will be the ultimate users of the results. Member hospital participation in CCR-Net research is therefore encouraged throughout all phases of each research project, including the choice of research topic and the collection of its results.

EXAMPLES OF CCR-NET ACTIVITIES

Examples that illustrate how this organization is reducing barriers to research transfer are:

1. *CCR-Net minimum data set.* Some CCR-Net member hospitals are collecting data to profile patient care activity in the critical care units. The data collected by these hospitals include patient age and sex, reason for admission, illness severity, length of stay, and patient outcome. The gathering of these data enables member hospitals to characterize their current activities, compare their activities with those of community hospital peers, measure their progress over time, and generate research hypotheses based on current data.¹² Importantly, team mem-

Table 4 • Evidence-based Clinical Guidelines Can Minimize Barriers to Research Transfer

Barrier	How Evidence-Based Clinical Guidelines Address Impediments
Does not appreciate importance of using research results	
No access to evidence	Relevant evidence becomes accessible in a synthesized format
Does not understand research results	Evidence is presented in an understandable format
Does not believe research results	Involve "community" practitioners in guideline-development process (to produce the synthesis of evidence)—they will therefore not only believe the guideline but advocate for its use For other practitioners, guideline development using the critical appraisal process will improve trust
Cannot operationalize research results	Evidence presented in a clinically useful format
Is not a supportive environment	Multidisciplinary team participation in development or adaptation promotes supportive environment in organization

bers in community hospitals involved in this project learn skill sets embodied in the health services research paradigm (risk stratification of patients with common clinical problems; assessment of cost-effectiveness of alternative management strategies; measurement of patient outcomes, including quality of life; measurement of quality of care, etc.) from faculty during the course of the research interaction.

More lessons were learned at this phase. In addition to personalized feedback provided to the participating hospitals, CCR-Net also solicits feedback from the decision makers to find out how the organization is performing. This open communication enables both the research personnel at the academic health center and the front-line researchers (i.e., the decision makers) to discuss needs and improve how they can work together to meet those needs. CCR-Net also consults literature on the members' behalf and creates a profile of "tools" that can help member hospitals improve on their current activities. Providing this feedback acts as a strategy to encourage the use of the research results in decision making. Eisenberg and Williams describe feed-

back about individual performance, compared with performances of peers or with an evidence-based clinical guideline, as particularly effective for encouraging, reinforcing, or discouraging certain behaviors.¹⁷ Because it is a reflection of personal performance, effective feedback must be given in a positive and constructive manner.

2. Pressure ulcer prevention in the critically ill. This CCR-Net project is studying the prevention of pressure ulcers in the critically ill. Available work showed that a program that emphasized multidisciplinary collaboration in teaching hospitals could be cost-effective,¹⁸ but cost-effectiveness has not been demonstrated by evaluation under conditions of average use. To transfer this research, decision makers in community hospitals were assembled and mentored on the process of critical appraisal. They determined that a standardized scoring system was needed. Subsequently, their evidence-based learning resulted in a clinical guideline that incorporated a scoring system. In this process, research transfer was actively facilitated by strategies that introduced the evidence-based paradigm to the community and made relevant information more accessible to and understandable by the decision maker.¹⁹ Furthermore, as the nursing staff operationalized the pressure-ulcer-scoring system they had developed, the nursing leadership understood their efforts and then created a supportive environment for research transfer.

3. Enteral and parenteral feeding in the intensive care unit (ICU). This CCR-Net project is an example of collaboration among researchers, practitioners, and community partners. CCR-Net community hospitals identified that they were not certain how feeding should be done. Consequently, CCR-Net staff assisted hospital dietitians in data collection that described current feeding practices. At the same time, CCR-Net took the participants through a critical appraisal exercise to determine the best evidence—knowing what they should be doing allowed participants to define "inappropriateness" and then led to a request that we collaborate in the design and evaluation of an evidence-based clinical guideline for feeding critically ill patients.

Development and dissemination of evidence-based clinical guidelines is one of the most effective research-transfer strategies currently known. Evidence-based clinical guidelines are among the few research-transfer strategies that have been demonstrated to successfully encourage the use of research findings in clinical practice and, consequently, improve the effectiveness and efficiency of health care delivery.²⁰⁻²² Evidence-based clinical guidelines, such as the CCR-Net "feeding guideline," are a synthesis of the best currently available evidence for a particular clinical situation, and they can

be used to assist practitioners' and patients' decision-making processes by providing them with research-based descriptions of situation- and patient-specific appropriate care.¹⁵ Evidence-based clinical guidelines break down barriers to research transfer by making relevant evidence more accessible, understandable, believable, and operational to decision makers (table 4). To maximize their effectiveness, implementation strategies must be adopted and the guidelines must be actively disseminated to their target audience. The most effective method for influencing practitioners' behaviors is the introduction of more than one guideline-implementation strategy (table 5).^{13,17,23}

Discussion

Research transfer is the movement of specific research-based knowledge into practice through a systematic series of activities. OHCEN is a regional (provincial) model of active dissemination and coordinated implementation. By stressing the evidence-based paradigm (which includes finding relevant information to address a specific problem, applying rules of science to critically appraise the evidence for its validity and usefulness, applying the information to answer the original question, and, finally, evaluating performance) and active participation by both researchers and decision makers, OHCEN is exploring innovative solutions to overcome barriers found by previous projects to impede the application at the bedside of best practices from research. We are finding that successful research transfer can be accomplished through member participation, feedback, multidisciplinary collaboration, and the development and dissemination of evidence-based clinical guidelines.

References

1. Lavis J, Anderson G. Appropriateness in health care delivery: definitions, measurement and policy implications. *Can Med Assoc J.* 1996;154:321–8.
2. The Canadian Cochrane Centre (September 23, 1996). Questions and Answers about the Canadian Cochrane Centre. What is the Cochrane Collaboration? [Online] Available: <<http://hiru.mcmaster.ca/cochrane/centres/canadian/default.htm>>.
3. Stetler CB. Research utilization: defining the concept. *Image: The Journal of Nursing Scholarship.* 1985;17(2):40–44.
4. Lomas J. Retailing research: increasing the role of evidence in clinical services for childbirth. *Milbank Q.* 1993;71:439–75.
5. Whitelaw A, William J. Relating health education research to health policy. *Health Educ Res.* 1994;9:514–26.
6. Watt GCM. The chief scientist reports. Making research make a difference. *Health Bull.* 1993;51:187–95.
7. Lambo EE. Enhancing the utilization of research results. *Bridge.* 1995;14:1–3.

Table 5 • Evidence-based Clinical Guideline Implementation Strategies

Continuing education	Written materials, conferences, or symposia Must be reinforced through additional mechanisms for newly learned behavior to be long-lasting
Academic detailing	Transfer of research information from respected and influential educator to more junior individuals
Feedback	Information provided to individuals or groups about their performances, compared with others or with an evidence-based clinical guideline Personal nature of information makes it effective for reinforcing or discouraging certain behaviors Should be given in a positive and constructive manner
Local opinion leaders	Individuals perceived as "educationally influential by colleagues" (Oxman et al., 1995 ²³) disseminate messages through large or small group lectures
Administrative interventions	Implementation of institutional regulations For successful adoption of regulations, input for those affected should be solicited
Financial incentives or penalties	Controversial implementation method Creates fear that practitioners will be forced to abandon their own clinical judgment
Practitioner participation	Should be incorporated in all implementation strategies Promotes ownership of guideline and advocacy for its adoption

8. Funk S, Tornquist M, Champagne M. Barriers and facilitators of research utilization: an integrative review. *Nurs Clin North Am.* 1995;30:395–407.
9. OHCEN 4th Annual Symposium. Working with the Evidence: Turning Evidence into Practice. Toronto, Ontario, Canada, November 1996.
10. Esmail R, Inman K. For the Ontario Health Care Evaluation Network (OHCEN). A Report on 20 Articles Retrieved from the OHCEN Research Transfer Literature Review, November 1996.
11. Hunt J. Barriers to research utilization. *J Adv Nurs.* 1996;23:423–5.
12. Eberhard J, Sibbald W. Strategic Alliances in Health Care. Presentation at Southwestern Ontario Critical Care Research Network: Improving Quality of Care through a Strategic Research Alliance. London, Ontario, Canada. May 1996.

13. Greco P, Eisenberg J. Changing physicians' practices. *N Engl J Med*. 1993;329:1271–4.
14. Kibbe D, Kaluzny A, McLaughlin C. Integrating guidelines with continuous quality improvement. *J Quality Improvement*. 1994;20:181–91.
15. Thomson R, Lavender M, Madhok R. How to ensure that guidelines are effective. *Br Med J*. 1995;311:237–42.
16. Wise C, Billi J. A model for practice guideline adaptation and implementation: empowerment of the physician. *J Quality Improvement*. 1995;21:465–76.
17. Eisenberg J, Williams S. Cost containment and changing physicians' practice behavior: can the fox learn to guard the chicken coop? *JAMA*. 1981;246:2195–201.
18. Inman K, Sibbald WJ, Rutledge FS, Clark BJ. Clinical utility and cost-effectiveness of an air suspension bed in the prevention of pressure ulcers. *JAMA*. 1993;269:1139–43.
19. Evidence-based medicine, in its place [editorial]. *Lancet*. 1995;346(8978):785.
20. Hay J, Lyubashevsky E, Elashoff J, Maldonado L, Weingarten S, Ellrodt AG. Upper gastrointestinal hemorrhage clinical guideline—determining the optimal hospital length of stay. *Am J Med*. 1996;100:313–22.
21. Weingarten S, Riedinger M, Conner L, et al. Practice guidelines and reminders to reduce duration of hospital stay for patients with chest pain; an interventional trial. *Ann Intern Med*. 1994;120:257–63.
22. Weingarten S, Riedinger M, Varis G, et al. Identification of low-risk hospitalized patients with pneumonia; implications for early conversion to oral antimicrobial therapy. *Chest*. 1994;105:1109–15.
23. Oxman A, Thomson M, Davis D, Haynes B. No magic bullets: a systematic review of 102 trials of interventions to improve professional practice. *Canad Med Assoc J*. 1995;153:1423–31.

Discussion

C. DAVID NAYLOR, MD, DPhil, *Moderator*

MODERATOR: Let me start with Dr. Alex Jadad. A thorough overview of a very important project, Alex. I was a little puzzled by some aspects of the presentation. This audience knows all about systematic reviews. So do journal editors. I think we can also assume that academics are attuned to this as a cheap way of doing research. If a topic is highly appropriate for a systematic review of randomized trials, I suspect the academic marketplace is likely to seize on it and get it into print, with or without participation of those tied to the Cochrane Collaboration. Accordingly, isn't there a risk that much of the Cochrane Collaboration's activity will be analogous to intellectual paleontology, i.e., digging up irrelevant or inconclusive trials from the 1960s and 1970s and doing overviews in less salient areas? That leads me to a related question about priority setting. We hear that the evidence from the Cochrane Collaboration will help decision makers with resource allocation, but who is allocating resources within the Cochrane Collaboration itself? Like any volunteer army, it is doubtless hard to direct. If you're having trouble getting dollars, perhaps it's because your priority-setting processes aren't addressing stakeholders' needs, or aren't addressing fundamental questions that are important to the people who hold the purse strings. Last, isn't it possible that instead of the Cochrane Collaboration's becoming a data distillery that will make patients, practitioners, and policymakers drunk on evidence, we're actually in some danger of creating a desert where they simply don't know how to get water? How is the Cochrane Collaboration actually choosing priorities and get-

ting evidence into practice? How do you avoid the trap of intellectual paleontology?

DR. JADAD: Those are most of the important challenges that we're trying to address at the moment. The main force behind the Collaboration at this point is the individual volunteer who is willing to contribute to it. As I noted in my presentation, that's a double-edged sword. At some point it's a Catch-22 situation, because you have to rely on volunteers to do the work, but then you may have difficulties making sure that they do select the right priorities. There are seven committees working very hard to try to come up with some solutions, but I think one of the most recent strategies—the incorporation of consumers at all levels within the organization—may help speed up the process. Consumers have a very important and growing presence within each of the review groups. My own belief is that they can be terrific at helping us set priorities if they have an active voice within each group. If the researchers are selecting inappropriate topics to look at first, the consumers may be able, if we empower them correctly or if they feel empowered, to make sure that the priorities are closer to patients' needs. I do think that we also need to involve more policymakers, i.e., people who are more directly in charge of allocating resources outside the Collaboration, in the activities of the organization.

I agree with you that what we are engaged in is basically an archeologic enterprise. However, not everyone understands what a systematic review is. We have recently completed an analysis of more