Guidelines for preparing research proposals

Navigating the road to success

August, 1999

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Foreword

THESE GUIDELINES HAVE BEEN DESIGNED to help researchers develop research proposals and to identify potential sources of funding for their research. They are general guidelines that have been adapted from typical guidelines for established funding agencies, and enhanced by the experiences of researchers involved in developing health-related research proposals for national, provincial and regional funding agencies.

Guidelines for Preparing Research Proposals is an updated version of an earlier set of guidelines developed by the Atlantic Health Promotion Research Centre (AHPRC) as a learning tool for AHPRC's first Regional Health Promotion Research Conference held in June, 1994. Special thanks are extended to Debra Barrath and Swarna Weerasinghe of the Nova Scotia Council on Multicultural Health for their contribution on challenges in multicultural health research. Staff of the Martime Centre of Excellence for Women's Health (MCEWH) and AHPRC contributed the sections on challenges in women's health research and health promotion research.

We welcome suggestions from researchers for improving the guidelines. Additional copies of the *Guidelines For Preparing Research Proposals* are available from AHPRC or MCEWH.

MARITIME CENTRE of EXCELLENCE for WOMEN'S HEALTH

AHPRC
Atlantic
Health
Promotion
Research
Centre

Challenges in health promotion research

R ECENTLY, HEALTH PROMOTION RESEARCHERS have broadened conceptual frameworks for making sense of the factors that influence health. At the same time, health reform has changed both the process and use of research. The challenge for health promotion researchers is to create evidence to support decision-making and to develop mechanisms for using the evidence for change in policy and practice.

1. **Influencing public policy.** How often have we heard that research reports "gather dust on someone's bookshelf"? Existing health promotion research findings must be used in decision-making and policy development. Long-term commitment and planning is needed for research and for the use of research results. Understanding the process for influencing policy is a relatively new and promising area for health promotion researchers.

2. **Partnerships.** Partnerships have long been a feature of health promotion activities, especially in communities. Frequently, funding agencies require broad-based research partnerships. Intersectoral partnerships are particularly desirable. However, the challenges of bringing together people with diverse interests, "ways of doing", forms of knowledge and working schedules, sometimes in different locations, are just beginning to reveal themselves.

3. **Citizen participation and capacity building for health.** What do citizens need to know to act in ways that will positively affect the systems (employment, education, health and community services, political structures) that affect their health? In order for citizens to make choices in a decentralized health care system, they need access to information and to resources for building the capacity for health, including health promotion, in their communities.

4. **Re-orient health services.** Reform of health systems mainly re-orients services by cutting back on formal services and increasing dependence on informal services. Researchers can identify gaps and linkages between the traditional health care sector and other determinants of health. In a rural area, for example, an elderly woman may require transportation for a visit to her doctor, but the local bus service has been stopped. Health services planners must focus on health promotion and illness prevention in the real context of people's lives. The definition of health services must be broadened to reflect the linkages between primary care services and other services such as transportation and caregiving.

5. **Taking action on the determinants of health.** Some health promotion research is moving in the direction of taking action on specific factors that influence health. Cultural interpreters are improving the accessibility of health services for members of ethno-cultural minorities, while at the same time evaluating these services according to need and satisfaction. Critics of advertising campaigns showing young, thin females smoking have been successful in eliminating these advertisements. Taking action means identifying the key factors that influence people's health and finding the means to change the policies and practices that impact negatively on health.

Health promotion research focuses on action to enable people, families, and communities to increase control over their health.

Health promotion research websites

Atlantic Health Promotion Research Centre
http://www.medicine.dal.ca/ahprc

Centre for Health Promotion University of Toronto
http://www.utoronto.ca/chp/

Community Health Promotion Network Atlantic
http://www.chebucto.ns.ca/cfn/CommunitySupport/CHPNA/index.html

Health Canada
http://www.hc-sc.gc.ca/

Health Promotion on the Internet
http://www.monash.edu.au/health/

World Health Organization
http://www.who.org/

Challenges in women's health research

ONE OF THE GREAT CHALLENGES IN WOMEN'S HEALTH is the support and undertaking of research which makes a difference to the lives of Canadian women. Four main challenges for women's health research are:

1. understanding the relationship between health and poverty
2. promoting public investment in women's health research
3. supporting the women's health movement
4. building trust across various research sectors

1. The Relationship Between Health and Poverty. There is little doubt that poverty and the health of Canadian women are related. Women in Atlantic Canada experience the highest poverty and illness levels in the country[1]. Despite our best efforts, wealth and income disparities in Canada are growing. Women, by and large, are becoming poorer, particularly in the Atlantic region.

Women face significant challenges in their search for economic security over their lifespan. With increasing social and familial pressures for women to assume the role of caregiver, more women must face the prospect of temporarily or permanently leaving the workforce and losing pension and other social income support over their lifespan. At the same time, public investment in health care in Canada has declined.

Research on the social and economic inclusion of women and families who live in poverty is ultimately aimed at influencing policy and public investment in women's health. Building research capacity at the community level enhances social action and participatory research. In turn, this research promotes social policy uptake and action on the social and economic factors that affect women's health and well being over the lifespan.

2. Promoting Investment in Women's Health Research. Public policy in Canada occurs at many levels, (e.g., federal, provincial, and municipal). Policy formulation is an ad hoc informal process which is influenced by a combination of determinants, (i.e., influence and power, community social activism, and research). It is not always based on rational or evidence-based decision making.

A decade of financial cutbacks and core funding disinvestment in women's organizations and infrastructure poses barriers to women's participation in the research process.

The rhetoric of health reform has, according to some analysts[2], been co-opted from the women's health movement. The lessons learned about the determinants of health are largely ignored and have been transformed into individual faults and causes which blame the victim[3]. There is a need to support research in women's health which addresses the research traditions of community, academic, clinical, and policy sectors and uses the comparative strengths of each approach and methodology in shaping and influencing public policy.

Women's health research websites

BC Centre of Excellence for Women's Health
http://www.bccewh.bc.ca/

Le Centre d'excellence pour la santé des femmes - Consortium Université de Montreal
http://www.cesaf.umontreal.ca/

Maritime Centre of Excellence for Women's Health
http://www.medicine.dal.ca/mcewh

National Network on Environments and Womens' Health
http://www.yorku.ca/research/nnewh/

Prairie Women's Health Centre of Excellence
http://www.pwhce.ca/

	ATLANTIC CANADA RATE
	NATIONAL RATE

24	16	27	21	12	9	13	8
HYPERTENSION per cent		**HEART DISEASE ARTHRITIS RHEUMATISM** per cent		**EMPHYSEMA** per cent		**CERVICAL CANCER** incidence per 100,000	

Disease rates in women Atlantic Canada versus national
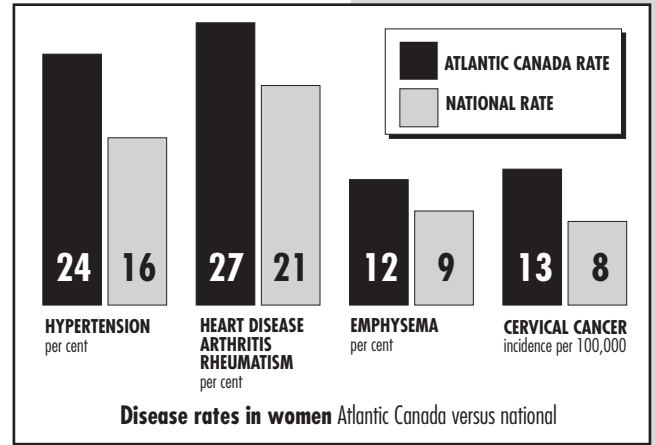
3. **Supporting the Women's Health Movement.** The federal budget of February 1999 changed the health research landscape in Canada. It provided priority funding for health research and innovation and presented new opportunities for health research. It acknowledged that to be world leaders in health research, Canadians have to develop a broader understanding of the underlying social and economic determinants of health. Research is recognized as important to maintaining the Canada Health Act. The budget called for a national system of quality health care research that will continue to evolve and build upon the continuum of collaborative relationships and networks of the Canadian Institutes of Health Research (CIHR). Additional health funding will be directed to health centres, health organizations and universities to help create world class facilities.

However, the disinvestment in women's organizations presents real challenges and barriers to the participation of community groups in health research. Community researchers will have to be proactive to access new women's health funding opportunities through collaborative research enterprises and partnerships with educational institutions, health organizations, and Centres of Excellence. Our success in conducting research on women's health will be determined to a large extent, by the way in which women's health researchers organize themselves and help each other. The Centres of Excellence model offers a unique platform for researchers from diverse research traditions to work together on common problems, issues and solutions. Such models can help voice women's priorities and translate research into a public policy language which will influence and shape the health of Canadian women and their families.

4. **Building Trust.** Women's health researchers traditionally design their research projects and organize their research teams within their own sector. We are learning new ways to build trust across community, academic, clinical, and public policy lines.

As research application procedures become more technical and complex in terms of accountability and partnerships, the onus will be on researchers to create new working arrangements. The key to partnership processes and programs lies in finding approaches and strategies which stress mutual benefit, shared risk taking, and shared power and resources. One such approach is the creation of strategic alliances and joint venture research initiatives.

The key to success for women's health researchers in the 21st century will be our ability to build trust across the academic, community, clinical and policy cultures and to build upon the comparative strength of each group.

Atlantic Canadian women have the highest rates of
- ■ **hypertension** (24% compared to the national average of 16%)
- ■ **heart disease, arthritis and rheumatism** (27% compared to a national average of 21%)
- ■ **emphsyema** (12% compared to a national rate of 9%)
- ■ **cervical cancer** (13 out of every 100,000 women compared to a national average of 8 per 100,000)
- ■ **high rates of teenage pregnancy.**[2]

[1] *A Profile of Poverty in Nova Scotia*, NS Advisory Council on the Status of Women, Halifax, Nova Scotia, January 5, 1997

[2] *Women's Health Study Group Report*, Halifax, IWK Grace Maternity Hospital, 1995.

[3] Women's Health Bureau, Health Canada, *Promoting Women's Health: Making Inroads into Canadian Health Policy*, Ottawa, January, 1999

In Nova Scotia:

 11.5% of children in two parent households live in poverty

 75% of those who remain below the poverty line are women

 20% of children are living below the poverty line

 67% of children in lone parent female headed households live in poverty[1]

Challenges in multicultural health research

Questions to consider when conducting multicultural health research

- How do specific cultural communities define their health priorities?
- Are data collected with the participation, permission and comprehension of the research participants in the cultural community?
- Why and for whom is the research being conducted?
- Are all stakeholders represented on the research design team?
- Are you keeping in mind that there are differences in perceptions and experiences (by age, gender, socio- economic status) within various cultural groups?

1 Diversity. Although Canada has a universal health care system, access is not equal because the needs of people from ethnocultural communities are poorly understood. While sharing much with those of the dominant culture, people from minority cultures may differ in their cultural beliefs, health practices, modes of communication, and values. There is also diversity between and within identifiable communities. As health priorities differ for each group, research must be designed that is culturally sensitive and responsive.

2 Context. To date, few effective cross-cultural indicators have been developed. As a result, research findings are generalized from one ethnocultural group to another. Competent health care delivery in a culturally complex society requires understanding of the historical, socio-economic, and cultural contexts of people's lives. In most research that collects and analyzes data using sociocultural indicators, the realities of smaller diverse groups are either subsumed or ignored, compromising the relevance of the conclusions.

3 Priorities. Historically, research has been non-participatory in design and the questions addressed may not have been those identified as priorities by the target populations. People are often very knowledgeable about their problems and can recommend solutions. It is imperative that researchers consult with people from diverse cultures to develop a research agenda that ensures prioritization of their concerns.

4 Partnerships. Research has the power to define social reality and what counts as knowledge. Power relations between researchers and participants from marginalized groups are often unequal. Research partnerships can help to address unequal relationships and increase validity of the research. Inclusive research addresses issues of power, privilege, and the very purpose of the research itself. Researchers must consider the power relations of every aspect of the project, including sampling, design and analysis.

Researchers are accountable to the people for whom the research is intended. They need to examine whether they have successfully reached out to relevant sociocultural groups. Working with coalitions can provide more resources and add credibility to the process. A research partnership between university and community partners can address both community and academic interests and enhance the quality and relevance of the research.

Participatory approaches are well-suited for exploring the needs of diverse populations. Members of culturally diverse groups are involved throughout the research process from project development, to data collection and analysis. The researcher's role is to help elicit information and facilitate the use of information. Community partners can provide grounded understanding and insights into priority issues and relationships.

Multicultural Health Research Websites

Australian Transcultural Mental Health Network
http://ariel.its.unimelb.edu.au/~atmhn/

The Centre for Cross-Cultural Health
http://www1.umn.edu/ccch/

Diversity Rx
http://www.diversityrx.org/HTML/DIVRX.htm

EthnoMed: Ethnic Medicine Guide
http://www.hslib.washington.edu/clinical/ethnomed/index.html

Transcultural and Multicultural Health Links
http://www.lib.iun.indiana. edu/trannurs.htm

Metropolis
http://canada.metropolis.globalx.net/

5 Ownership. When conducting participatory research, it must be recognized from the outset that the researcher is only one of many people involved in the project, and does not have exclusive ownership of it. This is a particularly sensitive issue for academics who need to publish their research, and it must be discussed at the beginning of the process. However, once the research is completed, both academic and community partners can use it. Research results should be written in plain language so that all stakeholders and research participants can share the information.

6 Ethics. A fundamental requirement of multicultural health research is the development of trust. Researchers need to be sensitive to, and respectful of, cultural practices. They must support the interests of respondents who may be vulnerable because of their gender, age, language, education, experience of political oppression, or other social barriers. Researchers can ensure that the disclosure of findings is not detrimental to the cultural community. It is crucial to be sensitive to the use of labels and negative language, and to conduct the research in ways which are both culturally sensitive and inclusive.

Tips for submitting proposals

✓ Review the funding agency's guidelines carefully before you begin.

✓ Check to make sure your proposal fits the agency's eligibility criteria.

✓ Pay attention to the estimated number of awards disbursed by a granting agency and the range of monies awarded. Don't submit a proposal to an agency that cannot accommodate your financial requirements.

✓ Be aware of the funding agency's proposal evaluation process.

✓ Request guidelines and forms for the program you are interested in.

✓ Check with the granting agency for any additional application instructions and for any program or deadline changes.

✓ Some granting agencies will give research a higher funding priority if the research is linked to that agency's policy criteria. For example, the National Health Research Development Program (NHRDP) favours projects that contribute to the knowledge base for national and regional policy development and planning, are timely, or demonstrate clear applicability and transferability beyond the local level.

✓ Include all required forms. Most granting agencies will not review a research proposal if all required forms are not included and properly completed. Some agencies require specific font sizes, margins and page sizes. If you do not meet these specifications, your application may be returned without review.

Make telephone calls, search the internet, read newsletters and bulletin boards, ask around about projects/research being conducted in your area of interest.

Pre-proposal activities

Where to Find Information on Funding Sources

University research services. Personnel in research services offices of major universities are aware of the most current information on funding sources. University-based researchers can typically obtain applications for various granting agencies through these offices.

National and regional agencies for health research in Atlantic Canada. Information on current funding competitions is available from these offices. Ask to be placed on their mailing lists for notification of upcoming research competitions. A list of national and Atlantic agencies can be found on page 23.

Provincial branches and associations if your research involves a particular target group. The Canadian Lung Association, the Canadian Cancer Society, and the Heart and Stroke Foundation of Canada, for example, have provincial chapters and funding for research.

Researchers in your area of interest. Specialists in the research area are often aware of current funding initiatives or can advise about potential funding sources.

Local libraries or sharinghouses. Libraries often have funding directories and directories of community based resources and organizations. References for several directories can be found on page 21.

Search the Internet. Look for agencies who have funding available for research, including granting agencies, foundations and corporations. Organizations with listservs or websites often post information on research funding related to specific populations or issues. Page 21 lists some websites to help you begin your search.

Eligibility Requirements

Funding agencies commonly set out four types of eligibility requirements.

1. Researchers (often called investigators) may be required to hold an academic position at a university or affiliated institution.

2. Some granting agencies require that research be carried out within a specific geographic location. For example, NHRDP limits competitions to university researchers, non-governmental organizations, and private researchers throughout Canada. Other agencies may be specific to a particular province within Canada.

3. Some granting agencies specify ineligible research areas and activities. For example, NHRDP will not fund laboratory and clinical research, community needs assessment, environmental studies, professional development, and program effectiveness evaluations.

4. Eligibility criteria might also include Canadian citizenship, residency in a specific province, or sponsorship by a non-profit organization.

Building a Research Team

Working with a research team will enhance the quality of your application for funding. It is preferable to bring together people with a variety of skills and backgrounds in order to produce a comprehensive proposal. Funding agencies often give preference to proposals which involve people from a number of academic and health disciplines and/or a variety of research backgrounds. It is increasingly common for researchers to involve representatives of the target group in the design and implementation of the research.

Who should you include on your team? For national funding agencies, it is helpful to include at least one individual with a track record of awarded grants and publications in respected journals, as this will increase your chances of receiving funding. Many of the larger funding agencies require that at least one of the researchers be affiliated with a university or major health care institution. Include individuals who work closely with the target group or are target group members. Their knowledge is invaluable.

For researchers in the Atlantic region, AHPRC may be able to refer you to individuals who are skilled in your area of interest, who could provide advice in developing your proposal.

The size of the research team. The size of the research team will vary depending on the type of study you are proposing. You will have to decide on the optimal size. It is important to note, however, that a large group may be more difficult to organize. It is often necessary to designate a "principal investigator" or several "co-investigators" who will have the primary responsibility for the research grant. In addition to co-investigators, you can include consultants on the team to help you with specific areas of your research project (such as survey construction, data analysis or development of educational materials). Federal funding agencies often require that proposals come from an established institution such as a university, local clinic, or service agency, so it may be important to include someone with these connections on your team.

Responsibilities and roles of the research team. Clearly specify the responsibilities and roles of each person on the research team in your proposal. For members of the team who will receive a salary or consulting fees from the grant (e.g., statistical consultants), this is particularly important. Responsibility for reporting the results of the research and/or subsequent writing of articles or monographs may also be discussed by the research team in the early stages of research. This includes the order of authors' names and assigning responsibility for correspondence about the research.

Applications/Deadlines
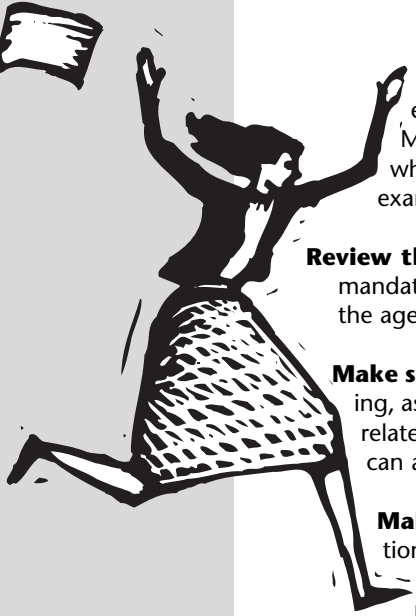
Find out about your potential funding source. Obtain as much information as possible about your potential funding source. If an agency has funded grants for others in your organization or institution, you could examine the successful proposals. Most funding agencies publish a list of funded research. Examine the list to determine what kinds of research that agency has funded. Foundation and corporate funders, for example, often support activities in several areas such as health, education and the arts.

Review the agency's mandate. It is very important that your proposal closely matches the mandate identified within the agency's annual report or funding guidelines. You can also call the agency with questions about the relevance of your proposed work to its mandate.

Make sure information is up to date. Verify the address and contact person before applying, as administrative changes may have taken place since the printing of the agency's grant related material. A brief telephone call to the agency will accomplish this. This information can also be found on the website for the funding agency.

Make sure you have the right forms. Many funding agencies have specific application forms. These forms can be rigidly structured, or simply provide sub-headings for the organization of your proposal. Foundations may not have specific forms but may require that applications contain specific types of information (e.g., statement of need, target population).

Check the deadline. Deadlines for funding vary according to the agency. Often there are only one or two deadlines per year. Funding agencies may offer different "types" of grants (e.g., seed money, demonstration projects, research grants), and there may be different deadlines for each type.

Submission process. Be sure you know whose signatures you will need on the final proposal. Depending on the type of research, a review committee may need to examine the proposal before submission (e.g., ethics review committee in a hospital or university). These procedures can take a lot of time, and you must anticipate them. Sometimes you can submit a proposal for ethical review at the same time that you submit the proposal to the funding agency (informing them that you have done so) to speed up the process.

Applying to multiple funding sources. It is advisable to apply to more than one funding source. This is generally acceptable to funding agencies, as long as you inform them that you are applying for alternative or additional sources of funding.

Letters of Intent

Some funding agencies require a letter of intent before the acceptance of a proposal for review. This letter is usually 2-5 pages in length, and states the objectives of your research and your plans to achieve those objectives. Based on the letter of intent, the agency may or may not invite you to submit a full proposal. It is to your advantage to send a letter of intent to determine eligibility and relevance of the proposed research project to the funding agency.

Tips for Writing Letters of Intent

- Identify all participants and affiliated institutions

- Provide name, credentials, mailing address, telephone and fax numbers, and e-mail addresses of the lead researcher and all other associates

- Include a short summary of the research proposal

Literature Review

Most proposals include a literature review to illustrate the current state of knowledge in the research area. It is advisable that you consult the literature while you are developing the research questions and objectives. A university library is the best place to find current literature, and it is often possible to search library holdings and databases through the Internet. The literature review should conclude with an analysis of the gaps or deficiencies in research conducted to date and the unique contribution of your proposed research.

Proposal Development

Write your proposal assuming that the reader has limited knowledge of the topic. The proposal should be comprehensive, well organized and logical. Use clear language with minimal technical jargon to describe your proposed research questions, methodology, data collection, and analysis. Typically, reviewers of proposals for funding agencies do have extensive knowledge of the field. Thus, your proposal must reflect the current state of research in your area of interest.

A standard formula for writing a grant proposal does not exist. The table on page 13 summarizes the key sections of most proposals. The table is followed by an elaboration of the contents in each of the key sections. Since funding agencies often have their own format and specific application forms, you should obtain the agency's guidelines before you begin to develop your proposal in detail.

Computerized Submissions

The Internet allows free access to up-to-date grant information and often permits electronic submission of proposals to funding agencies. It is easy to find and retrieve material once you know where and how to look. Many granting agencies provide their proposal application forms on-line, with step-by-step instructions on completion procedures. To access this information, you need a computer, modem, access to a telephone line, and communications software. This method of preparing your research proposal helps ensure that the information you are providing meets the requirements of the agency.

Program Rejection/Resubmission

If a funding agency rejects your proposal, you may resubmit the same or a similar proposal in a subsequent competition or to a different funding agency. You should seek feedback to help you revise or refine your proposal for resubmission. You should look at the reviewer's comments with the members of your research team and colleagues working in the area.

Although reviewer's comments should be given careful consideration, it is not necessary to follow all of the reviewer's suggestions, as reviewers change from year to year. Re-submissions should include a rebuttal, an indication of the changes you have made from the original proposal, and any counter-criticisms to the reviewers' comments. You must present re-submissions in such a way that a first-time reviewer has all the information needed to evaluate the proposal without having to refer to the original submission. Depending on the circumstances, your project team may want to seek alternative funding sources instead of re-submitting to the same agency.
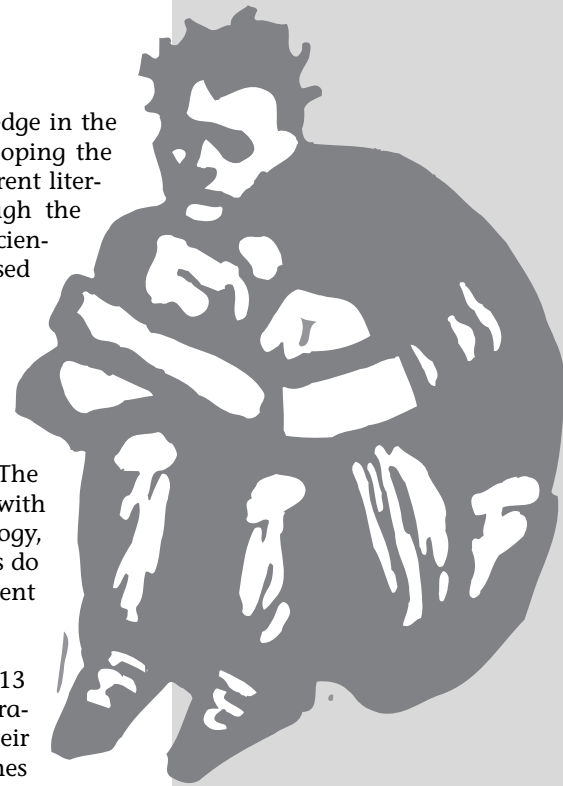
Questions to consider if your proposal is rejected

- What did we do in the proposal that we should not have done?

- What did we forget to do?

- Was the problem the concept or the presentation of the concept?

- Are particular components of the proposal a problem and why?

- Where do multiple reviewers share a consensus regarding problem areas?

Pointers for writing research proposals

Getting the research question focussed

Working with a well-defined research question will allow you to remain focussed throughout the research process.

- keep the question clear, simple and specific

- select a question that comes from experience

- select a question that addresses an identified need or gap in existing knowledge

- consult with colleagues to help focus the question

- consult the literature (previous research in the same area)

■ Connect your proposal with the interests and priorities of the funding agency.

■ Be concise and comprehensive.

■ Ensure that the organization of the proposal is clear.

■ Make the proposal easy to skim (highlight important points).

■ Make smooth transitions between each point in the proposal.

■ Use direct language and simple sentences; avoid jargon.

■ Convey liveliness and enthusiasm in your proposal.

■ Outline the specific objectives of the research.

■ State your research questions carefully and concisely.

■ Demonstrate how the research will contribute to new knowledge.

Key sections of a research proposal

Table of Contents	Required for a lengthy proposal.
Abstract / Summary	Clear, logical summary of your proposal, typically not exceeding 250 words.
Statement of Need	Outlines the problem(s), explains why you require funding, and states the importance and timeliness of the research.
Objectives/Research Questions/Hypotheses	Clearly defines the purpose(s) of the research, what you expect to achieve, and key questions to be answered.
Background and Literature	Provides information on existing knowledge related to the topic.
Methods/Study Design	Describes the methods you will use to accomplish your objectives within a given time frame.
Sample Selection/Data Size	Describes how participants for the research will be recruited and the number of participants required in order to adequately answer the research questions.
Data Measurement	Discusses the measures to be used, including their validity and reliability.
Data Collection	Outlines the data to be collected and the method(s) of data collection.
Data Analysis	Describes how the data will be analyzed. The analysis should correspond closely to the stated objectives of the proposal.
Budget	Describes in detail the amount of money required and how it will be spent.
Dissemination of Results/ Practical Significance	Describes how the results of the research will be communicated to professionals, researchers and/or the public, and anticipated outcomes of the research.
Appendices	Includes relevant explanatory or supplementary materials that strengthen the proposal.
Letters of Support	Letters from organizations indicating their support for your research, and what they are prepared to do to support it.

Abstract/Summary

You may label the abstract/summary separately or include it as the first paragraph of your introduction. This section helps to sell the idea, summarizes the objectives of the proposed research, the methods you will use, the target group or population you will study, the relevance of the research to the mandate of the funding agency, and the benefits expected from the research. After reading the summary, the reviewers should understand why you are proposing the research and the focus of the project should be clear. Typically, you will write the abstract after the proposal has been fully developed.

Statement of Need

This section may include statistics on the prevalence of a particular health problem or report on a prior needs assessment. You could consider a statement of support from the target group, or a brief outline of the extent or nature of the researchers' involvement with the target group or relevant agencies.

Objectives/Research Questions/Hypotheses

This may be a separate section or included at the end of the introduction. Separating them may help the reader identify them more readily. Objectives should be measurable and attainable within the time frame of the study. One possibility for the presentation of objectives is to include them in the introduction of the proposal and then rewrite them as hypotheses in the data analysis section, as follows:

Objective: To explore the relationship between physical exercise and children's attentiveness in school.

Hypothesis: Children who engage in a 15 minute exercise program at the beginning of each school day will be more attentive in class.

Background and Literature Review

The purpose of the background section is to provide the reviewers with the context within which they should consider the proposed research. You must convince the reviewers that you are aware of relevant research and refer to it in an appropriate manner. Typical discussions include descriptions of previous research, problems associated with collecting and analyzing data encountered previously, and the interpretation of previous findings. It may also include a theoretical framework or premises for the study. You should limit the discussion to what is essential to the present research.

Methods/Study Design

This section describes the methods you will use to achieve the stated objectives, including what you will do, how you will do it, with whom, and when. The objectives of your study will guide your choice of study design. For example, you may wish to describe characteristics of a target population (e.g., find out the needs of family caregivers), explain some outcome, or implement and evaluate the effectiveness of some intervention. Different types of objectives can lead to very different study designs (e.g., surveys, interviews, focus groups, observational or experimental studies). Qualitative and quantitative methodologies are appropriate for different types of studies. You must clearly justify the design and methods you choose. As a rule, keep the design simple and clear.

If a member of your research team does not have expertise in research methods, you should consider getting help in developing your study design. Many university departments offer consulting services on study design. Local research centres may have consulting services available for designing research methods (See page 22 for a listing of research centres in the Atlantic region).

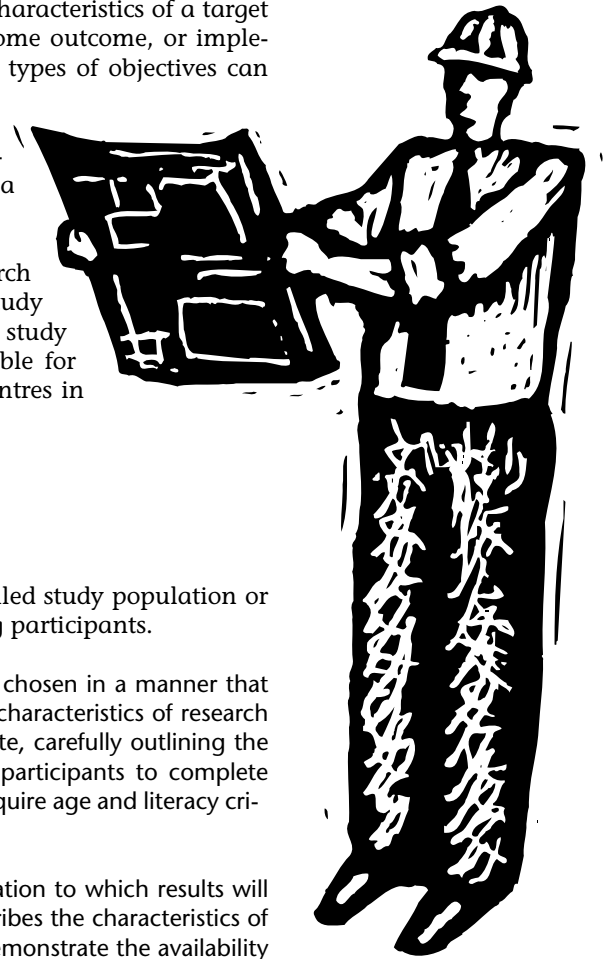## Sample Design/Sample Selection

This section describes how you will choose your participants (also called study population or target group). There are several important considerations in choosing participants.

Characteristics of research participants. Participants should be chosen in a manner that will not bias the research results. You should describe in detail the characteristics of research participants. You must present a clear picture of who will participate, carefully outlining the criteria for inclusion in the research. For example, if you expect participants to complete lengthy and complex questionnaires without assistance, you may require age and literacy criteria for participants.

Representativeness. How typical are the participants of the population to which results will be generalized? This is particularly important for research that describes the characteristics of some population or target group. Finally, you must consider and demonstrate the availability of your sample. Conducting a pilot test (a small-scale trial run) of the research population, to show that they are responsive to the research, can strengthen your proposal.

Number of individuals, groups or communities required. You should include calculations of the number of individuals, groups or communities required for the study in the proposal. You must ensure that you calculate the number correctly because an inadequate sample size will limit the ability to detect changes due to your intervention. On the other hand, including more subjects than you need can add unnecessary costs to your study. If you plan to use a random sample of participants, you must clearly discuss the method.

It may be necessary to contact a statistician for help in this area. For qualitative research projects, it is advisable to discuss sample size requirements with an individual experienced in this area of research.

Data Measurement

This section describes whether you are collecting quantitative or qualitative data (or both), how they "fit" with your research question(s), and the tools or measures you will use to collect the information. Measurement can take a variety of forms, ranging from scales and indexes (which are highly structured) to personal accounts or observations (which may be slightly or not at all structured).

Qualitative data. Qualitative data are observations or information assessed according to themes or categories inherent in the data collected, such as interviews, focus group discussions, daily journals, or field notes. Data of this kind are often gathered when the topic in question is not well-defined or easily counted, or as a preliminary step in developing more quantifiable measures. Qualitative data is valued for its rich, indepth, descriptive character, often not attainable using quantitative measures.

Quantitative data. Quantitative data are observations or information based on the numerical count of frequencies of attributes, behaviours, or responses of individuals or groups. The variables or attributes to be measured are largely or completely categorized in advance of data collection, although measures such as survey questions may be refined following pilot testing. Quantitative data is valued as a comparable, reliable form of measurement, as well as for its advantages for describing widely-occurring phenomena and large populations.

Measurement tools. You must demonstrate that the measurement tools you will use in your study are valid and reliable. This is particularly true for variables which are complex (e.g., self-esteem, depression or quality of life). It may be best to use established measures with a good "track record", and cite references that document their reliability and validity. If you are developing your own measure(s), include a clear description of how you will develop and validate the measure(s). Pilot test. In most cases, you should pilot test your data collection measures and procedures before proceeding with full data collection.

You can use preliminary analysis of pilot study data to establish that your measures are valid, reliable, easy to use, clearly presented and that you have all data needed for analysis purposes included in the measures. Pilot testing can illuminate weaknesses in data collection tools.

Evaluation. If an objective of your research is to evaluate an intervention or program, it is particularly important that you clearly specify and justify the criteria for success and failure that you will use. For many evaluation projects, you should consider evaluation of the costs as well as the effectiveness of the program/intervention.

Data Collection

This section of the proposal describes how you will collect your data and the procedures that you will use to ensure that the data are complete and of good quality. You need a clear description and rationale for the data you collect. The data you collect must be consistent with your objectives. Two pitfalls at this stage are collecting too much data on topics that you think might be interesting to look at, but are not consistent with your objectives, and failing to collect data important for meeting the study objectives. Be sure that you collect data that is relevant and complete.

Include a clear description of data collection procedures. Will you collect data through face-to-face interviews, self-administered questionnaires, over the telephone, etc.? What is the rationale for your choice of data collection procedures? For quantitative research, how will you record the data, enter it into a computer, and organize it for analysis? For qualitative research, how will you transcribe data and organize it for analysis?

You should discuss procedures you will use to ensure that the data you collect is complete, recorded accurately, and correctly transcribed/entered for analysis. This section should include a discussion of training and monitoring of staff who will collect data, procedures for obtaining a high response rate from study participants (particularly for surveys), and procedures for editing and preparing data for analysis.

Data Analysis Software Websites

ETHNOGRAPH:
http://qualisresearch.com/

NUD*IST:
http://www.qsr.com.au/

SPSS:
http://www.spss.com

SAS:
http://www.sas.com/

Validity refers to the degree to which a measurement actually measures what it claims to measure.

Bias is any trend in the collection, analysis, interpretation, publication, or review of data that can lead to conclusions that are systematically different from what actually exists.

Reliability refers to the degree to which the results obtained by a measurement procedure can be replicated.

A pilot test is a small-scale trial run of research procedures to determine the responsiveness of the target population, or to refine data collection tools.

Data Analysis

Describe how you will analyze your data. For quantitative data, include a description of the specific statistical procedures you will use. The analysis should also include validation of key measures. Computer programs, such as Statistical Package for the Social Sciences (SPSS) and Statistical Analysis System (SAS) are available for quantitative analysis. For qualitative data, describe how you will analyze key themes and categories emerging from the interviews, observations, documentation or other data. There are also computer software packages (THE ETHNOGRAPH, NUD*IST) to help with qualitative data analysis. A common pitfall in data analysis is to conduct a range of analyses not specified in the objectives. Be sure to focus the analysis on your specific study objectives.

Budget

An effective budget is an important part of a successful research proposal. Reviewers evaluate proposals based on the amount of funding requested, as well as on the ideas presented in the proposal. In some agencies, the review committee recommends an appropriate budget or suggests budget cuts independent of the scientific or societal relevance of the proposal. Typical budget items include personnel, travel expenses, and supplies and services (i.e., telephone, postage, printing, and office supplies etc.).You must provide a rationale for each budget item.

Be aware of the types of expenses and funding limits allowed by particular agencies. Some agencies fund capital equipment (office furniture, computers, etc.) and some do not. Include expenses for dissemination of the research results at the end of the project.

Sample Annual Project Budget

```
PERSONNEL
    Co-ordinator/Research Assistant
        Salary $3,000/mo X 12 months=$36,000/yr + benefits $3,600/yr
            Salary total                                             $39,600
    Consultants for graphics and development of educational materials  $2,000
    Personnel TOTAL                                                  $41,600

SUPPLIES & SERVICES
    Routine office supplies (paper, pens, envelopes, etc.)
        $100/mo X 12 months                                          $1,200
    Photocopies $360/mo X 12 months                                  $4,320
    Printing of educational materials                                $1,000
    Postage & Courier $60/mo X 12 months                              $720
    Telephone Set rental $4/mo X 12 months                             $48
    Line rental $30/mo X 12 months                                    $360
    Long distance phone and fax charges $180/mo X 12 mo             $2,160
    Equipment rental (computer, fax, overhead & slide projector)
        $400/mo X 12 months                                         $4,800
    Office Supplies TOTAL                                           $14,608

TRAVEL
    Local travel: 1184 km X $0.32/km                                  $379
    Conference travel (air)                                           $300
    Hotel: $150/night X 3 nights                                     $450
    Meals: $45/day X 3 days                                          $135
    Travel TOTAL                                                    $1,264

TOTAL BUDGET                                                       $57,472
```

Budget Tips

■ Justify the budget in detail by showing the relationship of budget items to project activities.

■ Make sure the amount you request is actually required by the project.

■ Organize the presentation of your budget according to the agency's requested format.

■ Ensure the budget is within the range of funding available from the agency.

■ Make sure your numbers add up!!

■ Show contributions from other sources or cost sharing possibilities.

... involves more than just data analysis:

■ measuring outcomes

■ analyzing the process

■ describing how informa-
tion will be collected,
analyzed and publicized

■ identifying who will use
the evaluation findings
and for what purpose

■ relating the evaluation
to the project's objec-
tives and activities

■ identifying the resources
for evaluation and the
person responsible for
implementing them

A proper evaluation plan
demonstrates that you take
your objectives seriously
and intend to measure
your effects.

Program Evaluation

In general, evaluations can be directed toward the research process, research outcomes or both.

Process evaluations. Process evaluations monitor what is actually being done. In other words, are the methods described in the research design being accurately followed? Process evaluations are good management tools that can be used to make fine adjustments in procedures to meet the methods set out for the project.

Outcome evaluations. Since process evaluations only measure the intermediate impact of a program or intervention, you need a second type of evaluation to measure outcomes. Outcome evaluations relate specifically to the program's objectives. You must define precise operational objectives in order for the impact of a program to be measurable. This type of evaluation asks if you have met the program objectives according to the goals you set out.

You can use process evaluations in conjunction with outcome evaluations to ensure that you follow correct methods and produce measurable outcomes. You should include a detailed description of evaluation methods in your proposal as some granting agencies provide extra funding for feasible evaluation projects. NHRDP, for example, awards funds only to proposals with a well-developed and detailed evaluation component that emphasizes the evaluation methodologies to be employed.

Many books and articles are available on program evaluation. A literature search at your local university library or on the internet will provide you with enough information for choosing the evaluation method most appropriate for your research.

Dissemination of Results/Practical Significance

Dissemination is the method of distributing the outcomes of your research project. Indicate how you will make the results of the project known to the research community and the general public.

Dissemination activities. Dissemination activities include preparing reports, publication in scholarly journals, presentation at conferences/workshops, public presentations, press releases, or production of educational materials. The people involved directly in the research (participants, key informants and contacts) must also receive information on findings, usually in summary form.

Method of dissemination. The method of dissemination chosen is often one of the criterion on which funding agencies evaluate proposals, so it is important that you choose your dissemination methods carefully. Some granting agencies encourage researchers to allocate a percentage of the total grant value to the dissemination of results. Having a plan and a budget for dissemination in your proposal adds credibility to the research project.

This section can also address the eventual beneficial outcomes for study participants and for the advance of knowledge if the grant is awarded. Include reference to the magnitude of the issue, the societal costs, and the potential for your research to address these. Will this be an area of research that is likely to continue and will it have implications for the target population and beyond?

Appendices

The list of appendices that follows does not apply to all proposals. Include materials as appendices only if they are essential to the reviewers' understandings of the proposed research. Appendices should complement the information in the body of the proposal.

Letters of support from the institutions or organizations involved in the study. For example, if you will be working with patients in a clinic or with members of a community organization, you should include a letter of support from the clinic or organization.

Findings from pilot study (if applicable).

Ethical approval from the institution(s) involved in the proposed project.

Consent form. The type and requirements for consent forms may vary by funding agency and the institution involved.

Samples of letters to project participants explaining the research project.

**Data collection** instruments (measures, interview schedules, surveys)

Budget and justification of expenditures (see page 17)

Job descriptions of primary staff. Funding agencies often provide specific forms for job descriptions.

Resumes or curriculum vitaes for investigators/researchers and staff, including information on research grant-related experience.

A **time schedule** for executing the study (demonstrates planning, may be included in the body of the proposal).

Diagram of research design (may be included in the body of the proposal).
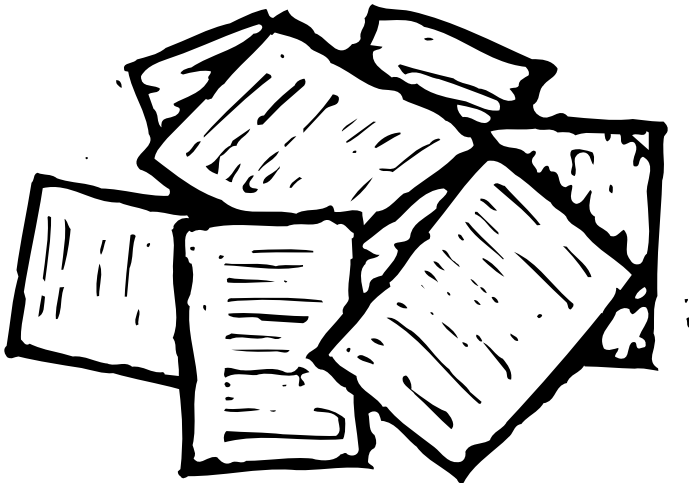
Resources

1. Resources for Proposal Writing

Hall, M.S. (1998). *Getting funded: A complete guide to proposal writing (3rd ed.)* Continuing Education Publications, Portland State University, P.O. Box 1394, Portland, OR 97207 (@$23.95 plus shipping/handling).

Malarkey, L.M. (1992). The persuasive proposal: A reviewer's perspective. *Nursing and Health Care,* 13, 310-313.

Mathurin, C. (1997). *The Diffusion of Research Results: The Role of the Dissemination of Scientific Information.* Ottawa, Ont.: Author.

Selby, M.L., R. Riportella-Muller & A. Farel. (1992). Building administrative support for your research: A neglected key for turning a research plan into a funded project. *Nursing Outlook*, 40(2), 73-77.

Streiner, D.L. (1996) *While you're up, get me a grant: A guide to grant writing. Canadian Journal of Psychiatry,* 41(3), 137-43.

Basic Elements of Grant Writing
http://www.cpb.org/grants/grants.writing.html

Grants Development Summary: Dos and Don'ts of Grant Writing
http://gamstcweb.gisd.k12.mi.us/gisd/Dos_and_Donts_Chart.htm

Guide to Completing a Research Proposal
http://www.idrc.ca/institution/proposition_e.html#GUIDE

Helpful Hints to Grant Getting
http://www.uth.tmc.edu/ut_general/research_acad_aff/ors/ffn/9706/art697.htm

Persuasive Proposal Writing: A Guide for Bur-Ilan University Researchers
http://www.biu.ac.il/RA/www/rserch/writing/write1.html

The Art of Grantsmanship, Jacob Kraicer, 1997.
http://www.hfsp.org/how_to_apply/Art_of_Grantsmanship/
Art%20of%20grantsmanship.htm

10-Point Plan for Standard Grant Funding Proposal (Grant Writing Guide).
http://www.seacoastweb.com/resource/grant1.htm

10 Things to do Before You Write a Grant Proposal
http://www.ascd.org/services/grantinfo/tip.html

2. Resources On Potential Funding Sources

Canadian Directory to Foundations (1996),
    9th Edition. Toronto: Canadian Centre for Philanthropy

Directory of Corporate Giving in Canada (1996).
    Vancouver, B.C.: Rainforest Publications.

Grantmakers in Canada – lists foundation and corporate sources
    http://www.fundsnetservices.com/philanthropy/_canada01.htm

Handbook of Grants and Subsidies of the Federal and Provincial Governments
    (1992). Ottawa: S.T.M. Corp.

Philanthropy Journal Online – provides links to foundation and corporate sources:
    http://www.philanthropy-journal.org/links.cfm

SPIN database – allows for general and specific searches for funding sources:
    http://spin.infoed.org/spinwww/spinwww.htm

3. Research-based organizations in Atlantic Canada

Atlantic Centre for the Study of Human Health (ACSHH)
Box 2533 Charlottetown, PEI C1A 8C2.
Phone (902) 626-4903 Fax (902) 566-7262
E-mail address: cdgallan@health.vac-acc.gc.ca
Web site address: http://www.acshh.ca
Danny Gallant, President and CEO

Atlantic Health Promotion Research Centre (AHPRC)
Room 5200 Dentistry Building, Dalhousie University
5981 University Ave Halifax, NS, B3H 3J5
Phone (902) 494-2240 Fax (902) 494-3540
E-mail address: ahprc@dal.ca
Website address: http://www.medicine.dal.ca/ahprc
Renee Lyons, Director

Health Law Institute
6061 University Avenue Halifax, Nova Scotia B3H 4H9
Phone (902) 494-6881 Fax (902) 494-6879
E-mail address: hli@dal.ca
Website address: http://www.dal.ca/law/hli
Jocelyn Downie, Director

Maritime Centre of Excellence for Women's Health (MCEWH)
5980 University Avenue P.O. Box/CP 3070 Halifax, B3J 3G9
Phone (902) 420-6725 Toll free 1-888-658-1112 Fax (902) 420-6752
E-mail address: MCEWH@dal.ca
Website address: http://www.medicine.dal.ca/mcewh
Carol Amaratunga, Executive Director

Muriel McQueen Fergusson Centre for Family Violence Research
University of New Brunswick P.O. Box 4400 Fredericton, NB, E3B 5A3
Phone (506) 453-3595 Fax (506) 453-4788
E-mail address: fvrc@unb.ca
Website address: http://www.unb.ca/arts/CFVR
Deborah Harrison, Director

Nova Scotia Centre on Aging
Mount Saint Vincent University Halifax, Nova Scotia, B3M 2J6
Phone (902) 457-6546 Fax (902) 457-6455
E-mail address: caging@msvu.ca
Website address: http://www.msvu.ca/agingres.htm
Marlene MacLellan, Associate Director

Nova Scotia Environmental Health Centre (NSEHC)
P.O. Box 2130 Fall River, Nova Scotia, B2T 1K6
Phone (902) 860-1377 Fax (902) 860-2046
E-mail address: NSEHC@Dal.Ca
Website address: http://www.NSEHC.com
Michelle Raoul, Communications Coordinator

The Nova Scotia Sociobehavioural Cancer Research Network
Canadian Cancer Society   1 - 5826 South Street Halifax, Nova Scotia B3H 1S6
Phone (902) 423-6183 Fax (902) 429-6563
Carol Smillie, Director

4. National and Regional Health Promotion Agencies & Departments

National Health Research and Development Program (NHRDP)
Information Officer Extramural Research Programs Directorate Health and Welfare Canada
Ottawa, Ontario K1A 1B4
Phone: (613) 954-8549" Fax: (613) 954-7363
Website: http://www.hc-sc.gc.ca/hppb/nhrdp

Social Sciences and Humanities Research Council of Canada (SSHRC)
255 Albert Street, P. O. Box 1610 Ottawa, Ontario K1P 6G4
Phone: (613) 992-0682 Fax: (613) 992-1787
Website: http://www.sshrc.ca

Health Promotion and Programs Branch Development,
Atlantic Regional Office of Health Canada
1557 Hollis Street, Suite 500 Halifax, N.S. B3J 3V4
Phone: (902) 426-2700 Fax: (902) 426-9689

Nova Scotia Department of Health
P. O. Box 488 5th floor, Joe Howe Building 1690 Hollis Street Halifax, N.S. B3J 2R8
Phone: (902) 424-5910 Fax: (902) 424-0663
Website: http://www.gov.ns.ca/health/

New Brunswick Department of Health and Community Services
2nd floor, Carleton Place 520 King Street Suite 5100 Fredericton, N.B. E38 5G8
Phone: (506) 453-3092 Fax: (506) 5243
Website: http://inter.gov.nb.ca/hcs-ssc/

Newfoundland Department of Health
Confederation Building, West Block, P. O. Box 8700, St. John's, NF A1B 4J6
Phone: (709) 729-3940 Fax: (709) 729-5824
Website: http://www.gov.nf.ca/health/

Prince Edward Island Department of Health and Social Services
4 Sydney St. P.O. Box 2000 Charlottetown, PEI C1A 7N8
Phone: (902) 368-6138 Fax: (902) 368-4969
Website:http://www.gov.pe.ca/hss/

Atlantic Health Promotion Research Centre (AHPRC)

The Atlantic Health Promotion Research Centre (AHPRC) was established in 1993 through a Centres of Excellence grant from the Social Sciences and Humanities Research Council of Canada (SSHRC) and the National Health Research Development Program (NHRDP). Since 1993, the Centre has generated over $5 million in research grants and contracts for the Atlantic region. AHPRC is currently supported by the Faculties of Health Professions, Medicine and Dentistry at Dalhousie University, NHRDP, the Departments of Health in Nova Scotia, Newfoundland, and Prince Edward Island, and Manulife Financial. AHPRC is the Atlantic representative for the Canadian Consortium for Health Promotion Research. The Centre's mission is to conduct and facilitate health promotion research that influences policy and contributes to the health and well-being of Atlantic Canadians.

Atlantic Health Promotion Research Centre (AHPRC)
Room 5200 Dentistry Building, Dalhousie University 5981 University Ave.,
Halifax, NS, B3H 3J5 Phone
(902) 494-2240 Fax (902) 494-3594
E-mail address: ahprc@dal.ca
Website address: http://www.medicine.dal.ca/ahprc Renee Lyons, Director

Maritime Centre of Excellence for Women's Health (MCEWH)

The Maritime Centre of Excellence for Women's Health is one of five national Centres mandated by Health Canada's Women's Health Bureau to conduct research and provide analysis, advice and information to government and health organizations. The mission of the Maritime Centre, a dynamic interaction of community, academic, clinical and government representatives in the Atlantic Provinces, is to promote social change and improve the health status of Canadian women through research on women's health within a social determinants framework. MCEWH has identified Women's Social and Economic Security as a key theme for the next three years and has also given priority to research initiatives that focus on the design and implementation of new gender equity analysis tools and practices, as well as initiatives that address the issues of black or rural women and caregivers.

Maritime Centre of Excellence for Women's Health (MCEWH)
5940 South St. P.O. Box/CP 3070 Halifax, B3J 3G9
Phone (902) 420-6725 Toll free 1-888-658-1112 Fax (902) 420-6752
E-mail address: MCEWH@dal.ca
Website address: http://www.medicine.dal.ca/mcewh
Carol Amaratunga, Executive Director

MCEWH is supported by Dalhouisie University and the IWK Grace Health Centre. MCEWH is also financially supported by the Women's Health Bureau of Health Canada and through generous anonymous contributions.