DISSEMINATION OF HEART HEALTH PROMOTION

DISSEMINATION OF HEART HEALTH PROMOTION IN ONTARIO'S PUBLIC HEALTH SYSTEM: A SOCIAL ECOLOGICAL PERSPECTIVE

By

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ABSTRACT

The research reported in this dissertation examines the dissemination of heart health promotion within the Ontario public health system. It contributes to a relatively new research agenda to understand how to enhance implementation of the new public health; to apply knowledge of effective community- and population-based prevention. Three studies are reported, which extend research conducted in Ontario from 1994 to 1998 as part of the Canadian Heart Health Initiative Ontario Project (CHHIOP). Study one combined diffusion and social ecological theories to examine the dissemination process at the level of the public health system and over a ten year period. Studies two and three examined the implementation stage in more depth, with a view to understand variability across Ontario communities. Study two was a quantitative path analysis to identify determinants of 1997 levels of implementation, and study three was a comparative case study to understand change in implementation from 1994 to 1996. Main data sources were quantitative and qualitative data from CHHIOP. Findings reinforce the need for a systems view of dissemination; that dissemination is a long-term, iterative process; and that organizational capacity building is a vital part of the dissemination process, especially when new practices represent a significant departure from traditional concepts and ways of doing business. The research demonstrates that the interplay of internal organizational factors (e.g. champions, leadership, organizational structure) and external system factors (e.g. research, political priorities, experiences of other jurisdictions, partnerships) helps to

explain movement within and across dissemination stages. Findings suggest promising areas for dissemination research, including replicating similar research in other public health systems. Findings also suggest promising strategies to accelerate the dissemination of effective health promotion, including specific strategies to further enhance heart health promotion in Ontario.

DEDICATION

For my parents, Ken and Bess, who continue to offer unconditional support in all I do, even though I sometimes *"think too much!"* Sincere thanks, Mom and Dad. xo

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A dissertation is the responsibility of one person, but is the product of many.

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CHAPTER 1:
Overview of the Dissertation and the Research Program

CHAPTER OVERVIEW

This chapter describes the format of the dissertation and the research program. It has these sections:

- *Organization of the Dissertation*: describes the purpose and contents of each chapter
- *Research Focus and Rationale*: describes the assumptions guiding the research
- *Research Context*: provides an overview of the research setting and the Canadian Heart Health Initiative Ontario Project (CHHIOP) - a four year study (1994-1998) on which this dissertation research builds
- *Research Objectives*: articulates three research objectives, and describes the approach to meet each objective
- *Scholarly and Practical Significance*: describes the contributions to the geographic and health promotion literature, and to public health policy and practice
- *Author's Perspective*: describes relevant training and experiences that contribute to the content and process of this doctoral research

ORGANIZATION OF THE DISSERTATION

This dissertation is paper-based. The results of three studies are reported in three scientific papers (chapters 2, 3 and 4). All papers are published or in press in *Health Education Research*, and are reproduced with permission. Preceding the papers is an overview of the research program. The concluding chapter (chapter 5) summarizes scholarly and practical contributions of the research and suggests future research directions.

The scientific papers that appear in this dissertation have not been altered from those submitted for publication, with one exception. To avoid duplication, references have not been included for individual papers; rather, references from all chapters were consolidated into a single bibliography, which appears at the end of the dissertation.

RESEARCH FOCUS AND RATIONALE

This doctoral research is about dissemination; the process to close the gap between science and practice by increasing the use of practices known to be effective (e.g. Lomas, 1994; King et al., 1998; Kitson, 1999). The research focusses on the dissemination of heart health promotion within the public health system in Ontario. It is specifically concerned with organizational aspects of advancing relatively new directions in public health. Heart health promotion emphasizes community-based interventions, intersectoral action, and a population approach to promote healthy behaviours and environments. These features exemplify the 'new public health' (World Health Organization et al., 1986; Frenk, 1993; Crichton, 1997), and are the foundation for effective prevention of cardiovascular and other chronic diseases with similar underlying risk factors and

conditions (Elder et al., 1993; Brunbach and Malecki, 1996; MacLean, 1996). The enormous societal burden of cardiovascular disease, opportunities for prevention, and gaps in knowledge provide a compelling rationale for the research reported in this dissertation. Specifically:

- *The societal burden of cardiovascular disease is high.* Although morbidity and mortality from cardiovascular disease (diseases and injuries of the heart and blood vessels) (CVD) have been on a steady decline since the 1960s, CVD is the leading cause of death of over one-third of Canadians and the third leading cause of premature death under age 75 (Heart and Stroke Foundation of Canada, 1999). Costs to individuals and societies are unacceptably high. In Ontario, coronary heart disease (the most common form of CVD) claims 20,000 lives per year (PHRED, 2000). The Ontario health care system spends $2 billion a year treating coronary heart disease, and lost productivity due to work absences amounts to about $4.5 billion (Ontario Ministry of Health, 1993).
- *Premature cardiovascular disease is preventable.* While much remains to be learned about the causes of CVD, especially mechanisms to explain the higher rates of CVD among those lower on the social hierarchy (Wilkinson and Marmot, 1998), much is also known. Several risk factors (notably smoking, high blood pressure, high blood cholesterol, physical inactivity, obesity, and psycho-social stress) are both prevalent and modifiable, and thus provide opportunities for prevention (Heart and Stroke Foundation of Canada, 1999).

- *Effective prevention calls for an emphasis on a population approach to prevention achieved by comprehensive, community-based heart health programs.*

Notwithstanding other approaches, priorities for primary prevention are to reduce risk behaviours; notably, smoking, sedentary living, and unhealthy diet. Since these behaviours are prevalent throughout the population, the greatest reduction in death and disability from CVD will be achieved by the entire population making small changes to reduce their risk (i.e. a population approach) (Rose, 1992). The need for a population approach, and the fact that health behaviours are embedded within social and physical environments, underline the importance of community-based programs to prevent CVD (Elder et al., 1993). These programs typically combine health education and environmental change programs, and require the co-ordination of public, private and voluntary sector activities.

For population impact, heart health programs must be effective. Effectiveness of community-based heart health programs has typically been assessed using communities as the unit of intervention and analysis, and placing primary emphasis on behavioural and risk factor outcomes. The earliest projects, which began in the 1970s, report some positive outcomes [cf. (Vartiainen et al., 1994; Schooler et al., 1997)]. Subsequent projects have generally yielded modest and mixed results, with the inability to discern effects attributed, in part, to methodological challenges and secular trends [cf. (Mittelmark et al., 1993; Dobbins and Thomas, 1996; Ebrahim and Smith, 1997; Schooler et al., 1997; Sellers et al., 1997; Viswanath and Finnegan, 1997)]. Although more needs to be

learned about the effectiveness of community heart health programs, the knowledge base is sufficient to warrant their widespread application (Cameron et al., 1996; Frankish et al., 1996; Nutbeam, 1996).

- *Community-based heart health programs need to be integrated into the existing public health system.* Population impact also requires that effective programs have broad reach. Implementation of community-based programs, however, remains universally low (Crichton, 1997). In order to achieve widespread application of heart health programs, they must be integrated into the existing system of health programs and services (Health and Welfare, 1992; Advisory Board of the 2nd International Heart Health Conference, 1995). Public health services are particularly important, because of their focus on disease prevention and health promotion within populations. Accordingly, public health leadership is a central strategy for CVD prevention worldwide (Advisory Board of the 1st International Heart Health Conference, 1992).
- *Knowledge of dissemination of effective practices within public health systems is limited.* Despite a clear goal to enhance health promotion activities within existing public health systems, little is known about the dissemination process. Very few studies address dissemination of health promotion among organizations, in general, and among public health agencies, in particular (Johnson et al., 1996; Orlandi, 1996; Hawe et al., 1997; Kitson, 1999). Those that do, typically focus on single interventions (Steckler and Goodman, 1989; Orlandi et al., 1990; Parcel et al., 1990; Rogers, 1995) rather than a cluster of interventions characteristic of

comprehensive, community-based health promotion. Also, few studies examine the influence of organizational and environmental factors on agency practices (Orlandi, 1996; Richard et al., 1996), yet these factors are increasingly recognized as important determinants of organizational performance (Champagne et al., 1993), and as central to understanding the dissemination process (Dobbins et al., 1998; King et al., 1998).

These gaps in knowledge punctuate the need to better understand how new, evidence-based health promotion practices gain widespread acceptance and adoption within the public health system. As a result, a learning agenda is emerging for public health services research, including a particular focus on health promotion dissemination research (Johnson et al., 1996). A priority in this new field is to understand organizational aspects of health promotion, including barriers and incentives for organizations to adopt new health information and practices (Farquhar, 1996; Green and Johnson, 1996; Johnson et al., 1996; MacLean, 1996). This research priority is strongly rooted in, and can be usefully guided by, social ecological foundations (O'Donnell and Stranahan, 1996).

Drawn largely from systems theory, a social ecological approach to health promotion addresses the interdependencies between environmental (e.g. social, political, organizational) and individual (e.g. biology, psychology) determinants of health. From a social ecological perspective, therefore, organizational aspects of health promotion must be understood, including the wide range of factors influencing organizational practices (Stokols et al., 1996)

Research on promoting heart health is a case in point. Within Canada, knowledge development on dissemination of effective heart health practices is a priority within the Canadian Heart Health Initiative (CHHI) - a multi-phase, 15 to 20 year strategy launched in 1986 that aims to integrate heart health into the existing system of health. The Initiative was conceived to build capacity within the public health system to prevent cardiovascular, and other chronic diseases (Conference of Principal Investigators, 2000). Research in the most recent 'dissemination phase' examines organizational aspects of health promotion planning and delivery, with an emphasis on public health and other community health agencies. The research reported in this dissertation contributes to the dissemination research agenda of the CHHI. It extends research conducted in Ontario from 1994 to 1998 as part of the Canadian Heart Health Initiative Ontario Project (CHHIOP).

RESEARCH CONTEXT: The Canadian Heart Health Initiative Ontario Project (CHHIOP)

The setting for the research is the formal public health system in Ontario, Canada's largest province with a population of about 11 million. Public health services in Ontario are primarily delivered through public health departments, each administered by an autonomous local board of health and regulated by provincial legislation and program guidelines. CHHIOP was a four year project (1994 to 1998) undertaken as part of the dissemination phase of the Canadian Heart Health Initiative.

CHHIOP is one component of a long-term process to develop and implement effective heart health programs in Ontario. Chronologically, CHHIOP was situated between two heart health programs funded by the Ontario Ministry of Health and Long-Term Care. The first project was the Heart Health Action Program (1990 to 1996), in

which five demonstration communities were funded to develop and implement heart health programs suitable for the Ontario context (RBJ Health Management Associates, 1995). The second project is the Ontario Heart Health Program (1998 to 2003), which supports 37 local coalitions to disseminate heart health programs province-wide.

CHHIOP's scientific objective was to examine the factors influencing predisposition and capacity to undertake community-based heart health promotion in public health departments in Ontario. A mixed methods design was used to gather both extensive (province-wide quantitative) and intensive (in-depth qualitative) information on organizational activities related to heart health promotion (Table I). A quantitative survey was administered to all public health departments (N=42) at three points in time. Another province-wide survey was administered to approximately seven community agencies in each health unit jurisdiction (n=283). Agencies participating were those with a mandate in some aspect of heart health promotion. The quantitative surveys were primarily to describe levels of predisposition, capacity and implementation over time.

Qualitative, in-depth interviews were completed with public health staff in a subset of eight health units in 1995 (n=56) and 1997 (n=38). These qualitative studies were primarily used to explain observed levels of predisposition, capacity and implementation, and changes in these levels.

Table I: CHHIOP data collection

DATA SOURCE	YEAR			
	1994	1995	1996	1997
Surveys of Public Health Units (N=42)	X		X	X[a]
Survey of Community Agencies (n=283)			X	
Qualitative Studies in 8 Health Units		X		X[b]

[a]1997 health unit survey is in Appendix A
[b]Interview checklist and coding scheme are in Appendix B

CHHIOP contributed to the science of health promotion dissemination research. The study developed new concepts and methods for dissemination research, and knowledge of factors influencing implementation of heart health promotion. Main contributions include:

- Developing definitions and measures of predisposition, capacity and implementation;
- Integrating quantitative and qualitative methods;
- Operationalizing a social ecological approach (by exploring factors within public health organizations and in the surrounding environment);
- Developing a system to monitor organizational activities related to heart health promotion; and
- Generating knowledge of factors influencing implementation of heart health promotion, including empirical support for linkages between organizational motivation and capacity, and capacity and implementation.

CHHIOP scientific publications focus on:

- Measuring predisposition, capacity and implementation (Elliott et al., 1998a);

- Factors influencing implementation of heart health promotion (Taylor et al., 1998b; Elliott et al., 2000b);
- Developments in predisposition, capacity and implementation from 1994-96 (Taylor et al., 1998a);
- Community participation in heart health promotion (Robinson and Elliott, 1999; Elliott et al., 2000a); and
- Synthesis of contributions to science and practice (Riley et al., 2001a).

An important extension to CHHIOP research is to enhance *explanation* of observed levels of predisposition, capacity and implementation, including changes over time. Another extension is to understand the longer-term dissemination process for heart health promotion within the public health system. These extensions provide the rationale for the objectives of this doctoral research program.

RESEARCH OBJECTIVES

This doctoral research contributes to knowledge development and to health promotion policy and practice by addressing three objectives:

1) To describe and analyse the dissemination of heart health promotion in Ontario's public health system by combining diffusion and social ecological theories;
2) To understand levels, and changes in levels of implementation of heart health promotion in public health agencies from a social ecological perspective; and

3) To identify implications of these findings for theory, methods, policy, practice and research.

Figure 1 shows how the three objectives are ordered according to time. Objective 1 spans a period from 1989 to 1999 and had two purposes. One purpose was to better understand the dissemination process for heart health promotion within the public health system. A second purpose was to provide a temporal and developmental context within which to understand province-wide levels of predisposition, capacity and implementation observed from 1994 to 1997 in the CHHIOP research.

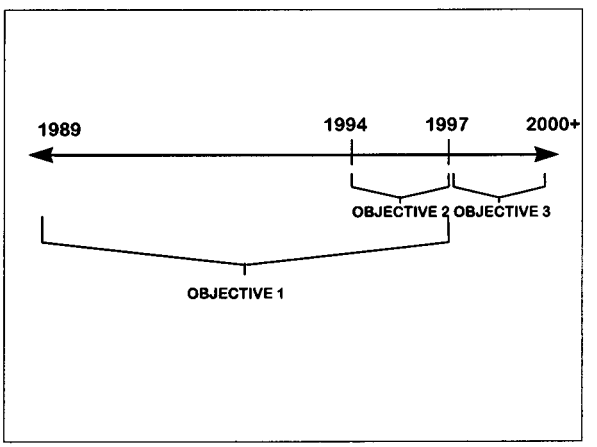

Figure 1: Research objectives in relation to time

Objective 1 was addressed by examining the first ten years of heart health promotion in Ontario. An holistic case study design was used with a focus on the formal public health system. Case study methodology was appropriate, since the dissemination of heart health promotion is a contemporary phenomenon and cannot be disentangled from the context in which it occurs, including the internal (public health) organizational setting and the external environment (e.g. institutional, political, social, economic) (Yin, 1994). Diffusion and social ecological theories guided data collection and analysis. Methods included document review, secondary data analyses, and interpretive analysis.

Objective 2 is nested within the time period for objective 1. It corresponds to the four years of CHHIOP research from 1994 to 1997 for which both extensive and intensive

information on heart health promotion within Ontario communities was collected. The primary purpose of objective 2 was to understand variability and changes in levels of implementation among Ontario's public health agencies. Two studies addressed objective 2. One study was a quantitative analysis to understand levels of implementation. Path analysis procedures were used to model 1997 levels of implementation of heart health activities. A second study used a comparative case study design to understand changes in implementation over the two year time period from 1994 to 1996. Two cases were selected on the basis of change in implementation; one in a positive direction and the other in a negative direction, and both experiencing larger changes than the average health unit in Ontario.

Objective 3 addresses implications of objectives 1 and 2 and, thus, extends beyond the formal research period. Scientific (i.e. theory, methods, research) and practical (i.e. public health policy and practice) implications are addressed. Contributions anticipated at the outset of the research program are described in the next section.

SCHOLARLY AND PRACTICAL SIGNIFICANCE

The dissemination process has been studied in many disciplines; for many new ideas, practices and technologies; and from many theoretical perspectives (e.g. communications, marketing, organizational theory). The dissemination research reported in this dissertation primarily draws on diffusion theory and health promotion literature, especially a social ecological view of health promotion. The application is heart health promotion, in particular, and the new public health, in general. The theoretical foundations and application could have a home in several disciplines, including (public)

health sciences, business administration, community health, health promotion, social work, communications, geography, and others. My selection of a disciplinary home was most strongly determined by the expertise and interests of my supervisor, and the opportunity to build on previous research I carried out as a health promotion consultant.

The relevance of this dissertation to geography is described first, followed by the significance to other aspects of science and practice.

Geographic Relevance of the Dissertation

The strength of different disciplines studying similar processes, such as dissemination, is in the types of questions asked and in the analytic perspective (Green and Johnson, 1996). This dissertation has strong points of intersection with geographic inquiry, including traditional streams in geography and present-day notions of health and place.

A first point of intersection is a focus on diffusion. Diffusion studies examine the spread of a phenomenon over space and through time, and have a long tradition in geography. They are most closely aligned with a long-standing stream of spatial analysis, with roots in urban economics. In essence, geographers extended economic analysis by incorporating a spatial dimension. Within medical geography, spatial analysis was used to map and model the spread of disease, often using sophisticated epidemiological modelling techniques. Geographic studies on the diffusion of AIDS are a case in point (Smallman-Raynor et al., 1992 cited in Johnston et al., 1994). Spatial patterning and use of health care delivery systems have also been explored in this tradition (Curtis and Taket, 1996). This dissertation does not apply sophisticated modelling techniques characteristic of

diffusion studies in geography, however, it examines ways to study diffusion (or dissemination), which may be applied in a geography of health promotion.

A second point of intersection is a fundamental interest in human - environment relations (i.e. an ecological perspective) (Jones and Moon, 1987). Specifically related to health, the geographic contribution is to understand relationships between humans and health/illness, mainly as mediated by the environment (e.g. political, economic, social, institutional). The importance of human - environmental interactions as they relate to health have become increasingly salient with an expanded notion of health and its multiple determinants (Evans and Stoddart, 1994). This dissertation examines how the organizational environment (specifically, public health and other community agencies) mediates the relationship between the population and health.

This dissertation is also relevant to geography because of a primary interest in understanding variation over space. This interest links squarely with a sensitivity to 'place', whereby general tendencies (such as adoption of health promotion activities) can get played out differently in different places because of the interplay of structural forces, institutional practices and human agency interactions (Jones and Moon, 1993; Kearns, 1995). Geographical differences, therefore, are part of the explanation of differences in health promotion practices, rather than a framework for identifying different levels of implementation. For example, health policies, such as community development and a population health approach, may be developed provincially, but be implemented differently in various locales. Characteristics and perceptions of the 'actors' in the system, including those of community leaders, health professionals and consumers interact with

the provincial policies to generate meaning and action. The interest in understanding local variation, and the use of a social ecological perspective to invoke understanding are strong connections between this dissertation and geography.

Contributions to Theory

The research in this dissertation advances theory in two main ways. First, it combines diffusion theory and social ecological theory to understand the diffusion process. Diffusion theory is most useful for describing the dissemination process, but is insufficient for explanation (Rogers, 1995). Many different theories have been used to assist with explanation, mostly 'middle-range' theories from social and community psychology (Green et al., 1991). This research capitalizes on the strength of diffusion theory by using it as a descriptive framework for the dissemination of health promotion. It explores relatively new territory by using social ecological theory to explain movement within and through various dissemination stages.

A second contribution to theory is further exploring the role of capacity building in the dissemination process. Guided by a growing literature on capacity building in health promotion, the research extends diffusion theory by positioning capacity building as an important stage (or function) in the dissemination process. Specifically, organizational capacity is hypothesized to play a central role in implementation and change in implementation.

Contributions to Methods

Although becoming increasingly common, mixed designs and methods are still considered somewhat non-traditional (Baum, 1995). While recognizing epistemological

conflicts, the three studies in this dissertation combine and integrate quantitative and qualitative methods in various study designs. Studies one and three use both quantitative and qualitative methods in case study designs whereas study two uses a quantitative analysis only in a longitudinal, observational design.

Another methodological advance is using case study and qualitative methods to study the dissemination process. Typical diffusion studies use extensive, cross-sectional, quantitative designs to identify factors influencing diffusion (Rogers, 1995). Qualitative and case study methods, however, are more appropriate to examine the interplay of various factors influencing the dissemination process (Yin, 1994). In studies one and three, this research explores the value and feasibility of using case study and qualitative methods for dissemination research.

Another rarely used technique in health promotion research is direct observation and participation in events. These techniques, however, can be powerful tools for explanation. Study one uses this technique. The author's role as a participant observer of heart health promotion in Ontario over a ten year period is one technique used to enrich the interpretive analysis.

Path analysis is also a seldom-used method in health promotion (Champagne et al., 1993), even though it provides a unique opportunity to examine structural relationships among predictor variables, and to distinguish between their direct and indirect effects. In study two, path analysis is used to identify various factors influencing dissemination.

Contributions to Policy and Practice

The objective of dissemination is to close the gap between what is known about effective practices and what is applied. A successful dissemination research program, therefore, will help policy makers and practitioners apply practices known to be effective.

One practical purpose of this research was to identify some strategies for Ontario to further enhance dissemination of heart health promotion within its public health system. Another practical aim was to generate some lessons about the dissemination of health promotion more generally. The lessons may be relevant to issues beyond heart health and to settings beyond Ontario health units. With respect to issue areas, the findings may be relevant to programs similar to heart health promotion, including those which are community- and population-based, collaborative and intersectoral. The research, then, is relevant to the new public health (Crichton, 1997), and the primary prevention of many chronic diseases with common risk factors and conditions. With respect to settings, the findings may be most relevant to systems and organizations with features similar to Ontario's public health system.

AUTHOR'S PERSPECTIVE

The researcher is a major instrument in any research program. Researchers shape the research questions, design, methods and interpretation (Miles and Huberman, 1994). They are guided by a complex interplay of knowledge, skills, experience and values. Researcher as instrument is a particularly dominant theme in qualitative research and interpretive analysis (Patton, 1990). Articulating one's perspective is a useful adjunct to

detailed descriptions of theory and methods, to allow others to assess the strengths and limitations of any interpretive account.

In this section, I highlight aspects of my training and experience that are most relevant to this doctoral research.

My formal, post-secondary education is somewhat eclectic. It includes a bachelor's degree in Physical Education (McMaster); a Masters in Health Studies (University of Waterloo); and doctoral training in health geography (McMaster). Three features of this educational path are highly relevant to this doctoral research. One is an increasingly broad view of health, moving from a medical model, to a biobehavioural model, to a socio-environmental view. Also, my focus shifted from the individual, to groups, then to organizations and populations.

A second feature of my formal education is exposure to various theoretical approaches. My Masters program exposed me to a wide range of theories used to explain health behaviour. Most of these theories were from social and community psychology (e.g. Health Belief model, Theory of Reasoned Action and Planned Behaviour, Diffusion of Innovations, community organization, stages of change, etc). Doctoral training in social geography enlarged my exposure to include numerous social science theories, including perspectives with a primary focus on individual agency (e.g. stress and coping) and structures (e.g. political economy, postmodernism, feminism). An emphasis in the doctoral program was an ecological perspective, with a focus on relations between humans and the social and physical environment.

Also in my post-secondary education, I was exposed to a variety of research designs and methods. Throughout my Masters training, my engagement with the experimental method and quantitative analyses were dominant. My Masters thesis was an experimental study to examine the influence of acute exercise on reactivity to psychosocial stress. Doctoral studies expanded my exposure, especially to qualitative methods, and to observational, quasi-experimental, and case study designs.

Throughout my graduate studies - on a part-time basis for the last year of my Masters and mostly a full-time basis throughout my doctoral studies - I maintained professional roles as a health promotion consultant and practitioner. As a consultant, I specialize in program evaluation and community-based research, with a primary focus on cardiovascular disease prevention and heart health promotion. Some of my projects include: resource development on health promotion planning and policy (e.g. planning guide for District Health Councils; community mobilization manual for public health and other community agencies); program evaluation (e.g. Community Food Advisor Program, Healthy Eating Manual, Heart Health Action Program); and research (e.g. CHHIOP; environmental scan on national research policy; synthesis of literature on decision support systems and effectiveness of community-based heart health promotion programs). As a practitioner, I am a long-time volunteer with the Heart and Stroke Foundations of Ontario and Canada. As a volunteer, I have performed a variety of roles in the areas of health promotion programs and policy development, at all levels in the organization. My professional experiences sparked my curiosity about many aspects of health promotion, including the tenuous links between research, policy and practice.

A major professional stimulus for exploring doctoral research opportunities was questions arising from the evaluation of the Heart Health Action Program. This evaluation studied five demonstration communities in Ontario in order to learn about how to effectively plan and implement comprehensive heart health programs in diverse locations in Ontario. The experiences I observed in these five communities, and the intellectual challenge to understand processes and events planted the seeds for further inquiry.

Following on the heels of the heart health demonstration communities in Ontario was the Canadian Heart Health Initiative Ontario Project. This project presented as a research opportunity that was aligned with my larger career commitment to studying the dissemination of heart health promotion in Ontario.

In the CHHIOP research, I had roles as a consultant and as a doctoral student. These roles were distinct, yet provided a useful synergy. As a consultant, main roles were as follows:

- Completed formative research and worked with CHHIOP Investigators and other stakeholders to focus the directions of the research;
- Assisted in writing the funding proposal with primary responsibility for writing sections on the formative research and the health promotion system in Ontario;
- Assumed a lead role in developing and administering the three province-wide surveys of public health units; and
- In addition to the papers in this dissertation, co-authored papers on the CHHIOP research (Taylor et al., 1998a; Elliott et al., 2000b; Riley et al., 2001a). The most substantive investment was the most recent paper synthesizing the main

contributions of CHHIOP. I authored this paper on behalf of the CHHIOP Investigators.

This dissertation is the main product of my roles in CHHIOP as a doctoral student.

CHAPTER 2:
Exploring the Dissemination Process - An Holistic Case Study

CHAPTER OVERVIEW

The paper in this chapter addresses objective one of the research program. The study combines diffusion and social ecological theories to examine the dissemination process for heart health promotion in Ontario.

The paper is single authored, with feedback from supervisory committee members and a colleague. My academic and consulting affiliations are both relevant, since the methodology includes the author's role as a participant observer within the health promotion environment in Ontario over the ten year study period.

The paper is in press in *Health Education Research*. The version of the paper accepted for publication is in this chapter, with the exception of references and acknowledgements. References are part of the consolidated bibliography for the full dissertation.

DISSEMINATION OF HEART HEALTH PROMOTION IN THE ONTARIO PUBLIC HEALTH SYSTEM: 1989-99

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ABSTRACT

This paper reports the results of an analysis of the dissemination of community-based heart health promotion strategies. The research draws on diffusion and social ecological theories to study the first ten years of heart health promotion in the public health system in Ontario, Canada. Using case description and interpretive analysis, the study describes developments in five stages of dissemination and examines the interplay of factors operating in the internal organizational setting and the external environment in order to explain these developments. Findings demonstrate that dissemination of health promotion is a long-term, iterative process involving multiple stages. Dissemination is influenced by a complex interplay of factors operating within the public health system (especially traditional public health practice and champions), and factors in the environment in which the public health system operates (especially research, practice information and health policies). Implications are that policy makers should: take a long-term view of dissemination; identify intermediate and long-term goals consistent with dissemination stages; and capitalize on internal and external forces supporting dissemination goals. Similar case study research in other public health systems and time periods, and in more advanced stages of dissemination will add further insight into the dissemination process.

INTRODUCTION

The 'new public health' emphasizes multiple determinants of health, community-based interventions, a population approach to prevention, and intersectoral action (World Health Organization et al., 1986). It is strong on principles yet weak on implementation (Crichton, 1997). How do new ideas and practices such as those that epitomize the new public health gain currency, acceptance and adoption? That is the fundamental concern of dissemination (Dunn et al., 1994; Tenove, 1999) and of this paper. The specific focus is on heart health promotion; an area in which a concerted effort has been made to integrate strategies of the new public health into the existing public health system.

Dissemination has international and multidisciplinary significance, especially as the gap widens between research evidence for practice and actual practice. The worldwide emphasis on health promotion and disease prevention makes dissemination of public health programs particularly important (Brunbach and Malecki, 1996; MacLean, 1996). A case in point is the international movement to promote heart health. Three international declarations on heart health call for a multi-faceted strategy with an emphasis on community-based programs that promote behaviour change in populations and change social and physical environments to support healthy behaviours (Advisory Boards for the 1st, 2nd and 3rd International Heart Health Conferences, 1992, 1995 and 1998, respectively). Within Canada, knowledge development on dissemination of effective heart health practices is a current priority (Stachenko, 1996). This priority is part of the Canadian Heart Health Initiative (CHHI); a multi-phase, 15 to 20 year strategy (launched in 1986) that aims to integrate heart health into the existing system of health. A policy

development phase was followed by provincial surveys of cardiovascular risk factors and a demonstration phase in which communities within each province developed and evaluated programs for possible widespread application. A subsequent dissemination phase, completed in Ontario in 1998 and at various stages in other provinces, aims to increase adoption of best practices in heart health promotion in communities across Canada (see Elliott et al., 1998a for more detail on the CHHI). The research in this paper can be used to plan future directions of the CHHI and initiatives in other countries that aim to integrate heart health promotion into existing public health systems. Findings can also inform plans to increase the application of community-based, primary prevention strategies in areas other than heart health.

Despite general agreement on critical elements of dissemination, little is known about the dissemination process (Dunn et al., 1994; Dobbins et al., 1998; Kitson, 1999). What is clear is that dissemination stages do not necessarily occur in a linear, time-ordered sequence (Rogers, 1995; Kitson, 1999). Also, the context in which new practices are introduced is increasingly recognized as central to understanding the dissemination process (Dobbins et al., 1998; King et al., 1998). This paper reports the results of a case study guided by diffusion and social ecological theories (Rogers, 1995; Green et al., 1996). It describes and analyses the dissemination of heart health promotion in Ontario's formal public health system over a ten year period. The object of dissemination is implementation of comprehensive, community-based programs that: a) address multiple behaviours (notably, tobacco use, physical inactivity, unhealthy diet), b) target populations in several community locations (e.g. schools, workplaces, health care

settings), and c) use a variety of population-based approaches (e.g. community-wide education, environmental and policy initiatives (Burns, 1991; Elder et al., 1993; Nutbeam, 1996). The study aims to answer two main questions: 1) How has the Ontario public health system progressed through the dissemination stages for heart health promotion? 2) How does the interplay of factors within and outside the public health system help to explain the dissemination process? The research focuses on the dissemination process at a provincial level. It provides a temporal and developmental context within which to understand findings from the Ontario project of the Canadian Heart Health Initiative, which was conducted from 1994 to 1998 and examined factors influencing implementation of heart health promotion activities in Ontario public health agencies (Riley et al., 2001b).

METHOD

Case study methodology is particularly useful for exploratory research and when the study phenomenon cannot be disentangled from the context in which it occurs (Yin, 1994) - both characteristic of the dissemination of heart health promotion. The most useful cases to study will display the phenomenon of interest, and will have information available from various perspectives and methods to examine the phenomenon. Heart health promotion in Ontario's public health system meets these criteria. It has a ten year history, culminating in the Ontario Heart Health Program (which began in 1998) which supports 37 local coalitions to disseminate heart health programs province-wide. The program aims to integrate heart health promotion into the existing public health system. How and why the province-wide program was launched can provide insight into how to

disseminate similar public health initiatives. Multiple data sources are also available to study the dissemination process in Ontario. Central among these are quantitative and qualitative data from the Canadian Heart Health Initiative Ontario Project (CHHIOP) conducted from 1994 to 1998.

Research Setting

Ontario is Canada's largest province with a population of approximately 11 million. Public health services are primarily delivered through regional health departments, each administered by a board of health and regulated by provincial legislation and program guidelines. Public health programs are cost-shared by provincial and municipal governments, with a total combined annual budget of approximately $300 million (1997 level) and 4,600 full-time equivalents (FTEs) or approximately 43 FTEs per 100,000 population (in 1997). Local boards range widely in per capita funding ($18 to $60 in 1997), population served (39,354 to 721,130 in 1997), and geographic location and size.

Design

The study period began in 1989 with the first evidence of a provincial focus on heart health promotion. The marker event was a new public health mandate to promote healthy lifestyles (Ontario Ministry of Health, 1989). This new mandate shifted the focus of public health to non-communicable disease prevention.

Study question #1 (description of the dissemination process): Primarily guided by diffusion theory (Rogers, 1995), the case study was expected to show that the dissemination process involves five stages (Table I). Each stage is defined by one or more objectives. Collectively, the stages cover the development, delivery and evaluation of

heart health promotion activities. Some activities must happen before others, but activity can take place in more than one stage at a time and movement can be forward or backward through stages. Case description was used as a general analytic technique (Yin, 1994). A chronology of events by dissemination stage was developed for the time period from 1989 to 1999. 'Events' included developments related to heart health or multiple risk factor programming in Ontario's public health system and were classified into stages based on their main purpose.

Study question #2 (explanation of dissemination process): Guided by a social ecological view (McLeroy et al., 1988; Simons-Morton et al., 1988; Green et al., 1996; Orlandi, 1996), the study explored the interplay of factors within the public health system and the broader environment in order to explain the dissemination process. Within the public health system, main factors that may influence dissemination include: perceptions of community health promotion (e.g. relative advantage over existing practice) (Rogers, 1995); skills and resources for heart health promotion (e.g. assessment of needs, planning, evaluation, community mobilization) (Schwartz et al., 1983; Goodman et al., 1997); leadership (Rogers, 1995); and mandate (Kreuter, 1992). Within the external system, some main influencing factors include: interorganizational relationships or partnerships (Butterfoss et al., 1993; Goodman et al., 1998); technical assistance or capacity building activities (Florin et al., 1993; Jackson et al., 1994), and contextual factors such as social and physical characteristics of communities and trends in the health and social policy environment (Green et al., 1996). In this study, internal and external factors supporting and constraining major events related to heart health promotion were identified. Factors

Table I: Dissemination stages for heart health promotion in the public health system[a]

Dissemination Stage	Objectives of Each Stage
Problem/ Opportunity Identification	• A need is identified to promote heart health or individual risk factors • An opportunity to improve public health practices to promote heart health is recognized, especially by key decision makers
Innovation Development or Adaptation	• Heart health promotion activities are found or developed that are appropriate for the public health system and the local context • Public health professionals responsible for implementation perceive that heart health promotion activities are compatible with public health practice; superior to current practice; easy and flexible to implement; possible to try on a small scale and terminate • Heart health promotion activities achieve their intended effect • Heart health promotion activities are revised to better suit local conditions
Strengthening Local Predisposition and Capacity	• Public health agencies are motivated to undertake heart health promotion activities • Public health agencies are aware of heart health promotion activities and their proper use • Sufficient and appropriate staff and financial resources are available for heart health promotion activities • Champions for heart health promotion exist in the public health system
Local Implementation	• Heart health promotion activities are implemented according to set standards • The meaning of heart health is clarified; heart health promotion activities are re-invented to accommodate public health agency needs and structures; and public health agencies are changed to fit with heart health promotion activities (i.e. redefining/ restructuring) • Implementation of heart health interventions increases over time • Heart health promotion is incorporated into the regular activities of public health (i.e. routinized)
Monitoring, Evaluation and Research	• Achievement of goals, objectives and targets for change are evaluated • Organizational predisposition and capacity for heart health promotion are monitored • Implementation of heart health promotion activities is monitored • Outcome evaluations address the scientific and social validity of heart health promotion activities, and are performed commensurate with investment in the program • Research is conducted to support the development and dissemination of heart health promotion activities • Monitoring, evaluation and research are used to inform other stages

[a]The definition of stages is primarily informed by Rogers (1995) and Orlandi (1996). A main adaptation is the stage to strengthen local predisposition and capacity, informed mainly by Green and Kreuter (1991) and a growing literature on capacity building in health promotion (e.g. Schwartz et al., 1993; Goodman et al., 1997).

were classified as 'internal' if they were under the direct control of the public health system, and 'external' if they were not. The relative influence of factors was determined based on: a) perceptions of factors influencing developments from public health professionals and other provincial and local stakeholders; b) changes in factors in relation to the timing of events; c) direct observation; and d) theoretical plausibility.

Data Sources

Multiple data sources were used for this study. All written documents were coded manually by the author, for dissemination events (study question #1) and factors influencing these events (study question #2). Data sources are described below and listed in the Appendix.

Provincial public health policy documents: Policy documents were initially identified by the author. A computerized search of Ontario government documents was also conducted using the following key words: population health, health promotion, heart health promotion, CVD prevention, tobacco, nutrition, physical activity, and chronic disease prevention.

Reports and publications from heart health programs in Ontario: Major heart health initiatives in Ontario include the Heart Health Action Program (HHAP) (1990-1996); the Canadian Heart Health Initiative Ontario Project (CHHIOP) (1994-1998); and the Ontario Heart Health Program (OHHP) (1998-2003). Reports from these initiatives were identified by the author, in consultation with government officials. Two major sources used were reports from CHHIOP qualitative studies. In-depth interviews were completed in a subset of eight health units in 1995 and 1997 (with 50% overlap of units). Units were

selected to achieve maximum variation on levels of implementation and other characteristics related to heart health promotion (e.g. region, per capita funding, population served). For each study, respondents included five to seven public health staff from each unit who were most involved in managing and delivering heart health programs (n=56 in 1995; n=38 in 1997). The 1995 study also included focus groups with representatives from other community agencies. Using thematic analysis, the qualitative studies were primarily used to explain observed levels of predisposition, capacity and implementation.

Publications of Public Health and Epidemiology Report Ontario (PHERO): PHERO is a monthly publication of the Public Health Branch, Ontario Ministry of Health. The primary audience is public health researchers and practitioners in Ontario. A manual search of PHERO publications from 1990 to 1999 was conducted to retrieve articles related to heart health promotion and healthy lifestyles programs.

Administrative staffing and budget reports for local boards of health: These reports were prepared by the Public Health Branch to show how the financial and staffing resources in public health have been allocated provincially across boards of health in relation to public health goals and their respective mandatory programs.

CHHIOP surveys of public health units: Secondary data analyses were performed on quantitative, province-wide surveys of public health departments completed in 1994, 1996 and 1997 (described in detail in Riley et al., 2001b). A written, organizational response was completed jointly by the local Medical Officer of Health and staff most involved in heart health promotion in all 42 health units at all three data collection times. The surveys

were primarily to describe levels of predisposition, capacity and implementation over time. Predisposition was measured as the perceived importance of undertaking 18 organizational practices to support heart health (on a four-point scale from 'not at all important' to 'very important'). Organizational practices were organized into four areas: assessment, planning, supporting implementation and evaluation. Capacity was measured as the perceived effectiveness of performing the same 18 organizational practices (on a five-point scale from 'not at all effective' to 'very effective'). Implementation was measured for 75 community-based activities, organized by risk factor and setting (on a five-point scale from 'not aware of any organized activity' to 'a high level of implementation'). Measures are described in more detail elsewhere (e.g. Elliott et al., 1998a ; Riley et al., 2001b).

Published and unpublished literature on trends and issues in public health and (heart) health promotion: Some key sources were identified by the author. Topics included: trends and issues in public health nationally and in Ontario; trends and issues in health promotion policy and practice; and descriptions and evaluations of community heart health programs in jurisdictions other than Ontario.

Direct observation: As a health promotion researcher, consultant, and volunteer, the author was a participant observer throughout the full study period (see specific involvements in the Appendix).

RESULTS: The first ten years of heart health promotion in Ontario

Figure 1 (on page 34) summarizes major events related to heart health promotion in Ontario from 1989 to 1999. It shows multiple developments in all five stages of the

dissemination process. An overall progression through stages is apparent, with various iterations within and between stages. Figure 2 shows main internal organizational factors and external system factors that help to explain the timing and character of selective events. The interplay of factors is unique for each event.

Results for study questions 1 and 2 are presented by stage. The superscripts refer to numbered data sources in the Appendix.

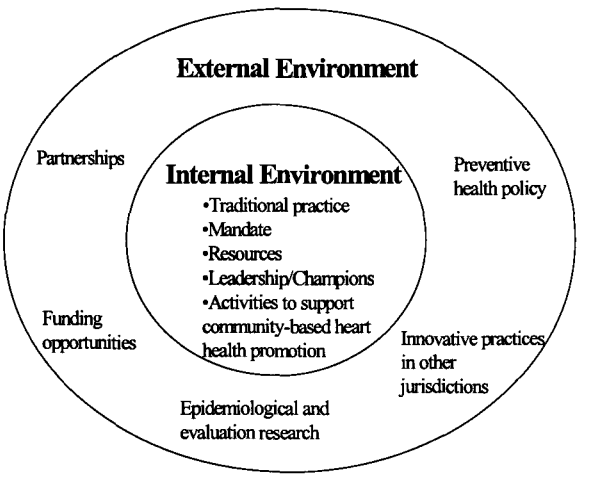
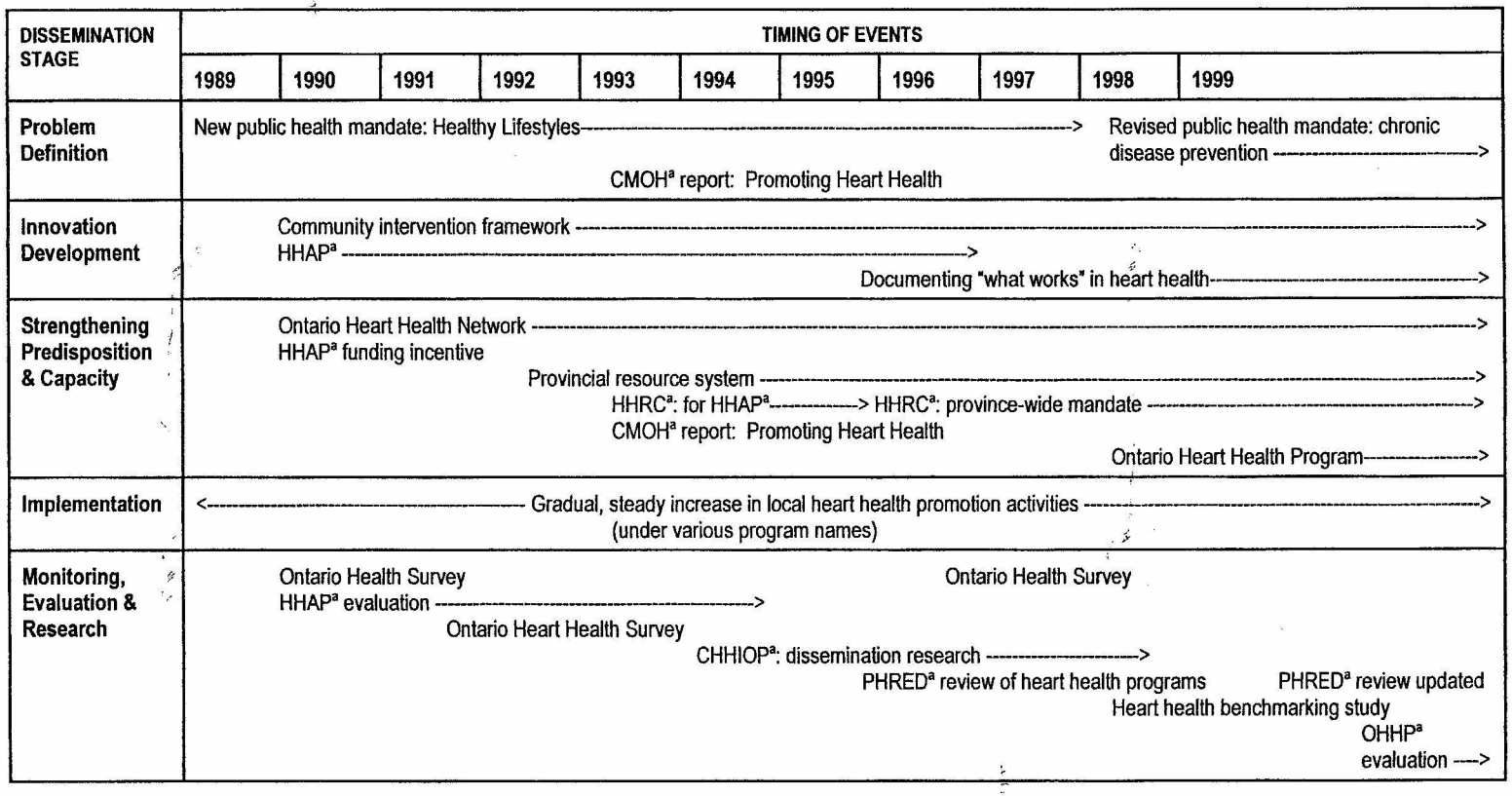


Figure 2: Internal organizational and external system factors influencing the dissemination process

Problem Definition: At the provincial level, the primary strategy for defining the problem of cardiovascular disease was the public health mandate[1]. Specifically, the 1989 guidelines for local boards of health introduced a set of healthy lifestyles programs, including tobacco use prevention, nutrition promotion and physical activity promotion. The healthy lifestyles programs identified a major opportunity to improve public health practice to prevent premature death and disability from cardiovascular and other chronic diseases[5, 36]. The lifestyles programs were taking a new approach to the challenge of ischemic heart disease[5, 10]; that is, a population health approach aimed at lowering the risk for the entire population through behavioural and environmental change (Table II).

Figure 1: Summary of heart health promotion activities in Ontario, 1989 to 1999



[a] Abbreviations (in alphabetical order): CHHIOP (Canadian Heart Health Initiative Ontario Project); CMOH (Chief Medical Officer of Health); HHAP (Heart Health Action Program); HHRC (Heart Health Resource Centre); OHHP (Ontario Heart Health Program); PHRED (Public Health Research and Education Development Program)

Table II: Shifts in public health practice with the healthy lifestyles programs[a]

Characteristic	Traditional public health	Healthy lifestyles mandate
Clients	Individuals	Populations
Targets of change	Risk factors	Health behaviours and social and physical environments
Dominant public health strategies	Health education and screening	Education, environmental and policy initiatives
Responsibility for public health	Public health agencies	Multiple sectors
Role of the public health professional	Educator and teacher	Facilitator and partner
Organizational structure	Hierarchies and disciplinary divisions	Networks and multidisciplinary teams

[a] This table is a synthesis of literature comparing traditional public health practices and the new public health. Some recent comprehensive reviews include Crichton (1997) and Shah (1998).

Several factors contributed to the introduction of the new public health mandate. Intellectual support was one factor[25, 38, 39], but was insufficient to shift public health policy on its own. A strong internal champion and political support were other necessary ingredients[10, 18]. The Chief Medical Officer of Health (CMOH) for the province championed the efforts internally. New to his position, the CMOH had a vision to re-vitalize public health[1]; to shift the emphasis towards chronic disease prevention. His vision was shaped, in part, by external forces. Main forces included: an abundant literature on disease and behavioural epidemiology[32]; recent work completed by the Premier's Council on Health Strategy to establish health goals for Ontario[8]; innovative practices in other jurisdictions (notably, Minnesota Heart Health Program)[15]; and a health policy environment aiming to enhance prevention and health promotion, especially by promoting individual behaviour change[7].

The definition of CVD as a problem of unhealthy lifestyles was reinforced every three to five years throughout the study period. It was reinforced in a subsequent public health mandate[6], policy documents[5], and heart health programs, including the Heart Health Action Program[15] and the Ontario Heart Health Program[14]. For each initiative, provincial public health authorities capitalized on circumstances in their internal and external environments. For example, the CMOH capitalized on his authority (internal factor) and the knowledge of prevention (external factor) in order to publish his 1993 report of the CMOH *Promoting Heart Health*[18, 39]. In 1997, internal structural changes (e.g. an upcoming shift to 100% municipal funding for public health programs) were a major stimulus for revising the provincial program guidelines[12]. The healthy lifestyles programs were consolidated into a single chronic disease prevention program, and program standards were made more measurable and prescriptive (Table III). These changes were to encourage at least a minimum investment in chronic disease prevention programs by local politicians and to facilitate enforcement.

Innovation Development: During the ten year study period, Ontario experienced three main phases in innovation development. The first phase was conceptual and involved developing a community intervention framework. In the late 1980's, the Ontario Ministry of Health adopted a comprehensive, population-based framework that was applied to single and multiple behavioural risk factors[3, 4]. The framework was maintained throughout the study period with minor refinements[14, 15].

Table III: Sample provincial public health objectives for heart health promotion, 1989 and 1997

Sample provincial public health goals	
1989[1]	1997[6]
Disease objectives	
	a. To reduce the mortality from ischemic heart diseases by 25% by the year 2010. b. To reduce the morbidity from diabetes and hypertension.
Behavioural objectives	
a. to reduce the proportion of adults and youth who use tobacco	a. to reduce the proportion of 12-19 year olds who smoke daily to 10% by the year 2005
b. to increase the proportion of the population with sound nutritional practices	b. to reduce dietary fat intake to an average of 30% of calories or less among people age 18 and older by the year 2010
c. to increase to 75% the proportion of adults who take part in regular physical activity by 2000	c. to increase to 40% the proportion of all adults who include at least 30 minutes of accumulated, moderate physical activity on most if not all days of the week by the year 2010
Environmental objectives	
a. to reduce the proportion of adults and youth who are exposed to second-hand smoke	a. to increase the proportion of smoke-free public places and workplaces to 100% by the year 2005 b. to increase the proportion of smoke-free homes by the year 2010

An interplay of internal and external factors contributed to the conceptual development. In the late 1980's, a political priority to increase the emphasis on health[8] (external), tests of community-wide approaches for the primary prevention of CVD in Europe and the United States[28, 35] (external), and a new public health mandate[1] (internal) set the stage for innovation in Ontario. A critical internal factor to make things happen was a new internal structure - the Community and Health Promotion Branch (CHPB) - with a mandate to catalyse health promotion in Ontario[2], and a Director who had both a vision and passion for a health promotion system in Ontario[18, 39].

A second phase of innovation development in Ontario was demonstration projects. The Heart Health Action Program (HHAP) was launched in 1990 with a goal to develop and test heart health programs at the community level[15]. Five diverse locations were selected so that approaches developed would be suitable to various settings in Ontario.

A mix of internal and external factors contributed to the timing and character of the HHAP. The broadest context was a supportive political environment for health promotion[8] (external), as well as research and practice information from jurisdictions outside of Ontario (external), such as the Canadian Heart Health Initiative[30] and international CVD prevention research and demonstration projects[35]. Two main internal factors supporting the HHAP were the new public health mandate in healthy lifestyles[1] and the mandate of the CHPB to catalyse community health promotion[2]. Public health authorities (Directors of the Public Health Branch and CHPB) capitalized on these supportive conditions and earmarked funds for heart health promotion when an investment opportunity presented itself in the late 1980s[18].

The third phase of innovation development was knowledge synthesis, with a goal to identify promising interventions for widespread application. Near the sunset of the demonstration projects, health units and other agencies across Ontario were looking to the HHAP for guidance on how to apply lessons learned from these projects in their own jurisdictions[10]. Public health professionals were keenly interested in "things that work", including specific products (e.g. pamphlets, displays, activity kits), statistical and review literature, practical strategy and planning material, media tools, information on risk factor strategies, and evaluation strategies. As a result, 1995 to 1998 was a transition phase to

bridge the gap between demonstration and dissemination. A priority during this phase was knowledge synthesis to identify and disseminate "best practices" for heart health[9, 13, 21, 27].

Efforts to identify best practices were made possible by a growing public health infrastructure in Ontario[29] (internal factor), as well as complementary efforts outside of Ontario[28, 31] (external factors). A major support within the public health system was a mandate to promote evidence-based practice in public health[33], including community-based heart health programs. Another internal support was the mandate of a provincially funded resource centre (i.e. Heart Health Resource Centre [HHRC]) to disseminate heart health programs[13, 18].

Strengthening Predisposition and Capacity:

Highly motivated....

At a provincial level, motivation for heart health promotion among local public health professionals remained high throughout the full study period. Over half of health units submitted applications for the HHAP; average levels of predisposition for heart health promotion, measured in CHHIOP from 1994 to 1997, were consistently high[16]; and all health units were participating in the Ontario Heart Health Program (OHHP).

Levels of motivation were influenced by both internal and external factors. Dominant internal supports were the public health mandate and funding incentives for heart health programs[13]. The opportunity for provincial funding was a particularly strong influence in 1997 (with the upcoming change to 100% municipal funding for public health programs) because of its interaction with competing local priorities (external factor). Staff speculated that "the future of heart health promotion will rest largely in the

hands of the Health Promotion Branch...through the Ontario Heart Health Program funding", since "it may be a difficult task, especially administratively, to convince municipal governments that heart health deserves the priority that it currently receives"[12] (p.69).

...but need the skills and resources

Throughout the 1990s, all skills and resources for heart health promotion (including financial and human resources, leadership, organizational structures, and partnerships) (Table IV) increased steadily, reaching modest levels by 1998. Main areas of strength were provincial funding for health promotion, staff expertise and a strong commitment to community partnerships. All skills and resources, however, had room to improve, especially sustained support for heart health promotion from local boards of health, public interest in heart health promotion and partnerships with agencies not traditionally involved in health promotion. The intersection of internal and external factors helps to explain the modest levels of skills and resources among Ontario local public health professionals. New directions in public health and health promotion[10, 17, 18, 32] (external factors) explain the low levels of skills and resources for heart health promotion at the beginning of the study period. Strengthening skills and resources during the 1990s was constrained by several factors, including: limited funding for prevention within the health system[29] (external factor); limited funding for heart health promotion within the public health budget[19, 24] (internal factor); and an increasingly broad mandate in public health, whereby local public health professionals felt they were being "stretched thinner

Table IV: Trends over time on some skills and resources for heart health promotion

Some skills and resources for heart health promotion	**Trends throughout the 1990s**
Public health budget for tobacco, nutrition and physical activity programs	• Approximately 10% of public health resources by 1997[17] • 3.6% increase from 1992-97[24] • Some additional resources through other public health programs (e.g. Healthy Growth and Development Program)[24]
Provincial funding incentives for heart health promotion	• 1990 (HHAP): $1 million per year for 5 years for 5 communities[15] • 1998 (OHHP): $3.4 million per year for 5 years for 37 communities[14]
Staff time spent on heart health promotion activities	• Among those staff most involved in heart health promotion, 12% increase in the average time spent on heart health activities from 1994-97 (71% of time, on average, in 1997) (CHHIOP health unit surveys)
Staff expertise	• Increases in knowledge and skills related to population health, heart health promotion, community development and organization, partnerships[10, 11] • By 1997, some areas for further improvement: clarifying the difference between population and individual approaches and learning how to work with other agencies[10, 11]
Leadership for heart health promotion	• Increased leadership for heart health promotion from health units; the average health unit reported taking a lead role in 31% of an inventory of 75 heart health promotion activities in 1994 and a lead role in 42% of activities in 1997 (CHHIOP health unit surveys) • Leadership from health units variably present across the province[10]
Organizational structure	• Shift away from a traditional disciplinary focus to interdisciplinary planning and programming[10, 11] • Many units restructuring and reorganizing at the end of 1997[11]
Organizational practices to support heart health promotion	• Effectiveness of organizational practices improved, including practices related to assessment, planning, mobilizing resources for implementation, and evaluation (CHHIOP health unit surveys) • By 1997, health units were "somewhat effective", on average. They were most effective with assessment and planning practices and least effective with evaluation practices (CHHIOP health unit surveys).

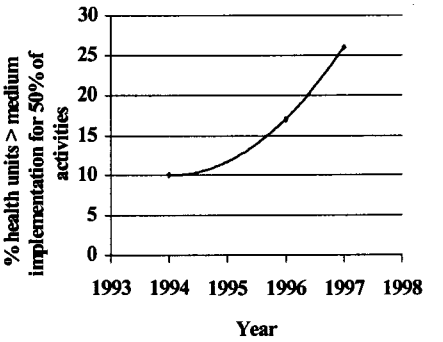
Continued on next page

Some skills and resources for heart health promotion	Trends throughout the 1990s
Partnerships with community agencies	• Increased number of and participation in networks related to heart health at provincial, regional and local levels (CHHIOP health unit surveys) • Uniform, strong commitment to community partnerships within public health[10] • Partnerships most advanced with schools and community agencies and less advanced with non-traditional partners such as municipal government, workplaces, and health care offices[10, 11] • "[T]he state of play of relationships with other community agencies is variable with some units still in the initial stages of learning how to work with community agencies. There is still a lot to be learned about how to translate philosophy into practice"[10 (p.93)]
Public interest in heart health promotion	• Sustained weak relationship between public health and the public. The profile of public health is "non-existent"[10 (p.66)], and the public maintain a traditional view of public health as an organization that "gives inoculations" and goes "out to schools to check kids eyes and teeth"[10 (p.66)]

and thinner and thinner" and "...didn't think (they) could take on any more new mandates and expect (to) do them well"[10 (p.89)] (internal).

The increases in skills and resources observed in Ontario were also the result of internal and external influences. External factors provided a supportive context for enhancing public health capacity within Ontario; notably, worldwide emphasis on strengthening public health to impact on chronic disease[32]; and a more established policy focus on disease prevention and community health promotion[8]. Developments in the public health infrastructure in Ontario were more directly responsible for observed increases in skills and resources[10, 12, 17]. Locally, changes such as new hiring practices, allocation of time to healthy lifestyles and heart health programs, and new organizational structures enhanced skills and resources for heart health promotion. A provincial resource system to support community health promotion also enhanced local capacity. Since 1992, multiple components of a health promotion resource system were established, including

peer networks, funding incentives, training and consultation supports and written resources[18]. Although the impact of specific components remains unclear, organizational level research provides evidence of an association between use of resource centres and organizational capacity[16].



Implementation was measured at three points in time: 1994, 1996 and 1997. The line joining the data points estimates progress with implementation over the four year period.

Figure 3: Percent of health units implementing ≥ 50% of heart health promotion activities at or above a medium level of implementation, 1994 to 1997

Local Implementation: By the end of the study period, Ontario was at an early stage of implementation. As of 1997, although most health units had established heart health programs, the average program only had a 2.6 year history and public health professionals did not yet have a common understanding of heart health[10]. Reported levels of implementation were also relatively low[16]. Figure 3 shows that implementation of heart health programs has continued to increase since at least the mid-1990s, however, by 1997, less than one third of health units were implementing heart health programs at a level that may be considered attainable with limited resources.

Factors influencing implementation of heart health activities at the organizational level are examined in detail in other papers[16]. Findings show that implementation is influenced by several internal organizational factors, such as health unit priorities, structures, processes and traditional practice, and external factors, such as partnerships

with community agencies and community interest in heart health. Nevertheless, approximately 50% of the variability across health units remains unexplained. The interplay of factors in particular locations may help explain this variability, and is the topic of further study (Riley et al., in press).

Monitoring, Evaluation and Research: Ontario met several objectives of the monitoring, evaluation and research stage during the ten year study period. The initial focus of activities was monitoring population health behaviours to identify a need for action[4]. These surveys demonstrate a commitment from within the public health system (internal factor) to use epidemiology to guide program directions. This commitment was demonstrated by the CMOH, in particular, in his 1993 report in which he described research and analysis as high priorities to support public health activities[5]. External incentives also influenced monitoring activities; notably, eligibility for research funding[18].

Another focus of activities in this stage was process (or implementation) evaluations of heart health initiatives. Major studies with this focus include the HHAP, CHHIOP, and benchmarking studies in public health[23]. A combination of internal and external factors helps to explain a strong focus on process evaluations. A major internal force was a growing infrastructure to conduct public health research[20, 22, 37]. The evaluation and research needs of this infrastructure were guided mainly by external factors, including the current knowledge base[15] and external funding incentives for implementation research[18].

A third, and most recent, focus in the evaluation stage is on outcome evaluations, including population impacts for knowledge and behaviour change[14]. This focus on

outcomes was mainly the result of the policy environment (external factor), which was increasingly focussed on accountability, return on investment and evidence-based practice[26, 29].

DISCUSSION

The findings in this paper support and build on the study propositions. Findings reinforce three main themes in the literature on the dissemination of health promotion:

1. *The dissemination of health promotion programs involves multiple stages.* Initiatives in Ontario to promote heart health met objectives consistent with five stages of dissemination. First, cardiovascular disease was defined as a problem of unhealthy lifestyles and opportunities were identified to improve public health practice to promote healthy lifestyles. Then, during the ten year study period, several activities (e.g. demonstration communities, knowledge synthesis) were undertaken to identify and test heart health innovations suitable for the Ontario context; to strengthen local capacity (e.g. provincial resource system activities); to evaluate programs (e.g. HHAP); and to conduct research to inform the dissemination process (e.g. CHHIOP, benchmarking in public health). Some objectives, such as sustaining implementation of heart health activities, were not addressed during the ten year study period, but may become a priority as levels of implementation of heart health promotion increase.

2. *The dissemination process is iterative, while maintaining an overall progression from defining the problem to evaluating solutions.* Consistent with study propositions, findings show that dissemination is non-linear. Events happened in more than one stage at a time and each stage was revisited several times throughout the ten year study period. Events

reinforced and extended previous activities. For example, the definition of the problem was reinforced every 3 to 5 years beginning in 1989, and the program requirements for local boards of health were strengthened from 1989 to 1997 as reflected in provincial guidelines. Similar patterns of reinforcement and extension were apparent in all stages (Figure 1).

3. *Capacity building is an essential component in the dissemination of health promotion.* The last 10-15 years have seen a growing literature on capacity building in health promotion, at individual, organizational and community levels. The focus on capacity reflects a recent paradigm shift in public health towards community-based, intersectoral and population approaches. Findings from this study reinforce the need for strengthening capacity within the public health system. They also reinforce the need to focus change efforts on various dimensions within public health organizations, including: structures (e.g. multidisciplinary teams), processes (e.g. media advocacy), organizational outputs (e.g. environmental change programs), values (e.g. focus on populations), knowledge (e.g. population health) and skills (e.g. building partnerships). These dimensions reflect many components of capacity described in recent literature (e.g. Hawe et al., 1997; Goodman et al., 1998), and are consistent with transformation processes within organizations (Crichton, 1997; Senge, 1999).

Findings also contribute new knowledge on the dissemination of (heart) health promotion, including the time period for dissemination and factors that help to explain the dissemination process.

1. *Dissemination of new health promotion practices takes a long time.* Ten years after the problem of unhealthy lifestyles (contributing to CVD) was defined as a public health problem in Ontario, levels of capacity and implementation for heart health promotion were low to modest. These findings suggest that at least ten years is needed to set the public health agenda and to prepare for change (e.g. developing innovations, strengthening predisposition and capacity), especially when new practices represent a departure from traditional ways of working (Rogers, 1995).

Findings also suggest that the time period for dissemination is extended if *what* to disseminate is unclear. Typically, a program (with objectives, strategies and results) is the basic material for dissemination (King et al., 1998). In Ontario, there was a substantial time delay between the completion of the demonstration projects and province-wide dissemination of heart health promotion activities. A main activity during this transition period was identifying and documenting practices for widespread application. This process was still in early stages at the end of the study period. Much is yet to be learned about how to evaluate the effectiveness of health promotion activities; how to translate research evidence into guidelines for application which take into account the need for adaptation in different jurisdictions; and how to gain support for new practices among public health professionals. Application of social marketing principles demonstrates some promising results in these areas (Kotler and Andreasen, 1991). A social marketing framework may help to maximize dissemination by considering the interplay of characteristics of the product (i.e. health promotion activities), circumstances under which

the product is used, and participation of those responsible for use of the product (e.g. public health professionals) throughout all stages of design and delivery.

2. *The dissemination process is energized by the intersection of internal organizational and external system factors.* As expected, Ontario findings show that the dissemination process cannot be disentangled from the context in which new practices are introduced. Many factors were shown to influence the dissemination process. Consistent with previous work, factors included features of the public health system such as local governance structures, knowledge and skills of public health professionals, leadership, mandate and resources. They also included environmental factors beyond the direct control of the public health system, such as national health policies, scientific information, and agency partnerships. A unique contribution from the social ecological analysis in this study is a greater understanding of the *interplay* of external and internal forces that influence movement within and across dissemination stages.

A prime example of the interplay of internal and external factors was the development of the new public health mandate in 1989 (Figure 4). The CMOH was a strong internal champion for the change in mandate. He was influenced and supported by events and information in the external environment; notably, a

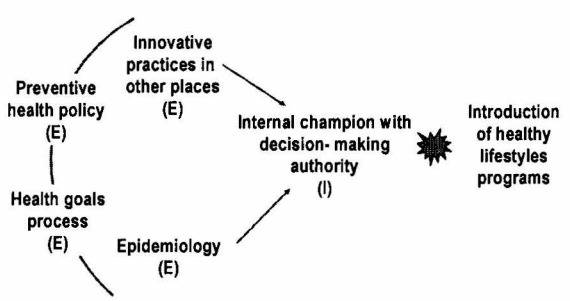


Figure 4: Interplay of factors influencing the introduction of the healthy lifestyles programs in the 1989 public health mandate

health policy environment supportive of enhancing disease prevention and health promotion, innovative practices in other jurisdictions, and epidemiological information.

Findings also provide some insight into the relative influence of each factor. The policy environment emerged as a particularly dominant force. A political desire to enhance health promotion was capable of overpowering incomplete evidence on the effectiveness of heart health promotion and of a poor economy. The policy environment also influenced how information was used in decision-making. One example is the strength and persistence of the lifestyles definition of heart health promotion in Ontario. Information on behavioural epidemiology was readily used to support a focus on individual lifestyles. Convincing evidence on social inequality as an important underlying cause of CVD (e.g. Wilkinson and Marmot, 1998), however, was not apparent in how the problem of heart health promotion was defined or in any other stages of dissemination. Explaining why this information was not used was beyond the scope of this study, but it may be related to the relative recency of conclusive evidence and the lack of practical solutions to address the problem of social inequalities.

Implications for Research

Findings suggest promising areas for research in three main areas. First, replication in other systems is a priority. Results of this single case study are suggestive more than definitive. Propositions about dissemination will be strengthened by conducting similar case study research under different spatial (i.e. public health systems) and temporal (i.e. time periods) conditions. The Canadian Heart Health Dissemination Project, recently launched as part of the CHHI, contributes to this research agenda.

A second priority for research is to conduct more in-depth analyses of the interplay of factors that create change. Complementary research in Ontario provides examples of more in-depth studies, including a path analysis (Riley et al., 2001b) and comparative case studies (Riley et al., in press) to better understand variability in levels of implementation among Ontario health units.

A third area for research is to study more advanced stages of dissemination. What factors accelerate and constrain the dissemination process over a longer period of time? As health promotion initiatives mature, in Ontario and elsewhere, opportunities for this research will increase. The provincial evaluation of the Ontario Heart Health Program is one opportunity, which includes quantitative and qualitative data collection from local public health and other community agencies, similar to CHHIOP, as well as data collection from provincial stakeholders.

Implications for Public Health Policy and Practice

Findings suggest policy makers should consider a long time horizon for dissemination and set realistic expectations for changes (e.g. ten years to create capacity for substantial growth in levels of implementation). Applied to the CHHI (and other similar initiatives), the "dissemination phase" needs to extend well beyond five years to achieve substantial gains in program implementation. Policy makers must also view dissemination as a dynamic process; one that requires creating and capitalizing on opportunities for change. Furthermore, identifying such opportunities requires constant attention to forces operating in the internal and external environments. Planning for dissemination, therefore, means striving to create a synergy of forces to achieve

intermediate and long-term dissemination objectives. For public health policy makers, it means identifying and changing factors that they can influence directly (e.g. mandate, resource allocation) and aiming to influence those factors that are beyond their immediate span of control (e.g. political priorities).

APPENDIX: Data sources

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39. *Direct observation*: The author was involved in health promotion research and practice in Ontario throughout the full study period. Primary involvements were developing resources on community health promotion (e.g. planning guides); evaluation of the Heart Health Action Program; member of the research team for the Canadian Heart Health Initiative Ontario Project; and volunteering with the Heart and Stroke Foundations of Ontario and Canada. These involvements contributed to many personal communications with provincial and local professionals from public health and other community agencies.

CHAPTER 3:
Understanding Levels of Implementation of Heart Health Promotion - A Quantitative Analysis

CHAPTER OVERVIEW

The paper in this chapter addresses part of objective 2 of the research program. Using a quantitative analysis, the study examines factors influencing 1997 levels of implementation of heart health promotion in Ontario's public health departments.

I am first author on the paper. In that role, I completed all analyses, wrote the paper and responded to feedback from co-authors, committee members, and external reviewers. The second author provided guidance on the path analytic technique.

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The published version of the paper appears in this chapter, with the exception of references, which appear in the consolidated bibliography after chapter 5.

DETERMINANTS OF IMPLEMENTING HEART HEALTH PROMOTION ACTIVITIES IN ONTARIO PUBLIC HEALTH UNITS: A SOCIAL ECOLOGICAL PERSPECTIVE

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ABSTRACT

This paper reports the results of a study undertaken to explain levels of implementation of heart health promotion activities observed in Ontario public health agencies in 1997. Organizational level data were collected by surveying all 42 health departments in 1994, 1996 and 1997 as part of the Canadian Heart Health Initiative Ontario Project. Guided by social ecological and organizational theories, the model examines relationships between implementation and four sets of possible determinants of activity: a) the predisposition of agencies to undertake heart health promotion activities; b) their capacity to undertake these activities; c) internal organizational factors; and d) external system factors. A small set of five variables explain almost half of the variance in implementation (R^2 = 0 46): organizational capacity (β=.40), priority given to heart health (β=.36), coordination of programs (β=.19), use of resource centres (β=.12) and participation in networks (β=.09). The results suggest that models integrating organizational and social ecological theories can help us understand the implementation of community-based heart health promotion activities by public health agencies. Implications for future research and for policy and practice are discussed.

INTRODUCTION

Lifestyle behaviours may explain up to 50% of preventable coronary heart disease mortality (Fries et al., 1993; Byers et al., 1998) and hence the emphasis on behaviour change in heart health promotion programmes. Widespread behaviour change in populations requires a full spectrum of effective interventions, from 'downstream' interventions focussed on individuals at high risk for illness or with existing symptoms, to 'upstream' interventions focussed on macro-public policies (McKinlay, 1995). The 'new public health' (Frank, 1995) calls for mid-stream, or population-based, interventions characterized by targeting defined populations for the purpose of changing and/or preventing health damaging behaviours (McKinlay, 1995; Crichton, 1997). Comprehensive community heart health programs are one application of the new public health. These programs typically aim to change behaviours of defined populations as well as social and physical environments that support healthy behaviours (Shea and Basch, 1990; Advisory Board of the 1st International Heart Health Conference, 1992; Health and Welfare Canada, 1992; Elder et al., 1993).

For population impact, programs must be effective and have broad reach. Effectiveness of community-based heart health programs has typically been assessed using communities as the unit of intervention and analysis, and placing primary emphasis on behavioural and risk factor outcomes. The earliest projects, which began in the 1970s, report some positive outcomes (cf. Vartiainen et al., 1994; Schooler et al., 1997). Subsequent projects have generally yielded modest and mixed results, with the inability to discern effects attributed, in part, to methodological challenges and secular trends (cf.

Mittelmark et al., 1993; Dobbins and Thomas, 1996; Ebrahim and Smith, 1997; Schooler et al., 1997; Sellers et al., 1997; Viswanath and Finnegan, 1997). While recognizing the need to expand the knowledge base on the effectiveness of (heart) health promotion, sufficient evidence supports the widespread application of community-based heart health programs (Cameron et al., 1996; Frankish et al., 1996; Nutbeam, 1996). Furthermore, widespread application requires that heart health programs be integrated into the existing system of public health programs and services (Health and Welfare Canada, 1992; Advisory Board of the 2nd International Heart Health Conference, 1995).

Implementation of heart health programs among public health agencies, however, is universally low (Advisory Board of the 3rd International Heart Health Conference, 1998). Yet very few studies address organizational uptake of health promotion activities (Johnson et al., 1996; Orlandi, 1996; Hawe et al., 1997). Those that do typically focus on single interventions (Steckler and Goodman, 1989; Orlandi et al., 1990; Parcel et al., 1990; Rogers, 1995) rather than a cluster of interventions characteristic of comprehensive, community-based health promotion. Also, few studies examine the influence of internal organizational and external system factors on agency practices (Orlandi, 1996; Richard et al., 1996), yet these factors are increasingly recognized as important determinants of organizational performance (Champagne et al., 1993). This paper examines internal organizational and external system factors influencing implementation of heart health promotion activities by public health agencies in Ontario.

The research is part of the Ontario project of the Canadian Heart Health Initiative, described in detail in a previous paper (Elliott et al., 1998a). In brief, the CHHI is a multi-

phase initiative which began in 1986. A policy development phase was followed by provincial surveys of cardiovascular risk factors (MacDonald et al., 1992), and a demonstration phase in which communities within each province developed and evaluated programs for possible widespread application (Stachenko, 1996). A subsequent dissemination phase, completed in Ontario in 1998 and at various stages of development in other provinces, is aiming to increase adoption of best practices in heart health promotion within communities across Canada. The CHHI aims to integrate heart health promotion into the existing public health system.

Consistent with the philosophy and strategies of the CHHI, the dissemination phase of the Ontario project focussed on factors influencing the dissemination of heart health promotion activities in the formal public health system. Guided mainly by Green and Kreuter (1991), factors of primary concern were the predisposition (motivation) and capacity (skills and resources) of health departments to implement heart health promotion activities. Data collection involved quantitative and qualitative components. A quantitative survey was administered to all health departments at three points in time (1994, 1996, 1997), and in-depth interviews were conducted in a subset of health units in 1995 and 1997. Findings reported in this paper build on previous papers that report cross-sectional findings from the quantitative surveys (Elliott et al., 1998a; Taylor et al., 1998a, 1998b). An important extension to this work is to conduct a longitudinal analysis to understand levels of implementation of heart health activities. This paper uses path analysis to examine the factors influencing levels of implementation of heart health

activities reported by public health agencies in 1997 using survey data from all three points in time from 1994 through 1997.

The setting for the research is the formal public health system in Ontario (described in Elliott et al., 1998a). At the time of data collection, Ontario had 42 local health units, each administered by a local board of health, and regulated by provincial legislation and program guidelines. In 1989, public health in Ontario experienced a strategic shift in programming direction by re-focussing on non-communicable disease prevention, with a particular emphasis on cardiovascular disease. In addition to existing responsibilities, health units were required to provide extensive programming in tobacco use prevention, nutrition promotion and physical activity promotion (Ontario Ministry of Health, 1989). By 1997, approximately 10% of public health resources in Ontario were targeted to these program areas (Ontario Ministry of Health, 1998). Health units were also required to work collaboratively with a wide variety of local agencies and groups to achieve public health goals (Schabas, 1996).

The change in public health mandate stimulated other structural changes. Local health departments hired staff with a wider range of health promotion skills (e.g. community development, program evaluation, social marketing) and re-organized into multidisciplinary teams. Various networks and coalitions (mostly consisting of agency representatives) were formed at local and provincial levels for heart health and individual issue areas (e.g. tobacco, active living). In addition, a provincial resource system was established to support health promotion activities of public health and other community agencies. The system consisted of over 20 resource organizations, which provided

technical assistance in general health promotion skills (e.g. planning, evaluation), and for issue-specific programming (e.g. tobacco, nutrition). The resource system and other provincial level developments related to heart health promotion in Ontario are described in more detail elsewhere (Riley, in press).

Theoretical Framework

Previous work on the dissemination of health promotion programs draws primarily on diffusion theory, organizational theory, and individual behaviour change theories applied to organizations (Parcel et al., 1990; Orlandi et al., 1990; Orlandi, 1996; Nutbeam and Harris, 1998). A consistent conclusion from this work is the need to view organizations from a systems or ecological perspective, whereby the interactions among organizations and their environment are a central focus. This study consolidates a diverse literature, but draws most heavily on a social ecological perspective (Green et al., 1996), recognizing the importance of the context in which agencies undertake health promotion activities.

The theoretical framework for this study is illustrated in Figure 1. Although the goal is improved health of the population, the outcome of interest in this study is implementation of comprehensive, community-based programs to prevent cardiovascular disease (CVD) and promote heart health. While recognizing a wide range of factors determining cardiovascular health (Evans and Stoddart, 1990; Lomas, 1998), community-based programs typically focus on changing health behaviours and social and physical environments to support healthy behaviours (Ontario Ministry of Health, 1993). A comprehensive approach would address multiple behaviours (notably, tobacco use,

physical inactivity, unhealthy diet), target populations in several community locations (e.g. schools, workplaces, health care settings), and use a variety of population-based approaches (e.g. community-wide education, environmental and policy initiatives) (Burns, 1991; Elder et al., 1993; Nutbeam, 1996).

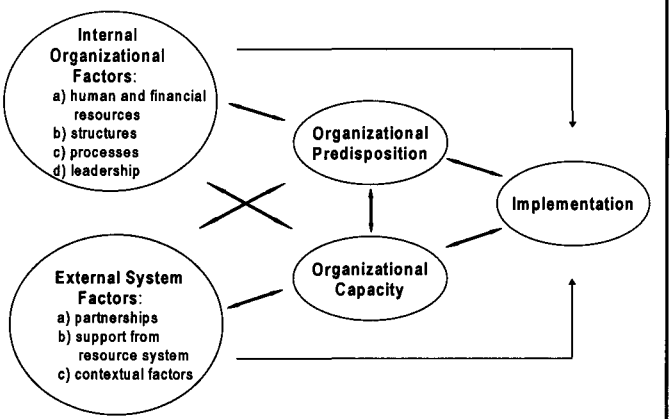

Figure 1: Factors influencing public health agency implementation of heart health promotion activities

A diverse literature suggests implementation by organizations is influenced by aspects of motivation, characteristics of the organization (e.g. skills, resources, structures, processes), and the environment in which organizations function. According to the provisional framework for this study, implementation is most directly influenced by a) organizational predisposition; and, b) organizational capacity.

Following Green and Kreuter (1991), predisposition refers to the motivation to undertake heart health promotion activities. Even though heart health promotion activities are part of the legislated public health mandate, health departments are locally autonomous units and can choose to delay implementation or move at a slower (or faster) rate. The importance of a shared commitment among staff to organizational directions is increasingly recognized as an important precondition for effective organizational action (Rogers, 1995; Goodman et al., 1998; Senge, 1999).

In this study, capacity refers to the skills and resources of public health agencies to undertake heart health promotion activities (Green and Kreuter, 1991; Clark and McLeroy, 1995). Our view of capacity was informed by literature on efforts to strengthen the public health system in the United States (Institute of Medicine, 1988; Roper et al., 1992), and capacity building for community-based CVD and other prevention programs (Kreuter, 1992; Schwartz et al., 1993; Steckler et al., 1997). In this literature, there is general agreement that the organization must be able to effectively assess, plan, prioritize, organize, implement, evaluate, adjust and maintain organizational initiatives. Accordingly, our notion of capacity refers to how well public health agencies conduct a set of organizational practices related to assessing, planning, organizing resources to support implementation, and evaluating heart health promotion activities (see Method). The most recent literature, which post-dates the definition and measurement of constructs for our research, defines capacity as a more global construct, comprised of aspects of motivation, organizational structures and processes, and the environment (Hawe et al., 1997; Goodman et al., 1998). The framework (Figure 1) includes all of these dimensions, but as separate constructs rather than as dimensions of a global concept of capacity.

Guided by a social ecological view, we propose that organizational predisposition and capacity are influenced by a variety of factors related to the internal organization as well as the external system. With respect to the former, appropriate financial and human resources are key (Hoover and Schwartz, 1992; Ornstein et al., 1992; Schwartz et al., 1993; Hawe et al., 1997). Also, organizational structures and processes must encourage a focus on heart health promotion, and facilitate multi-disciplinary activities, collaborative

planning with community agencies, and coordination of individual programs related to heart health (e.g. tobacco, nutrition, physical activity) (Kaluzny and Hernandez, 1988; Green and Kreuter, 1991; Goodman et al., 1998). A final dimension of internal organizational factors is leadership, with the type and strength of leadership provided by medical officers being particularly relevant (Becker, 1970; Schwartz et al., 1993). However, opinion leadership and champions for heart health promotion can emerge from any level within the organization and can strongly influence organizational performance (Rogers, 1995).

With respect to the external system, interorganizational relationships, or partnerships, are especially relevant. There is widespread recognition of the need for public health agencies to work effectively with other service providers (Bracht and Kingsbury, 1990; Butterfoss et al., 1993; McLeroy et al., 1994; Steckler et al., 1997; Goodman et al., 1998), citizens (Goodman et al., 1998), and organizations at other levels (e.g. federal and provincial) (Green et al., 1996; Steckler et al., 1997) to plan and carry out health promotion activities.

The external system also includes activities to support community (heart) health promotion by public health agencies (Florin et al., 1993; Schwartz et al., 1993; Jackson et al., 1994). The primary purpose of these activities is to enhance the knowledge, skills and resources for local organizations and groups to conduct effective health promotion. Major support functions include consultation and training, rewards and incentives, and feedback on performance. Feedback on performance, consistent with Green and Kreuter's (1991) reinforcing factors, is especially important for sustainability.

Many other characteristics at different levels (e.g. local/regional, provincial, federal) may also influence heart health promotion of public health agencies. These are referred to as contextual factors in the framework, and include social and physical characteristics of communities, community priorities, and trends in the health and social policy environment (Green et al., 1996; Robinson and Elliott, 1999).

METHOD

Data Collection

Quantitative surveys were conducted in all 42 public health units in Ontario in order to measure organizational level predisposition, capacity and implementation of community-based heart health promotion activities in 1994, 1996 and 1997. In December 1994, a two-stage Survey of Capacities, Activities and Needs (SCAN) of Ontario public health units was administered, and is described in detail in a previous paper (Elliott et al., 1998a). The first stage of the SCAN measured levels of implementation of community-based heart health activities over the previous year in the geographic areas served by the public health units. An organizational response was completed jointly by the local Medical Officer of Health (MOH) and staff most involved in heart health promotion. The response rate was 100%. The second stage survey in 1994 measured organizational capacity and predisposition for heart health promotion as well as internal organizational factors (e.g. human and financial resources, leadership for heart health) and external system factors (e.g. community interest, partnerships). Surveys were completed by the MOH and approximately six additional unit staff (representing between 1-14% of public health staff) nominated by the MOH as those most familiar with managing and/or

delivering heart health activities. The response rate was 90% (N=262). In December 1996 and January 1998, the surveys were repeated to determine heart health predisposition, capacity, and implementation for the preceding 12 months, as well as factors related to the external system and the internal organization of the health unit. Thus, comparable data were collected for all 42 health units over three time periods. The main difference between the first and subsequent surveys was that the corporate and individual surveys administered in 1994 were combined into a single instrument which was completed corporately (i.e. one survey from each unit) by the MOH and staff most involved with heart health promotion (6 staff per unit on average). Consistent with guidelines for collecting organizational data (Steckler et al., 1997), the comparability of the data is increased by the overlap of the respondents (59% from 1994 to 1996, 68% from 1996 to 1997, and 46% from 1994 to 1997); the similar distribution of positions within units over time (medical officers, directors/managers, program staff); and verification of data by respondents.

Definitions of Variables and Measures

Predisposition refers to the motivation to undertake heart health promotion activities. It was operationally defined as a collective belief among staff in the importance of the organization conducting a set of public health activities to support community-wide implementation of heart health promotion activities. The primary indicator of predisposition was importance ratings of 18 organizational practices supportive of heart health, categorized into four areas: assessment, planning, activities to support implementation and evaluation (Table I). The selection of organizational practices was

informed by: a) expert consultation with public health professionals and researchers within and outside Ontario; b) information on the process to develop performance indicators for public health in the United States (cf. Turnock et al., 1994); and, c) literature on community organization processes (cf. Bracht and Kingsbury, 1990).

Table I: Examples of the 18 organizational practices for deriving predisposition[a] and capacity scores[b], by category

***Assessment Activities**: Since January 1, 1997[c], our health unit...* a. Reviewed information on local factors and conditions affecting heart health b. Reviewed heart health activities developed elsewhere that might be adopted or adapted for local use
***Planning Activities**: Since January 1, 1997 our health unit...* a. Participated in a strategic planning process to set priorities for public health activities b. Set goals and objectives for promoting heart health
***Activities to Support Implementation**: Since January 1, 1997, our health unit...* a. Recruited volunteers to assist with heart health activities b. Took advantage of resources outside of public health to support implementation of heart health activities
***Evaluation Activities**: Since January 1, 1997, our health unit...* a. Collected and used information to guide development of heart health activities ("formative evaluation") b. Collected and used information to determine if heart health activities met outcome objectives (e.g. awareness, behaviour change)

[a]Calculated as the mean of 18 organizational practices, each rated on a four-point scale from not at all important to very important.
[b]Calculated as the mean of 18 organizational practices, each rated on a five-point scale from not aware that the activity was conducted to, the activity was conducted and was very effective.
[c]Ratings were given for approximately one year for each survey: 1994, 1996 and 1997.

Predisposition was calculated as the mean of 18 organizational practices, each rated on a four-point scale from 'not at all important' to 'very important'. In 1994, average scores from individuals within units were used as corporate scores after confirming strong correlations between individual scores and within-unit means using the procedures described by James (1982) and Shrout and Fleiss (1979). The mean score on four subscales was used to construct a multi-item scale. Levels of predisposition were consistently high from 1994 to 1997 (rated as 'very important') (Table II). Variability

across units was low at all three data collection times. The multi-item scale yielded good internal consistency with alpha coefficients ranging from .61 to .87 from 1994 to 1997. Construct validity was established by: a) expert review; b) positive feedback from respondents; and, c) fairly consistent relationships between predisposition and capacity (Table II) and predisposition and implementation (Table IV).

Table II: Mean overall scores and correlations between predisposition and capacity, 1994 to 1997 (N=42)

Year	Predisposition: Average Importance Score (range)	Capacity: Average Effectiveness Score	Correlation Between Predisposition & Capacity (p value)
1994	3.5 (2.8-3.8)	1.7 (0.3-3.1)	.41** (.006)
1996	3.8 (3.3-4.0)	2.3 (0.4-3.8)	.24^{NS} (.132)
1997	3.8 (2.9-4.0)	2.8 (0.4-3.9)	.42** (.005)

** p < .05

Capacity refers to skills and resources required to implement community-based heart health activities. It was operationally defined as effectiveness in performing organizational practices to support heart health promotion activities and was measured by effectiveness ratings on a five-point scale from 'not aware activity was conducted' to 'activity was conducted and was very effective'. Item and scale construction were the same as for predisposition (Table I).

Levels of capacity were low to moderate between 'somewhat' and 'fairly' effective, and increased over time (Table II). Internal consistency was high with alpha coefficients ranging from .84 to .92 from 1994 to 1997. Construct validity was established using several methods: expert review of measures; positive reviews by respondents; a high correlation between a global rating of capacity in 1997 (on a five point scale from

low to high) and the multi-item score (r=.45, p=.003); and consistent and strong correlations between capacity and predisposition (Table II) as well as capacity and implementation (Table IV).

Implementation, in this study, refers to the performance of community-based heart health activities. Respondents rated levels of implementation for 75 activities, organized by risk factor and setting, on a five-point scale from 'not aware of any organized activity being planned or implemented' to a 'high level of implementation' (Table III). Ratings were made relative to 'full implementation', defined as 'ideal implementation in your community, not just to the extent that resources allow'.

Table III: Examples of the 75 community heart health activities[a] used to derive a total implementation score[b] for 1997, by setting

Activities designed to improve general heart health. *Please indicate the current stage of development of each activity (including those carried out by agencies other than the health unit) in your community (area served by your health unit)....*
Schools a. Educational materials on heart health in schools b. Recognition awards to schools with heart health programming (e.g. comprehensive school health approach)
Workplaces a. Health risk assessments of workers b. Small group sessions for behaviour change
Health Care Settings a. Training for primary care providers on assessing patient risk factors for cardiovascular disease b. Information for primary care providers for referring patients to community programs
Community at large a. Media campaigns on heart health b. Advocacy directed at the provincial level for policies related to heart health

[a]The examples in this table are activities to improve general heart health. Other risk factors included in the inventory are activities to reduce tobacco use, increase healthy eating and increase physical activity. The complete instrument is available from CHHIOP, Health Behaviour Research Group, MC6082, University of Waterloo, Waterloo, Ontario, N2L 3G1.

[b]Calculated as the mean of 75 items, each rated on a five point scale from not aware of any organized activity being planned or implemented to, a high level of implementation whereby the activity is at over 2/3 of full implementation (where full implementation is the optimal level of implementation if resources were not limited).

The inventory of heart health activities incorporated risk factors, settings and approaches and was adapted from the US Public Health Service comprehensive approach to tobacco control (Burns, 1991). Risk factors are behavioural targets for change, and included tobacco use reduction, nutrition promotion, physical activity promotion, and promotion of heart health in general (i.e. general heart health or two or more of the other risk factors). Settings are locations for program activities and included schools, workplaces, health care settings, and the community at large. Approaches are the strategies to produce change, and included education, environmental support and policy initiatives.

Average scores were calculated for overall implementation. Implementation increased from 1994 to 1997, with the average health unit at a low level of implementation by 1997 (Table IV). Internal consistency for overall implementation was high, with alpha coefficients ranging from .75 to .94 for the three measurement times. Evidence of construct validity was from: a) expert review; b) a strong correlation between a global rating of implementation in 1997 (on a five point scale) and the multi-item scale (r=.61, p=.000); c) positive assessments from respondents; d) a high correlation between implementation in 1996 and 1997; and, e) consistent relationships between predisposition and implementation as well as capacity and implementation (Table IV).

Table IV: Mean overall implementation scores and correlations with predisposition and capacity, 1994 to 1997 (N=42)

Year	Overall Implementation Score (range)	Correlation between predisposition and implementation	Correlation between capacity and implementation
1994	1.6 (0.8-2.4)	.13	.60***
1996	1.8 (1.0-3.2)	.21	.51***
1997	1.9 (0.7-2.9)	.18	.70***

*** $p < .001$

Internal organizational factors refer to resources, structures, processes and leadership within health departments. Facilitators and barriers address all dimensions of internal organizational factors shown in Figure 1 and specific items are listed in Table V. Additional indicators were developed for all dimensions except leadership. Indicators of financial resources included: whether or not the health department had a budget line for heart health, and budget per capita. Health units were unable to estimate resource allocation for heart health activities since these activities are part of several and variably defined program areas (e.g. healthy growth and development, healthy lifestyles). Indicators of human resources included: staff time spent on heart health and working with volunteers. Indicators of organizational structure included: coordination of programs within the health unit and priority of heart health in the organization. Table V shows how the indicators were measured, scoring procedures for the path analysis, and the range of scores.

Table V: Constructs, indicators, measures and scores for path analysis

Constructs and indicators	Measures	Scoring for path analysis	Range of scores
EXTERNAL SYSTEM FACTORS			
duration of community heart health program (X_1)	start date of program	program duration in number of years up to 1997	0-11
external barriers (X_2) (lack of... -support from local board of health -community interest -collaborating with others -local statistics/information -evidence of effectiveness -provincial priority -demonstration community -professional incentives -evidence of meeting community needs)	rating from 0=not at all limiting to 3=very limiting	sum of external barriers rated as moderately or very limiting in 1996 and 1997 (0-9 each year)	0-16
external facilitators (X_3) (presence of each of the items listed under external barriers in the row above, with the addition of provincial funding)	rating from 0=not at all helpful to 3=very helpful	sum of external facilitators rated as moderately or very helpful in 1996 and 1997 (0-10 each year)	10-20
helpfulness of CHHIOP (X_4) (including surveys, reports, promotions, conference presentations, and interactions with project members relevant to each year)	rating from 0=not at all helpful to 3=very helpful	sum of CHHIOP activities rated as moderately or very helpful in 1996 and 1997 (7 items in 1996, 12 in 1997)	0-18
participation in networks (X_5)	yes/no for each item	mean number of networks in which health unit participated in 1996 and 1997 (0-7 each year)	2.5-7.0
population served by health unit (X_6)	population figure from census	average population served throughout 1994, 1996 and 1997	40,222-807,938
priority of heart health in community (X_7)	rating from 1=low priority to 3=high priority	sum for 1994, 1996 and 1997	3.2-7.3
use of resource centres (X_8)	yes/no for each item	sum of centres used in 1994, 1996 and 1997 (17 items in 94 & 96; 18 items in 97)	35-50
usefulness of resource centres (X_9)	rating from 0=not at all useful to 4=very useful	sum of centres rated as fairly or very useful in 1994, 1996 and 1997 (17 items in 94 & 96; 18 items in 97)	7-43

continued on next page

Constructs and indicators	Measures	Scoring for path analysis	Range of scores
INTERNAL ORGANIZATIONAL FACTORS			
budget line for heart health (X_{10})	yes/no and dollar amount	4 categories: 0=no budget line in any of 1994, 1996 or 1997; 1=budget line in 1 of 3 years; 2=budget line in 2 of 3 years; 3=budget line in all 3 years	0-3
budget per capita (X_{11})	dollar figure	mean for 1994, 1996 and 1997	19-62
coordination of programs within the health department (X_{12})	rating from 1=not well coordinated to 3=very well coordinated	sum of ratings for 1994, 1996 and 1997	3.7-8.9
internal barriers (X_{13}) (lack of... -management support -resources -staff experience -sufficient staff -coordination of programs)	rating from 0=not at all limiting to 3=very limiting	sum of internal barriers rated as moderately or very limiting in 1996 and 1997 (0-5 each year)	0-10
internal facilitators (X_{14}) (presence of each of the items listed under internal barriers in the row above)	rating from 0=not at all helpful to 3=very helpful	sum of internal facilitators rated as moderately or very helpful in 1996 and 1997 (0-5 each year)	4-10
priority of heart health in organization (X_{15})	rating from 1=low priority to 3=high priority	sum of ratings for 1994, 1996 and 1997	4.3-8.9
staff time spent on heart health (by approximately 6 staff most involved in heart health programming) (X_{16})	percent of time spent on individual and multiple risk factors	sum of average percent staff time spent on heart health for 1994, 1996 and 1997	35-88
working with volunteers (X_{17})	yes/no	sum of responses for 1996 and 1997	0-2
PREDISPOSITION (X_{18})			
overall importance ascribed to 18 organizational practices to support heart health promotion activities	rating from 1=not at all important to 4=very important	overall mean score on 4 subscales from 1996 and 1997	3.2-4.0
CAPACITY (X_{19})			
overall effectiveness of 18 organizational practices to support heart health promotion activities	rating from 0=not aware activity was conducted to 4=activity was conducted and was very effective	overall mean score on 4 subscales from 1996 and 1997	1.1-3.8
IMPLEMENTATION (X_{20})			
overall implementation of 75 heart health promotion activities	rating from 0=not aware of any organized activity to 4=high implementation	overall mean score of 75 items for 1997	0.7-2.9

External system factors refer to conditions and other factors beyond the direct control of the health departments, and include partnerships, support from resource organizations, and contextual factors. Facilitators and barriers address all dimensions of external system factors in Figure 1. An additional indicator of partnerships was participation in networks. Support from resource organizations was measured by use and usefulness of resource centres and helpfulness of supports offered by the Canadian Heart Health Initiative Ontario Project (CHHIOP). Indicators of contextual factors included: population served by each health unit, duration of a heart health program in the community, and priority of heart health in the community. Table V shows how the indicators are measured, scoring procedures for the path analysis, and the range of scores.

Path Analysis Procedures

Path analysis is a statistical method that builds on multiple regression techniques and is often used with exploratory models. It was used to estimate the direct and indirect effects of external system factors, internal organizational factors, predisposition and capacity on 1997 levels of implementation. A central assumption was that scores on explanatory variables over time (rather than scores at one point in time) would provide the most theoretically plausible explanation for 1997 levels of implementation. This assumption is based on the process of change characteristic of health promotion programs undertaken using a community development approach (Mittelmark et al., 1993; Frankish and Green, 1994; Nutbeam and Harris, 1998). That is, the development and implementation process is often extended over a period of years and requires sustained activity from a number of agencies. Consequently, scores on factors, such as the amount

of partnering with community agencies, that reflect the time period from 1994 through 1997 provide a stronger basis for explanation of 1997 levels of implementation rather than single scores at any one point in time. Candidate variables to help explain implementation, therefore, were composite scores using survey data from all three time periods (Table V). The limited degrees of freedom due to the small number of observations (N=42) also influenced how variables were constructed. Composite measures were created to optimize the use of data and reduce the number of variables. Such composite measures, however, may mask embedded relationships. A case in point is the measures of facilitators and barriers. Four aggregate scores were computed; internal and external classes for each of facilitators and barriers. These aggregate measures take into account all items (15 facilitators, 14 barriers) and reflect overall scores on a wide range of factors helping or impeding progress. Correlations with individual items were also explored to better understand factors that contribute most to the aggregate measures.

A staged modelling approach was used whereby separate regression models were estimated for predisposition, capacity and implementation. At each stage, correlation analyses were performed to identify candidate variables for inclusion in the regression model (using $p<0.10$ as the inclusion criterion to prevent premature elimination of variables). Correlation screening was used because of a high number of candidate variables and relatively few degrees of freedom. The bivariate correlations between all variables in the model are shown in Table VI.

For each dependent variable (i.e. predisposition, capacity, implementation), models were estimated for external system factors and internal organizational factors

Table VI: Bivariate correlations for all variables[a] used in the path analysis

	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}	X_{11}	X_{12}	X_{13}	X_{14}	X_{15}	X_{16}	X_{17}	X_{18}	X_{19}	X_{20}
X_1	–																			
X_2	-.24	–																		
X_3	.20	.09	–																	
X_4	-.19	-.03	.19	–																
X_5	.37*	-.26	.26	.22	–															
X_6	.25	-.19	.23	.14	.30	–														
X_7	.40*	-.12	.25	-.08	.30	.29	–													
X_8	.34*	-.05	.37*	.24	.39*	.19	.17	–												
X_9	-.10	-.09	.21	.14	.02	-.03	-.19	.30	–											
X_{10}	.34*	-.43*	.11	.13	.31*	.21	.12	.26	.14	–										
X_{11}	-.20	-.05	-.04	-.02	-.16	-.47*	-.22	-.04	.30	.01	–									
X_{12}	.24	-.07	.12	.00	.34*	-.03	.21	.25	.09	.34*	.06	–								
X_{13}	-.28	.81*	.01	.01	-.33*	-.16	-.15	-.15	-.01	-.45	.07	-.16	–							
X_{14}	.20	-.03	.46*	.09	.06	.19	.01	.38*	.16	.22	-.09	-.01	-.10	–						
X_{15}	.13	-.12	.20	.09	.22	-.12	.10	.39*	.36*	.30*	.23	.70*	-.19	.00	–					
X_{16}	.10	-.02	.13	-.09	.05	-.04	.13	.16	-.14	.28	-.26	.32*	-.23	.09	.19	–				
X_{17}	.05	.04	.17	-.04	.29	.08	-.03	.06	-.00	.31*	-.15	.19	-.21	.15	.12	.29	–			
X_{18}	-.06	-.23	.26	-.01	.24	-.15	.05	.10	.30	-.02	.26	.14	-.09	-.05	.34*	-.09	-.00	–		
X_{19}	.19	-.13	.34*	.22	.51*	.16	.22	.50	.29	.40*	.09	.63*	-.08	.11	.59*	.22	.24	.29	–	
X_{20}	-.06	.10	.18	.17	.20	-.03	.27	.28	.27	-.05	.14	.60*	.05	-.07	.60*	.07	.06	.26	.62*	–

*$p<.05$

[a]Variable Names:

External system factors:
X_1=duration of community heart health program
X_2=external barriers
X_3=external facilitators
X_4=helpfulness of CHHIOP
X_5=participation in networks
X_6=population served
X_7=priority of heart health in the community
X_8=use of resource centres
X_9=usefulness of resource centres

Internal organizational factors:
X_{10}=budget line for heart health
X_{11}=budget per capita
X_{12}=coordination of programs
X_{13}=internal barriers
X_{14}=internal facilitators
X_{15}=priority of heart health in the organization
X_{16}=staff time spent on heart health
X_{17}=working with volunteers

Predisposition:
X_{18}=perceived importance of organizational practices for heart health promotion activities

Capacity:
X_{19}=perceived effectiveness of organizational practices for heart health promotion activities

Implementation:
X_{20}=total implementation in 1997

separately and then in combination. The final model for capacity also included predisposition and the final model for implementation included both predisposition and capacity. This cumulative approach was used in order to provide insight as to how the variables behave individually as well as in combination with respect to the outcome of interest.

RESULTS

Modelling Predisposition to Undertake Heart Health Promotion Activities

The dependent variable was the mean importance rating on 18 organizational practices related to heart health throughout 1996 and 1997. The explanatory variables were those with statistically significant correlations with the dependent variable ($p<.10$). In the separate model estimated with external system factors, usefulness of resource centres (X_9) was retained in the model ($\beta=.30$; t (41)=1.98, $p=.06$; $R^2=.09$). Priority of heart health in the organization (X_{15}) was the only variable retained for internal organizational factors and in the combined model, with the same statistical result ($\beta=.34$; t (41)=2.28, $p=.03$; $R^2=.12$) in both models.

Modelling Capacity to Undertake Heart Health Promotion Activities

The dependent variable was the mean effectiveness rating (over two years) of 18 organizational practices related to heart health and the explanatory variables were those significantly correlated with the primary indicator of capacity. In the first model two of four external system factors were retained: participation in networks (X_5) ($\beta=.37$; t (41)=2.67, $p=.01$) and use of resource centres (X_8) ($\beta=.35$; t (41)=2.54, $p=.02$) with an R^2 of .36. In the next model, coordination of programs (X_{12}) ($\beta=.43$; t (41)=2.57, $p=.01$) and

priority of heart health in the organization (X_{15}) (β=.30; $\underline{t}$ (41)=1.77, $\underline{p}$=.08) were significant ($\underline{R}^2$=.45). The combined model yielded an $\underline{R}^2$ of .57 and maintained participation in networks (X_5) (β=23; $\underline{t}$ (41)=1.92, $\underline{p}$=.06), use of resource centres (X_8) (β=.29; $\underline{t}$ (41)=2.45, $\underline{p}$=.02) and coordination of programs (X_{12}) (β=.48; $\underline{t}$ (41)=4.23, $\underline{p}$=.00).

Modelling Implementation of Heart Health Promotion Activities

The dependent variable was the mean implementation score for 75 community-based heart health activities. The explanatory variables were those with statistically significant correlations with mean implementation; variables carried forward from the previous models for predisposition (priority of heart health in the organization) and capacity (participation in networks, use of resource centres, and coordination of programs); and mean importance and mean effectiveness ratings as indicators of predisposition and capacity, respectively. In the model estimated using external system factors, priority of heart health in the community (X_7) (β=.34; $\underline{t}$ (41)=2.27, $\underline{p}$=.03) and usefulness of resource centres (X_9) (β=.33; $\underline{t}$ (41)=2.27, $\underline{p}$=.03) were retained ($\underline{R}^2$=.18). In the model estimated using internal organizational factors, both coordination of programs (X_{12}) (β=.34; $\underline{t}$ (41)=2.02, $\underline{p}$=.05) and priority of heart health in the organization (X_{15}) (β=.36; $\underline{t}$ (41)=2.11, $\underline{p}$=.04) were retained ($\underline{R}^2$=.42). The combined model yielded an $\underline{R}^2$ of .46 and the significant predictors of overall implementation in 1997 were capacity (X_{19}) (β=.40; $\underline{t}$ (41)=2.76, $\underline{p}$=.01) and priority of heart health in the organization (X_{15}) (β=.36; $\underline{t}$ (41)=2.49, $\underline{p}$=.04). The direct and indirect effects on 1997 levels of implementation are displayed in Figure 2. Indirect effects were calculated by multiplying the beta weights for

direct effects of explanatory variables on capacity (.23, .29, and .48 for X_5, X_8, and X_{12}, respectively) and the beta weight for the direct effect of capacity on implementation (.40). Analyses were repeated using a weighted implementation score based on the role of the health unit (i.e. lead/support/no role) in undertaking community-based heart health promotion activities. The strength of associations decreased with the weighted scores.

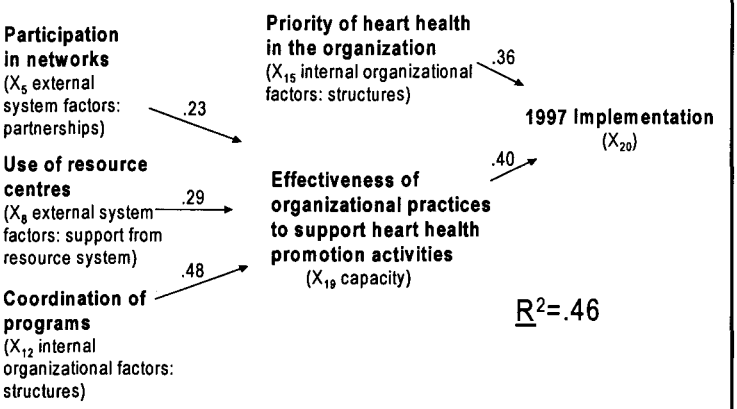

Figure 2: Final model to explain 1997 levels of implementation

DISCUSSION

This paper developed a path model to explain 1997 levels of implementation of heart health promotion activities in Ontario's 42 health unit jurisdictions. Organizational level data were collected by surveying all health departments in 1994, 1996 and 1997. Informed by ecological and organizational theory, 19 explanatory variables were used to estimate path models. One primary indicator was used for each of predisposition and capacity, and other variables were grouped into factors related to the external system in which public health agencies operate and factors related to the internal organization of public health agencies. The final model includes five variables that explain almost half of

the variance (i.e. 46%) in 1997 levels of implementation of heart health promotion activities in Ontario public health units. These are strong results, especially given the exploratory nature of the work, statistical limitations, and the complexity of the public health system (Champagne et al., 1993; Crichton, 1997).

The path model supports a number of relationships hypothesized in our preliminary framework. It supports a strong and direct relationship between capacity and implementation. This finding is consistent with Champagne and colleagues (1993), who examined the influence of organizational and environmental factors on performance of public health agencies in Quebec, and found a strong relationship between organizational practices (referred to as capacity in our model) and organizational performance (implementation in our model). Our result is also consistent with the presumed link between capacity and implementation in the health promotion literature, however, our measure of capacity was limited to organizational practices and did not include the multiple dimensions recently proposed by others (Hawe et al., 1997; Goodman et al., 1998). In our research, other dimensions of capacity, such as motivation, organizational structure and contextual factors, were defined and measured as separate constructs.

The path model also indicates that external system and internal organizational factors impact on implementation primarily by influencing organizational practices to support heart health promotion (i.e. capacity). Of the external system factors, partnerships with other local agencies (measured by participation in networks) and support from resource organizations were most strongly related to the effectiveness of organizational practices. The central importance of partnerships in health promotion is now well-

recognized (Bracht and Kingsbury, 1990; Advisory Board of the 1st International Heart Health Conference, 1992; Schwartz et al., 1993; Nutbeam and Harris, 1998), however, little empirical work has confirmed relationships between partnerships and organizational practices. Similarly, although the literature on resources to support community-based health promotion is expanding (Florin et al., 1993; Schwartz et al., 1993; Jackson et al., 1994), few studies demonstrate an empirical link between such resources and performance of local agencies. Of the internal organizational factors, organizational structure, measured by coordination of programs within public health units, was shown to have the strongest relationship to capacity. This finding may support new organizational models in public health agencies. That is, recent shifts away from traditional disciplinary activities towards more integrated and multi-disciplinary programming that targets specific problems or goals may facilitate implementation, assuming these shifts enhance program coordination. Other indicators of organizational structure are needed to strengthen this conclusion.

A direct influence of internal organizational factors on implementation was also supported. Specifically, priority given to heart health promotion within the public health organization had a direct and strong relationship with implementation. This finding suggests that a shared commitment to organizational priorities impacts directly on implementation. Literature on organizational performance, including relatively recent literature on learning organizations, supports this finding (Senge, 1999). Nevertheless, practical implications have not been considered in depth. For example, how do public health agencies most effectively develop priorities and a shared commitment to them?

How many priorities can be addressed with finite resources? The results of the path model raise the importance of these practical issues for public health professionals.

Predisposition, measured by importance ratings of public health practices to support heart health promotion, was not retained in the final model. The most plausible reasons are its high scores and low variability across units. Predisposition, therefore, may be important even though the path modelling procedures were unable to demonstrate hypothesized relationships between predisposition, other explanatory variables and implementation. In addition, it may be that predisposition is more important at earlier or later stages in the dissemination process (e.g. adoption), and less relevant during the implementation stage. Further study is warranted on the role of predisposition at various stages in the dissemination process.

The path analysis undertaken in this paper represents an advance over previous, related research in its attempt to specify structural relationships between various explanatory variables and implementation and to distinguish between their direct and indirect effects. No claim is made to identify causal relationships, but rather to clarify the links among multiple factors influencing levels of implementation. The results suggest that a model integrating organizational and social ecological theories can help us understand movement within the implementation stage of disseminating mandated, community-based, heart health promotion activities among public health agencies. Conceptually, priority given to heart health in the organization and organizational capacity (i.e. effectiveness of organizational practices to support heart health) exert a direct influence on implementation. Consistent with social ecological approaches to health

promotion, internal organizational factors and external system factors influence implementation indirectly through organizational capacity.

The structural relationships among variables suggests that a useful research strategy is to continue to "unbundle" capacity; that is, to examine relationships among the multiple dimensions of a global concept of capacity recently proposed by others (Hawe et al., 1997; Goodman et al., 1998). Further study is needed to examine relationships not supported in the path model, notably, the role of financial and human resources, leadership and contextual factors. Qualitative findings suggest that these factors exert a strong influence on implementation of heart health activities, however, the interplay of these factors needs further study. In order to substantially increase the application of findings, other useful directions are to examine the extent to which similar variables a) influence other areas of health promotion practice (e.g. injury prevention) and, b) operate in other jurisdictions.

Results also have implications for policy and practice. Based on the results of the path model, the practitioner who wants to increase implementation of heart health promotion activities would make heart health an organizational priority and strengthen organizational practices to assess, plan, mobilize resources for implementation, and evaluate heart health promotion activities. Primary strategies to improve these practices would be to participate in networks, access support from the resource system, and coordinate individual programs related to heart health (e.g. tobacco, nutrition, physical activity) within the health unit. Provincial public health authorities with an interest in enhancing dissemination of heart health promotion activities would ensure supports are

available to strengthen the priority given to heart health by public health agencies and organizational practices supporting heart health activities. Policy makers would also encourage the integration of program delivery within health units.

CHAPTER 4:
Understanding Change in Implementation - A Comparative Case Study

CHAPTER OVERVIEW

The paper in this chapter addresses part of objective 2 of the research program. Using a comparative case study design, the study examines the interplay of factors influencing change in implementation of heart health promotion activities from 1994 to 1996 in two Ontario public health units.

As first author, I had a lead role in designing the study, completing the analyses, writing the paper and responding to feedback from co-authors, committee members, and external reviewers.

The paper in this chapter is in press in *Health Education Research* for a second review. With the exception of references, which appear in the bibliography, the paper is the version accepted for publication.

ORGANIZATIONAL CAPACITY AND IMPLEMENTATION CHANGE: A COMPARATIVE CASE STUDY OF HEART HEALTH PROMOTION IN ONTARIO PUBLIC HEALTH AGENCIES

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ABSTRACT

This paper reports the results of a comparative case study that examines factors influencing changes in implementation of heart health promotion activities in Ontario public health units. The study compared two cases that experienced large changes in implementation from 1994 to 1996, but in opposite directions. Multiple data sources were used, with an emphasis on secondary analyses of quantitative surveys of health units and other community agencies, and in-depth interviews of public health staff, collected as part of the Canadian Heart Health Initiative Ontario Project. Guided by social ecological and organizational theories, changes in implementation were explained by examining changes in: a) organizational predisposition to undertake heart health promotion activities; b) organizational practices to undertake these activities; c) other internal organizational factors; and d) external system factors. Findings show that in communities with diverse characteristics, implementation change was most strongly influenced by an interplay of changes in internal features of public health agencies; notably, leadership, structure, and staff skills. Findings support a social ecological approach to health promotion by demonstrating the importance of: the institutional context in the implementation change process; the interaction of individual (skills) and organizational (structure) levels in explaining implementation change; and community context in shaping the change

process. Findings also reinforce the value of strengthening capacity within public health agencies, and suggest further research on the implementation change process, especially in different systems and over longer periods of time.

INTRODUCTION

Moving from principles to widespread implementation of the new public health is a dominant theme in public health research and practice (Crichton, 1997). Heart health promotion, which focuses on a population approach to prevention, community-based strategies, and partnerships reflects key features of the new public health (World Health Organization et al., 1986; Frenk, 1993). Efforts to enhance the implementation of heart health promotion therefore provide an opportunity to learn about implementation and dissemination processes for the new public health. The specific focus of this paper is on understanding changes in implementation of heart health promotion in Ontario public health units. The research contributes to the relatively new field of health promotion dissemination research, and can be used by policy makers and public health professionals to enhance implementation of community-based heart health promotion, and other similar health promotion activities.

Intervention research in health promotion has revealed many factors that influence implementation (Bracht, 1990; Guldan, 1996; Green and Kreuter, 1999). Within this broad area of research, two relatively recent directions are particularly relevant to this study. One direction is the focus on community and organizational capacity building (Goodman et al., 1997; Goodman et al., 1998). The other is social ecological foundations in health promotion (Green et al., 1996; Newes-Adeyi et al., 2000). Both of these

directions focus attention on the institutional (or organizational) context for health promotion, including the dynamic interaction between organizations and the environment in which they operate. With the introduction of the new public health, public health agencies are particularly important, with an emphasis on the relationship between various dimensions of organizational capacity and implementation of community-based health promotion activities (Frenk, 1993; Goodman et al., 1997; Hawe et al., 1997; McKinlay and Marceau, 2000).

Implementation research in public health agencies has focussed in three main areas. One is defining and assessing the roles of public health agencies in the new public health (Sutcliffe et al., 1997; Bloom, 1999; Corso et al., 2000; McKinlay and Marceau, 2000), including the use of community approaches (Robinson and Elliott, 1999). A second area of research is to learn about strategies to strengthen the public health system, such as various types of technical assistance and training, and other 'capacity-building' activities (Roper et al., 1992; Rutten, 1995; Alciati, 1996; Lee and Paxman, 1997). A third research focus is understanding determinants of public health performance, including levels of implementation of health promotion activities (Champagne et al., 1993; Riley et al., 2001b). Little is known, however, about the implementation change process. Factors that promote change in health promotion implementation may not be the same as those that maintain levels of implementation (cf. Rogers, 1995). Understanding the implementation change process within the public health system is vital to facilitating efforts to enhance implementation of the new public health and thereby advance the primary prevention of chronic disease.

This paper reports the results of a comparative case study that examines changes in implementation of heart health promotion activities. It builds on previous work of the Canadian Heart Health Initiative Ontario Project (CHHIOP) (carried out from 1994 to 1998 and described in detail in Elliott et al., 1998a). Consistent with the Canadian Heart Health Initiative (Stachenko, 1996), an overall goal of CHHIOP was knowledge development on dissemination of effective heart health practices. The contributions of CHHIOP are synthesized elsewhere (Riley et al., 2001a). Main scientific contributions include: developing constructs and indicators for health promotion dissemination research; operationalizing a social ecological approach; developing a longitudinal profile of organizational predisposition, capacity, and implementation in public health agencies; and understanding factors influencing levels of these three main constructs.

CHHIOP contributions have been extended by two recent studies. Riley (in press) combines social ecological and diffusion theories to examine the dissemination process using the case of heart health promotion in the Ontario public health system. The study reinforces recent conceptions of dissemination (e.g. iterative, multiple elements), and shows how social ecological theory can enhance explanation of the dissemination process (e.g. the interplay of organizational and environmental factors). The study also provides a temporal and developmental context for the CHHIOP study period from 1994 to 1998.

The second study extending CHHIOP contributions (Riley et al., 2001b) was a quantitative path analysis to understand the main determinants of 1997 levels of implementation of heart health promotion activities. Results were strong, with the final model explaining approximately half of the variance in implementation. The study begins

to map structural relationships between various dimensions of organizational capacity that impact on levels of implementation, and provides additional support for the explanatory power of social ecological theory.

The study reported in this paper also aims to explain variability in implementation of heart health promotion within Ontario's public health system. Specifically, it examines implementation change. Whereas the path analysis methods were well-suited to examine determinants of implementation observed at one point in time, case study and qualitative methods are appropriate for examining the change process (Yin, 1994). Using these methods, most insight is gained by comparing cases that experienced different degrees of change, including change in different directions. The two cases reported in this study experienced large changes in implementation relative to the average health unit in the province, and in opposite directions.

Research Setting

Ontario is located in central Canada and is the largest province with a population of about 11 million. Public health services in Ontario are primarily delivered through public health departments, each administered by an autonomous local board of health and regulated by provincial legislation and program guidelines. At the time of data collection, Ontario had 42 local health units. Public health programs were cost-shared by provincial and municipal governments, with a total combined annual budget of approximately $300 million and 4,600 full-time equivalents (FTEs), or approximately 43 FTEs per 100,000 population (in 1997). Local boards ranged widely in per capita funding ($18 to $60 in 1997), population served (39,354 to 721,130 in 1997), and geographic location and size.

In 1989, public health in Ontario experienced a strategic shift in programming direction by focussing on non-communicable disease prevention. In addition to existing responsibilities, health units were required to provide programming in tobacco use prevention, nutrition promotion and physical activity promotion (Ontario Ministry of Health, 1989). At the same time, the provincial government supported a number of demonstration programs (typical duration approximately five years) for community-based health promotion. Five demonstration communities focussed specifically on heart health promotion. During the study period from 1994 to 1996, Ontario was in a transition phase between demonstration projects and province-wide dissemination of 'best practices' in health promotion. The Canadian Heart Health Initiative Ontario Project was completed during this transition period.

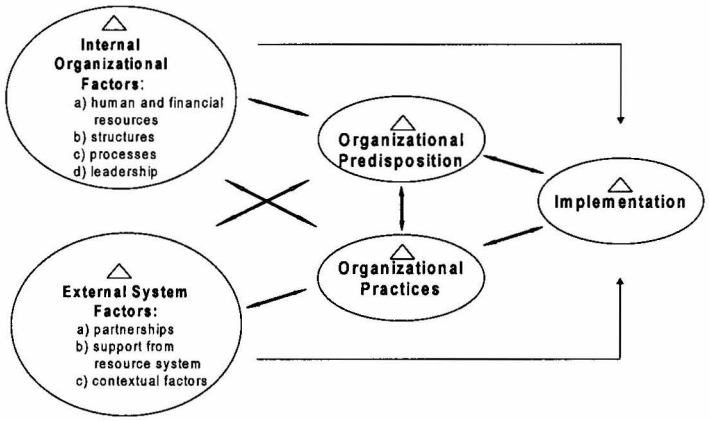

Figure 1: Theoretical framework to explain change (△) in implementation of heart health promotion activities

Theoretical Framework

The theoretical framework for this study (Figure 1) was adapted from previous work (Riley et al., 2001b). The framework reflects a diverse literature, but draws most heavily on a social ecological perspective (Green et al., 1996), recognizing the importance of health promotion institutions, and the context in which agencies undertake health promotion activities. The organizational context (e.g.

organizational culture, policies, processes) and the environmental context (e.g. political, social, economic) are represented in Figure 1 by internal organizational and external system factors, respectively.

The outcome of interest in this study is change in implementation of comprehensive, community-based programs to prevent cardiovascular disease and promote heart health. The framework identifies broad classes of variables known to influence implementation of health promotion programs by organizations. It suggests that change in implementation is most directly influenced by a) change in organizational predisposition and, b) change in organizational practices. Predisposition refers to the motivation to undertake heart health promotion activities, and practices refer to various assessment, planning and related tasks of public health agencies to undertake heart health activities. Guided by a social ecological perspective and supported by the quantitative research to explain 1997 levels of implementation among Ontario public health units (Riley et al., 2001b), the framework proposes that changes in organizational predisposition and practices are influenced by a variety of factors related to the internal organization (notably, human and financial resources, structures, processes, leadership) as well as the external system (notably, partnerships, support from the resource system, contextual factors).

METHODS

Case Selection and Description

Two cases were selected for this study on the basis of change in implementation of heart health activities from 1994 to 1996. Quantitative and qualitative data previously

collected for CHHIOP were used to select cases (described under Data Sources below). Implementation scores derived from surveys completed by health units in 1994 and 1996 were used for case selection. Implementation was measured for 75 community-based activities, organized by risk factor and setting (see Table I). The 75 activities represent a comprehensive, population-based approach to heart health promotion, and were defined using four dimensions: risk factors (tobacco use, physical inactivity, nutrition, general heart health), channels (schools, workplaces, health care settings and general community), approaches (education, environmental support, policy) and target groups. Baseline levels and change in total implementation were used for case selection. Total implementation scores were the mean level of implementation for all 75 activities.

Table I: Examples of the 75 community heart health activities[a] used to derive implementation scores

Activities designed to improve general heart health. *Please indicate the current stage of development of each activity (including those carried out by agencies other than the health unit) in your community[b] (area served by your health unit)....*
Schools a. Educational materials on heart health in schools b. Recognition awards to schools with heart health programming (e.g., comprehensive school health approach)
Workplaces a. Health risk assessments of workers b. Small group sessions for behaviour change
Health Care Settings a. Training for primary care providers on assessing patient risk factors for cardiovascular disease b. Information for primary care providers for referring patients to community programs
Community at large a. Media campaigns on heart health b. Advocacy directed at the provincial level for policies related to heart health

[a]The examples in this table are activities to improve general heart health. Other risk factors included in the inventory are activities to reduce tobacco use, increase healthy eating and increase physical activity. The complete instrument is available from CHHIOP, Health Behaviour Research Group, MC6082, University of Waterloo, Waterloo, Ontario, N2L 3G1.

[b]Each item was rated on a 5-point scale from 0=not aware of any organized activity being planned or implemented, to 4=a high level of implementation whereby the activity is at over 2/3 of full implementation (where full implementation is the optimal level of implementation if resources were not limited).

One case experienced an increase in implementation (hereafter referred to as '*Up*') and the other a decrease in implementation (referred to as '*Down*'). The two cases had similar baseline levels of implementation in 1994; slightly above the provincial average at a 'low level of implementation' (defined as implementation at <⅓ of ideal implementation if resources were not limited) (Table II). Change in implementation from 1994 to 1996 was in opposite directions. *Up* advanced to a 'medium level of implementation' (between ⅓ to ⅔ of ideal implementation) and *Down* regressed to somewhere between active planning and a low level of implementation. In both cases, the magnitude of change in overall implementation was above the provincial average of 0.2 points (SD .41). In *Up*, the one point shift was over 2 standard deviations above the average change for health units in the province. Interviews of public health staff validated an increase in implementation from 1994 to 1996, but suggested the reported increase was slightly inflated. Perceptions of staff were supported by a lower implementation score of 2.9 reported just one year later (1997) in a similar organizational survey. In *Down*, the observed change in implementation from survey results was validated by staff perceptions, and by a repeat score of 1.7 in a 1997 survey.

Table II: Implementation of heart health promotion, cases and the provincial average, 1994 to 1996

Case	Implementation Score		
	1994	1996	Change score
Up	2.2	3.2	+1.0
Down	2.1	1.7	-0.4
Provincial average (N=42)	1.6	1.8	+0.2

At the time of selection (1994), the two cases were similar on several other characteristics (Table III), especially the strongest predictors of level of implementation found in our path analytic study. Specifically, the two cases shared a relatively high motivation for heart health (e.g. predisposition, priority of heart health in the health unit); fairly effective organizational processes (e.g. assessment and planning practices, coordination of programs); similar resources and concepts for healthy lifestyles programs; and strong relationships with community partners and centres offering technical assistance. The cases also shared some demographic features, such as rate of population growth and a majority of English-speaking residents; geo-political re-structuring; and levels on some CVD risk factors, including physical inactivity, hypertension and diabetes.

Despite these similarities, the cases varied on several internal organizational factors and external system factors. With respect to organizational factors, the main differences were the history and structure for heart health programs. *Up* did not have a designated heart health program. Rather, the health unit addressed heart health activities through its healthy lifestyles programs. *Up* had formed a multi-disciplinary healthy lifestyles team in 1990 (one year after the healthy lifestyles mandate was introduced) and, by 1994, self-identified as having a lead role (i.e. more involved than other agencies) in about ⅔ of community-based heart health activities. In contrast, the health unit in *Down* initiated a heart health program in 1987, and received enrichment funding from the provincial government as one of five heart health demonstration communities in Ontario. Unique to public health practice at the time, the heart health program was run by a community partnership, with strong coordination and program support from health unit

Table III: Comparison of *Up* and *Down* on baseline characteristics

SIMILARITIES	DIFFERENCES
IMPLEMENTATION	
Overall implementation of heart health activities at a 'low level of implementation'	*Up* had higher implementation in the health care setting and for physical activity; lower implementation for general heart health (>1.5 point difference in these settings and risk factors)
ORGANIZATIONAL PREDISPOSITION	
Overall importance of organizational practices for heart health was rated between 'fairly' to 'very' important	
ORGANIZATIONAL PRACTICES	
Overall effectiveness of organizational practices was rated between 'somewhat' to 'fairly' effective	*Up* rated evaluation practices as more effective than *Down* (1 point difference)
INTERNAL ORGANIZATIONAL FACTORS	
Processes: Co-ordination of tobacco, nutrition and physical activity promotion programs in the health department rated as 'fairly well co-ordinated' **Leadership**: Priority of heart health in the health department rated between a 'medium' to 'high' priority Health unit leadership characterized by bringing forward program ideas and bringing agencies together **Human and Financial Resources**: Per capita funding for public health 'healthy lifestyles' programs at $7 per capita Belief in a comprehensive approach to heart health Heavy workloads a barrier to strong internal relationships Respect for staff with diverse background	**Structures:** Healthy lifestyles committee in *Up* versus a discipline-based structure in *Down* **Processes**: Internal (health unit) collaboration growing in *Up* and weak in *Down* **Leadership**: *Up* indicated a 'lead role' (defined as more involved than other agencies) for 61% of community-based activities, compared to 38% for *Down* (23% difference) Health department in *Down* established a heart health program in 1987 *Down* was a heart health demonstration project (with provincial funding) since 1990 **Human and Financial Resources**: Overall budget for public health lower for *Up* ($29 per capita versus $43 for *Down*) *continued on next page*

SIMILARITIES	DIFFERENCES
EXTERNAL SYSTEM FACTORS	
Support from Resource System: Used services of health promotion resource centres and found them useful **Partnerships**: Strong partnerships for heart health with a variety of community agencies, other health units and citizens Effective partnerships characterized by common goals and sharing resources Barriers to external partnerships included unequal workloads, different mandates, turf issues, interpersonal differences, lack of time **Contextual**: Municipal re-structuring underway Approximately 80% of the population 15 years and older 5-10% increase in population from 1991 to 1996 A majority of the population with English as a first language (approx 55-60%) CVD risk factors: Physical inactivity approx 56% Hypertension approx 10% Diabetes approx 3%	**Support from Resource System**: *Down* used services of the Heart Health Resource Centre (with a mandate to support the demonstration projects); and as a demonstration project was asked to provide information to the HHRC **Partnerships**: Priority of heart health in the community perceived to be 'medium' in *Down* and 'low' in *Up* **Contextual**: *Down* is a single municipality in a Metropolitan area and *Up* consists of 5 counties and a city; *Up* is mostly rural (covering 5,305 square kilometres) and *Down* is urban (covering 21 sq km) *Up* had a larger population (191,000 versus 102,000 in *Down*) 40% of the population had French as a first language in *Up* and other languages in *Down* Much higher immigrant population in *Down* (42% in *Down* versus 6% in *Up*) and visible minority populations (31% in *Down* versus 1% in *Up*) Higher proportion with university education in *Down* (25% versus 10% in *Up*) More favourable income and work status in *Down* (total income approx $3,500 higher and $100,000 difference in the average value of owned occupied dwellings) More medical services in *Down* (116 doctors per 100,000 versus 61 in *Up*) Teaching health unit in *Down* Many services not defined by municipal boundaries in *Down* Cardiovascular disease mortality higher in *Up* (297 deaths per 100,000 population versus 205 in *Down*) CVD risk factor differences: Daily smoking higher in *Up* (28% versus 21% in *Down*) Excess fat in the diet higher in *Up* (80% versus 65%) Obesity higher in *Up* (28% versus 22%)

staff. Community involvement was expanded from 1990 to 1994, mostly in response to requirements to receive the enrichment funds. By 1994, the heart health program was relatively arms-length from other health unit programs and operations, though health unit staff continued to provide coordination, organizational and program support. Operating within the partnership structure, the health unit reported a lead role in approximately 40% of heart health activities (30% lower than *Up*). Meanwhile, mandatory public health programs, including the healthy lifestyles programs, were largely accomplished through a traditional discipline-based structure within the health unit.

With respect to external system factors, the cases varied on many geographic, demographic, health service and health status characteristics. *Up* is situated in eastern Ontario and consists of 5 counties and one city. It covers a large geographic area and is mostly rural. The population in 1994 was approximately 191,000 and included a large proportion of Francophones. *Down* is a single, urban municipality, covers a small geographic area, and is situated in south-central Ontario. The population in 1994 was approximately 108,000, with almost half representing immigrant groups. Whereas income, education and health services were lower in *Up* compared to *Down*, circulatory death rates and some CVD risk factors, including smoking, excess fat in the diet and obesity were higher.

Data Sources

Quantitative and qualitative data previously collected for CHHIOP (during the time period 1994 to 1997) were used for this study. Secondary analyses of CHHIOP data were supplemented with information from staffing and budget reports for Ontario public

health units (Public Health Branch, 1995, 1998), census data (1991 and 1996), and unpublished results from the 1990 Ontario Health Survey. The classes of variables in the theoretical framework were used to identify potentially relevant information from all data sources. Indicators are listed in the Appendix. CHHIOP sources include:

a) *CHHIOP health unit surveys, 1994 and 1996*: These surveys are described in detail elsewhere (Riley et al., 2001b). Surveys of all health units were completed in 1994 and 1996, with a 100% response in both years. Organizational level data were obtained on predisposition, capacity and implementation for heart health promotion. A mailed survey was completed under the direction of the Medical Officer of Health by those people who were most involved in managing and/or delivering heart health activities in the 1994 and 1996 calendar years. Acceptable levels of reliability and validity were demonstrated (Riley et al., 2001b).

b) *CHHIOP survey of community agencies, 1997*: This survey is described in detail elsewhere (Elliott et al., 2000a). The main focus of the survey was on agency involvement in heart health promotion activities and partnerships for these activities. Agencies participating were those with a mandate in some aspect of heart health promotion, and included voluntary health agencies, school boards, municipal Parks and Recreation departments, and local YM/YWCAs. The survey was completed by telephone by the individual in each agency who was most familiar with heart health programming. Seven and six agencies participated in *Up* and *Down*, respectively.

c) *CHHIOP qualitative study, 1997*: A technical report is available on the 1997 qualitative study (Elliott et al., 1998b). In-depth, semi-structured interviews were conducted with a

total of 38 public health professionals who were most involved in heart health promotion from a subset of 8 health units. The primary purpose of the interviews was to explain changes in predisposition, capacity and implementation of heart health promotion activities from 1994 to 1996. Five individuals were interviewed from each of the two cases in the current study. Respondents were predominantly well-educated females between 36-55 years, from a range of professions within the health unit, including managers, public health nurses and health promotion officers/ coordinators. Three of the five respondents from each location completed the health unit surveys in 1994 and 1996, including the same Medical Officer of Health in each case. Interviews were completed by the same two interviewers in both locations. A systematic thematic analysis of the in-depth interview data was facilitated using qualitative software (*Ethnograph*). The theme code set was developed using both deductive and inductive approaches, allowing researchers to address specific objectives while allowing new ideas/themes to emerge from within the qualitative data. Reliability was assessed using inter- and intra- rater reliability while validity was assessed using member-checking (see Baxter and Eyles, 1997). Using these data, summary reports were developed for each participating health unit (n=8). These reports summarized main findings by theme and included direct quotations from original transcripts which best articulated the view of individuals within the unit. For this study, the main data source was these summary reports. In addition, original transcripts were read and additional analyses were done using *Ethnograph* to explore selective themes in more detail.

Analysis

Single case analyses provide a necessary foundation for case comparisons (Yin, 1994). Using the same interpretive process, explanations of the observed changes in implementation were developed for *Up* and *Down* independently. For each case, results were compiled for all indicators listed in the Appendix. Results were coded as supporting change in a positive direction, no change or change in a negative direction. To the extent possible, time ordering and relations between variables were also determined. The relative contribution of factors to the change process was judged based on strength of evidence. Strongest evidence was demonstrated by meeting all three of the following criteria, however, few variables were measured using both qualitative and quantitative methods:

1. Qualitative findings (from in-depth interviews of public health staff) reported that the factor influenced a change in implementation. Factors reported with the greatest frequency and intensity were considered to provide the strongest evidence.
2. Quantitative findings showed that the factor changed during the study period, in a direction which supported the observed change in implementation.
3. Theoretical and/or empirical literature (other than from CHHIOP) support a link between the factor and the level of implementation.

A subsequent comparative case analysis examined similarities and differences in the single case explanations, including the types of factors supporting and limiting implementation change, as well as the amount of change in these factors, the timing of changes, and the interplay of factors. Possible implications of baseline differences in the cases were also examined.

RESULTS

Single Case Explanations

Figures 2 and 3 highlight the major factors explaining implementation change in *Up* and *Down*, respectively. 'Conditions' did not change during the study period, but provide an overview of the circumstances within which change took place. 'Processes' initiated or contributed to the 'Outcome' of implementation change.

During the study period, *Up* experienced an accelerated increase in implementation relative to other health units. The increase was facilitated most by internal organizational factors, which were strong enough to overpower characteristics of the external system known to limit implementation, including significant demographic (e.g. low income and education, large Francophone population) and geographic (e.g. 6 municipalities, large area, mostly rural) challenges.

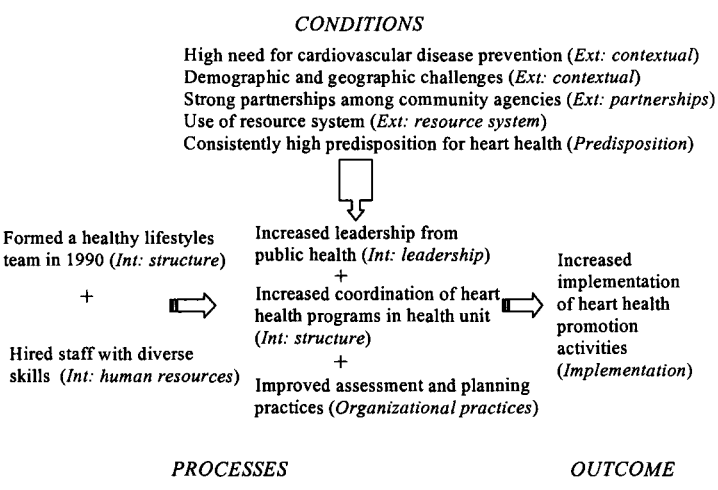

Figure 2: Explanation of implementation change - *Up*

Following the introduction of the healthy lifestyles programs into the public health mandate in 1989, *Up* re-organized internally to form a healthy lifestyles team (Figure 2). It took approximately five years to

realize the full benefit of the new structure, due to: a) overcoming resistance to the organizational change; b) learning how to work as a multi-disciplinary team; and c) hiring new staff to work as members of the team. The healthy lifestyles committee facilitated a multi-risk factor approach:

> *"within our health unit we try to develop initiatives that combine the three lifestyles together, like nutrition, tobacco and physical activity"*,

and a multi-disciplinary approach:

> *"if we need to develop a project or a program, we usually try to get input from the public health nurses, public health educator, nutritionists, physical activity people, even environmental people."*

On its own, however, the new organizational structure was insufficient to substantially increase implementation of healthy lifestyles programs. Hiring staff with non-traditional and diverse backgrounds to work as members of the multi-disciplinary team was also needed:

> *"I find that the diversity of background is a definite asset to us. And I think that's a big factor in implementation. You don't have the socialized mentality of a health care provider when you go get people with different backgrounds."*

Changes in the organizational structure and staff facilitated an increase in public health leadership for heart health promotion; an increase in coordination of heart health (i.e. healthy lifestyles) programs; and an increase in the effectiveness of organizational practices (i.e. assessment, planning) supporting heart health promotion. These changes were supported by ongoing assistance from resource organizations and a consistently high priority given to heart health within the health unit.

For *Down* (Figure 3), 1994 to 1996 was a time to re-group/ re-organize for healthy lifestyles promotion in general and for heart health in particular. This was after an innovative and active history in heart health promotion as a health unit and as a community. Despite many factors promoting positive change (e.g. consistently high predisposition, partnerships with other agencies, support from the resource system, highly educated population), and a provincial trend of small, steady increases, *Down* experienced a large decrease in implementation of heart health promotion.

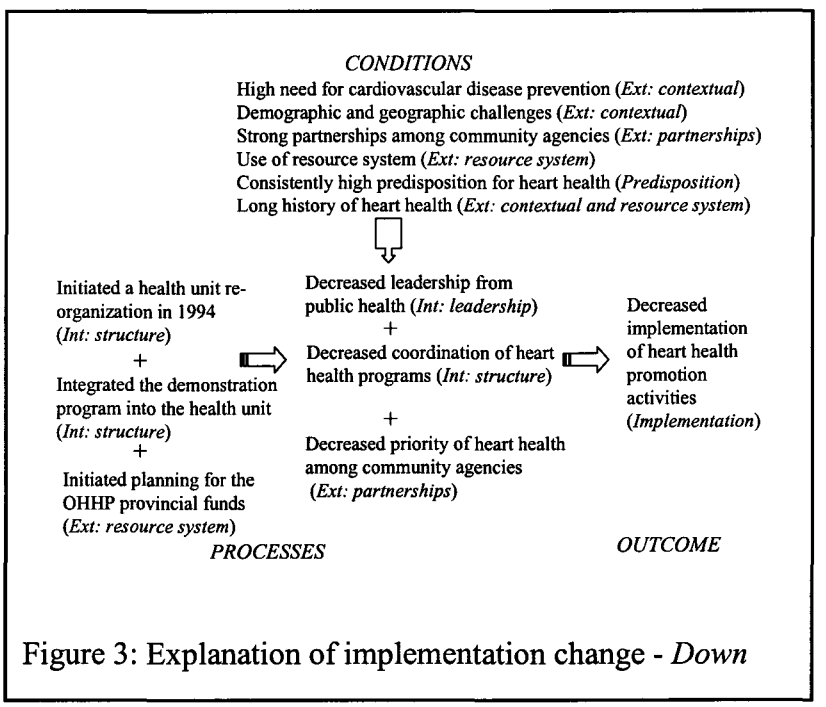

Figure 3: Explanation of implementation change - *Down*

A major precipitating event was a health unit re-organization. During the study period, the health unit re-organized to form a healthy lifestyles team, with a main objective to enhance multiple risk factor programming rather than continue to address behavioural risk factors (e.g. smoking, physical inactivity) individually. As expected, coordination of heart health programs decreased during the organizational change process, and increased once the healthy lifestyles team was established. The re-structuring within

the health unit was the main stimulus for a decline in implementation, which was exacerbated by a number of other related factors.

Specifically, the health unit re-organization was more complex since it incorporated the integration of the heart health demonstration program. During the study period, the demonstration phase was winding down, and the major focus was on how to sustain the program:

> *"a decline in implementation is a reflection of, again, the program coming back into the health unit, the program being shut down for a period of about 18 months where they were concentrating on how they were going to sustain themselves as a separate program".*

Together, the integration of the demonstration program and the health unit re-organization resulted in many staff changes and less emphasis on programming issues compared to previous years:

> *"in 95 and toward the end of 94, [the heart health program] lost its staff, there was great staff change-over. In 94 the program manager changed, and several staff changed and then there were staff hired on temporary contracts to do specific projects." "The re-organization was also an influx of staff, because I came on and shortly after me there were 7 people too. And our team's gone through many changes in terms of management".*

These changes led to a temporary lapse in health unit leadership for heart health. Without this leadership, priority given to heart health among community partner agencies also decreased, contributing to the observed decline in heart health implementation.

Implementation was further compromised from 1994 to 1996 because of a focus on planning for the Ontario Heart Health Program. The health unit and other community agencies were working together to develop a five year strategic plan as part of an application process for provincial funding. In addition to a heavy emphasis on planning,

uncertainty regarding funding also contributed to less emphasis on implementation compared to previous years:

> *"the whole uncertainty is frustrating because it's already end of the year"*
> *"I mean it's dragged on and on and that's been difficult. It has held back promotion of my strategic plan because I don't have any confirmation of dollars."*

The decrease in implementation in the two year study period was a dramatic turn of events for a health unit that was a leader in heart health promotion. Public health staff predicted that the long-term result of the re-organization would be an increase in implementation:

> *"I think if you look at this [overall implementation rating] a few months down the road you might see a climb. It won't continue to drop."*

Consistent with these predictions, implementation increased by 1.3 points from 1997 to 2000 (unpublished data from a survey of health units in 2001).

Case Comparison

The major factors responsible for implementation change in both cases were strikingly similar, despite baseline differences in internal (health unit) and external environments. Implementation change was most strongly influenced by internal organizational factors; notably, public health leadership, organizational structure, and skills of staff. Where present (in *Up*), public health leadership, and an established multi-disciplinary structure consisting of staff with non-traditional and diverse health promotion skills resulted in positive implementation change. Where absent, and during a process of re-structuring within the health unit (in *Down*), negative implementation change was the result.

The cases were also similar on the typical role of the health department. Despite different histories of heart health programming, both health units described their typical role as coordination (e.g. bringing agencies together) and supporting implementation of community-based activities. With the exception of during the health unit re-structuring process in *Down*, the health units were typically more involved than other agencies (i.e. leadership role of the health unit).

Although the specific functions of the health unit were described in similar ways in the two cases, *perceptions* of the role of the health unit differed. In *Up*, public health staff more commonly described a 'lead' role of the health unit, whereas in *Down*, staff more commonly reported a 'support' role. This difference might be explained by the experience of *Down* as a demonstration project; specifically, the condition to enhance community involvement to receive enrichment funds. This condition may have resulted in a 'lead' role for public health being interpreted as undesirable and, thus, a greater tendency by staff to describe their roles as 'support'.

Another difference between the two cases was the influence of the opportunity to receive provincial funding for heart health. The potential funding incentive had little to no impact on activities in *Up*:

> *"It has been announced so long ago and it still hasn't come. We're not waiting for that."*

In contrast, substantial frustration and negative consequences were reported by staff in *Down*. The differential response might be explained by different past experiences with special funding projects - *Down* was a heart health demonstration community whereas *Up*

was not. Communities that receive special funding may develop a dependence on those funds for sustained activity.

Up and *Down* also differed on some incentives for maintaining a high priority on heart health. Both *Up* and *Down* reported high rates of CVD and associated risk factors as motivating factors. *Down* reported an additional community responsibility, which seemed to stem from its innovative history in heart health, including its participation as a demonstration community.

DISCUSSION

This study adds to both the science and practice of health promotion. The results contribute to knowledge on organizational aspects of health promotion implementation. They identify some core elements involved in the transformation of public health, including: leadership, organizational structure and staff skills. These factors are all considered to be important dimensions of organizational capacity for health promotion (e.g. Hawe et al., 1997; Advisory Board of the Third International Heart Health Conference, 1998; Goodman et al., 1998). The dominant influence of internal organizational factors on the implementation change process is noteworthy, since in much of the health promotion literature, the focus is on external organizational relationships (or partnerships).

With respect to partnerships, study findings contribute to the increasing dialogue on community coalitions for health promotion (Butterfoss et al., 1993; Stoto et al., 1996; Wolff, 2001); specifically, the role of public health agencies in community coalitions. While shared 'ownership' among participating members (agencies and/or citizens)

remains a useful goal to optimize coalition functioning, specific contributions of various partners may (appropriately) vary depending on mandate, resources and individuals involved. In the case of public health agencies, this study suggests a leadership role is vital to the sustained implementation of community-based health promotion activities. Results suggest that leadership may be operationalized by building partnerships, coordinating efforts of partner agencies, and providing program implementation support.

Results also provide support for a social ecological approach to health promotion. Specifically, they reinforce the importance of the institutional context (i.e. public health and other community agencies) for health promotion (Rutten, 1995; Green et al., 1996). Within the organizational setting, results illustrate the important interaction of individual level (i.e. staff skills) and organizational level (i.e. team structure) variables. Results also highlight the importance of community context in the implementation change process. In this study, history of heart health programming was particularly important. Notably, participation as a time-limited demonstration project influenced the magnitude of organizational re-structuring, the influence of external funding incentives, the community participation process, and perceptions of community accountability.

The results do not support the proposed links between changes in organizational predisposition and practices, and change in implementation. Insufficient sensitivity of measures, relatively high baseline levels (in predisposition), a short 2-year time period for the study, and lack of information prior to 1994 (e.g. since sustained levels on these variables may be better predictors of implementation change as seen in the quantitative path analysis reported in Riley et al., 2001b) may explain, in part, the absence of these

factors in the explanation of implementation change. Proposed contributions of external system factors were also not found. The time period of two years may be too short to demonstrate the (potential) influence of long-standing circumstances such as demographic and geographic characteristics. These and other contextual factors may also be more relevant at later stages of implementation.

A major practical implication of the findings is to continue efforts to strengthen public health, with a focus on creating multi-disciplinary teams consisting of staff with a variety of health promotion skills, and developing strategies to enhance public health leadership while fostering strong community partnerships. Another implication is for the design of demonstration or pilot projects in health promotion. Terms and conditions attached to incentive funds should strive to maximize positive consequences (e.g. a sense of community responsibility) and minimize negative consequences (e.g. lack of integration with agency processes and activities).

Future Research

Results of a single, pair-wise comparison are more suggestive than definitive. To increase the application of findings, similar research needs to be carried out in other health systems and with other issue areas (though still focussing on multiple, community-based interventions taking a population approach to prevention).

To build on the findings in this preliminary work, other similar studies could examine additional aspects of implementation (Champagne et al., 1993; Scheirer et al., 1995). For example, direct measures of implementation could be incorporated, other measures of agency performance could be included, and the quality (or fidelity) of

implementation could be assessed. Future studies should focus on the interplay of factors influencing implementation change, and assess perceptions of the influence of various factors (e.g. barriers to implementation, history of collaborative relationships and programming). Future studies should also examine factors influencing change at later stages of implementation. During these later stages, different factors, such as participation of community partners, technical assistance, or contextual factors, may have a stronger influence on changes in implementation than organizational shifts within public health agencies.

Another area for further research is to examine long-term consequences of demonstration projects. 'Durability' or 'sustainability' of demonstration projects have been examined (Thompson et al., 2000), but little attention has been given to understanding consequences experienced by participating agencies, and how those consequences influence related program initiatives and collaborative relationships.

APPENDIX: Constructs and indicators for explaining changes in implementation

Main data sources are noted using the following abbreviations in parentheses:

HU = CHHIOP health unit surveys, 1994 and 1996
CA = CHHIOP survey of community agencies, 1997
Qual = CHHIOP qualitative study, 1997

IMPLEMENTATION

change in level of implementation of activities for risk factors (tobacco - 18 items; nutrition - 24 items; physical activity - 17 items; general heart health - 15 items in 1994, 16 items in 1996); settings (schools - 16 items; workplaces - 16 items in 1994, 17 items in 1996; health care - 10 items; community at large - 32 items); and risk factor/setting combinations (mean score for items in each subscale, rated on a 5-point scale - see Table I) (HU)

perceptions of factors influencing change implementation from 1994 to 1996 (Qual)

CAPACITY

change in level of effectiveness of 18 organizational practices to support heart health promotion activities and subscales for assessment (4 items), planning (6 items), supporting implementation (6 items), and evaluation (2 items in 1994, 4 items in 1996) (mean scores for 4 subscales and overall - items rated on a 5-point scale from 0=not aware activity was conducted to 4=activity was conducted and was very effective) (HU)

perceptions of the influence of capacity on implementation change from 1994 to 1996 (Qual)

PREDISPOSITION

change in level of importance of 18 organizational practices to support heart health promotion activities and 4 subscales (as above for capacity) (mean scores for subscales and overall - items rated on a 4-point scale from 1=not at all important to 4=very important) (HU)

perceptions of the influence of predisposition on change in implementation (Qual)

INTERNAL ORGANIZATIONAL FACTORS (includes Human and Financial Resources, Structures, Processes, and Leadership)

change in funding per capita for public health programs and healthy lifestyles programs

change in coordination of programs (rating from 1=not well coordinated to 3=very well coordinated) (HU)

change in proportion of activities in which the health unit had a lead role in implementation (ratings of 'lead', 'support' or 'no' role for community-based heart health activities) (HU)

change in priority of heart health within the health unit (rating of 1=low priority to 3=high priority) (HU)

continued on next page

INTERNAL ORGANIZATIONAL FACTORS *(continued)*

perceptions of the influence of internal organizational factors on implementation change (Qual)

health unit involvement in heart health compared to other agencies (1996 only) (HU)

EXTERNAL SYSTEM FACTORS (including Partnerships, Support from the Resource System, and Contextual Factors)

level of involvement of community agencies in heart health programming for risk factors (tobacco, nutrition, physical activity, general heart health) (ratings on a 3-point scale from 1=not at all involved to 3=very involved) (CA)

change in use of resource system (number of resource centres used each year) (HU)

change in usefulness of resource system (number of resource centres rated as 'fairly' or 'very' useful) (HU)

usefulness of CHHIOP (1996 only) (including surveys, reports, promotions, conference presentations, and interactions with project members) (sum of CHHIOP activities rated as 'moderately' or 'very' helpful) (HU)

change in priority of heart health in the community (rating from 1=low priority to 3=high priority) (HU)

change in geo-political structure

change in demographics (size and characteristics of population, social and economic conditions)

change in health services (especially history of heart health programming in community)

change in health status (rates of cardiovascular disease and risk factor profile)

perceptions of the influence of external system factors on implementation change (Qual)

CHAPTER 5:
Research Contributions and Future Directions

CHAPTER OVERVIEW

This chapter directly addresses objective three of the research program by synthesizing main contributions from the three studies reported in chapters 2, 3 and 4. This chapter builds on the implications for science, policy and practice discussed in previous chapters, which were inevitably limited by the word count restrictions for journal articles. In particular, a more in-depth analysis is offered on relevance of the research to heart health promotion in Ontario. Also, while recognizing the multi-disciplinary nature of the dissertation, contributions most relevant to a geography of health promotion are noted.

Table I provides a summary of main contributions discussed in this chapter. The chapter concludes with some suggestions for future research.

Table I: Summary of main contributions from this dissertation

Some Main Contributions from this Dissertation
THEORY • Shows promise in combining diffusion theory and social ecological theory to understand dissemination of health promotion (diffusion theory mainly for description and social ecology for explanation). • Reinforces knowledge about health promotion dissemination, including stages (or functions) of dissemination, the iterative process, and the role of organizational capacity building. • Generates new knowledge about dissemination related to the time course for system change and factors energizing and constraining movement within and between dissemination stages. • Suggests that an interplay of organizational and environmental factors may help to explain different levels of implementation. The relative influence of these factors and their structural relationships are also proposed. • Suggests that internal organizational factors may have the most influence on implementation change, especially during early stages of dissemination. • Provides empirical support for linkages between organizational capacity and implementation; and between resource centre (or technical) support and organizational capacity.
METHODS • Operationalizes a social ecological approach by exploring how factors operating within internal (organizational) and external environments interact to influence the dissemination of health promotion programs. • Uses quantitative and qualitative approaches to better understand the dissemination process. • Applies three under-used techniques in health promotion research (i.e. case study methodology, participant observation, path analysis) to study the dissemination process.
POLICY AND PRACTICE • Provides a provisional framework for dissemination of health promotion for policy makers and practitioners at all levels (e.g. international/ national, provincial, local). The framework includes: a) desired outcomes (or objectives) for five stages of dissemination b) strategies to achieve the stage-based objectives (e.g. routine scans of the internal and external environments, appraisal of evidence and practice, knowledge synthesis, technical support) c) critical supports, including factors within the public health system (e.g. champions with decision-making authority) and factors in the environment (e.g. research, policy context, partnerships). • Encourages those responsible for dissemination to be strategic (e.g. in their use of the dissemination framework) and opportunistic (capitalize on critical supports). • Identifies some priorities to enhance heart health promotion in Ontario, including: a) re-visiting aspects of problem/opportunity identification (e.g. acknowledge influence of social determinants of cardiovascular health; develop objectives that reflect knowledge about a realistic time course for change; acknowledge the magnitude of change within the public health system) b) maintaining a high priority on (heart) health promotion c) increasing the level of investment to achieve population impacts d) continuing to identify and disseminate promising practices e) continuing to strengthen health promotion capacity within the public health system f) incorporating monitoring, evaluation and research activities into usual public health practice.

CONTRIBUTIONS TO THEORY

This research is the first known attempt to combine diffusion and social ecological theories to study health promotion dissemination. Collectively, the three studies show promise in combining these theories to help understand dissemination of population health promotion within the public health system. Diffusion theory is most useful for description, and social ecological theory for explanation.

The research provides support for several features of diffusion theory. Study one (reported in chapter 2) supported that dissemination involves multiple stages (e.g. problem definition, innovation development, implementation). Study one also reinforced that the dissemination process is iterative, while maintaining an overall progression from defining the problem to evaluating solutions. The observed dissemination process for heart health in Ontario was non-linear. Events happened in more than one stage at a time and each stage was revisited several times throughout the ten year study period. Events reinforced and extended previous activities (e.g. definition of the problem was reinforced every three to five years beginning in 1989).

The research also extends knowledge on health promotion dissemination. One new insight is the long time needed to achieve substantial change within the public health system. Study one showed that it can take ten years to set the public health agenda and to prepare for change (e.g. developing innovations, strengthening predisposition and capacity), especially when new practices represent a significant departure from traditional ways of working (Rogers, 1995). The time period for dissemination is also extended if the object of dissemination is unclear. Typically, a program (with objectives, strategies and

results) is the basic material for dissemination (King et al., 1998). In Ontario, dissemination objects covered a much wider range, including: programs, policies, strategies to build and sustain partnerships, and knowledge of population health. Since the end of the demonstration phase, these and other promising practices have been identified for widespread application.

The research also contributes to theoretical aspects of organizational capacity, including the nature of capacity and its role in health promotion dissemination. With respect to the nature of capacity, the studies reinforce that health promotion capacity consists of many skills and resources, including: structures (e.g. multidisciplinary teams), processes (e.g. collaborative planning among local agencies, media advocacy), programs and services of organizations (e.g. educational activities, environmental change programs), individual and organizational values (e.g. focus on populations), knowledge (e.g. population health, advocacy strategies), and skills (e.g. building partnerships) (e.g. Hawe et al., 1997; Goodman et al., 1998). Studies two (quantitative analysis) and three (comparative case study) offered additional information on possible relationships between some dimensions of capacity. For example, in study two, both organizational structure and partnerships were shown to be associated with organizational practices to support heart health (e.g. assessment, planning, evaluation). In study three, organizational structure was associated with coordination of programs and public health leadership.

With respect to the role of organizational capacity in dissemination, studies one and two provide strong support for capacity building as an essential function. Study one showed that, in Ontario, "capacity", or skills and resources for health promotion was an

important focus following the relatively recent paradigm shift in public health towards community-based, intersectoral and population approaches (World Health Organization et al., 1986). The public health system required a fundamental re-tooling to effectively carry out its mandate in health promotion/ chronic disease prevention. Study two provided empirical support for organizational capacity as a direct and strong predictor for level of implementation, and for supports from resource centres (i.e. technical support) enhancing organizational capacity.

Another theoretical contribution of this research is support for a social ecological approach to health promotion. All three studies concluded that an interplay of factors operating within the public health system (i.e. internal organizational factors) and in the external environment (i.e. external system factors) helped to explain the nature and timing of dissemination events (including movement within the implementation stage). For example, study one demonstrated that dissemination events, such as the introduction of the public health mandate in healthy lifestyles promotion, and the launch of heart health demonstration communities, were the result of champions with decision-making authority within the public health system (internal factor) operating in a supportive environment (e.g. well-established evidence, consistent with policy directions, limited barriers in decision-making structures) (external factors). Similarly, in study two, the final model to explain levels of implementation included an interplay of internal organizational factors (i.e. organizational structure, organizational priority, organizational capacity), and external system factors (i.e. partnerships, resource system support).

All theoretical contributions are highly relevant to a geography of health promotion. The strongest point of connection is support for a social ecological approach to health promotion. Study findings underscore the importance of a relational view of space, whereby interdependencies of environmental, community, organizational and individual factors are central to understanding the operations and outcomes of organizations. Study three suggested that a combination of internal organizational factors had the strongest influence on the implementation change process. Study three also illustrated the importance of community history (or context) in shaping the impact of variables such as incentive funds and perceptions of community accountability.

Theoretical aspects of diffusion are also highly relevant to geographical inquiry. They are closely aligned with a core geographic interest in understanding variation across space and over time. A message from this dissertation is that much more needs to be learned about variations observed in health promotion implementation across communities and over time. Current conceptions of dissemination (e.g. iterative, multi-stage, long-term process) offer a useful framework for studying such variations.

CONTRIBUTIONS TO RESEARCH METHODS

Although becoming more common, especially for problem-based, applied research, mixed methods designs are not the norm in public health research (Baum, 1995). The studies reported in this dissertation provide examples of using both quantitative and qualitative methods to better understand dissemination and to develop practical applications. As expected, quantitative data (e.g. province-wide surveys) were most suited for description and qualitative data (e.g. in-depth interviews) added richness to

explanation. Whereas traditional diffusion studies in geography used sophisticated, quantitative modelling techniques to reveal patterns of disease, health facility location and other health-related phenomenon, future studies could incorporate a qualitative component to understand observed patterns.

This dissertation also provides examples of three seldom-used methods in health promotion research: the case study method, participant observation, and path analysis.

- The *case study method* is under-used in health promotion research despite the contextual nature of health promotion (Eakin and MacLean, 1992). Studies one and three provide examples of using a case study approach; both drawing on multiple data sources and methods. They demonstrate the value of case studies, especially to interpret events or processes for which information is available, however, was not collected to specifically address the purpose of the case study. Studies one and three also reinforce the importance of rigour in case study design (Yin, 1994); including developing study propositions; defining the 'case' and the unit(s) of analysis; and understanding the strengths and limitations of various data sources and methods.
- *Participant observation* is another seldom-used technique, especially in studies that span a long period of time. Study one provides an example of using participant observation as an explanatory tool. 'Living' within and conducting participatory research within the Ontario health promotion environment throughout the study period, allowed the author to interact with the players, and 'observe' events as they were unfolding. This direct experience enriched the

interpretive analysis of how and why dissemination of heart health promotion occurred in Ontario over the ten year period. A promising direction, therefore, is for researchers to study phenomena with which they have direct experience. This type of 'co-operative inquiry' or 'partnership research', whereby meaning is revealed through experience, is of growing interest within health promotion (e.g. was the theme of a national health promotion conference in Victoria, BC, April 2002).

- *Path analysis* is a third under-used method in health promotion research, often because of statistical limitations (e.g. sample size too small, insufficient quantitative measures for explanatory variables). Nevertheless, efforts to map relationships between variables is useful in health promotion, especially since, typically, multiple factors influence health promotion processes and outcomes. Study two provides an example of using path analysis procedures. Notwithstanding limitations, the path analysis was useful to identify a set of five variables, and relationships between them, that helped to explain levels of implementation. As part of the method, study two also provides an example of applying health promotion theory to the construction of explanatory measures. Explanatory variables were constructed based on assumptions of the change process; that the nature and levels of processes and characteristics (e.g. level of priority given to heart health) over a period of time are most relevant to levels of implementation at a single, later point in time.

CONTRIBUTIONS TO POLICY AND PRACTICE

Findings from the three studies have many implications for health promotion policy and practice. In this section, general implications are discussed first. They may be applied to heart health promotion and other similar issues (e.g. chronic disease prevention in general) undertaken in official public health agencies in Ontario and other similar settings. Guidelines may be useful for those working at different levels, including international/ national, provincial and local. Following general implications, strengths and limitations of the dissemination of heart health promotion in the Ontario public health system are discussed, with some specific, evidence-based suggestions for ways to enhance dissemination in Ontario.

Some Guidelines for Health Promotion Dissemination

Collectively, the three studies suggest some evidence-based guidelines for individuals and organizations responsible for health promotion dissemination. Guidelines are suggestive more than definitive since they reflect results of a single case.

First, results suggest that policy makers and other public health professionals should consider a long time horizon for health promotion dissemination. They need to set realistic expectations for changes, such as approximately ten years to create capacity for substantial growth in levels of implementation. This time horizon has implications for time periods for various phases of initiatives, such as the Ontario Heart Health Program and the Canadian Heart Health Initiative. Five years is a very short period of time for substantial dissemination to occur when a desired object of dissemination is meaningful

levels of implementation of comprehensive community-based programs to achieve population impact. *(Study one)*

Results also suggest that practitioners view dissemination as a dynamic process; one that involves a number of stages and several iterations between stages. Dissemination can be usefully guided by objectives in each of the dissemination stages, strategies to achieve objectives, and critical supports for effective action. These features are summarized in Table II as a provisional framework for health promotion dissemination. To apply this framework requires the integration of strategy and opportunity. Strategy involves identifying intermediate and long-term dissemination objectives and routinely taking inventory of organizational and environmental factors, focussing on those listed under 'Critical Supports' in Table II. Opportunity involves implementing strategies that capitalize on opportunities to achieve one or more dissemination objectives. *(Study one)*

Highlights of directions suggested in the dissemination framework are described in four areas: public health priorities, organizational practices, technical support and monitoring.

Table II: A provisional framework for dissemination of health promotion

Stages	Desired Outcomes (Objectives)	Strategies	Critical Supports
Problem/ Opportunity Identification	• a need for change is identified, preferably by public health officials with decision-making authority • an opportunity to improve public health practices is identified, especially by key decision-makers	• environmental scanning (e.g. epidemiological data on mortality, morbidity, risk factors; practices in other jurisdictions) • appraisal of evidence and practice • goal-setting (e.g. provincial public health goals) • policy development (e.g. public health mandate) • consciousness-raising (e.g. survey reports)	• information: epidemiology; effectiveness of public health strategies; experiences of other jurisdictions • champions within the public health system • public health infrastructure: legislative authority; information systems • supportive health policy environment
Innovation Development or Adaptation	• health promotion activities are found or developed that are appropriate for the public health system and the local context • activities achieve (or are expected to achieve) their intended effect	• environmental scanning (e.g. practices in other jurisdictions) • appraisal of evidence (e.g. assessment of promising practices) • modelling	• information on experiences in other jurisdictions • champions within public health system, preferably with decision-making authority • infrastructure: system for identifying, appraising, documenting and distributing 'best' or 'promising' practices • realistic expectations for the impact of health promotion activities • supportive health policy environment
Strengthening Predisposition and Capacity	• public health agencies are motivated to undertake new health promotion practices • public health agencies have the skills and resources required to undertake new practices	• environmental scanning (e.g. capacity building systems in other jurisdictions) • appraisal of practice • incentives (e.g. demonstration project funding) • culture, knowledge and skill development (e.g. information resources, training, consultation)	• infrastructure: provincial resources and supports • sufficient time for culture and skill development • information: experiences of other jurisdictions; research (e.g. on capacity building in health promotion) • supportive health policy environment
Implementation	• health promotion activities are implemented according to set standards • health promotion activities are sustained, as appropriate • health promotion activities are revitalized, as needed	• rewards and incentives (e.g. funding) • adaptation to local circumstances	• sufficient funding to implement programs • champions for health promotion, especially at an administrative level • organizational priority given to new health promotion practices • supportive local organizational structures and practices (e.g. multidisciplinary teams) • appropriate knowledge and skills among service providers • partnerships • sufficient time for implementation • new practices are relevant to the general population • professional rewards and incentives for implementation
Monitoring, Evaluation and Research	• progress towards goals, objectives and targets is assessed • outcome evaluations are performed commensurate with investment in programs and include scientific and social validity • research is conducted to support the development and dissemination of new health promotion activities • monitoring, evaluation and research are used to inform other stages	• appraisal of practice • knowledge synthesis • research	• availability of appropriate constructs, indicators and measures • responsibility for monitoring, evaluation and research • evaluation and research skills

- *Public health priorities*: Not surprisingly, a high priority on health promotion was strongly associated with high levels of programming. And so was leadership by public health (while working in partnership with other community agencies). To advance health promotion dissemination, therefore, public health agencies need to give priority to health promotion and they need to provide leadership for health promotion programming. To effectively implement these strategies, more needs to be learned about how to set public health priorities and how to provide leadership from public health while enhancing community ownership. *(All three studies)*
- *Organizational practices*: Findings are clear that effective organizational practices are associated strongly with levels of implementation of heart health promotion activities. The most direct relationship between implementation and practices to assess, plan, support implementation and evaluate heart health promotion activities. Other important organizational practices include: coordinating tobacco, nutrition and physical activity promotion programs; forming multi-disciplinary teams for health promotion; hiring staff with diverse health promotion skills; partnering with community agencies; and doing systematic reviews (or scans) of the internal organizational setting and external environments to identify opportunities and threats. According to study findings, public health agencies need to optimize these practices to advance dissemination of heart health promotion. *(Some practices in all three studies)*
- *Technical support*: Results show that resource system use assisted with implementation of heart health promotion within communities. An implication for

practice is to invest in a provincial resource system to strengthen the links between research (i.e. knowledge of effective practices, or "what works") and practice (i.e. activities carried out by public health professionals, decisions made by public health policy makers). *(Studies one & two)*

- *Monitoring*: Monitoring is vital to provide meaningful feedback on progress with dissemination. At a population level, monitoring (or surveillance) systems typically focus on mortality, morbidity, and risk factors for various diseases. Systematic monitoring of programming is rare. Even more rare is systematic monitoring of organizational capacity. This dissertation suggests that some key indicators of capacity and implementation would be useful additions to ongoing monitoring systems. *(All three studies)*

Some Priorities to Enhance Dissemination of Heart Health Promotion in Ontario

The need to enhance dissemination of effective strategies to promote heart health is clear. In the research reported, level of implementation of heart health activities was the primary indicator of dissemination. Reported levels of implementation signal a need to increase heart health programming in all community settings. The low dose of programming is further reinforced by the level of investment in heart health promotion, which is a common indicator of 'dose' or intensity of programming (Centers for Disease Prevention and Control, 1999). In the year 2001, the most liberal estimate for the dose of heart health programming in Ontario was $2.95 per capita in Canadian dollars (Riley et al., 2002). This estimate includes the OHHP provincial funding, estimates of local in-kind contributions for the OHHP, and funding for local tobacco programming from the Ontario

Tobacco Strategy, which is another major source of funding for activities related to heart health. This investment does not compare favourably to expenditures that can be expected to translate into population-level impacts. An example from tobacco control illustrates this point. Several U.S. states have shown a dose-response relationship between per capita expenditure on tobacco control and smoking rates. This prompted the U.S. Centers for Disease Prevention and Control to recommend budget guidelines for comprehensive programming for tobacco control. Resourcing below these recommended levels would be unlikely to translate into significant shifts in population smoking rates. Resources ranging from $4.51 to $14.91 per year per capita were recommended (in U.S. dollars and for states with a population of 10 million) (Centers for Disease Prevention and Control, 1999). Informed by these recommendations, Ontario's Expert Panel on the recent renewal of the Ontario Tobacco Strategy recommended $8 Canadian per capita per year (Ashley et al., 1999). These recommended levels are much higher than resourcing for heart health in Ontario. Although direct comparisons cannot be made between tobacco control and heart health, it is safe to assume that spending for heart health (which includes tobacco control) would not be lower than spending for tobacco control.

How can dissemination of heart health promotion in Ontario be enhanced?

Table III offers suggestions for ways to increase dissemination of heart health promotion in Ontario. Priorities for Ontario were identified by assessing Ontario developments in relation to the dissemination framework (Table II).

Table III: Some priorities for Ontario to enhance dissemination of heart health promotion

Dissemination Stage	Some Priorities for Ontario
Problem/ Opportunity Identification	• Acknowledge social determinants (e.g. social inequities) as a risk condition for CVD. • Maintain priority on heart health promotion/ chronic disease prevention within the public health system. • Develop objectives for heart health promotion that take into account current status of dissemination and knowledge of the time course for change (e.g. include capacity building).
Innovation Development or Adaptation	• Enhance knowledge synthesis to identify best practices, including behavioural and social structural interventions, and ways to integrate heart health into chronic disease prevention initiatives.
Strengthening Predisposition and Capacity	• Improve co-ordination of tobacco, nutrition and physical activity programs within health departments. • Further establish multi-disciplinary teams within health departments for health promotion planning and delivery. In these teams, include staff with diverse areas of expertise, including community organization, advocacy, and social marketing. • Increase human and financial resources for (heart) health promotion. • Identify and nurture champions for (heart) health promotion. • Further strengthen networks and community partnerships for heart health promotion, preferably with public health taking a leadership role.
Local Implementation	• Increase levels of implementation of heart health promotion activities.
Monitoring, Evaluation and Research	• Establish a monitoring system that includes indicators of capacity and implementation of heart health promotion programs. • Conduct regular scans of the internal (organizational) and the external environments for opportunities and challenges. • Support research focussing on dissemination of health promotion. • Build in plans to evaluate the outcomes of innovative or large scale programs. Consider a wide range of outcomes at individual, organizational, environmental, and population levels, as well as social validity of the programs.

One priority is to re-visit aspects of how the problem is defined. Since 1989, the problem of CVD as a public health problem and as a problem of population health behaviours, has been reinforced at regular intervals. Current knowledge of risk factors and risk conditions for CVD signal a need for Ontario to update how the problem is defined. The influence of social determinants needs to be acknowledged (e.g. Raphael, 2001), and

objectives need to reflect knowledge about the long time course for change. For example, realistic and meaningful objectives for the next five years would emphasize changes in organizational capacity and community-based programming. Provincial objectives for the OHHP include programming objectives, however, they do not explicitly focus on capacity building (Riley et al., 2002).

To enhance dissemination, heart health promotion needs to be maintained as a public health priority. A high priority was maintained throughout the dissertation study period. Nevertheless, threats to maintaining this priority were also apparent (Elliott et al., 2000b), especially with an expanded public health mandate and competing priorities within communities. Ontario needs to develop strategies, therefore, to maintain a priority on heart health promotion, commensurate with the value of heart health activities to the health of the Ontario population.

Further work is needed to identify promising practices for heart health. In this area, Ontario has strong developmental work on which to build (e.g. a system to identify and classify promising practices). To reflect current knowledge and the current environment, the range of strategies to consider needs to be expanded. Useful additions would be strategies to reduce social isolation and social inequities; and strategies to integrate heart health promotion with other chronic disease prevention initiatives, such as prevention activities for stroke, cancer and diabetes. Initial signs of Ontario coalitions moving towards integrated approaches (e.g. heart health and cancer prevention, healthy lifestyles) were apparent in the late 1990s. Since then, these directions have become more

pronounced, and are consistent with health policy and practice environments (Riley and Feltracco, 2002).

Findings suggest that Ontario needs to stay the course on strengthening health promotion capacity within the public health system. Some priorities for capacity building include aspects of organizational structure (e.g. multi-disciplinary teams), organizational practices (e.g. assessment, planning, community partnerships), and leadership (e.g. champions for heart health promotion). In Ontario, a major strategy to enhance capacity is investing in a health promotion resource system. Findings support ongoing investments in this system, assuming activities of these centres result in enhanced capacity for health promotion.

Another area for growth is building on monitoring, evaluation and research activities. One opportunity is to incorporate some key indicators of organizational capacity and implementation of (heart) health promotion into routine monitoring for public health. CHHIOP provided a model on which to build for province-wide monitoring of some relevant and meaningful indicators of dissemination. The provincial evaluation of the OHHP continues to track some key indicators, however, 2003 is the last data collection point.

Another priority for monitoring is to scan internal and external environments for opportunities and for challenges. Ontario could develop a systematic process to track some key trends and issues within the public health system and in external environments most relevant to heart health promotion (e.g. research, experiences of other jurisdictions, policy directions). An environmental scanning process could include responsibilities for

both provincial and local public health stakeholders. Plans to synthesize findings and to identify implications would also need to be considered.

Evaluation also needs to be strengthened. One priority is to evaluate innovative and large-scale programs. Opportunities for outcome evaluations will increase over time as implementation issues are resolved and programs are being implemented as intended. To maximize the benefits of evaluation, a wide range of outcomes need to be considered, including the social validity of programs (e.g. cost savings from activities, population benefits, the meaning of 'heart health' or 'health promotion' to citizens, professionals, and organizations). Evaluation of resource system activity is also needed in order to set priorities for strategies to enhance local capacity for health promotion.

Lastly, dissemination in Ontario can be enhanced by growing the knowledge base on dissemination. In these early days of a second wave of dissemination research in health promotion, many unanswered questions remain. The next section outlines some promising directions.

FUTURE RESEARCH DIRECTIONS

Health promotion dissemination research is relatively new, with a preliminary agenda proposed in 1996 (Johnson et al., 1996). Accordingly, possible research directions are abundant. In this section, two streams of inquiry are proposed. The first is replication of the three studies in order to strengthen propositions about health promotion dissemination. The second stream is complementary research, with a focus on research that is most relevant to advancing heart health promotion in Ontario.

Replication of Studies

To strengthen findings in this dissertation, and to extend their application, the studies need to be replicated in other (public) health systems and with other health promotion issues. The Canadian Heart Health Initiative provides an opportunity for similar research to be conducted under different spatial (i.e. health systems) and temporal (i.e. time periods) conditions. Replication with other health promotion issues should give priority to issues that, like heart health, exemplify features of the new public health (e.g. population approach, community-based, collaborative).

Replication studies would be further strengthened by addressing some limitations of this dissertation research. Some priorities include:

- *Examine capacity among different types of organizations and among individuals*: The studies reported reinforce the importance of capacity in the dissemination process. CHHIOP research and the dissertation extensions focus on organizational capacity among health units. For heart health (and other similar issues), capacity among community agencies other than public health (e.g. community partners addressing similar risk factors and conditions) and among coalitions, a common organizational unit for comprehensive, community-based programs, would be useful additions. Building on the CHHIOP research, these three organizational units are being examined as part of the provincial evaluation of the Ontario Heart Health Program. In addition to various organizational units, embedded units should also be examined. For organizational capacity, individual capacity is an important embedded unit of observation and analysis.

- *Assess the quality of implementation*: Because of the long-term nature of dissemination, the *plausible* impact on population knowledge and risk factors is often what can be examined rather than actual impact. Long-term effectiveness is more plausible if quality of implementation is high. Incorporating strategies to assess quality of implementation would add strength to conclusions about likely effectiveness and, therefore, strengthen the links towards community and population impacts.
- *Develop complementary and, preferably, direct measures of predisposition, capacity and implementation*: In the CHHIOP and dissertation research, measures were limited to perceptions. Other useful measures might include observation, document review, expert opinion, and performance measures.

Some Research Priorities to Support Dissemination of Heart Health in Ontario

Considering the status of heart health dissemination in Ontario, knowledge in the following areas would help to optimize ongoing dissemination efforts:

- *Investing in prevention*: (Heart) health promotion receives widespread support in principle. Resource allocation, however, remains a minuscule proportion of the health budget. To increase investment in prevention, research is needed on how resource investment decisions are made, especially for health promotion, and on factors influencing these decisions.
- *Strategies to address the socio-economic environment*: Socio-economic factors, such as gender, employment, social isolation, and social inequities have a profound influence on (heart) health (Wilkinson and Marmot, 1998). Most heart

health initiatives in Ontario and other jurisdictions (including other Canadian provinces) tend to emphasize public awareness and education, education for intermediaries (i.e. those who deliver programs), and creating enabling environments (to encourage smoke-free environments, healthy eating and physical activity) (Riley et al., 2002). The powerful social determinants of health have had comparatively little attention. Similar to behavioural interventions, strategies to address social determinants could be assessed for effectiveness, plausibility and practicality (Cameron et al., 2001), although existing criteria in these categories may need to be revised for application to social structural interventions.

- *Priority setting in public health*: A high priority given to heart health promotion was strongly associated with high levels of programming. During the study period, the average priority ascribed to heart health by local health departments increased, but was consistently high. This priority may be threatened as the public health mandate expands disproportionately to public health resources. Research needs to focus on how to effectively set priorities that are appropriate to the value of various public health activities on the health of Ontario citizens.
- *Capacity-building strategies*: CHHIOP research and dissertation extensions concluded that the resource centres in Ontario contributed to enhancing local capacity. The resource centres include many players and a wide range of supports, mainly for health intermediaries (i.e. those who plan and deliver health promotion programs). Direct services to clients include: information and knowledge exchange/ diffusion; networking and referrals; consultation; and training. Little is

known, however, about the effectiveness of different types of capacity building activities. Knowledge in this area would help guide decisions in Ontario about the development of the Ontario Health Promotion Resource System.

CONCLUSION

Dissemination research is necessary to apply our growing knowledge of prevention and health promotion. Dissemination is both a process and an outcome. It is multi-disciplinary; it is applied; and it has been studied from multiple perspectives. This dissertation contributes to the science and practice of health promotion dissemination. Study findings reinforce the need for a systems view of dissemination. They assert that we can better understand and accelerate the dissemination of community- and population-based activities by focussing on various functions of dissemination and attending to the interplay of factors operating within particular organizational and environmental contexts. Findings suggest a framework for dissemination, which can guide policy and practice decisions. Findings also suggest specific options to enhance dissemination of heart health promotion in Ontario.

This research is a modest beginning. Much more needs to be learned about the dissemination of the new public health within complex and rapidly changing health systems. This knowledge is vital to effectively translate philosophical commitments to health promotion and disease prevention into public health policy and practice.

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APPENDIX A

Survey of Public Health Units: 1997 survey

CANADIAN HEART HEALTH INITIATIVE – ONTARIO PROJECT

1997 SCAN of Public Health Units

Survey of Capacities, Activities, and Needs for Promoting Heart Health

ORGANIZATIONAL RESPONSE

ANYWHERE COUNTY HEALTH UNIT

INSTRUCTIONS

1. To reflect an organizational response, we encourage you to complete this survey as a group. Question 1 on the next page will help you identify the most appropriate people to involve from your health unit.

2. Your responses will be treated as confidential.

3. Please mail or fax the completed survey by January 30, 1998. Use the enclosed envelope or send to:

   Rosemary Walker
   Health Behaviour Research Group - MC 6082
   University of Waterloo, Waterloo, Ontario, N2L 3G1
   FAX: (519) 746-8171

4. Please feel free to contact Rosemary Walker, Project Director, at (519) 888-4567 Ext. 2924 if you would like to discuss the project. Your call will be confidential.

We appreciate your assistance.

Sponsored by Health Canada and the Health Promotion and Public Health Branches of the Ontario Ministry of Health

STAFF ASSIGNED TO HEART HEALTH ACTIVITIES

1. a] Please list the names and positions of the six (6) people in your health unit (in addition to the Medical Officer of Health) who spent the most work time on heart health activities from *January 1, 1997 to now*, including staff who participated in the 1996 survey (see enclosed list) and continue to have responsibilities in heart health activities. "Heart health activities" include activities addressing tobacco, nutrition, physical activity, and multiple risk factors/heart health in general (see enclosed list).

	NAME	JOB TITLE
1.	Dr. John Black	Medical Officer of Health
2.		
3.		
4.		
5.		
6.		
7.		

b] Ask each person listed above to fill out a "Staff Information Form" (7 enclosed), and send the seven forms back with the completed survey.

c] Please list the names and positions of people other than those listed in a] above, who contributed to completing this survey.

IMPLEMENTATION OF HEART HEALTH ACTIVITIES IN YOUR COMMUNITY

2. *Activities designed to reduce tobacco use.*
Please indicate the *current* stage of development of each activity (including those carried out by agencies other than the health unit) *in your community* (area served by your health unit).

0 = Not aware of any organized activity being planned or implemented
1 = Active planning - some plans are in writing for the activity and/or it is being pilot tested
2 = Low level of implementation - the activity is at less than 1/3 of full implementation*
3 = Medium level of implementation - the activity is at approximately 1/3 - 2/3 of full implementation*
4 = High level of implementation - the activity is at over 2/3 of full implementation*
* Full implementation means the optimal level of implementation if resources were not limited.

SCHOOLS

		0-4
a.	Special events in schools (e.g., health fairs, National Non Smoking Week activities, etc.) to encourage nonsmoking	
b.	School-based smoking prevention programs	
c.	School-based smoking cessation programs for teens	
d.	Recognition awards to schools with smoking prevention or cessation programming	
e.	Opportunities and incentives for staff and teachers to quit smoking	

f. What role would you say the health unit played in implementing activities in schools to reduce tobacco use in 1997? *(Circle one answer only)*

NO role	SUPPORT role	LEAD role
(i.e., activities were carried out by others)	(i.e., the health unit had some role in implementing activities, but one or more community players were *more* involved)	(i.e., the health unit played a greater role than other community partners or implemented the activity independently)

WORKPLACES

		0-4
g.	Smoking education messages in the workplace	
h.	Smoking cessation initiatives for employees who smoke (e.g., Quit and Win, smoking cessation classes)	
i.	Workplace nonsmoking policies	
j.	Municipal bylaw development to prohibit smoking in the workplace	

k. What role would you say the health unit played in implementing activities in workplaces to reduce tobacco use in 1997?

NO role SUPPORT role LEAD role

HEALTH CARE SETTINGS

		0-4
l.	Training for primary care providers in smoking cessation counselling	
m.	Information for primary care providers for referring patients to local resources available for smoking cessation	

n. What role would you say the health unit played in implementing activities in health care settings to reduce tobacco use in 1997?

NO role SUPPORT role LEAD role

COMMUNITY AT LARGE

		0-4
o.	Local media campaigns to increase awareness of tobacco-related issues	
p.	National Non Smoking Week activities directed to the community at large	
q.	Smoking cessation resources for special needs groups (e.g., women, pregnant women, heavy smokers, low income groups, etc.)	
r.	A campaign for retailers to inform them of laws prohibiting sales of tobacco to minors	
s.	Municipal bylaw development prohibiting smoking in public places	
t.	Advocacy directed at the provincial level for policies related to tobacco	
u.	Advocacy directed at the federal level for policies related to tobacco	

v. What role would you say the health unit played in implementing activities in the community at large to reduce tobacco use in 1997?

NO role SUPPORT role LEAD role

w. What, if any, other types of activities that do not fit into the above categories, have been carried out in your community in the past year? List these on another page or the back of this one.

3. *Activities designed to increase healthy eating.*
Please indicate the *current* stage of development of each activity (including those carried out by agencies other than the health unit) *in your community* (area served by your health unit).

0 = Not aware of any organized activity being planned or implemented
1 = Active planning - some plans are in writing for the activity and/or it is being pilot tested
2 = Low level of implementation - the activity is at less than 1/3 of full implementation*
3 = Medium level of implementation - the activity is at approximately 1/3 - 2/3 of full implementation*
4 = High level of implementation - the activity is at over 2/3 of full implementation*
* Full implementation means the optimal level of implementation if resources were not limited.

SCHOOLS

		0-4
a.	Healthy eating messages in schools/cafeterias	
b.	Curriculum review/development for healthy eating messages	
c.	School food policies	

d. What role would you say the health unit played in implementing activities in schools to increase healthy eating in 1997? *(Circle one answer only)*

NO role	SUPPORT role	LEAD role
(i.e., activities were carried out by others)	(i.e., the health unit had some role in implementing activities, but one or more community players were *more* involved)	(i.e., the health unit played a greater role than other community partners or implemented the activity independently)

WORKPLACES

		0-4
e.	Healthy eating messages in workplaces/cafeterias	
f.	Contests/challenges related to healthy eating (e.g., weight loss contest)	
g.	Incentives for employees for adopting healthy eating patterns	
h.	Food policies in workplaces	

i. What role would you say the health unit played in implementing activities in workplaces to increase healthy eating in 1997?

NO role SUPPORT role LEAD role

HEALTH CARE SETTINGS

		0-4
j.	Educational materials on healthy eating for patients	
k.	Information for primary care providers for referring patients to local resources available for healthy eating	
l.	Food policies in health care settings	

m. What role would you say the health unit played in implementing activities in health care settings to increase healthy eating in 1997?

NO role SUPPORT role LEAD role

RESTAURANTS

		0-4
n.	On-site advertising of healthy food choices	
o.	Incentives/recognition for restaurants/cafeterias that provide healthy foods (e.g., dining guide, awards)	
p.	Training for food industry personnel on healthy cooking methods	

q. What role would you say the health unit played in implementing activities in restaurants to increase healthy eating in 1997?

NO role SUPPORT role LEAD role

GROCERY STORES

		0-4
r.	Point of purchase information to encourage customers to buy healthy foods	
s.	Incentives to buy healthy foods (e.g., coupons, in-store specials	
t.	Displays on healthy food choices	
u.	Grocery store tours on healthy food choices	

v. What role would you say the health unit played in implementing activities in grocery stores to increase healthy eating in 1997?

NO role SUPPORT role LEAD role

COMMUNITY AT LARGE

		0-4
w.	Local media campaigns promoting healthy eating	
x.	Consumer education on food labels	
y.	Nutrition Month activities	
z.	Skills-based programs on healthy eating (e.g., Healthy Eating Manual)	
aa.	Programs to increase access to healthy foods (e.g., food buying clubs, community gardens, community kitchens)	
bb.	Advocacy directed at the provincial level for policies related to nutrition	
cc.	Advocacy directed at the federal level for policies related to nutrition	

dd. What role would you say the health unit played in implementing activities in the community at large to increase healthy eating in 1997?

NO role SUPPORT role LEAD role

ee. What, if any, other types of activities that do not fit into the above categories, have been carried out in your community in the past year? List these on another page or the back of this one.

4. *Activities designed to increase physical activity.*
Please indicate the *current* stage of development of each activity (including those carried out by agencies other than the health unit) *in your community* (area served by your health unit).

0 = Not aware of any organized activity being planned or implemented
1 = Active planning - some plans are in writing for the activity and/or it is being pilot tested
2 = Low level of implementation - the activity is at less than 1/3 of full implementation*
3 = Medium level of implementation - the activity is at approximately 1/3 - 2/3 of full implementation*
4 = High level of implementation - the activity is at over 2/3 of full implementation*
* Full implementation means the optimal level of implementation if resources were not limited.

SCHOOLS

		0-4
a.	Special events promoting physical activity	
b.	Curriculum review/development on health benefits of physical activity	
c.	Training or consultation for teachers on school programming to increase physical activity	
d.	Recognition to schools with daily physical education for students	
e.	School/board policies for quality daily physical education	

f. What role would you say the health unit played in implementing activities in schools to increase physical activity in 1997? *(Circle one answer only)*

NO role	SUPPORT role	LEAD role
(i.e., activities were carried out by others)	(i.e., the health unit had some role in implementing activities, but one or more community players were *more* involved)	(i.e., the health unit played a greater role than other community partners or implemented the activity independently)

WORKPLACES

		0-4
g.	Physical activity messages in workplaces	
h.	Corporate challenges/contests to promote physical activity	
i.	Recognition awards to workplaces with physical activity initiatives	
j.	Workplace policies supporting physical activity (e.g., bicycle racks, showers, flex time)	

k. What role would you say the health unit played in implementing activities in workplaces to increase physical activity in 1997?

NO role SUPPORT role LEAD role

HEALTH CARE SETTINGS

		0-4
l.	Educational materials on physical activity for patients	
m.	Information for primary care providers for referring patients to local resources available for physical activity	

n. What role would you say the health unit played in implementing activities in health care settings to increase physical activity in 1997?

NO role SUPPORT role LEAD role

COMMUNITY AT LARGE

		0-4
o.	Local media campaigns promoting physical activity	
p.	SummerACTIVE (previously FitWeek) activities	
q.	Promotions of community resources available for physical activity	
r.	Municipal bylaws for physical activity opportunities (e.g., safe walking and bicycle routes)	
s.	Advocacy directed at the provincial level for policies related to physical activity	
t.	Advocacy directed at the federal level for policies related to physical activity	

u. What role would you say the health unit played in implementing activities in the community at large to increase physical activity in 1997?

NO role SUPPORT role LEAD role

v. What, if any, other types of activities that do not fit into the above categories, have been carried out in your community in the past year? List these on another page or the back of this one.

5. *Activities designed to improve general heart health*

(incl[illegible] activities that address at least two of tobacco, healthy eating, & physical activity).

Please indicate the ***current*** stage of development of each activity (including those carried out by agencies other than the health unit) ***in your community*** (area served by your health unit).

0 = Not aware of any organized activity being planned or implemented
1 = [illegible]e planning - some plans are in writing for the activity and/or it is being pilot tested
*2 = [illegible]evel of implementation - the activity is at less than 1/3 of full implementation **
3 = [illegible]um level of implementation - the activity is at approximately 1/3 - 2/3 of full implementation
*4 = High level of implementation - the activity is at over 2/3 of full implementation **
** Full implementation means the optimal level of implementation if resources were not limited.*

SCHOOLS

		0-4
a.	Educational materials on heart health in schools	
b.	Recognition awards to schools with heart health programming (e.g., comprehensive school health approach)	
c.	Training or consultation for administrators and teachers on heart health in schools	

d. What role would you say the health unit played in implementing activities in schools to improve general heart health in 1997? *(Circle one answer only)*

NO role	SUPPORT role	LEAD role
(i.e., activities were carried out by others)	(i.e., the health unit had some role in implementing activities, but one or more community players were *more* involved)	(i.e., the health unit played a greater role than other community partners or implemented the activity independently)

WORKPLACES

		0-4
e.	Educational messages on heart health in workplaces	
f.	Health risk assessments of workers	
g.	Small group sessions for behaviour change	
h.	Training or consultation for workplace professionals on heart health in workplaces	
i.	Recognition awards to workplaces with comprehensive heart health programs	

j. What role would you say the health unit played in implementing activities in workplaces to improve general heart health in 1997?

NO role SUPPORT role LEAD role

HEALTH CARE SETTINGS

		0-4
k.	Educational materials on heart health for patients	
l.	Training for primary care providers on assessing patient risk factors for cardiovascular disease	
m.	Information for primary care providers for referring patients to community programs	

n. What role would you say the health unit played in implementing activities in health care settings to improve general heart health in 1997?

NO role SUPPORT role LEAD role

COMMUNITY AT LARGE

		0-4
o.	Media campaigns on heart health	
p.	Special events promoting heart health	
q.	Information on community resources available for CPR training (which includes education on cardiovascular health)	
r.	Advocacy directed at the provincial level for policies related to heart health	
s.	Advocacy directed at the federal level for policies related to heart health	

t. What role would you say the health unit played in implementing activities in the community at large to improve general heart health in 1997?

NO role SUPPORT role LEAD role

u. What, if any, other types of activities that do not fit into the above categories, have been carried out in your community in the past year? List these on another page or the back of this one.

6. There are many ways to work with community partners. Overall, which statement best describes how your health unit worked with other heart health stakeholders in the past year?

A. Most heart health activities were carried out by the health unit independently. ☐

B. Most heart health activities were carried out by the health unit and other agencies. The health unit was generally more involved than other agencies. ☐

C. Most heart health activities were carried out by the health unit and other agencies. The health unit was generally as involved as other agencies. ☐

D. Most heart health activities were carried out by the health unit and other agencies. Other agencies were often more involved than the health unit. ☐

E. Most heart health activities were carried out by one or more agencies, with little or no involvement of the health unit. ☐

7. a] Within your ***organization,*** would you say promoting heart health is a:

LOW PRIORITY ..... ☐
MEDIUM PRIORITY ..... ☐
HIGH PRIORITY ..... ☐
DON'T KNOW ..... ☐

b] Compared to one year ago, would you say the priority given to heart health within your ***organization*** has:

DECREASED ..... ☐
STAYED THE SAME ..... ☐
INCREASED ..... ☐
DON'T KNOW ..... ☐

8. a] Within your ***community***, would you say promoting heart health is a:

LOW PRIORITY ..... ☐
MEDIUM PRIORITY ..... ☐
HIGH PRIORITY ..... ☐
DON'T KNOW ..... ☐

b] Compared to one year ago, would you say the priority given to heart health within your ***community*** has:

DECREASED ..... ☐
STAYED THE SAME ..... ☐
INCREASED ..... ☐
DON'T KNOW ..... ☐

9. Would you say the heart health activities within your ***organization*** are ...

NOT WELL CO-ORDINATED .... ☐
FAIRLY WELL CO-ORDINATED . ☐
VERY WELL CO-ORDINATED ... ☐
DON'T KNOW ..... ☐

CHHIOP: 1997 SCAN of Public Health Units

ORGANIZATIONAL PRACTICES

10. Below is a list of activities your organization may carry out to support implementation of heart health activities. Choose one response from each column.

COLUMN A: Please give your collective opinion of how effective each activity was in supporting implementation of heart health activities (see enclosed list).

- 0 = Not aware that the activity was conducted in 1997
- 1 = Activity was conducted in 1997, but was not very effective
- 2 = Activity was conducted in 1997, and was somewhat effective
- 3 = Activity was conducted in 1997, and was fairly effective
- 4 = Activity was conducted in 1997, and was very effective
- DK = Activity was conducted in 1997, but don't know how effective it was

COLUMN B: Please give your opinion of how important the activity is for your health unit to carry out to support implementation of heart health activities.

- 1 = Not at all important
- 2 = Somewhat important
- 3 = Fairly important
- 4 = Very important
- DK = Don't know

ASSESSMENT ACTIVITIES: *Since January 1, 1997, our health unit ....*	A	B
a. Reviewed information on local factors and conditions affecting heart health		
b. Reviewed heart health activities developed elsewhere that might be adopted or adapted for local use		
c. Reviewed heart health activities of other local organizations		
d. Reviewed community, cultural, and organizational factors that would influence activities promoting heart health		
e. Carried out other assessment activities related to heart health activities (please list)		
_____		
_____		

PLANNING ACTIVITIES: *Since January 1, 1997, our health unit ....*	A	B
a. Participated in a strategic planning process to set priorities for public health activities		
b. Set goals and objectives for promoting heart health		
c. Participated in a planning process with community stakeholders to make judgements about which heart health activities to carry out		
d. Participated in developing action plans for heart health activities		
e. Participated in developing and/or adapting heart health activities for local use		
f. Carried out a process to ensure heart health activities were co-ordinated with other public health activities		
g. Carried out other planning activities related to heart health activities (please list)		
_____		
_____		
_____		

COLUMN A: Please give your collective opinion of how effective each activity was in supporting implementation of heart health activities (see enclosed list).

0 = Not aware that the activity was conducted in 1997
1 = Activity was conducted in 1997, but was not very effective
2 = Activity was conducted in 1997, and was somewhat effective
3 = Activity was conducted in 1997, and was fairly effective
4 = Activity was conducted in 1997, and was very effective
DK = Activity was conducted in 1997, but don't know how effective it was

COLUMN B: Please give your opinion of how important the activity is for your health unit to carry out to support implementation of heart health activities.

1 = Not at all important
2 = Somewhat important
3 = Fairly important
4 = Very important
DK = Don't know

ACTIVITIES TO SUPPORT IMPLEMENTATION:
Since January 1, 1997, our health unit....

	A	B
a. Recruited volunteers to assist with heart health activities		
b. Took advantage of resources outside of public health to support implementation of heart health activities		
c. Promoted heart health through local media		
d. Participated in initiatives designed to make heart health a priority among health professionals		
e. Participated in initiatives to make heart health a priority among key people from non-health sectors (e.g., politicians, business leaders)		
f. Provided opportunities for service providers (including public health staff, community agency staff and/or volunteers) to build knowledge and skills for promoting heart health		
g. Carried out other activities to support implementation of heart health activities (please list)		

_____

_____

_____

EVALUATION ACTIVITIES:
Since January 1, 1997, our health unit....

	A	B
a. Collected and used information to guide development of heart health activities ("formative evaluation")		
b. Collected and used information to assess the implementation of heart health activities		
c. Collected and used information to determine if heart health activities met process objectives		
d. Collected and used information to determine if heart health activities met outcome objectives (e.g., awareness, behaviour change)		
e. Carried out other evaluation activities related to heart health activities (please list)		

_____

_____

_____

11. Did yo[u]r health unit have a budget line for a heart health program in 1997?

YES ☐
NO ☐

12. What *best* describes how your health unit currently plans and delivers heart health activities? Check one answer only.

A. Through a heart health program ☐
B. Through a heart health and cancer prevention program ☐
C. Through a chronic disease prevention program ☐
D. Through issue-specific (i.e., tobacco, nutrition, physical activity) programs ☐
E. Through a healthy lifestyles program ☐
F. Other (please specify) ☐

_____

13. In 1997, what coalitions or networks (groups involving 2 or more agencies) related to heart health activities did your health unit participate in?

PROVINCIAL COALITIONS OR NETWORKS	YES	NO
A. Ontario Heart Health Network	☐	☐
B. Ontario Active Living Alliance	☐	☐
C. Coalition of Agencies for Comprehensive School Health Education	☐	☐

D. Other provincial coalitions or networks (please specify)

_____
_____
_____
_____

LOCAL AND REGIONAL COALITIONS OR NETWORKS	YES	NO
A. Tobacco Free Council	☐	☐
If YES → Name: _____		
B. Nutrition coalition or network	☐	☐
If YES → Name: _____		
C. Active Living coalition or network	☐	☐
If YES → Name: _____		
D. Heart Health coalition or network	☐	☐
If YES → Name: _____		

E. Other local and regional coalitions or networks (please specify)

_____
_____
_____

SUPPORT FOR HEART HEALTH PROGRAMMING

14. Support for health promotion in Ontario includes services offered by government and non-government organizations. Please complete Column A for each item, and Column B as appropriate.

COLUMN A: For each organization, please indicate whether your health unit used its services in 1997.

Y = Yes
N = No
DK = Don't know

COLUMN B: For those services your health unit used, please give your collective opinion of how useful the services were in helping your health unit plan and/or implement heart health activities.

1 = Not at all useful
2 = Somewhat useful
3 = Fairly useful
4 = Very useful
DK = Don't know

ONTARIO TOBACCO STRATEGY RESOURCE CENTRES	A	IF YES →	B
a. Council for a Tobacco-Free Ontario			
b. National Clearinghouse on Tobacco and Health			
c. Program Training and Consultation Centre			
d. Smoking and Health Action Foundation			

OTHER RESOURCE CENTRES & ORGANIZATIONS	A	IF YES →	B
a. Cancer Society - Ontario Division			
b. Health Communications Unit/University of Toronto Centre for Health Promotion			
c. Health Promotion Branch, Ministry of Health			
d. Heart Health Resource Centre (at the Ontario Public Health Association)			
e. Heart and Stroke Foundation of Ontario			
f. Ministry of Culture, Tourism and Recreation			

OTHER RESOURCE CENTRES & ORGANIZATIONS (cntd.)	A	IF YES →	B
g. Ontario Heart Health Network			
h. Ontario Lung Association			
i. Ontario Ministry of Agriculture, Food & Rural Affairs			
j. Ontario Physical & Health Education Association			
k. Ontario Prevention Clearinghouse			
l. Ontario Public Health Association (excluding the Heart Health Resource Centre)			
m. ParticipACTION			
n. Public Health Branch, Ministry of Health			
o. Other (please list)			
_____			
_____			
_____			

15. W are the 3 most important things that could be done either locally (by your organization or other local agencies), or centrally (e.g., b Ministry of Health or other resource organizations) to implement new heart health activities or to enhance existing activities (e.g., increase the reach) in your community ...

a] *WITHIN THE NEXT YEAR?*

#1 priority:

_____

_____

_____

#2 priority:

_____

_____

_____

#3 priority:

_____

_____

_____

b] *WITHIN THE NEXT 5 YEARS?*

#1 priority:

_____

_____

_____

#2 priority:

_____

_____

_____

#3 priority:

_____

_____

_____

16. a] *Currently*, how *helpful* is each of the following factors in planning and/or implementing heart health activities in *your community*? Please choose one rating for each item.

	NOT AT ALL helpful	SLIGHTLY helpful	MODERATELY helpful	VERY helpful	DON'T KNOW
Support for heart health from local board of health/ regional Health & Social Services Committee					
Support for heart health from health unit management					
Community interest in heart health					
Resources (dollars, materials)					
Appropriate staff experience/knowledge/skills					
Sufficient staff assigned to heart health programming					
Co-ordination of programs within the health unit					
Collaborating/partnering with other agencies					
Local statistics/information related to heart health					
Evidence that heart health activities are effective					
Presence of a heart health demonstration community					
Provincial priority given to heart health					
Professional incentives for carrying out heart health activities					
Opportunity to apply for provincial funding					
Evidence that heart health activities meet community needs					
Others (please specify)					
_____					
_____					
_____					

16. b] *Currently*, how *limiting* is each of the following factors in planning and/or implementing heart health activities in *your community*? Please choose one rating for each item.

	NOT AT ALL limiting	SLIGHTLY limiting	MODERATELY limiting	VERY limiting	DON'T KNOW
Lack of support for heart health from the local board of health/regional Health & Social Services Committee					
Lack of support for heart health from health unit management					
Lack of public interest in heart health					
Lack of resources (dollars, materials)					
Insufficient staff assigned to heart health programming					
Lack of appropriate experience/knowledge/skills of staff					
Lack of co-ordination of programs within the health unit					
Lack of collaborating/partnering with other agencies					
Lack of priority given to heart health within the province					
Lack of local statistics/information related to heart health					
Lack of evidence that heart health activities are effective					
Presence of a heart health demonstration community					
Insufficient professional incentives for carrying out heart health activities					
Evidence that heart health activities do not meet community needs					
Others (please specify)					
_____					
_____					
_____					

17. How *he*[illegible]*ful* have CHHIOP's activities been in planning and/or implen[illegible]ng heart health activities in *your community?* Please choose one rating for each item.

	NOT AT ALL helpful	SLIGHTLY helpful	MODERATELY helpful	VERY helpful	DON'T KNOW
1994 SCAN survey					
1996 SCAN survey					
PHERO articles on CHHIOP activities					
Heart Health Implementation Report (June 1995)					
Public Health Practices Report (June 1996)					
CHHIOP Qualitative Report (June 1996)					
Heart Health Implementation Report (June 1997)					
Public Health Practice Report (December 1997)					
CHHIOP Homepage					
CHHIOP conference presentations					
Interactions with CHHIOP Investigators					
Interactions with Project Advisory Group members					

18. a] What, if any, information from CHHIOP did your health [illegible]it use in preparing your proposal for Heart Health Program fundi

b] How did you use this information?

c] Overall, how helpful was the information from CHHIOP in preparing your proposal?

☐ NOT AT ALL HELPFUL ☐ SLIGHTLY HELPFUL ☐ MODERATELY HELPFUL ☐ VERY HELPFUL ☐ DON'T KNOW

19. a] What, if any, information from sources other than CHHIOP did your health unit use in preparing your proposal for Heart Health Program funding?

b] Overall, how helpful was the information from these sources in preparing your proposal?

☐ NOT AT ALL HELPFUL ☐ SLIGHTLY HELPFUL ☐ MODERATELY HELPFUL ☐ VERY HELPFUL ☐ DON'T KNOW

20. a] Preparing a proposal for Heart Health Program funding was a major activity of most health units in 1997. Did your health unit submit a proposal?

YES ☐ → Go to part b]

NO ☐ → Go to question 21

b] Please rate how much you agree or disagree that each of the following impacts were experienced by your health unit as a result of preparing the proposal.

	STRONGLY DISAGREE	DISAGREE	NEUTRAL	AGREE	STRONGLY AGREE
a. Increased the priority given to heart health within our health unit	☐	☐	☐	☐	☐
b. Increased staff time allocated to heart health within our health unit	☐	☐	☐	☐	☐
c. Enhanced co-ordination of planning for tobacco, nutrition, and physical activity programs within our health unit	☐	☐	☐	☐	☐
d. Increased the priority given to heart health among other community agencies	☐	☐	☐	☐	☐
e. Strengthened existing relationships between the health unit and other community agencies	☐	☐	☐	☐	☐
f. Established new relationships between the health unit and other community agencies	☐	☐	☐	☐	☐
g. Other impacts of preparing the proposal *(Please describe)*	☐	☐	☐	☐	☐

_____

_____

_____

21. a] Does your organization have volunteers (i.e., people who are not paid by the health unit nor by any other organization for the time they spend)?

YES ☐ → Complete b] & c]

NO ☐ → Go to Question 22

b] How many volunteers are currently active in heart health programming?

☐ <10 ☐ 11-25 ☐ 26-50 ☐ More than 50 ☐ Don't Know

c] In the past year, roughly how many volunteer hours were devoted to heart health programming?

☐ <50 ☐ 51-100 ☐ 101-500 ☐ 501-1,000 ☐ More than 1,000 ☐ Don't Know

22. Over the past 3 years, CHHIOP has tracked levels of predisposition, capacity, and implementation in the area of heart health promotion within public health units. On a scale of 1 to 5, where 1 is low and 5 is high, how would you rate:

	1-5
a] *PREDISPOSITION* for heart health within your health unit? -- the general motivation or inclination towards heart health within your health unit	
b] *CAPACITY* for heart health within your health unit? -- skills and resources within your health unit that make implementation of heart health activities possible	
c] *IMPLEMENTATION* of heart health activities within your health unit jurisdiction? -- including those activities that address major risk factors for heart disease and take a population health approach	

23. Comments *(optional; use back of page if more space is required)*

_____

_____

_____

_____

HEART HEALTH ACTIVITIES

The activities listed below can be used to promote heart health. The list is not a recommended set, nor is it exhaustive. These activities may be part of a designated heart health program and they may be part of other program areas.

TOBACCO

SCHOOLS	WORKPLACES	HEALTH CARE SETTINGS	COMMUNITY AT LARGE
* Special events in schools (e.g., health fairs, National Non Smoking Week activities, etc.) to encourage nonsmoking * School-based smoking prevention programs * School-based smoking cessation programs * Recognition awards to schools with smoking prevention or cessation programming * Opportunities and incentives for staff and teachers to quit smoking	* Smoking education messages in the workplace * Smoking cessation initiatives for employees who smoke (e.g., Quit & Win, smoking cessation classes) * Workplace smoking policies * Municipal bylaw development to prohibit smoking in the workplace	* Training for primary care providers in smoking cessation counselling * Information for primary care providers for referring patients to local resources available for smoking cessation	* Local media campaigns to increase awareness of tobacco-related issues * NNSW activities directed at the community at large * Smoking cessation resources for special needs groups (e.g., women, pregnant women, heavy smokers, low income groups, etc.) * Campaign for retailers to inform them of laws prohibiting sales of tobacco to minors * Municipal bylaw development prohibiting smoking in public places * Advocacy directed at the provincial level for policies related to tobacco * Advocacy directed at the federal level for policies related to tobacco

HEALTHY EATING

SCHOOLS	WORKPLACES	HEALTH CARE SETTINGS	RESTAURANTS	GROCERY STORES	COMMUNITY AT LARGE
* Healthy eating messages in schools/cafeterias * Curriculum review/ development for healthy eating messages * School food policies	* Healthy eating messages in workplaces/cafeterias * Contests/challenges related to healthy eating (e.g., weight loss contest) * Incentives for employees for adopting healthy eating patterns * Food policies in work-places	* Educational materials on healthy eating for patients * Information for primary care providers for refer-ring patients to local resources available for healthy eating * Food policies in health care settings	* On-site advertising of healthy food choices * Incentives/recognition for restaurants/cafeterias that provide healthy foods (e.g., dining guide, awards) * Training for food industry personnel on healthy cooking methods	* Point of purchase infor-mation to encourage customers to buy healthy foods * Incentives to buy healthy foods (e.g., coupons, in-store specials) * Displays on healthy food choices * Grocery store tours on healthy food choices	* Local media campaigns promoting healthy eating * Consumer education on food labels * Nutrition month activities * Skills-based programs on healthy eating (e.g., Healthy Eating Manual) * Programs to increase access to healthy foods (e.g., food buying clubs, community gardens, community kitchens. * Advocacy directed at the provincial level for policies related to nutrition * Advocacy directed at the federal level for policies related to nutrition

PHYSICAL ACTIVITY

SCHOOLS	WORKPLACES	HEALTH CARE SETTINGS	COMMUNITY AT LARGE
* Special events promoting physical activity * Curriculum review/development on health benefits of physical activity * Training or consultation for teachers on school programming to increase physical activity * Recognition to schools with daily physical education for students * School/board policies for quality daily physical education	* Physical activity messages in workplaces * Corporate challenges/contests to promote physical activity * Recognition awards to workplaces with physical activity initiatives * Workplace policies supporting physical activity (e.g., bicycle racks, showers, flexitime)	* Educational materials on physical activity for patients * Information for primary care providers for referring patients to local resources available for physical activity	* Local media campaigns promoting physical activity * FitWeek activities * Promotions of community resources available for physical activity * Municipal bylaws for physical activity opportunities (e.g., safe walking and bicycle routes) * Advocacy directed at the provincial level for policies related to physical activity * Advocacy directed at the federal level for policies related to physical activity

GENERAL HEART HEALTH

SCHOOLS	WORKPLACES	HEALTH CARE SETTINGS	COMMUNITY AT LARGE
* Education materials on heart health in schools * Recognition awards to schools with heart health programming (e.g., comprehensive school health approach) * Training or consultation for administrators and teachers on heart health in schools	* Educational messages on heart health in workplaces * Health risk assessments of workers * Small group sessions for behaviour change * Training or consultation for workplace professionals on heart health in workplaces	* Educational materials on heart health for patients * Training for primary care providers on assessing patient risk factors for cardio-vascular disease * Information for primary care providers for referring heart patients to community programs	* Media campaigns on heart health * Special events promoting heart health * Information on community resources available for CPR training (which includes education on cardiovascular health) * Advocacy directed at the provincial level for policies related to heart health in general * Advocacy directed at the federal level for policies related to heart health in general

Canadian Heart Health Initiative - Ontario Project [CHHIOP]
1997 SCAN of Public Health Units

STAFF INFORMATION FORM

Instructions:

You have been identified as one of six people in your health unit (in addition to the Medical Officer of Health) who spent time on heart health activities from January 1, 1997 to now. Heart health activities include activities addressing tobacco, nutrition, physical activity and multiple risk factors/general heart health.

This form is part of the 1997 survey of public health units carried out by CHHIOP. Please complete this form and give it to the person co-ordinating completion of the survey within your health unit. Your name will be confidential to the research group and will help us understand changes in the sample completing the CHHIOP surveys over time.

NAME: _____

POSITION: _____

From January 1, 1997 to now, approximately what percentage of your total work time did you spend on activities addressing the following: ***(Total should not exceed 100%)***

Tobacco	_____%	Nutrition	_____%
Physical activity	_____%	Multiple risk factors/general heart health	_____%

SEX: ☐ Male ☐ Female

AGE RANGE: ☐ 18-25 yrs ☐ 26-35 yrs ☐ 36-45 yrs ☐ 46-55 yrs ☐ Over 55 yrs

Please list all completed post-secondary degrees/diplomas:

DEGREE/DIPLOMA	YEAR COMPLETED

Did you complete the CHHIOP "Individual Response" survey in 1994? ☐ YES ☐ NO ☐ Don't Know

Did you help to complete the CHHIOP SCAN of Public Health Units in 1996? ☐ YES ☐ NO

OVER ☞

Which of the following questions on the 1997 SCAN of Public Health Units did you help to complete?

		YES	NO
1	Staff assigned to heart health activities		
2	Implementation and role of health unit in tobacco activities		
3	Implementation and role of health unit in healthy eating activities		
4	Implementation and role of health unit in physical activity promotion activities		
5	Implementation and role of health unit in general heart health/multiple risk factor activities		
6	How health unit works with other heart health stakeholders in the community		
7	Priority of heart health within your organization		
8	Priority of heart health activities within your community		
9	Co-ordination of heart health activities		
10	Effectiveness and importance of organizational practices		
11	Heart health budget line		
12	Program for heart health activities		
13	Participation in coalitions or networks		
14	Use and usefulness of resource centres and organizations		
15	Suggestions for support from resource centres and organizations		
16	Facilitators and barriers to implementing heart health activities		
17	Influence of CHHIOP activities on heart health programming		
18	Use of CHHIOP information in proposal development		
19	Use of information other than CHHIOP in proposal development		
20	Impacts of preparing proposal for Heart Health funding		
21	Volunteers working on heart health activities		
22	Perceptions of overall predisposition, capacity, and implementation		

APPENDIX B

1997 Qualitative Study: Checklist and Coding Scheme

APPENDIX 1:

CHHIOP IN-DEPTH INTERVIEW CHECKLIST
May 28, 1997

Preamble: I am a researcher from McMaster University working with CHHI-OP (Canadian Heart Health Initiative-Ontario Project). The purpose of our study is to examine changes in the factors and the relationships that influence community-based heart health activities in public health units. The focus, therefore, is to look at the changes in heart health activities that have occurred over the past 2-3 years in public health units across the Province. < You and others in your unit have already participated in the survey portion of the research project (1994/1996).> If you have any questions throughout the interview please do not hesitate to ask. Today's interview should take about _____ and everything we say will be kept strictly confidential. We would like to tape record the interview to accurately document your views, do you mind? Your name will not appear on any tapes or manuscripts.

TOPIC	QUESTIONS	PROBES
I. Introduction	What is your position in this health unit?	• for how long? • what do you do with respect to heart health activities... • tobacco? • nutrition? • physical activity? • other? • amount of time spent on heart health activities?
II. Perceptions of Predisposition, Capacity, and Implementation	1)What motivates you/other staff to do heart health promotion within your HU?	• leadership/champion(s)? • managerial support? • professional incentives? • decision-making process? • what is the level of heart health priority ? why? • evidence/need? • how does it get done?
	2) What skills and resources are most helpful for heart health promotion within your HU?	• tools, materials,videos, kits? • planning, media, coordination? • community support? • resource centre/organization support? • peer support- inside/outside HU?
	3) How does your HU determine which specific heart health activities (e.g. policy/advocacy- tobacco by-laws, education- health fair, media, skills- cooking) to undertake?	• what factors influence those decisions? • which criteria are most important? e.g. public demand/community momentum, awareness, past success, organization priorities • differ across risk factors, settings, approaches?

	4)Which activities do you think have the greatest impact on community behaviour/attitudes for heart health? Why?	• what activities would you select? • public education, service-provider training, policy/advocacy, environmental support? • implementation activities? • in a specific channel/setting?
Preamble:	We would now like to present your HU's results from the 1994 and 1996 SCAN (See Table). These are your scores.....levels of predisposition, capacity, implementation as measured by indicators of importance of a set of heart health organizational practices, effectiveness of these practices, and implementation of community-based activities....1994 and 1996.	
III. Perception of Changes in Predisposition, Capacity, and Implementation	(1) Do you think these results accurately reflect the level of importance of heart health (predisposition) in your HU?	• old/new trend? • similar direction? • why/why not? (problems with process)
	2) What factors have affected these findings?	• level of awareness? • leadership/lack of? • evidence? • commitment? • community support/lack of? • other factors?
	3) Do you think these results accurately reflect the level of skills/resources (capacity) available for heart health in your HU?	• old/new trend? • similar direction? • why/why not? (problems with process)
	4) What factors have affected these findings?	• leadership? • people power (staff & volunteers)? • knowledge/skills? • access to resources/tools? • planning/organization? • partnering? • other factors?
	5) Do you think these results accurately reflect the level of implementation of heart health in your HU?	• old/new trend? • similar direction? • why/why not? (problems with process)

	6) What factors have affected these findings?	• levels of awareness? • leadership/lack of? • MoH/guidelines? • competing health/social priorities? • not enough evidence? • lack of knowledge/skills in that area? • little commitment to that area? • increased/decreased partnering? (internal/external) • lack of/or access to resources/expertise? • people power (volunteers/staff)? • planning/organization ? • lack of/or community support?
	7) Here are the provincial results of the 1994, 1996 SCANs, you might be interested in how they compare with your HU.	• do you have any comments about these results in light of your HU results?
Preamble: Part of CHHIO?'s role is to investigate how health units and agencies are partnering together to promote heart health. The next few questions are related to relationships within your HU and between your HU and other community agencies.		
IV. Relationship in Partnering	1) a. How would you characterize the nature of interactions both within your HU and between your HU and community partners?	• how do you partner? • cooperate, coordinate, collaborate? • do these relations differ for internal vs. external relations? • do these differ across... risk factors? settings? by approach/activity? by organization? • have these relations changed over time?
	2) Which relationships have been most effective? Least effective? Why?	• has effectiveness of partnerships varied across settings, risk factors and approaches?
	3) What factors facilitate/sustain stronger partnerships both within HUs and between HU and community partners?	•decision making processes (equal power) •roles of different partners, specific: facilitate, lead, administrative, resources, knowledge, $ •dedication of staff/volunteers •coalitions/networks •previous successes •shared resources/expertise, what? •supportive community/agencies •strong leadership •other • do these factors vary by setting? • do they differ for internal or external relationships?

	4) What factors weaken partnerships both within HUs and between HU and community partners?	•decision making processes (too controlled)? •roles of different partners (specific)? •program resources/funds? •lack of community support/collaboration •differing philosophy/mandate? •competition for progs, funds (turf overlap)? •organizational structure- changes? •lack of leadership? •other? • do these factors vary by setting? • **do they differ for internal or external relationships?**
Preamble: We've been talking about ways of partnering. Now we would like to discuss how heart health is promoted at the community level.		
	5) How would you characterize how issues are defined and who contributes to the design and implementation of heart health programs within your community?	• consensus process, consultation? • how are citizens/consumers involved? • how are agencies, groups involved? • what is the role of your HU? • does this process & participation vary by issue/agency ? • relative mix of these approaches in the community? • have you seen a shift in how issues are identified, programs designed?
	6) In your opinion, who provides leadership for heart health in your community?	• individuals, organizations? • what do you see as leadership? differs from ownership?
Preamble: Resource centres/organizations play a key role in supporting heart health activities. We would like to get your input on how they can be most helpful for HU's.		
V. Resource System	1)a. What has been your HU's experience with Provincially mandated resource centres/org.? b. What is the experience with local/regional resource centres/org.?	• use- which one(s)? SEE LIST • useful? (+/-)- types? • barriers to use? • what suggestions do you have to improve service provision?
	2). How has the use of resource centres/organizations enhanced heart health promotion in your HU?	• better organization relations? • implementation of by-laws? • better planning/evaluation?

	3) a. To what extent have the experiences of other community/HU heart health programs been shared with your HU? b. How have the findings, programs and resources of the Ontario Demonstration projects affected heart health practices within your HU? within your community?	• how else could these experiences be shared? (e.g., newsletters, websites) • have these experiences been used? • to what extent have they influenced what you do? • video kits, pamphlets, planning processes, evaluation tools, media campaigns?
	4) How has knowledge of provincial funding - the 'heart health program' - influenced your work within the HU and with community partners?	•initiated planning? •supported other partnering? • frustration with uncertainty? • implications of this funding? (i.e., sustainability - funding or heart health promotion , effectiveness).
VI. Future of Public Health	1) What is your/HU reaction to changes in the mandatory guidelines focusing on HH/chronic disease?	• what are the implications of these changes? •will this change how HUs operate? do heart health?
	2) What do you see as the future of PH in Ontario?	• do you think the priority of heart health will change? • do you think the priority for population health approach (vs. high risk approach) will change?
Conclusions	Do you have any other final comments or questions?	

APPENDIX 2:

DEPTH INTERVIEW THEME CODES			
General Topic	**Theme**	**Issues**	**Code**
Introduction	Position.	• length of time. • time spent on h.h activities/ r.f. areas.	IPL IPT
	Organ. Structure.	• healthy lifestyles. • heart health program. • other.	IOL IOH IOO
	Packaging.	• risk factor (individual). • healthy lifestyles. • heart health.	IPR IPH IPX
Perceptions of Predisposition, Capacity and Implementation	Motivation.	Yes: • mort./morb./burden of illness. • high level of risk factors. • leadership/management support. • provincially mandated. • belief health promotion/make diff. • funding/demonstration site. • community partnership/support. • personal experience. • other. No: • low level awareness of staff.	 PMM PMR PML PMP PMB PMF PMC PME PMZ PMA
	Priority.	• level of/rank. • not priority. • change.	PPL PPN PPC
	Skills & Resources.	• characteristics: mix/single. multi-disciplinary group. experienced staff. • by risk factor: tobacco. physical activity. nutrition. general heart health. • skills: media/marketing/public relations. evaluation. planning/program dev. skill building/education. advocacy/lobbying/policy. • information: workshops. health unit contacts. tools/kits. resource centres/organizations. • network/partnering. • community support/interest. • other.	 PSS PSG PSE PST PSA PSN PSZ PSM PSV PSD PSB PSL PSW PSH PSK PSR PSP PSC PSO

	Determine Activities.	• how/process:	
		strategic/operational plans.	PDS
		across divisions.	PDD
		trial/error.	PDT
		diff./sim. across h.u./r.f./set.	PDH
		• criteria:	
		needs assessment.	PDN
		scient. knowledge/stats/OHS.	PDK
		mandatory programs.	PDM
		literature review.	PDL
		public demand/consultation.	PDP
		agency/partner support.	PDA
		consid.channels/settings	PDC
		past experience (HU/betw.).	PDE
		resources/staff/skills.	PDR
		target audience.	PDF
		other.	PDO
	Activities with greatest impact.	• characteristics:	
		multiple strategies.	PAM
		partnering.	PAJ
		repeat contacts.	PAR
		integrate programs.	PAI
		target audience	PAG
		other/don't know/uncertain.	PAO
		• strategies:	
		media/social marketing.	PAS
		skill building/training.	PAB
		advocacy/policy.	PAA
		environmental support.	PAV
		awareness/education.	PAE
		community dev./mobil./inv.	PAD
		other.	PAX
		• risk factors:	
		tobacco.	PAT
		physical activity.	PAP
		nutrition.	PAN
		other.	PAY
		• settings/channels:	
		healthcare.	PAH
		schools.	PAK
		workplaces.	PAW
		community-wide.	PAC
		other.	PAZ

Perceptions of (changes in) levels of Predisposition, Capacity, and Implementation AND Factors affecting (changes in) these levels	Predisposition.	• trend:	
		accurate/inaccurate	SPT
		future	SPF
		• level :	
		accurate/inaccurate	SPL
		• individual cell (i.e., assessment, planning, implementation support, evaluation activities).	SPI
		• factors:	
		needs assessment/statistics.	SPA
		strategic planning process.	SPS
		leadership.	SPD
		competing priorities (h.u.)	SPC
		teaching health unit	SPH
		community involvement.	SPP
		changing role/org.structure.	SPR
		not community priority.	SPN
		other.	SPO
	Capacity.	• trend:	
		accurate/inaccurate.	SCT
		future	SCF
		• level:	
		accurate/inaccurate.	SCL
		• individual cell (i.e., assessment, planning, implementation support, evaluation activities).	SCI
		• factors:	
		strategic planning process.	SCP
		staff.	SCS
		reorganization structure.	SCR
		volunteer program.	SCV
		skill development.	SCD
		funds.	SCM
		external partnering.	SCE
		access to resources.	SCA
		other.	SCO

	Implementation.	•trend: accurate/inaccurate. future. •level: accurate/inaccurate. • risk factors: tobacco. physical activity. nutrition. general heart health. •settings: schools. workplaces. healthcare. community-wide. •factors: funds. staff size. skills/experience. reorganization. in planning phase. demonstration site. partnering. other.	 SIA SIF SIL SIT SIP SIN SIG SIK SIW SIH SIC SIM SIS SIE SIR SIX SID SIJ SIO
	Provincial. Comparison.	• trend: accurate/inaccurate. future. • level: accurate/inaccurate. • average/above or below. • reasons.	 SZT SZF SZL SZA SZR
Relationship in Partnering	Nature.	<u>Internal:</u> frequency of meetings. cooperation > r.f./setting. coordination > r.f./setting. collaboration > r.f./setting. change. <u>External:</u> frequency of meetings. cooperation > r.f/setting. coordination > r.f/setting. collaboration > r.f/setting. change. <u>Effectiveness:</u> type (3). agency/organization. diff/similar (r.f./setting). other characteristics.	 RNF RNP RND RNL RNC RNM RNE RNI RNO RNA RNT RNZ RNS RNY

	Facilitators.	Internal:	
		leadership/management.	RFM
		organization.	RFO
		multi-disciplinary team.	RFD
		meetings/joint.	RFJ
		planning process/strategic plan.	RFP
		respect/trust.	RFR
		other.	RFY
		External:	
		equal partners.	RFE
		leadership.	RFL
		clear goals/roles.	RFC
		sharing resources.	RFS
		common goals/objectives.	RFG
		commitment.	RFX
		respect/trust.	RFT
		health unit partnering skills.	RFU
		existing network/coalitions.	RFH
		community involvement/partic.	RFI
		other.	RFZ
		Int. vs. Ext.	
		• difference/not.	RFN
	Barriers.	Internal:	
		personal differences.	RBD
		inflexible.	RBI
		workload/time.	RBT
		professional silos.	RBS
		lack of skills/staff experience.	RBE
		reorganization/bureaucracy.	RBR
		other.	RBO
		External:	
		different philosophies.	RBP
		unequal workload.	RBW
		unequal power.	RBU
		lack of time.	RBL
		lack of interest.	RBN
		competition/territory.	RBC
		mistrust.	RBM
		mandate differences	RBJ
		other.	RBZ
		Int. vs. Ext.	
		• difference/not.	RBF
	Issues defined.	How:	
		• formal	RIF
		• informal	RII
		Who:	
		•Health Unit:	
		information source/facilitator.	RID
		leader.	RIE
		• Community:	
		consulting.	RIV
		leader.	RIL
		•Agency/organization:	
		consulting.	RIS
		leader.	RIA
		• combination of groups.	RIG
		• other.	RIZ

	Design & Implementation.	How: • formal. • informal. Who: • Health Unit: information source/facilitator. leader. • Community: consulting. leader. • Agency/organization: consulting. leader. • combination of groups. • other.	 RDF RDI RDD RDE RDV RDL RDS RDA RDG RDZ
	Shifts.	• mixture/varies. • by risk factor. • change.	RSM RSR RSC
	Leadership for Heart Health.	• health unit. • citizens. • agency/organization. • combination. • other. • change in leadership. • leadership diff. ownership.	RLH RLC RLA RLM RLO RLE RLL
Resource System	Used-Experience.	Provincial: Public Health Branch. Program Training & Consultation. H.H. Resource Centre/OPHA. Health Promotion Branch. Ontario Prev. Clearing House. OntarioHeart Health Network. U of T Centre for Health Prom. Other. Local/Regional: Heart & Stroke Foundation. Cancer Society. Lung Association. Ministry of Cult., Tour., & Rec. Other.	 RUB RUT RUA RUH RUP RUN RUU RUO RUS RUC RUL RUM RUZ
	Barriers and Suggestions.	• costs. • contact names/directory. • other.	RAC RAD RAO
	Extent Enhancing.	Rate: great deal. somewhat. limited. none.	 REG RES REL REN

	Inter HU communication.	Who Shared: • demo site. • non-demo site. How Shared: telephone. heart health network. e-mail. written reports/documents. meetings/conferences. other. Content Shared: evaluation. planning. resources. specific projects. other. Extent of sharing: none. minimal. (ideas) moderate. (prog. pieces) maximum (program transplant).	 RCD RCU RCT RCH RCM RCW RCC RCZ RCE RCP RCR RCS RCX RCN RCL RCO RCA
	Provincial $.	•Effect: boost. let down. no effect. •Process: frustration pleased/liked. no awareness • other	 RPB RPD RPN RPF RPP RPA RPO
Future of Public Health	Guideline Changes.	• Positive/Negative. • H.H vs. chronic disease prevention. • prescriptive vs. flexible. • enforcement . • not aware. Change HU: organizational structure. activities. • other.	FGP FGH FGR FGE FGN FGO FGA FGZ
	P.H./Municipal Changes.	• heart health priority (+or-). • other local issues/priorities. • high risk. • population health. • uncertainty. System comments: increase freedom. no standards. • other.	FPH FPO FPR FPP FPU FPI FPN FPZ
Conclusions	Additional Comments.	• interviewing process. • SCAN results/process. • other.	CAI CAS CAO