

# An Interdisciplinary Approach to Capacity Building in Applied Research

## Une approche interdisciplinaire pour le renforcement des capacités dans le domaine de la recherche appliquée

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## Abstract

The Canadian Health Services Research Foundation (CHSRF) has contributed to applied health and nursing services research in Canada by establishing the Regional Training Centres (RTCs). The interdisciplinary education and experience in applied health and nursing services research that the RTCs offer has produced graduates who are highly sought after by both academic and key health services decision-making agencies. Students educated in these multidisciplinary environments learn that different perspectives and methodological approaches enrich their capacity to define and complete research. This paper describes how the RTCs have helped build capacity in health services research through an interdisciplinary approach that considers the substantive, conceptual and methodological domains.

## Résumé

La Fondation canadienne de la recherche sur les services de santé (FCRSS) a contribué à la recherche appliquée aux services de santé et aux services infirmiers au Canada par l'établissement des Centres régionaux de formation (CRF). La formation et l'expérience interdisciplinaires dans le domaine de la recherche appliquée en services de santé et des soins infirmiers qu'offrent les CRF produisent des diplômés qui sont très recherchés par les établissements universitaires et les organismes chargés de prendre des décisions clés en matière de services de santé. Les étudiants formés dans ces milieux multidisciplinaires découvrent que différentes perspectives et approches méthodologiques leur permettent d'enrichir leur capacité de définir et d'effectuer la recherche. Cet article décrit la contribution des CRF à l'accroissement de la capacité dans le domaine de la recherche en services de santé en utilisant une approche interdisciplinaire qui tient compte des domaines importants, conceptuels et méthodologiques.

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## Key messages

- ✦ Collaboration between researchers and decision-makers results in better appreciation of the realities of the healthcare system.
- ✦ An interdisciplinary perspective facilitates comprehensive representation of the healthcare system reality.
- ✦ A repertoire of research methods is useful in addressing questions related to the healthcare system.

**T**HE CANADIAN HEALTHCARE SYSTEM STRIVES TO DETERMINE HOW BEST to deliver services to the population. These concerns are addressed through health services research (HSR) now well established in the United Kingdom,

North America and parts of Europe over the last 20 years (Fulop et al. 2001). By advancing our understanding and knowledge of ways to organize and deliver health services, HSR supports both the effectiveness and efficiency of the healthcare system and contributes to the health and well-being of Canadians. The Canadian Health Services Research Foundation (CHSRF) used a strategic approach to increase the number and quality of applied health services researchers by funding four regional training centres (RTCs): the Atlantic Regional Training Centre (ARTC), the Western Regional Training Centre (WRTC), the Ontario Training Centre (OTC) and the Centre de formation et d'expertise en recherche en administration des services infirmiers (FERASI). The RTCs used an interdisciplinary approach to enhance research capacity in HSR (Brachman et al. 2008; Conrad 2008). This paper will define HSR and then illustrate the contribution of the RTC to HSR within the substantive, conceptual and methodological domains.

## Defining Health Services Research

HSR is usually considered a multidisciplinary field of inquiry, both basic and applied, that examines healthcare services to increase knowledge and understanding of the structure, processes and effects of health services (field et al. 1995; Fulop et al. 2001). For CHSRF, HSR is more a broad field of inquiry than a discipline (CHSRF 2003). Some argue that HSR is, fundamentally, multidisciplinary scientific investigation (Fulop et al. 2001; Health Services Research 2007). However, the scientific endeavour and contribution to the building of research capacity through each RTC may have many different meanings and dimensions.

Langley et al. (2003), referring to Brinberg and McGrath's (1985) three-dimensional model of the research process, propose that research operates in the *substantive domain*, associated with specific empirically observable phenomena, problems or settings; in a *conceptual domain*, associated with abstract ideas and theories about the nature of the world; and in a *methodological domain*, associated with the procedures used to relate ideas from the conceptual domain to the real world of the substantive

TABLE 1. Applied health and nursing services research

Substantive Domain	Conceptual Domain	Methodological Domain
Phenomena related to access, quality and cost of healthcare  Eg: Barriers to accessing care, resource utilization, program evaluation, innovation in structure and services	Theoretical perspectives from many disciplines  Eg: Political science, work organization, organization theory, management, economics, nursing theory	Procedure used to relate substantive and conceptual domains  Eg: Survey methods, mixed qualitative and quantitative, appreciative inquiry

domain (see Table 1). This framework allows us to distinguish domains within the global mandate of building research capacity for Applied Health and Nursing Services Research (AHNSR) and to show how that mandate has been successfully pursued by each RTC. Examples of curriculum content and student research projects will be used to illustrate these domains.

## The Substantive Domain

The substantive domain is associated with specific, empirically observable phenomena, problems or settings within the real world (Langley et al. 2003). HSR studies demonstrate how social factors, financing systems, organizational structures and processes, health technologies or personal behaviours affect access, quality and cost of healthcare (field et al. 1995; Health Services Research 2007). Each RTC has its students address problems or phenomena affecting the healthcare system. The breadth of problems examined by RTC students illustrates how the substantive domain of AHNSR can be transformative.

## The Atlantic Regional Training Centre

The ARTC, through its four interconnected sites, offers a joint master's degree in applied health services research. This advanced degree program accepts students from a variety of backgrounds and disciplines and prepares them with the necessary theoretical understanding to investigate complex health systems issues. The multi-site program uses Web-based courses and rotating theme-based workshops as a forum for linkage and exchange among decision-makers (DMs), students and faculty. As well, there is a four-month research residency placement in which students apply theory and concepts within decision-making organizational contexts. The residency is designed to provide hands-on research and decision-making experience, to develop an understanding of how knowledge is transferred from the academic community to decision-makers and to determine whether projects undertaken are of sufficient interest to the student and the host organization to merit further investigation as a thesis research topic. One ARTC student conducted a study to identify the barriers women face in seeking cervical cancer screening. This master's thesis addressed the need for provincial health program evaluation.

## The Ontario Training Centre

Upon entry into the OTC, students prepare an individualized learning plan that ensures they meet required competencies (Brachman et al. 2008). Students can then select various pathways according to these plans. Students with extensive policy experience are able to join research teams. An OTC student who was a senior official in the Canadian Memorial Chiropractic College was able to participate in the activities of

the Arthritis Community Research Evaluation Unit. This practicum resulted in a number of papers detailing the predictors of healthcare services utilization for musculoskeletal conditions. Alternatively, students with significant research exposure in their degree work are able to gain experience in the policy arena. A pharmacy-based student studying adverse events and natural health products joined the Marketed Health Products Directorate of Health Canada and developed natural health product adverse event reporting guidelines for practitioners and manufacturers.

The OTC has developed 12 targeted distance education courses to address the OTC competencies. These courses include those with a substantive focus (eg. work organization and health). In addition to course work and the Summer Institute, participating students must complete a policy and/or research practicum with a DM partner. The practicum options are wide ranging, and ensure that OTC graduates are thoroughly exposed to “empirically observable phenomena” and have developed an understanding of, and respect for, the importance of evidence-informed decision-making.

These varied experiences introduce OTC students to the interdisciplinary nature of health services research and help them develop the skills they will need to become successful practitioners. Approximately 30 students have graduated from the OTC since its inception. Dissertation topics have included an examination of role perceptions of public health nurses in Northern Ontario; the pursuit of scientific legitimacy in the current research funding context; recruitment and retention strategies for rehabilitation health human resources; and nursing autonomy and leadership in acute care settings. The activities encourage multidisciplinary debate and collaboration between students and faculty and between students and key health decision-making partners. The program develops among its students an appreciation of the contributions of health services and policy research to an understanding and improvement of the Canadian healthcare system. As such, the OTC’s activities ensure that its students are exposed to the real world of the substantive domain.

### The Western Regional Training Centre

The WRTC encompasses the entire spectrum of health services and policy research through a focus on issues central to AHNSR. Students have not only to pose and answer questions for the field, but must “complete the loop” through linkage and exchange back to those who have provided data, facilitated access to patients or staff or allowed entrée into healthcare organizational decision-making.

Similarly, field placements challenge students to understand not only the conceptual perspectives of those engaged in healthcare management and provision, but the practical, political and ethical realities that may constrain decision-making. Thus, the breadth of empirical AHNSR application to contemporary issues in healthcare services *organization and utilization* might encompass such areas as safety principles in the

context of the structures and processes of infection control in long-term care facilities; assessment of primary and specialist utilization and continuity of care for childhood cancer survivors; creation of a framework for the evaluation of community care for chronic disease management; or assisting with the implementation of a program budgeting and marginal analysis for priority setting (from the micro to macro levels). AHNSR approaches to the solution of continuing issues in *healthcare provision* might include development and evaluation of pharmaceutical policy; utilization of engineering-based safety concepts in a falls strategy for elderly patients; and analysis of the risk of depression in post-acute myocardial infarct or return to the emergency room among asthmatic patients.

### Centre FERASI

The Centre FERASI has a mandate specific to *nursing administration research*, and the questions raised by the students must relate to this substantive domain. However, nursing administration research is the component of AHNSR dealing with questions of importance for the single largest group of healthcare providers – nurses. Thus, it is concerned with the costs of nursing care, and with nursing service delivery issues within the broader context of healthcare service and policy analysis. FERASI delivers four seminars: nursing work life, organization of nursing services and care, policy related to nursing administration and knowledge transfer.

The questions raised by the doctoral students focus on organizational structures and how they influence clinical practice, the effects and outcome of different roles and types of practice, innovation in structure and services provided and other questions related to human resources. Doctoral theses address such phenomena as organizational initiatives regarding recruitment and retention, clinical governance in oncology and service integration in clinical programs of local integrated networks. According to Denis (2007), this nursing research is an exemplar of how professionals can be a source of innovation at the interface of clinical practice and organizations.

### Lessons learned from the substantive domain

- Students have a better grasp of the reality of the healthcare system through collaboration with DMs and through interdisciplinary studies.
- Field placements in DM contexts help both students and the DMs themselves distinguish perceived problems from real problems.
- The RTC model of collaboration with DMs is a challenge for academic programs as it is costly in terms of time and effort. However, the RTCs found ways to compensate for these efforts to ensure that AHNSR is a viable and interesting option for students.

## The Conceptual Domain

Research must be located within a conceptual domain of abstract ideas about the nature of reality and recognized patterns of understanding (Langley et al. 2003). HSR is not a single scientific discipline; the breadth of subjects it encompasses requires the use of multiple conceptual perspectives to understand the reality of health services (Fulop et al. 2001). Each RTC has dealt with the need for conceptual interdisciplinarity of AHNSR in different ways, even though two of them have either a strong nursing component (OTC) or a strong nursing mandate (FERASI).

## The Atlantic Regional Training Centre

The primary purpose of the ARTC is to increase health services research capacity throughout Atlantic Canada. Students within this four-province collaborative venture are expected to prepare a thesis proposal that outlines the particular area to be investigated. The unique composition of the thesis committee includes a decision-maker, where appropriate, and may include members of several faculties and more than one participating institution.

Students' thesis topics take into account the research interests of faculty across the four sites. In addition to faculty supervision, the program's capacity to provide appropriate research supervision from institutional health policy and decision-makers is also considered. The ARTC's rotating workshops have focused on information exchange on such contemporary healthcare issues as knowledge translation, evidence-based decision-making and evaluation research, providing the opportunity for dialogue with experts in these fields. Students learn about health policy and the determinants of health, knowledge transfer and research uptake. They then use this knowledge of healthcare services issues and the organized network of experts to formalize research questions to complete their thesis requirement.

## The Ontario Training Centre

The OTC requires the completion of a health services research or policy dissertation as part of its common requirements (Brachman et al. 2008). The distance education courses include those with a policy focus (Canadian health policy, rural and northern health policy), and graduates' dissertations have been conceptually grounded in a range of disciplines (economics, nursing theory, sociology). The OTC has delivered four Summer Institutes with the themes of Research and Policy Implications of Delivering Mental Health Services in Rural and Northern Parts of Ontario (2004), Health Human Resources Research and Policy (2005), Women's Health (2006) and Regionalization of Health Services (2007). The topics of these Summer Institutes provide good examples of the interdisciplinarity of the conceptual domain.

### The Western Regional Training Centre

The WRTC provides exposure to the conceptual aspects of many disciplines. It explicitly seeks out and encourages students with varied undergraduate and graduate backgrounds to consider AHNSR as a field of concentration. Through its seminar series and annual institutes, the WRTC provides an opportunity for interaction and debate with individuals of varying epistemological and ontological backgrounds as well as varying degrees of administrative responsibility. Students, faculty and DMs from a wide array of professions have found common ground for engagement and learning. As a result, research topics of WRTC students (see previous section for examples), while broad with regard to conceptually relevant disciplinary perspectives, integrate these to maintain a focus on critical questions of health services, access, delivery and outcomes in diverse care settings and for varied populations, as noted above.

### Centre FERASI

The Centre FERASI is interdisciplinary through a consortium of two Faculties of Nursing (Montreal and Laval universities) and a School of Nursing (McGill University). Each partner of the consortium has working relationships with researchers and professors from other faculties such as management, health administration, political sciences, anthropology and sociology. Moreover, DMs who participate on the thesis committees add to the interdisciplinary nature of the research project. Examples of doctoral work illustrate how interdisciplinary the research is at the conceptual level.

One student assessed organization of nursing services in order to explore its contribution to job satisfaction, burnout and the quality of nursing care. This student was co-supervised by a health administration professor, a nursing professor and a nursing CEO. Thus the project was grounded in theoretical models and perspectives from nursing, management, the sociology of organizations, work and professions as well as in industrial psychology. Another student, supervised by a specialist in human resources (physician and health administration scientist), studied organizational climate and its influence on nursing care practices and professional satisfaction in acute and psychiatric care hospitals. Her committee reflected expertise from nursing, organizational psychology and human resource theory. Thus, interdisciplinarity is interwoven at a conceptual level into the Centre FERASI's program.

### Lessons learned from the conceptual domain

- Students are challenged to integrate many disciplinary perspectives as opposed to more traditional studies within a single disciplinary perspective.
- An interdisciplinary perspective is better suited for students interested in a more



- comprehensive representation of the healthcare system reality.
- The RTC model illustrates that interdisciplinary conceptualization of an empirical problem is possible and that there are many benefits in supporting education at the graduate level to promote theses including such perspectives.
- The interdisciplinary model of the RTCs can accommodate a wider range of students with a variety of backgrounds who can share and learn from one another.
- Graduates from interdisciplinary programs such as the RTCs could be challenged, when they seek a position, by finding ways to fit within a discipline-specific environment. Alternatively, they may be perceived as an asset in an academic research group or in a health services research organization.

## The Methodological Domain

AHNSR is conceptually interdisciplinary, and thus an area of applied research. Yet, AHNSR studies are guided by varied disciplinary methods. Research within each RTC has to take into account the debate between mode 1 research (academically driven, discipline-based, summative) and mode 2 research (transdisciplinary, reflexive, socially accountable, formative and connected to a wider range of non-university stakeholders) (Gibbons et al. 1994). According to Calnar et al. (2003), this debate is especially pointed in the methodological domain, as much process research in health-care takes the form of applied evaluation funded by government. Only later in its life cycle does it generate theoretical work. Thus, it is important to be aware of the range of appropriate methods and the types of questions that different methods can address. Each RTC has used various methods to pursue research endeavours and has put different types of educational training in place to build AHNSR capacity.

## The Atlantic Regional Training Centre

The ARTC strives to provide graduate education at the master's level in the conduct of applied health services research from an interdisciplinary perspective. It advances reciprocal arrangements between academic communities and decision-maker organizations that facilitate the use of evidence in policy decisions affecting the health of Atlantic Canadians. The ARTC provides a platform where interchanges between decision-makers and health researchers from academic communities generate policy-relevant research. Through a Web-based approach, students gain a broad picture of applied health services research through course work in the Canadian health system, health ethics and research and evaluation design. They focus on healthcare research methodology through course work in qualitative and quantitative approaches. The multidisciplinary nature of the program determines that the theses have varied topics and diverse methodologies.

### The Ontario Training Centre

The OTC focuses on the achievement of an agreed-upon set of health services and policy research competencies and the sharing of common requirements across all universities. These requirements include a minimum of 1.5 full course equivalents beyond graduate degree requirements (comprised of the Summer Institute, a policy and/or research practicum and additional course work as needed) and completion of a thesis with a focus in health services research or policy. The distance education courses include those with a focus on methods mixed methods in health services and policy research, qualitative research, survey methods).

### The Western Regional Training Centre

The WRTC fosters a broad array of research topics and methodologies in developing students' intellectual and experiential knowledge as well as encouraging faculty and decision-makers to engage with students and with each other. Faculty members must engage in health services research and be fully informed about the field, its concepts and its methods, both quantitative and qualitative. Support of the WRTC by two internationally known centres – the Manitoba Centre for Health Policy in Manitoba and Centre for Health Services and Policy Research in British Columbia – is critical to providing a strong and broadly based conceptual foundation, access to comprehensive sources of data and methodological expertise in data analysis. This interdisciplinary engagement fosters consideration of differing methodological approaches. Field placements challenge students to understand the practical, political and ethical realities that may constrain the relevance and utility of various methods.

### Centre FERASI

Centre FERASI has emphasized building capacity at the doctoral level, but also has graduated a large number of master's students. Since a doctorate is a much longer commitment, only three new researchers have been graduated. A look at the students' projects reveals that they used many methods, among them, action research. For example, one student used appreciative inquiry; another used case studies to compare the implementation of new roles; and another used a mix of quantitative and qualitative methods to examine quality of care.

### Lessons learned from the methodological domain

- ✦ Students explore with the decision-makers which methodological domain would best address their questions.
- ✦ Substantive and conceptual interdisciplinarity of AHNSR means that students have to learn different methods.
- ✦ Students learn a repertoire of research methods to address research questions.

## Conclusion

The interdisciplinary education and experience in applied health and nursing services research offered by the RTCs have produced graduates who are highly sought after by both academic and key health services decision-making agencies. These students, educated in a multidisciplinary environment, learn that there are many perspectives and methodological approaches to define and complete research. Moreover, RTC students emerge with the theoretical expertise and field experience to determine the best mix of methods relevant to the solution of complex health services problems.

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