Transdisciplinary Research Teams in Primary Health Care: Who Are They; What Do They Bring From Their Unique Discipline and How Do They Work Together?

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Introduction

The Canadian Institutes of Health Research (CIHR) Strategic Training Program “Transdisciplinary Understanding and Training on Research – Primary Health Care (TUTOR-PHC)”, was created to address the need for training in interdisciplinary research specific to primary health care. This one year, national training program (Stewart et al, 2008) provides novice researchers with the opportunity to acquire the skills in interdisciplinary primary health care methods and processes necessary to answer the complex questions that arise from primary health care. The program is sponsored by 7 Canadian Universities with representation from 8 disciplines relevant to primary health care. By the end of 2008-09, the program will have graduated 77 “CIHR Strategic Training Fellows in primary health care research”.

Primary health care, an essential component of the health care system, is increasingly delivered by interdisciplinary teams representing various professions such as family medicine, nursing, social work, psychology and pharmacy. As primary health care research has developed and expanded, the need for interdisciplinary teams, which foster cross-fertilization and creative inquiry, has become a reality. Multiple professions contribute to these teams including those noted above as well as epidemiology, sociology, dentistry, occupational therapy, physiotherapy and nutrition. This list is not meant to be exhaustive but rather to serve as an example of some of the professions who are actively participating in interdisciplinary primary health care research teams.

While the advent of interdisciplinary primary health care research teams holds great promise, they can also evoke “fear among scientists, funding organizations and decision makers” (Hansson 1999, p.339). It is the latter issue, the mix of anxiety, apprehension and uncertainty about participating on an interdisciplinary primary health care research team, which needs to be expediently addressed with novice researchers entering the field of primary health care research. When examining the processes inherent in the functioning of interdisciplinary research teams, it has been suggested that the whole is greater than the sum of its parts or, as Hansson (1999, p.341) has stated individual researchers are” pieces to be fit within the greater system of science as a whole”. Armed with the appropriate knowledge, skills and attitudes necessary for being an effective member of an interdisciplinary primary health care research team will not only assist new PHC researchers in their contributions to the team, but also aid them in advocating at both policy and decision-making levels.

The purpose of this paper is to describe an educational intervention utilized at the
TUTOR-PHC Symposium to elucidate the process of creating, building and sustaining an interdisciplinary research team in primary health care.

**The Educational Intervention**

With the emphasis on team oriented research and the increasingly interdisciplinary composition of these teams, the TUTOR-PHC program felt it was imperative to address the different roles disciplines can play in primary health care research teams. This important topic needed to be addressed at the beginning of the fellowship year and would be best presented during the on-site Symposium. Recognizing the challenges in becoming a member of an interdisciplinary primary health care research team or at best creating an interdisciplinary primary health care research team the second half of Day One of the Symposium is devoted to defining and describing interdisciplinary primary health care research teams. For the first few years, the topic of interdisciplinary research teams was presented in a panel format with TUTOR-PHC mentors representing different disciplines describing to the participants who they are as a researcher from their own discipline’s perspective, what they bring to the interdisciplinary primary health care research team that is unique to their discipline and an example of how they have worked collaboratively on interdisciplinary primary health care research teams. While this format was informative, it lacked an interactive component essential to adult learning.

In order to make this aspect of the Symposium more interactive and adult-learner focused (Knowles, 1980), the learning format was altered. The current curriculum design consists of four components: 1) brief didactic lecture on definitions, characteristics and challenges of interdisciplinary primary health care teams; 2) a “bell-ringer” exercise; 3) group presentations of the information obtained during the “bell-ringer” to the larger assembly and 4) small group discussions facilitated by two TUTOR-PHC mentors where trainees examine their own discipline contributions to interdisciplinary primary health care teams.

At the outset the participants attend a brief lecture on interdisciplinary primary health care research teams including definitions of interdisciplinary research teams as well as some of the barriers and facilitators in creating, building and sustaining interdisciplinary primary health care research teams. A summary of the content of the lecture follows.

Some definitions offered include:

- “Interdisciplinary research is a cooperative effort by a team of investigators, each expert in the use of different methods and concepts, who have joined in an organized program to
attack a challenging problem. Ongoing communication and reexamination of postulates among team members promote broadening of concepts and enrichment of understanding. Although each member is primarily responsible for the efforts in his or her own discipline, all share responsibility for the final product.” Institute of Medicine, 2002 (adapted from Luszki, 1958)

- “Interdisciplinary is defined as the ability to analyze, synthesize and harmonize links between disciplines into a coordinated and coherent whole.” CIHR 2001

Important characteristics of interdisciplinary research teams are described and include: shared values, goals and vision; understanding and valuing each team member’s perspective and scope of research; expecting and accepting differences; acknowledging and discussing diversity; confronting conflict; and seeking equitable and fair resolution to conflict. It is this latter issue of conflict resolution which can be most challenging.

Interdisciplinary research teams can at times produce conflicts of ideas and roles. To operate successfully, these teams must foster resolution of differences in ways that teams without such diversity may not require. This necessitates open and frank communication, sharing of information, constructive feedback, flexibility and the ability to listen to and learn from each other. Role definitions on an interdisciplinary research team can be difficult to concretely and traditionally define. The interdisciplinary group members must be comfortable with permeable boundaries, must ensure equitable distribution of responsibility, accountability, and power and be creative and innovative in finding solutions.

Finally, as with any team endeavour, interdisciplinary research teams come with a set of challenges that are system-related (bureaucracy/organization; logistics of meeting, fiscal problems), discipline/role related (turf issues, role blurring, disciplinary cultural differences), and leadership-related (lack of a common framework, ambiguity of function and task, boundary confusion). Even though these teams can be challenging to undertake and participate on, the benefits to primary health care researchers on a personal level (opportunities for growth and learning, renewal of excitement for research) and on a professional level (sharing new and vital information, and meeting the growing expectation of granting bodies for interdisciplinary research) outweigh the challenges.

The topic of discipline roles within an interdisciplinary primary health care research team is covered in a “Bell Ringer” exercise. This exercise allows participants to interview experienced primary health care researchers on what they bring to the interdisciplinary research enterprise.
Usually, six discipline representatives are stationed in breakout rooms. While disciplines participating in this exercise have varied from year to year depending on faculty availability, over the six years of the TUTOR-PHC program the following disciplines have participated: Epidemiology, Family Medicine, Nursing, Psychology, Social Work, Gerontology, Pharmacy and Sociology.

The trainees are divided into 6 groups of approximately 4 participants each and move from room to room. The groups are given 7 minutes to interview three disciplines with the switch in room signified by the ringing of a bell. Each group is responsible for interviewing their three discipline representatives using one of the assigned questions described below:

1) How would you define your discipline and its relevance to PHC?
2) What does your discipline bring to the interdisciplinary research process?
3) Typically, what is your role on an interdisciplinary research team?

Discipline representatives (mentors with the TUTOR-PHC program) are asked in advance to prepare responses to the three questions. At the completion of the interviews, the groups who interviewed the same disciplines meet and prepare a joint presentation to all participants on the role of those disciplines on an interdisciplinary primary health care research team. This part of the exercise fulfills the adult learning principle of actively involving adult participants in the learning process by allowing them to assume responsibility for presentations and group leadership (Portner, 2006) It provides an opportunity for critical reflection, synthesizing data and practicing presentation skills. A general discussion and question/answer session follow.

All the mentors have extensive experience working on interdisciplinary primary health care research teams and as such their cumulative knowledge and expertise provide valuable insights and instructive directions for current and future researchers seeking to work on interdisciplinary primary health care research teams. Finally, the contributions of the mentors and the ensuing discussions by all the participants illustrate the breadth and depth of perspectives that create the synergistic impact of an interdisciplinary research approach.

Following this interactive exercise the TUTOR-PHC trainees then break into a small discussion group of 8 participants facilitated by two TUTOR-PHC mentors. The discussion groups enable the TUTOR-PHC trainees to begin conceptualizing how they might contribute to an interdisciplinary project from the unique perspective of their own disciplines and how they can evolve as an interdisciplinary research team member. In combination these three educational
experiences establish the groundwork for the tasks ahead during the remainder of the Symposium and the entire fellowship year.

The following section provides a summary of the mentors’ responses to the three questions posed during the “Bell-ringer” exercise. Several disciplines are described from the mentors own unique perspective and include epidemiology, family medicine, nursing, psychology, social work, pharmacy, and sociology.

**SOCIOLOGY – Dr. Roanne Thomas-MacLean**

1) **How would you define your discipline and its relevance to PHC?**

Sociology is a study of people's possibilities and limitations as they relate to their positions and roles in society. Key sociological concerns are power and inequality and access to resources, including non-material resources such as knowledge. Sociologists might ask: what are the processes by which resources are distributed? Who gains from particular social relationships and structures? With respect to health, sociologists would examine the effects of social categories such as gender, ability, race/ethnicity and sexuality in terms of the balance of power and health status. Sociologists are also interested in the effects of social structure -- institutions, ideology, values and beliefs -- and how it is created and maintained through everyday interactions as well as political and social forces.

2) **What does your discipline bring to the interdisciplinary research process?**

Sociologists may engage in quantitative, qualitative or mixed methods research. The overall aim is to effect some type of social change. Key to the research process is examining power, including the power of language. Most sociologists would be advocates of decolonizing methodologies and approaches to research and would be concerned about the potential for perpetuating inequality embedded in research processes. Sociologists are particularly interested in researching social interaction, including paying attention to how reality is constructed on a continual basis.

3) **Typically, what is your role on an interdisciplinary research team?**

My role has been to ensure that social aspects of research participants' lives are recognized. This typically leads to messy questions and responses. Sociologists have embraced innovative
research methods, such as photovoice and I have engaged with these methods as well. There is also a growing interest in knowledge translation among sociologists.

SOCIAL WORK – Dr. Susan Watt

1) How would you define your discipline and its relevance to PHC?
Social Work is a profession that tries to understand and intervene with people in their social contexts – for example family and work relationships – and what enhances or detracts from those relationships. We understand power relationships and how power imbalances affect the functioning of individuals, families, groups, and communities. These power imbalances are based on age, class, ethnicity, gender, geographic location, health, ability, race, sexual preference and income which are also identified as social determinants of health. To the degree that PHC is concerned with understanding and ameliorating the negative impacts of social determinants, social work should play a role in identifying preventive and corrective strategies for individuals, families, communities, and wider policy initiatives.

2) What does your discipline bring to the interdisciplinary research process?
Social Work brings an understanding of the complex relationship between the individual and their environments including research approaches that permit access to understanding the meanings of the degree of fit between the individual and the environment. The social worker on a research team should bring questions about the meaning of human interactions, the meaning of environment and person-environment interaction, and the implications of the bio-psycho-social environment on the target research group. They should also engage in questioning the policy impact of research outcomes and how findings might be used to improve the individual and social outcomes of subjects and subject groups.

3) Typically, what is your role on an interdisciplinary research team?
Most often twofold – resident social policy expert, charged with answering the “so what” question and resident social health person – “No you can’t talk about doses of recreation”, charged with keeping a health and not medicine foci.

EPIDEMIOLOGY – Dr. Moira Stewart

1) How would you define your discipline and its relevance to PHC?
There are two kinds of epidemiology. The first is defined as classical epidemiology, the study of the distribution and determinants of health-related states or events in specified populations and the application of this study to control health problems. In classical epidemiology, it is the study of individuals, through standardized interviews with individual patients or chart reviews from which is built a data base. Thus, the epidemiologic method is to generalize or make inferences from a series of individual observations to a larger population. The second, clinical epidemiology, is defined as the study of the determinants of decisions in public health, health services and community medicine and the impact of those decisions on those individuals. In clinical epidemiology the information acquired on a large population is used to inform the researcher’s decisions with an individual patient, one at a time, i.e., your clinical application of the epidemiologic finding.

2) What does your discipline bring to the interdisciplinary research process?
An epidemiologist does not have the language or the conceptual framework or the vocabulary of the other disciplines who are usually on the interdisciplinary primary health care research team and as such are not wedded to one or the other of the conceptual frameworks or the vocabulary. Hence an important role epidemiologists play in interdisciplinary teams is that they often can serve as the bridge between and among disciplines. Epidemiologists can translate how one discipline may be using one term into the language another discipline is using. This is extremely helpful when different disciplines are not understanding each other because they are using different vocabularies and thus, a major strength epidemiologists bring to the interdisciplinary primary health care research team is the ability to bridge among other disciplines.

3) Typically, what is your role on an interdisciplinary research team?
Epidemiology is not a study of a content area, of conceptual frameworks or of theories. Rather it is a study of methods, designs and measures. Hence what is the epidemiologist’s role on an interdisciplinary primary health care research teams? First, epidemiologists bring to the team a notion of the magnitude of the problem under examination. Epidemiologists often identify areas of fruitful research or inform the research team about the magnitude of the problem derived from population-based studies. Epidemiologists help refine the research question and guide the team in determining and clarifying the main research question from a quantitative perspective. Finally, epidemiologists will assist and provide expertise in identifying methods, designs, and measures
that one could use in answering the research questions. In summary, epidemiology is a methodology rather than a content area.

**FAMILY MEDICINE**—Dr. Marie-Dominique Beaulieu

1) **How would you define your discipline and its relevance to PHC?**

In most industrialized countries, professional organizations of general practitioners and family physicians have taken clear positions by adopting definitions of the family physician which include a broad scope of practice, accessibility to care and continuity of care. These have been presented as the very foundations of the profession. The College of Family Physicians of Canada defines the discipline of family medicine around four principles.

- The family physician is a skilled clinician (comprehensive approach centered on the patient, expertise in a wide range of routine problems and in emergencies).
- Family medicine is a community-based discipline (practice profile adapted to the needs of the community; unselected and undifferentiated problems; varied practice settings; professional collaboration).
- The family physician is a resource to a defined practice population (practice as a “population at risk”).
- The patient-physician relationship is central to the role of family physician (understanding the human condition; providing continuity; defending patients’ interests).

2) **What does your discipline bring to the interdisciplinary research process?**

Historically, family physicians have received minimal training in research methodology. Family physicians are introduced to the principles of biomedical research and clinical epidemiology, but are rarely trained in the social sciences. Hence they are not often very familiar with theory development and conceptual frameworks. However, family physicians bring to a research team their knowledge of physiopathology, etiology of diseases, and treatment protocols. We can help bridge between the biomedical sciences and the social sciences.

3) **Typically, what is your role on an interdisciplinary research team?**

The family physicians' skills at history taking, interviewing skills, and interest in human nature prepares and provides a foundation to use qualitative methodologies. Indeed, many family
physicians who do research are attracted to qualitative research methods because they feel intuitive and familiar.

PSYCHOLOGY – Graham Reid

1) How would you define your discipline and its relevance to PHC?
Psychology is scientific study of behavior and its causes. Psychology is a diverse field studying everything from cells to communities. The subfield of psychology which is perhaps the most relevant to primary health care is clinical psychology – the application of the science of psychology to physical and mental health problems. Psychologists are primary health care providers, in that they can be the first point of contact with the health care system for many patients. Psychologists are also part of other primary health care teams 1.) One of the distinguishing features of psychology as a science is that, unlike any of the other health professions, the Ph.D. is a standard of training as a psychologist. (It should be noted that a number of provinces in Canada allow for individuals with a Masters in Psychology to practice independently.) 2.) Clinical psychologists are trained to do both research and clinical work. Psychology is unique among the health care professions in that the clinician-scientist is fundamental to what we do, and who we are.

2) What does your discipline bring to the interdisciplinary research process?
Conceptualization and complexity are two key elements that characterise psychology, and two elements that psychologists often bring to the interdisciplinary research process. Constructs (i.e., conceptual models of unobservable phenomenon), permeate psychological research. Psychological research reflects the inherent complexity of human behaviour and strives to develop and test conceptual models that provide an understanding of why people act the way they do, and often how we can change people’s behavior.

The complexity inherent in testing complex construct often results in the need to obtain multiple perspectives of a phenomena including measures of cognition, emotion, physiology gathered through multiple mechanisms, such as observation, self reports, teacher reports, physiological recording, etc. A focus on processes is related to the psychologist’s desire to understand phenomena. The term “confounding factor” is less likely to be found in psychological research compared to a mediator. Another disciplines’ confounder is psychology’s variable of interest. One of the challenges in dealing with complexity in human behavior is a tension
between control and generalizability. Psychologists often tend focus more on internal validity, and deal with complexities through experimentation, meaning manipulation of an independent variable rather than a randomized clinical trial to improve clinical outcomes. Often, experiments are used to understand the processes controlling behavior with less regard for changing outcomes.

Psychology aims to understanding phenomena, particularly in the area of health, from all levels of analysis from the biological to the community. However, psychology’s focus, relative to other disciplines, lies in relation to an understanding of cognitive-behavioral factors.

A clinical psychologist will also bring expertise in behavior change to the interdisciplinary process. Clinical psychologists are experts in helping people decrease maladaptive behaviors and increase adaptive or more positive behaviors. Within the health care context, this is knowledge is critical and psychologists have been extensively involved in developing interventions to help patients with health-related issues such as making lifestyle changes (e.g., diet, exercise, smoking), integrating medical regimens into their life (e.g., taking prescriptions), and coping with chronic and acute illness.

Finally, psychologists also bring their knowledge in statistics and measurement to the interdisciplinary process. Psychology is really the home of the questionnaire. Psychologists apply considerable rigor in the development and evaluation of questionnaires.

3) Typically, what is your role on an interdisciplinary research team?

Psychologists often take lead roles in research teams in terms of both bringing forward questions and problems that need to be addressed and serving as principal investigators on projects. Whether acting as principal investigator or as co-investigator, psychologists often play roles in defining the theoretical models that underlie study designs, selecting and/or developing measures, and analyzing data. Clinical psychologists will also bring their skills in behavior change and group process to the team. A good clinical psychologist can help groups manage and maintain optimal team functioning to facilitate the research process.

References

2. Canadian Psychological Association. Provincial/Territorial licensing requirements
NURSING—Dr. Vivian Ramsden

1) How would you define your discipline and its relevance to PHC?
Nursing encompasses autonomous and collaborative care of individuals of all ages, families, groups and communities, sick or well and in all settings. Nursing includes the promotion of health, prevention of illness, and the care of ill, disabled and dying people. Advocacy, promotion of a safe environment, research, participation in shaping health policy and in patient and health systems management, and education are also key nursing roles (ICN, 2008). The Canadian Nurses Association (CNA) indicates that they believe people are entitled to a health system which has the capacity to help them their physical and mental health needs – whether those needs are illness prevention, early detection, treatment, rehabilitation or recovery. Further, the CNA indicated that they believe that the responsiveness of the health system can be strengthened through effective collaboration among health professions (CNA, 2008).

2) What does your discipline bring to the interdisciplinary research process?
My practice is framed within primary health care and focuses on determinants of health; health promotion/disease prevention; enhancing self-reliance and self-determination; participatory methods of research and evaluation; assessment of strengths (assets) and opportunities for change (needs) using empowerment and building capacity in urban, rural, First Nations and international settings. In addition to this, designing, implementing and evaluating evidence-informed programs using practical tools and working with individuals, families and communities to enhance their capacity and thereby increase their health and well-being. Within each and every aspect of my professional practice, transformative learning and knowledge translation is required and utilizes methods that are appropriate and affordable for individuals, families, communities, undergraduate and graduate students including Family Medicine Residents and Faculty.

3) Typically, what is your role on an interdisciplinary research team?
The roles that I play on interdisciplinary research teams are: team member, facilitator (transformative learning for and with other members of the research team including community members; capacity building with community members, clinicians and others aspiring to engage
in research), advocate (working with an individual and/or community to empower and begin to address their identified needs), translator (knowledge and research skills into something that could be funded; sharing the results/findings with the various communities in a language that they can understand), administrator (ensuring that the Final Reports are written and submitted; human resources aspects of the grant have been undertaken and completed), and clinician (referral of individuals to appropriate resources in the community including my physician colleagues).

References


PHARMACY - Dr. Lisa Dolovich

1) How would you define your discipline and its relevance to PHC?

Professional competency for pharmacists in Canada require that pharmacists in partnership with patients and other health care professionals use their unique knowledge and skills to meet patients’ drug related needs and to achieve positive patient outcomes by maintaining or improving the patient’s quality of life. Pharmacists achieve this competency by providing pharmaceutical care. Pharmaceutical care involves designing, implementing, and monitoring a therapeutic plan that includes identifying, resolving and preventing drug related problems to produce specific therapeutic outcomes for the patient. The primary health care system as it pertains to medications includes prescribing, dispensing, monitoring and use.

2) What does your discipline bring to the interdisciplinary research process?

Numerous areas of research related to primary health care have a large focus on better use of medication including (but not limited to): chronic disease management, drug safety, pharmacist
as an interdisciplinary primary care team member, emerging fields in pharmacology and therapeutics such as pharmacogenetics, continuing pharmacy, medical (and other discipline) education, interventions designed to improve primary care practice, quality indicators, drug utilization, health technology assessment / pharmacoeconomics, medication adherence and the patient perspective on using medications.

3) Typically, what is your role on an interdisciplinary research team?
A pharmacist can provide professional expertise to an interdisciplinary primary health care research team who is focused in any area contributing to better prescribing and use of medication. Conventional pharmacy education and training instills certain methodologies or ideologies that pharmacy brings to the interdisciplinary primary health care research enterprise. Pharmacists are generally a post-positivist group, using quantitative methodology to test hypotheses in their quest for ultimate proven truth. Pharmacists focus on the benefits and harms of an intervention and so use the associated methodologies that can provide evidence of therapeutic safety and effectiveness. A background in pharmacodynamics and pharmacokinetics instills an appreciation to examine the intensity, ‘dose-response’, and strength of an intervention. Despite a strong quantitative background, pharmacists are increasingly using qualitative and mixed methods approaches to answer relevant research questions relating to medication use.

References
**Conclusion**

This educational intervention is designed to introduce the trainees to being a member of an interdisciplinary primary health care research team. Through this process they begin to learn about the importance of relationship-building as a basis for team work. In addition through their interactions with the TUTOR-PHC mentors and each other they learn about establishing mutual trust and respect - key aspects of effective teamwork. The variety of learning formats fulfill the requirements of training adult learners including providing 1) explicit and tacit knowledge, 2) collaborative co-created learning experiences and 3) opportunities for critical reflection of the trainee’s contributions to interdisciplinary research teams (Greenhalgh & Russell 2006; Fenwick, 2000).