

L'élaboration d'un schéma conceptuel traitant de l'utilisation de la recherche en soins infirmiers

Carole A. Estabrooks

L'intérêt accru qui est porté dernièrement au domaine de l'utilisation de la recherche, lequel s'appuie souvent sur des notions de pratique reposant sur des preuves, fournit de riches possibilités quant à l'avancement de ce créneau des sciences infirmières. Bien qu'il existe, dans la profession, une documentation étendue sur le sujet, un examen approfondi révèle qu'une grande part de celle-ci est fondée sur des opinions ou des anecdotes et que l'élaboration de théories soutenues et génératrices de programmes, accompagnées de vérifications, a été menée, tout au mieux, de façon sporadique. Cet article présente un schéma conceptuel traitant de l'utilisation de la recherche et propose de mettre l'accent sur certains éléments d'étude d'importance : *les fondements, les synthèses, les politiques et les interventions* scientifiques, historiques et philosophiques visant à promouvoir l'utilisation de la recherche, et *les résultats*. En suivant cette voie, nous pouvons développer des approches différentes en matière de perspectives et de conceptualisation dans ce domaine. En exécutant les études et les programmes mis d'avant dans ce schéma, la profession peut, en collaboration avec les partenaires appropriés, réaliser d'importants progrès dans le domaine des études et de la pratique liées à la diffusion et à l'utilisation de la recherche, et ce à de nombreux paliers du système de santé.

Mapping the Research Utilization Field in Nursing

Carole A. Estabrooks

The recent increase in interest in the field of research utilization, often embedded in the notions of evidence-based practice, presents a rich opportunity to advance the field in nursing. While an extensive literature on the subject exists in nursing, close examination reveals that much of it is opinion and anecdotal literature, and that sustained and programmatic theory building and testing in this field has been sporadic at best. This article maps the field of research utilization, proposing that we focus on major areas of inquiry: scientific, historical, and philosophical *foundations, synthesis, determinants, policy, interventions* to increase research utilization, and *outcomes*. In so doing, alternative ways of viewing and conceptualizing this field are possible. In conducting the kinds of studies and supporting the kinds of programs identified in this map, nursing, in collaboration with appropriate partners, can significantly advance the field of research dissemination and utilization studies and practice at many levels in the health system.

The past few years have seen a surge of interest in the field of research utilization. This interest has often focused on the broader field of *evidence-based practice* or *evidence-based decision-making*, of which research utilization is a special subset (Estabrooks, 1998; Stetler et al., 1998). Research utilization is, at its simplest, the use of research to guide practice, and is particularly concerned with the use of research evidence — that is, the findings of scientific studies. In contrast, evidence-based practice includes, or ought to include, a much broader conceptualization of evidence than research evidence alone (Estabrooks, 1998). Organizations such as the Agency for Health Care Policy and Research (AHCPR) in the United States, the global Cochrane Collaboration, and the National Forum on Health (NFH), the National Centre of Excellence, and the Health Evidence Application and Linkage Network (HEALNet) in Canada have increasingly focused attention on how scientific evidence is used at various levels of decision-making in health-care practice.

Not since the large research utilization initiatives of the 1970s has there been such a rich opportunity to advance the field in nursing. Since the first nursing study related to research utilization appeared in the literature (Shore, 1972), a large nursing literature has accumulated on the subject. However, much of it is opinion and anecdotal literature, and it has a number of characteristics that suggest the profession has not yet

been able to realize sustained initiatives that build and test theory in this area.

First, the literature is seriously limited by a scarcity of discussions at the conceptual level. The last in-depth discussions specifically addressing the nature, structure, and/or function of research utilization in nursing were those by Loomis (1985) and Stetler (1985). Second, there were fewer than 70 research studies published between 1972 and 1998, an average of 2.7 a year, with many years yielding none.¹ This publication pattern is illustrated in Figure 1. Further, an examination of those studies reveals little evidence of sustained programmatic research — it is rare to find either individuals or groups who have published repeatedly in the field.

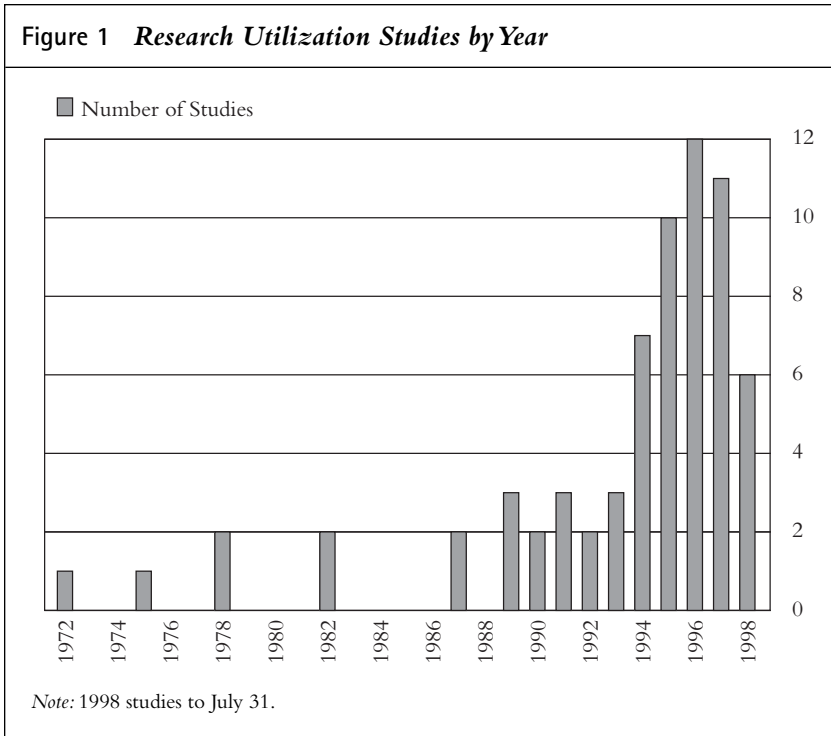
Third, an explicit description of form and substance in the research utilization field could not be located. Such a description or map, were it available, could be used to visualize the field, to locate studies in it, to assess the potential contribution of a study or set of studies to knowledge development in the area, and to guide basic and applied research programs in the field. The perception by many nursing investigators that

¹While the literature reviewed for this article ranges beyond the nursing literature and has in the past included searches of several databases (e.g., MEDLINE, HSTAR, PSYCHINFO, ABI-INFORM, Dissertation Abstracts, SSCI), the nursing literature reviewed, and to which this statement refers, was examined by using the specific strategies described below. Past searches have also included (a) manual searches of the print version of CINAHL from its beginning to 1982 using the terms *research use*, *research*, *research utilization*, *innovation diffusion*, and *dissemination*, and (b) manual scanning of all reference lists at the end of all retrieved nursing articles. The literature search for this article was undertaken to ensure that all studies were identified. The criteria used to determine whether an article was a study were generous — that is, if authors stated they had done a study and there was any evidence they had measured or intended to measure research utilization (including dissemination, innovation diffusion, adoption, transfer, uptake, or use) or a related dimension (e.g., barriers to research utilization), it was considered a study. Qualitative studies were also counted if they examined research utilization. In conjunction with a reference librarian, the CINAHL database was searched from 1982 through December 1998 using the following terms:

Diffusion of innovation	(subject heading)	
research utilization	(textword)	
Research, nursing	(subject heading-exploded)	OR
and		
transfer, practice or practise	(textwords)	
Research AND transfer	(subject heading and textword)	

Newly retrieved articles were all from 1998; the reference lists of these were manually scanned. Excluded from this count were articles that describe the implementation of a research-based practice on a nursing unit — unless there was an explicit evaluation and some attempt to measure research utilization. These largely anecdotal articles appear primarily in practice journals or research journals targeting clinicians.

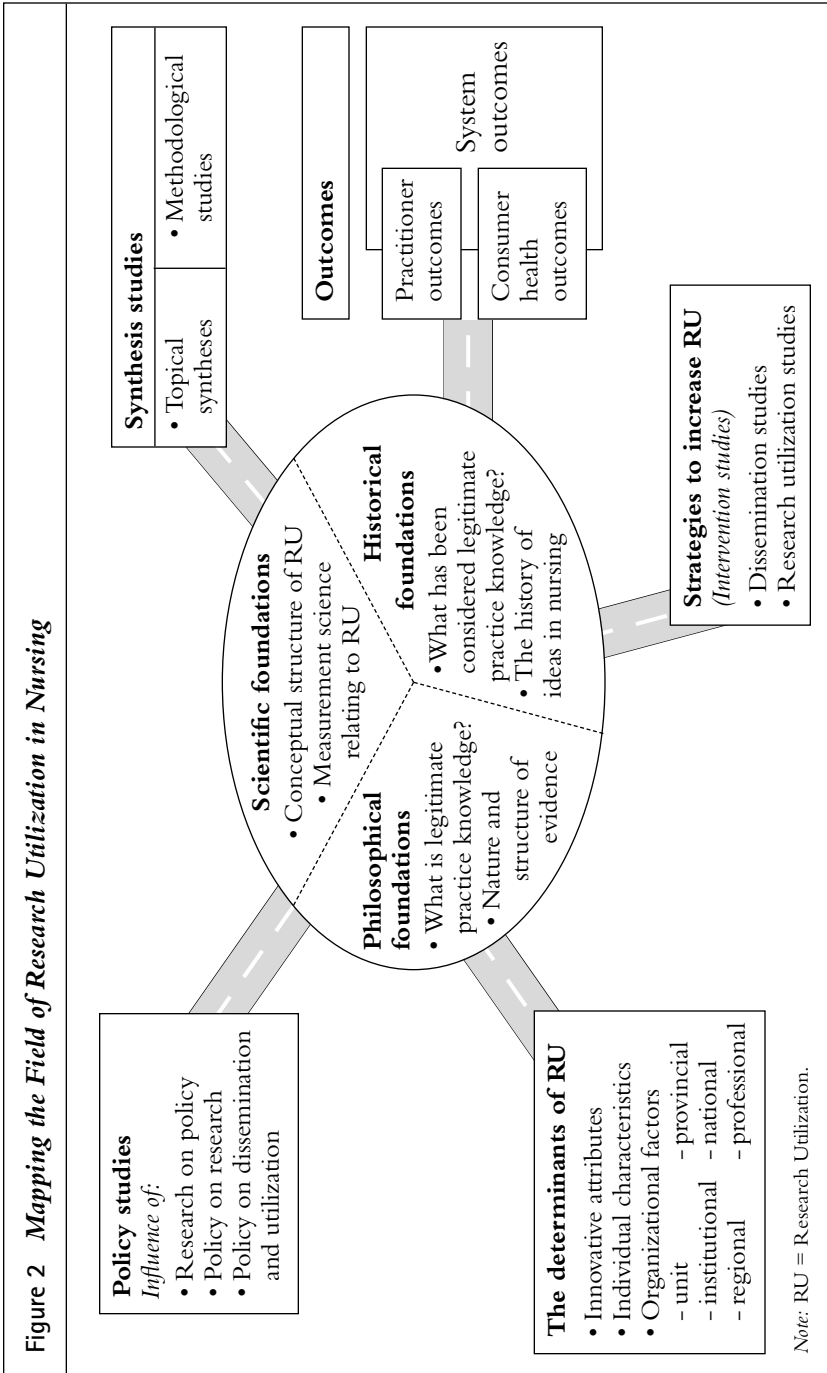
Figure 1 *Research Utilization Studies by Year*



research utilization is exclusively an applied field of study with little or no requirement for basic, foundational studies may in part be responsible for the relatively disorganized state of the field today.

This article proposes such a map, with the goal of clarifying new and more comprehensive approaches to viewing and conceptualizing the research utilization field. A schematic of the map is presented in Figure 2. This schematic attempts to conceptualize research utilization as a field of both basic and applied investigation and as a field in a dynamic and interactive state.

The remaining sections discuss the elements depicted in the figure, beginning with foundational work and progressing through the areas of synthesis, determinants of research utilization, policy, intervention studies to increase research utilization, and outcomes. This article focuses on nurses, and does not address ongoing work in the area of consumer decision-making and consumers' need for and use of research evidence in making health decisions (e.g., Degner et al., 1997; Llewellyn-Thomas, 1997; O'Connor, 1997; O'Connor et al., 1998; Rothert et al., 1997; Sawka et al., 1998).



Foundational Work in the Field

One of the areas most central to sustained advancement in the research utilization field is described in Figure 2 as “foundational work.” This foundational work has at least three dimensions: scientific, historical, and philosophical.

Scientific Foundations

Historically, nursing investigators have viewed research utilization as an applied area rather than as a field of inquiry with basic science requirements — that is, as an area of original work itself. Investigators would implement the findings of others’ research, develop and apply models of research utilization, and to some extent study influencing factors. In order to advance the research utilization field meaningfully, however, there must be advances in areas such as developing and refining its conceptual structure, developing the measurement science needed to undergird scientific studies, and developing a clear conceptual understanding of the nature and structure of evidence in nursing and of the relationship of research to evidence.

There are no studies or conceptual papers in the nursing literature and only rarely elsewhere (e.g., Dunn, 1983) that directly explore measurement issues. The empirical work in this field is currently plagued with measurement difficulties, which are likely to worsen if we do not explicitly undertake to resolve them. We have little idea of appropriate and relevant measures of research utilization — whether at single or multiple levels. For example, the most common approach to measuring research utilization does not differentiate among the kinds of research utilization, although it is implicitly an instrumental measure (Barta, 1995; Brett, 1987, 1989; Coyle & Sokop, 1990; Michel & Sneed, 1995; Varcoe & Hilton, 1995). If the findings of studies measuring only instrumental research use are used, we will underestimate nurses’ overall research use, as we will not have accounted for either conceptual or persuasive use (Estabrooks, 1999b). Furthermore, this approach to measuring instrumental use developed by Brett (1987) is relatively complex, requiring an assessment of the extant user-ready research in the particular area each time it is used, in contrast to a global measure of research use (Estabrooks, 1997, 1999b). Which approach is better? Or does each have an appropriate usage? Are there other approaches that we need to develop?

We require both empirical and conceptual work designed to develop and test emerging mid-range theories on research utilization; the development of these mid-range theories is the overarching goal of activity in this field. In the literature on innovation diffusion, Downs and Mohr (1976) put forward the idea that there was not a single theory of inno-

vation, but that rather different types of innovation require distinct theories. Thirteen years and a considerable amount of research later, Poole and Van De Ven (1989) contended that no single theory can encompass “the complexity and diversity of innovation processes” (p. 638). Other authors in the innovation literature have reached the same conclusion (Damanpour, 1987, 1991; Mohr, 1987; Van De Ven & Rogers, 1988; Wolfe, 1994). While research utilization is not entirely synonymous with innovation diffusion, it is close enough that such advice should be heeded. It is quite likely that as we begin to understand the complexities of the determinants of research utilization and how they behave, different research utilization theories will begin to emerge and be tested.

Historically, nursing investigators have used a fairly limited set of approaches to study this field. Can we expand our repertoire of design approaches and modify our thinking in order to construct densely theoretical studies; studies whose express purposes include theory development and assessment; studies whose reports would include a discussion of where the particular study fits in terms of emerging theories of research utilization in nursing; studies running the gamut from naturalistic to rigid empirical assessment of theory; and studies that help us discover the structure of research utilization, its properties, its predictors, and its contextual variations?

The lack of clarity on the relationship between research utilization and evidence-based practice is also a potentially serious impediment. The current (and, this author believes, erroneous) tendency to equate the two could possibly lead us to rank-order evidence such that we devalue — or, worse, negate — non-scientific evidence. While some recent journal articles in nursing (DiCenso, Cullum, & Ciliska, 1998; Estabrooks, 1998; Kitson, 1997) suggest the need for a debate on the *evidence-based practice* movement, and by implication the nature and structure of evidence, and provide some fodder for this debate, there has not yet been a visible and collective debate on this topic in nursing such as is currently taking place elsewhere — for example, in the *British Medical Journal*, the *Canadian Medical Association Journal*, and the *Journal of Evaluation in Clinical Practice*. In Canada, the NFH published an entire volume on evidence-based decision-making (Evidence-Based Decision Making Working Group, 1997). Additionally, HEALNet has adopted as one of its strategic directions for 1998–2002 the pursuit of a research program on evidence (<http://hiru.mcmaster.ca/nce/research.htm>). Its work will be influential in determining how evidence is conceptualized, ordered, and ultimately valued in the health-policy environment in Canada. It is a matter of some urgency that nurses too take up a public debate on the nature and structure of evidence — one that develops in print and is voiced where we are gathered.

Historical and Philosophical Foundations

We ought perhaps to be viewing the often neglected areas of historical and philosophical inquiry as primary areas of insight into how we proceed in this complex field. Sound historical inquiry would go a long way in helping us to understand how, for example, nurses as a profession have conceptualized, legitimated, and controlled knowledge for practice and for professionalization. It would enlighten us as to what knowledge we have valued within different social and historical contexts; it would enable us to create a more planned future in the development and use of practice knowledge, including research knowledge; and it would surely expand our thinking in the evidence debate.

While historical examination would assist in laying a foundation for the future, it is to philosophy that we should turn for the debate on what ought to be — that is, what ought we value, create, legitimate, and control? What is and what ought to be the nature of practice knowledge? What parts of that practice knowledge are amenable to the strategies a good research utilization investigator might offer? Encouragingly, small philosophical groups are forming in Canadian nursing graduate programs, and this is where we must hope the seeds will be planted for the epistemological debates that need to occur. Such debates must find their way to basic education curricula in this country if we are to adequately prepare the next generation of practitioners, who will be working not under the shadow of the industrial revolution but rather under the glare of the cybernetic age.

Synthesis Work

Twenty years ago, the most significant problem in research utilization studies was the lack of available studies to utilize (Kreuger, Nelson, & Wolanin, 1978). While we have progressed a great deal, enormous gaps remain in the research that is available to guide nursing practice. There are insufficient synthesized research findings, such as meta-analyses, systematic research effectiveness overviews, and sound integrative literature reviews that would provide clinicians with digestible and readily accessible material.

The Cochrane Collaboration and the AHCPN have spurred a great deal of activity in this area, and in Canada considerable methodological work by nurse investigators is ongoing at McMaster University. However, the set of research methods used in nursing is wide-ranging. We have relatively few randomized clinical trials (RCTs) on which most of the meta-analytic work has been done, and large numbers of descriptive and qualitative studies. If we are to provide the substance that will support research-based nursing interventions, we must hurry on to the demand-

ing methodological work involved in developing appropriate methods with which to synthesize or aggregate non-RCT studies, including qualitative studies.

It is also important to spend some time synthesizing the research utilization work that has been done, so that we have a clearer understanding of the state of affairs. How far have we come? Where are we now? Where do we need to go? Otherwise, we will be vulnerable to random development in the field. It makes little sense to proceed in any but a systematic manner in this field, along the way steering our graduate students and junior investigators in those same systematic directions.

The Determinants of Research Utilization

To date, the work in research utilization in nursing has focused almost exclusively on the determinants of research utilization — those factors, characteristics, and attributes of individuals, organizations, and innovations that influence the use of research. However, despite this focus, after nearly three decades of research the body of descriptive research identifying these determinants is underdeveloped and equivocal.

Individual Determinants

Most of the work to date in nursing has addressed individual determinants of research utilization — that is, those characteristics possessed by the individual that influence their use of research findings in their work. Examples of these factors include: a *positive attitude* to research (Bostrum & Suter, 1993; Champion & Leach, 1989; Lacey, 1994; Rizutto, Bostrum, Suter, & Chenitz, 1994); *autonomy* (Funk, Champagne, Weiss, & Tornquist, 1991; Lacey, 1994; Rodgers, 1994; Walczak, McGuire, Haisfield, & Beezley, 1994); *awareness of agency policy* and *educational level* (Michel & Sneed, 1995); *conference attendance* (Coyle & Sokop, 1990); *cooperativeness and self-efficacy* (Kim & Kim, 1996); *job satisfaction* (Coyle & Sokop, 1990); *involvement in nursing research activities* (Bostrum & Suter, 1993; Pettengill, Gillies, & Clark, 1994); and *time spent reading professional journals* (Barta, 1995; Brett, 1987; Coyle & Sokop, 1990; Kirchoff, 1982). However, when the relatively small body of work on these factors is examined closely, it yields little direction. Study designs and methods vary widely, sample sizes are small, and results tend not to converge on common recommendations (Estabrooks & Floyd, in progress). When the individual determinants that have been studied were rigorously and empirically tested to assess their influence on research utilization behaviour (Estabrooks, 1997, 1999a), only a positive attitude to research, in-service attendance, and the ability

to suspend strongly held beliefs remained in structural equation models as significant influencing factors.

Organizational Determinants

Organizational determinants — those characteristics of health-care organizations, of units within those institutions, and of governance structures outside of those institutions that facilitate the dissemination and uptake of research findings — have been addressed to an even lesser extent than have individual determinants. Those organizational determinants that have been looked at include organizational size, administrative support, access to research, and time (Brett, 1987, 1989; Coyle & Sokop, 1990; Dunn, Crichton, Roe, Seers, & Williams, 1998; Funk et al., 1991; Rutledge, Ropka, Greene, Nail, & Mooney, 1997; Varcoe & Hilton, 1995). Other organizational determinants, such as complexity, centralization, presence of a research champion, traditionalism, and organizational slack, have not, for the most part, been addressed in the nursing literature, although others, such as organizational analysts, have studied these characteristics extensively (e.g., Chakarbarti, 1974; Damanpour, 1987, 1988, 1991, 1996; Downs & Mohr, 1976; Fennell, 1984; Kimberley, 1981; Kimberley & Evanisko, 1981; Mohr, 1969).

Perhaps most importantly, there are no published reports of studies whose investigators have examined organizational culture at the local (unit) level, at multiple levels within the organization, or at the Regional Health Authority or Board levels. Unit and institutional culture are undoubtedly significant and multidimensional influences on research utilization behaviours. Elements such as unit norms, unit belief structures, local leadership and influence, rules of engagement, and interactions with other levels of the organization are likely embedded in the broader notion of organizational culture. Additionally, organizational factors such as a supportive administrative structure and adequate time to use research can probably be well understood only within the context of local unit culture. For example, even in a very research-positive climate there may be rules of practice that supersede the will or intent of individuals to use research.

Another dimension of organizational determinants that has received no attention to date in nursing is the influence of institutional structures at the different jurisdictional levels on research utilization behaviour. For example, are there institutional structures in place to support research-based nursing practice at the organizational levels? At regional levels? At provincial or national professional-association levels? At union levels? In educational institutions? If there are, how effective are they? If there are not, how can we expect individual practitioners to be accountable for evidence-based practice?

Attributes of the Innovation

Attributes of the innovation are those characteristics of the research findings and of the clinical phenomenon that influence the uptake of relevant research. For example, the characteristics of the body of research on effective pain management as well as the characteristics of the phenomenon of pain itself will contribute to whether or not nurses make effective use of pain research in their practices. Unfortunately, there is little if any understanding of the influence of attributes of the innovation on nurses' research utilization behaviour.

First, unlike what has been done in other fields, there has been no study of the attributes of the innovation specific to nursing. Second, we do not know to what extent research findings as a product mimic innovations. In nursing, the concepts of innovation diffusion have been readily incorporated into conceptualizations of research utilization as if they were synonymous, but there is little evidence to support this, and little theoretical discussion in this regard. It seems reasonable that some of the attributes of innovations that have been considered to be important are also likely important attributes of nursing research and related clinical phenomena, but it seems equally likely that some are quite different.

Outside of nursing, Rogers (1983, 1995) proposes a list of five innovation attributes — *complexity*, *relative advantage*, *compatibility*, *trialability*, and *observability* — thought to be important to the adoption of innovations. Tornatsky and Klein (1982) report more equivocality in the influence of such attributes than Rogers's work suggests, and others have suggested additional and different attributes (Damanpour, 1988; Dearing & Meyer, 1994; Kimberley, 1987; Van De Ven, 1986). These studies and conceptualizations of innovation attributes in other fields should serve to assist nurses in the conceptualization and study of innovation attributes. In particular, we need to expand our understanding of the parallels between innovation attributes and research attributes and between innovation attributes and the attributes of the clinical phenomenon.

Policy

Few if any studies have been published that address the relationship between nursing research and policy or between policy and research utilization. Policy holds promise as a strategy to facilitate research utilization. It also can function in many institutions as an impediment. The more we know about and understand these processes, the more effective we will be in both the use of policy to improve practice and the use of research to effect policy change. The earlier discussion of institutional structures (under ***Organizational Determinants***) is fundamentally related

to questions of policy. Is the current rhetoric (and hence, one could argue, at least the broad policy intent) of evidence-based decision-making in this country tied in meaningful ways to actual policy implementation? What policy instruments have been applied to create an evidence-based decision-making culture? Have these instruments been applied differentially or non-differentially? At what levels have they been applied? Have they been effective? What has been — and what should be — the role of regional boards, employers, professional associations, and labour unions in creating institutional structures that encourage and facilitate research-based practice? What is the profession's capacity to generate policy studies, to influence policy that affects dissemination and uptake of research in the health sector, and to marshal policy expertise among investigators and practitioners?

Strategies to Increase Research Utilization (Intervention Studies)

A second area (in addition to determinants) in which nurse investigators have conducted research is intervention studies (see Figure 2); however, there are few such studies. Examples of those that have been done include the work of Dufault, Bielecki, Collins, and Wiley (1995), who examined the effectiveness of a collaborative research utilization model directed towards the transfer of pain-assessment knowledge to practice; Hodnett et al. (1996), who examined the effectiveness of a marketing strategy geared to increasing nurses' use of intrapartum interventions on patient outcomes; Luker and Kenrick (1992), who evaluated the effectiveness of an "information package" on the management of leg ulcers in the community; Rutledge and Donaldson (1995), who evaluated a 3-year project involving 20 service organizations and nearly 400 nurses in California; and Tranmer, Kisilevsky, and Muir (1995), who evaluated the effectiveness of a nursing research utilization strategy ("developmentally sensitive care") in a neonatal intensive care unit.

Reports such as the above offer beginning evidence about the kinds of strategies that may or may not be useful in getting research used. However, intervention studies designed to examine strategies to increase research utilization are more likely to contribute to knowledge and theory development in this area if they are premised on (a) strong, less equivocal descriptive work (i.e., study of the determinants), (b) reliable outcomes work, and (c) sound theoretical and conceptual foundations. It will be especially difficult to design strong intervention studies until we have well-developed approaches to measuring research utilization.

Outcomes

Intervention studies in this area must be rigorously focused on patient/client health status, and not exclusively on the *intermediate* outcome of research utilization. While we have a great deal of work to do in the area of validly and reliably measuring research utilization — the practitioner outcome of interest in Figure 2 — we also have a considerable amount of work to do in identifying and measuring nurse-sensitive client and system outcomes. Additionally, in light of the discussion thus far, client and system outcomes must be sensitive to research utilization as a predictor variable if we intend to demonstrate that using research to guide nursing practice makes a difference in consumer outcomes. Nurse investigators who have programs in research utilization must begin to work early on with nurse investigators who have expertise in outcomes research.

The measurement of research utilization as a useful outcome is premised on somewhat different assumptions from those sometimes made in intervention studies (e.g., see Hodnett et al., 1996) that eliminate measurement of research utilization (or a research utilization index) as an intermediate variable. These studies directly measure the effect of a specific set of nursing interventions (brought about by a research utilization strategy) on client outcomes and eliminate the measurement of the intermediate outcome, research utilization. It can be argued that the retention of research utilization as an important outcome variable in studies has value beyond the science of those studies. Such value lies in the central relationships of institutional structures, practices, and cultures to the work of nurses. For example, a measure of research utilization in an organization, or on units within that organization, is likely to be an important characteristic or indicator of organizational culture. We can speculate, for example, that it may be a characteristic of the magnet hospital (McClure, Poulin, Sovie, & Wandelt, 1983) and that, as such, its direct measurement is of added value.

Discussion

Mapping a field of inquiry in any domain is a complex undertaking. This first attempt to do so in the field of research utilization is designed to (a) clarify that a field of inquiry exists, (b) clarify that study in this field is best undertaken systematically from both basic and applied perspectives, and (c) encourage collaborative work among investigators. A reasonable next question is: Are there priority areas that we should address? There are many places on the schematic in Figure 2 to legitimately begin for those who are new to the field, and many places to locate one's own work for those already engaged in this area of research.

I began with empirical work that focused on elements of both scientific foundations and determinants, and attempted to develop and test beginning research utilization theory (Estabrooks, 1997, 1999a, 1999b). From that experience, I became convinced that the descriptive and foundational bodies of research are so underdeveloped that we must attend to them with some urgency in order to be able to design sound studies that develop and test strategies to increase research utilization (i.e., intervention studies).

How should we proceed so that our approaches are systematic? Although it is difficult to set priorities for activity in the field, a proposed set of reasonable priorities includes the following:

- develop a more thorough and confident understanding of the determinants of research utilization, with an emphasis on the different levels of organizational determinants, especially local culture, and the interactions of different groups of determinants in different clinical contexts
- conduct foundational studies, both theoretical and empirical, that address, as priorities, the conceptual structure of research utilization and its measurement
- develop a better understanding of individual determinants, with a view to targeting interventions early in educational programs when they are most likely to have an effect, especially if, as we suspect at this stage, these determinants are largely related to attitude, thinking styles, and belief structures
- conduct intervention studies that are informed by descriptive work, by measurement work, and by related outcomes work, taking care to reflect on *the nature and structure of nursing work* when considering different intervention strategies
- build functional partnerships with those individuals and institutions (both within and across disciplines and countries) whose expertise is outside the area of research utilization per se but is central to the advancement of a research utilization agenda — for example, outcomes researchers, policy analysts and experts, political scientists, organizational analysts, clinicians, and clinical investigators.

Two provisos should be added to this discussion. We need to be cognizant of the tendency in the past to study only the utilization of *nursing* research findings. The only plausible reason for restricting study in this area to nursing research seems to be a professional one, intended to advance the legitimization both of nursing as an academic pursuit and of our research. However, nurses need a full repertoire of theoretical and practice knowledge, of which nursing is but one component. Therefore, we should be interested in the use of any and all kinds of research that

are relevant to the work of nurses and to better health outcomes for patients and clients. This will require us to work closely with practising nurses and consumers as we develop our understanding of not only what practice knowledge they require, but in what forms they can best use it.

Second, if we are to advance systematic and programmatic study in this field, the profession has considerable work to do to build capacity. The agenda outlined here is ambitious and will require the cooperative work of many individuals and institutions. To date, at least in Canada, we have no readily identifiable centres or programs and very few individuals who espouse expertise in research utilization. While we are aware informally of expertise in some of the sub-areas discussed, we have not often made this explicitly known to potential graduate students or post-doctoral trainees, who are the most likely sources of future capacity. However, because of Canadian funding-agency decisions in recent years to focus more on knowledge dissemination and research transfer and uptake, we have considerable potential to attract and build the needed capacity, as well as to conduct the high-quality studies needed to advance the science of research utilization.

We have an extraordinary window of opportunity that has been opening in Canada since the NFH called for a culture of evidence-based decision-making earlier this decade. We should not squander the opportunity. We should focus on getting on with the agenda — systematically, programmatically, and collaboratively. Doing so could create considerable synergy in this field, setting the stage for observable progress in the decades ahead.

References

- Barta, K.M. (1995). Information-seeking, research utilization, and barriers to research utilization of pediatric nurse educators. *Journal of Professional Nursing, 11*(1), 49–57.
- Bostrum, J., & Suter, W.N. (1993). Research utilization: Making the link to practice. *Journal of Nursing Staff Development, 9*(1), 28–34.
- Brett, J.L.L. (1987). Use of nursing practice research findings. *Nursing Research, 36*, 344–349.
- Brett, J.L.L. (1989). Organizational integrative mechanisms and adoption of innovations by nurses. *Nursing Research, 38*, 105–110.
- Chakrabarti, A.K. (1974). The role of champion in product innovation. *California Management Review, 17*(2), 58–62.
- Champion, V.L., & Leach, A. (1989). Variables related to research utilization in nursing: An empirical investigation. *Journal of Advanced Nursing, 14*, 705–710.
- Coyle, L.A., & Sokop, A.G. (1990). Innovation adoption behaviour among nurses. *Nursing Research, 39*, 176–180.

- Damanpour, F. (1987). The adoption of technological, administrative, and ancillary innovations: Impact of organizational factors. *Journal of Management*, 13, 675–688.
- Damanpour, F. (1988). Innovation type, radicalness, and the adoption process. *Communication Research*, 15, 545–567.
- Damanpour, F. (1991). Organizational innovation: A meta-analysis of effects of determinants and moderators. *Academy of Management Journal*, 34, 555–590.
- Damanpour, F. (1996). Organizational complexity and innovation: Developing and testing multiple contingency models. *Management Science*, 42, 693–715.
- Dearing, J.W., & Meyer, G. (1994). An exploratory tool for predicting adoption decisions. *Science Communication*, 16, 43–57.
- Degner, L.F., Kristjanson, L.J., Bowman, D., Sloan, J.A., Carriere, K.C., O'Neil, J., et al. (1997). Information needs and decisional preferences in women with breast cancer. *Journal of the American Medical Association*, 277, 1485–1492.
- DiCenso, A., Cullum, N., & Ciliska, D., (1998). Implementing evidence-based nursing: Some misconceptions. *Evidence-Based Nursing*, 1, 38–40.
- Downs, G.W., & Mohr, L.B. (1976). Conceptual issues in the study of innovation. *Administrative Science Quarterly*, 21, 700–714.
- Dufault, M.A., Bielecki, C., Collins, E., & Wiley, C. (1995). Changing nurses' pain assessment practice: A collaborative research utilization approach. *Journal of Advanced Nursing*, 21, 634–645.
- Dunn, V., Crichton, N., Roe, B., Seers, K., & Williams, K. (1998). Using research for practice: A U.K. experience of the BARRIERS scale. *Journal of Advanced Nursing*, 27, 1203–1210.
- Dunn, W.N. (1983). Measuring knowledge use. *Knowledge: Creation, Diffusion, Utilization*, 5(1), 120–133.
- Estabrooks, C.A. (1997). *Research utilization in nursing: An examination of formal structure and influencing factors*. Unpublished doctoral dissertation, University of Alberta, Edmonton.
- Estabrooks, C.A. (1998). Will evidence-based nursing practice make practice perfect? *Canadian Journal of Nursing Research*, 30(1), 15–36.
- Estabrooks, C.A. (1999a). Modeling the individual determinants of research utilization. *Western Journal of Nursing Research*, 21(6), 758–772.
- Estabrooks, C.A. (1999b). The conceptual structure of research utilization. *Research in Nursing and Health*, 22, 203–216.
- Estabrooks, C.A., & Floyd, J.A. (in progress). *A systematic review of the literature addressing individual determinants of research utilization behaviour in nursing*.
- Evidence-Based Decision Making Working Group. (1997). *Creating a culture of evidence-based decision making in health*. Ottawa: National Forum on Health.
- Fennell, M.L. (1984). Synergy, influence, and information in the adoption of administrative innovations. *Academy of Management Journal*, 27, 113–129.
- Funk, S.G., Champagne, R.A., Weiss, R.A., & Tornquist, E.M. (1991). Barriers to using research findings in practice. *Applied Nursing Research*, 4(2), 90–95.
- Hodnett, E.D., Kaufman, K., O'Brien-Pallas, L., Chipman, M., Watson-MacDonald, J., & Hunsburger, W. (1996). A strategy to promote research-based nursing care: Effects on childbirth outcomes. *Research in Nursing and Health*, 19, 13–20.

- Kim, I., & Kim, M.-I. (1996). The effects of individual and nursing-unit characteristics on willingness to adopt an innovation: A multilevel analysis. *Computers in Nursing, 14*, 183–187.
- Kimberley, J.R. (1981). Managerial innovation. In P. Nystrom & W. Starbuck (Eds.), *Handbook of organizational design*. Vol. 1 (pp. 84–104). Oxford: Oxford University Press.
- Kimberley, J.R. (1987). Organizational and contextual influences on the diffusion of technological innovation. In J.M. Pennings & A. Buitendam (Eds.), *New technology as innovation: The development and diffusion of microelectronics* (pp. 237–259). Cambridge, MA: Ballinger.
- Kimberley, J.R., & Evanisko, M.J. (1981). Organizational innovation: The influence of individual, organizational, and contextual factors on hospital adoption of technological and administrative innovations. *Academy of Management Journal, 24*, 689–713.
- Kirchoff, K. (1982). A diffusion survey of coronary precautions. *Nursing Research, 31*, 196–201.
- Kitson, A. (1997). Using evidence to demonstrate the value of nursing. *Nursing Standard, 11*(28), 34–39.
- Krueger, J.C., Nelson, A., & Wolanin, M.O. (1978). Nursing research: Development, collaboration, and utilization. Germantown, MD: Aspen.
- Lacey, E.A. (1994). Research utilization in nursing practice: A pilot study. *Journal of Advanced Nursing, 19*, 987–995.
- Llewellyn-Thomas, H.A. (1997). Investigating patients' preferences for different treatment options. *Canadian Journal of Nursing Research, 29*, 45–64.
- Loomis, M.E. (1985). Knowledge utilization and research utilization in nursing. *Image: Journal of Nursing Scholarship, 17*(2), 35–39.
- Luker, K.A., & Kenrick, M. (1992). An exploratory study of the sources of influence on the clinical decisions of community nurses. *Journal of Advanced Nursing, 17*, 457–466.
- McClure, M.L., Poulin, M.A., Sovie, M.D., & Wandelt, M.A. (1983). *Magnet hospitals: Attraction and retention of professional nurses*. Kansas City: American Academy of Nursing.
- Michel, Y., & Sneed, N.V. (1995). Dissemination and use of research findings in nursing practice. *Journal of Professional Nursing, 11*, 306–311.
- Mohr, L.B. (1969). Determinants of innovation in organizations. *American Political Science Review, 63*, 111–126.
- Mohr, L.B. (1987). Innovation theory: An assessment from the vantage point of the new electronic technology in organizations. In J.M. Pennings & A. Buitendam (Eds.), *New technology as innovation: The development and diffusion of microelectronics* (pp. 13–31). Cambridge, MA: Ballinger.
- O'Connor, A.M. (1997). Consumer/patient decision support in the new millennium: Where should our research take us? *Canadian Journal of Nursing Research, 29*, 7–11.
- O'Connor, A.M., Tugwell, P., Wells, G.A., Elmslie, T., Jolly, E., Hollingworth, G., et al. (1998). Randomized trial of a portable, self-administered decision aid for postmenopausal women considering long-term preventive hormone therapy. *Medical Decision Making, 18*, 295–303.

- Pettengill, M.M., Gillies, D.A., & Clark, C.C. (1994). Factors encouraging and discouraging the use of nursing research findings. *Image: Journal of Nursing Scholarship*, 26, 143–147.
- Poole, M.S., & Van De Ven, A.H. (1989). Toward a general theory of innovation processes. In A.H. Van De Ven, H.L. Angle, & M.S. Poole (Eds.), *Research on the management of innovation: The Minnesota Studies* (pp. 637–662). New York: Harper & Row.
- Rizutto, C., Bostrum, J., Suter, W.N., & Chenitz, W.C. (1994). Predictors of nurses' involvement in research activities. *Western Journal of Nursing Research*, 16, 193–204.
- Rodgers, S. (1994). An exploratory study of research utilization by nurses in general medical and surgery wards. *Journal of Advanced Nursing*, 20, 904–911.
- Rogers, E.M. (1983). *Diffusion of innovations*, 3rd ed. New York: Free Press.
- Rogers, E.M. (1995). *Diffusion of innovations*, 4th ed. New York: Free Press.
- Rotherth, M.L., Holmes-Rovner, M., Rovner, D., Kroll, J., Breer, L., Talarczyk, G., et al. (1997). An educational intervention as decision support for menopausal women. *Research in Nursing and Health*, 20, 377–387.
- Rutledge, D.N., & Donaldson, N.E. (1995). *Journal of Nursing Administration*, 25(10), 12–16.
- Rutledge, D.N., Ropka, M., Greene, P.E., Nail, L., & Mooney, K.H. (1997). Barriers to research utilization for oncology staff nurses and nurse managers/clinical nurse specialists. *Oncology Nursing Forum*, 25, 497–506.
- Sawka, C.A., Goel, V., Mahut, C.A., Taylor, G.A., Thiel, E.C., O'Connor, A.M., et al. (1998). Development of a patient decision aid for choice of surgical treatment for breast cancer. *Health Expectations*, 1, 23–36.
- Shore, H.L. (1972). Adopters and laggards. *Canadian Nurse*, 68(7), 36–39.
- Stetler, C.B. (1985). Research utilization: Defining the concept. *Image: Journal of Nursing Scholarship*, 17(2), 40–44.
- Stetler, C.B., Brunell, M., Giuliano, K.K., Morsi, D., Prince, L., & Newell-Stokes, V. (1998). Evidence-based practice and the role of nursing leadership. *Journal of Nursing Administration*, 28(7/8), 45–53.
- Tornatsky, L.G., & Klein, K.J. (1982). Innovation characteristics and innovation adoption-implementation: A meta-analysis of findings. *IEEE Transactions on Engineering Management*, 29, 28–45.
- Tranmer, J.E., Kisilevsky, B.S., & Muir, D.W. (1995). A nursing research utilization strategy for staff nurses in the acute care setting. *Journal of Nursing Administration*, 25(4), 21–29.
- Van De Ven, A.H. (1986). Central problems in the management of innovation. *Management Science*, 32, 590–607.
- Van De Ven, A.H., & Rogers, E.M. (1988). Innovation and organizations. *Communication Research*, 15, 632–651.
- Varcoe, C., & Hilton, A. (1995). Factors influencing acute-care nurses' use of research findings. *Canadian Journal of Nursing Research*, 27, 51–71.
- Walczak, J.R., McGuire, D.B., Haisfield, M.E., & Beezley, A. (1994). A survey of research-related activities and perceived barriers to research utilization among professional oncology nurses. *Oncology Nursing Forum*, 21, 710–715.

Wolfe, R.A. (1994). Organizational innovation: Review, critique and suggested research directions. *Journal of Management Studies*, 31, 405–431.

Acknowledgements

The author wishes to acknowledge the thoughtful and lively contributions of the CNA working group on research dissemination and utilization in nursing, the encouragement of colleagues at the Faculty of Nursing, University of Toronto, and Laura Benben at ICES for her assistance with graphics.

Carole A. Estabrooks, RN, PhD, is a Medical Research Council and Alberta Heritage Foundation for Medical Research postdoctoral fellow at the Institute for Clinical Evaluative Sciences in Toronto, Ontario, Canada, and Assistant Professor, Faculty of Nursing, University of Alberta, Edmonton, Canada.

2009 update: *Carole A. Estabrooks is Professor and Canada Research Chair in Knowledge Translation, Faculty of Nursing, University of Alberta.*

