

Office of Professional Development
Faculty of Medicine
Memorial University of Newfoundland

Cardiovascular Disease *Needs Assessment Survey*



Cardiovascular Disease

Continuing Medical Education Needs Assessment Survey Results



Memorial

University of Newfoundland

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Executive Summary

This report summarizes the results of a questionnaire-survey of the perceived continuing medical education needs and learning preferences of Canadian family physicians and general practitioners as they pertain to the clinical subject area of Cardiovascular Disease (CVD). Between October 1999 and January 2000, the Office of Professional Development, Faculty of Medicine distributed a questionnaire-survey as a means for identifying and understanding physicians' learning needs in CVD. The survey sought detailed information on the individual practice and demographic profiles of respondents, physicians' attitudes towards MAINPRO credits and accredited CME programs, therapeutic information regarding physicians' practice profiles and perceived learning needs in the area of CVD, and educational format preferences for participating in CME. This report summarizes the results from all surveys which were received up to and including January 31, 2000. Of the 4,105 surveys that were distributed, 1,503 were returned before January 31, 2000 for a response rate of 36.6%.

The demographic characteristics of the respondents and the overall survey sample did not appear to differ significantly from the general characteristics of the actual family physician or general practitioner population of Canada. The respondent sample does appear to over represent a larger number of respondents who practice in communities with a population of less than 10,000 persons and physicians who are certificants of the Canadian College of Family Physicians. However, the physician sample responding to the survey was representative of the actual physician population in terms of age, gender, and province of practice location.

The key issues raised from the results of the study are:

- < MAINPRO accredited programs were perceived as being important or very important by 45% of the respondents to the survey. Physicians in Manitoba, New Brunswick, and Saskatchewan felt MAINPRO credits were more important than their colleagues in British Columbia and the Yukon Territories.
- < A majority of physicians who were members of the College of Family Physicians of Canada felt MAINPRO credits were either important or very important.
- < A larger number of female physicians, young physicians, and physicians practicing in communities with less than 10,000 persons felt that MAINPRO credits were either important or very important.

- < A majority of physicians in Canada (70.9%) view accredited programs as credible and non-biased. Physicians from Saskatchewan, Newfoundland, New Brunswick, and Prince Edward Island reported positive opinions of accreditation, while physicians from British Columbia, Alberta, and the Yukon were more skeptical and pessimistic of accreditation.
- < A majority of Atlantic Canadian physicians reported that they see 50 or more patients with CVD per month: New Brunswick (52.6%); Nova Scotian (54.5%); Newfoundland (50.0%); and PEI (60.0%) physicians.
- < Physicians practicing in communities with a population of less than 10,000 persons reported that they see a larger proportion of patients with CVD than physicians in larger communities. As well, a larger proportion of male physicians reported seeing more patients with CVD as compared to female physicians.
- < Physicians reported that the largest knowledge gaps in terms of current vs desired knowledge existed in the areas of Arrhythmia, Peripheral Vascular Disease, Female with CVD, and Congestive Heart Failure.
- < The patient management areas in which the greatest perceived problems were experienced included: compliance with lifestyle; compliance with medication; and patients that do not follow up. A large number of respondents suggested that the main solutions to these problems included: organizing and delivering relevant public and/or patient education campaigns; and increasing counselling time and some form of compensation for this time.
- < The majority of physicians responding to this survey preferred: Small Group Learning educational formats; Wednesdays as the day of the week for participating in CME; and CME that occurred in the evening, after 5 pm.

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The needs assessment project was supported by an educational grant provided through AstraZeneca Canada Inc.. The questionnaire and design of the survey methodology was developed by a planning committee comprising representatives from AstraZeneca Canada Inc., Ms. Mary Phaneuf, Manager of Professional Education and Ms. Heather Moore, Atlantic Professional Education Associate, and the Faculty of Medicine, Memorial University of Newfoundland, Dr. Lydia Hatcher, Director of CME and Ms. Fran Kirby, Manager of the Office of Professional Development. Dr. Vareesh Gadag of the Division of Community Health, Faculty of Medicine assisted with designing survey methodology and advising on statistical analysis procedures. The survey results were compiled, analyzed and reported by Ms. Tanya Noseworthy, Research Assistant and Dr. Vernon Curran, Educational Consultant, Faculty of Medicine.

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The physicians who returned this survey played an instrumental role in the success of this project and we thank them for taking time out of their busy schedules to complete the survey and return their valuable comments.

Needs Assessment

An important method which organizers of adult and continuing education use for informing the design, development, planning and evaluation of instructional programming is needs assessment. Rossett (1987) defines needs assessment as a process for the systematic gathering of information related to learning, training or performance needs, issues and concerns. One of the guiding principles of adult education is to deliver training and education programs which address the perceived needs of adult learners. Needs assessment is a proven method for identifying felt learning needs and ensuring that educational program objectives address the specified needs of adult learners. The identification of learning needs in the medical profession is very important given the rapid advances in medical research and knowledge, and the ongoing dissemination of various clinic practice guidelines concerning the management and treatment of health problems.

Vetrovec et al. (1995) believes that as models of care change in the future, it will be even more critical to examine the referral patterns and type of cardiovascular care provided by primary care physicians. The need for the continuous review of clinical practice in cardiovascular disease has also been reported by Steptoe et al. (1999) who concluded that the attitudes of health professionals are crucial to the implementation of effective cardiovascular prevention strategies and that these attitudes require regular review. In these contexts, needs assessment serves a vital role in gathering information on physicians' learning needs, attitudes towards models of care, knowledge of clinical practice guidelines, as well as ascertaining physicians' preferences concerning time and location for CME, topics of interest, preferred CME formats and motivational factors underlying their participation in CME programs.

Needs assessment processes can utilize a variety of research methods and encompass an array of purposes. The purposes may include: finding optimal (what ought to be happening) and actual (what is currently happening); seeking causes of performance problems; determining feelings of the respondents about the performance problems and priorities for addressing these problems; and involving relevant parties in formulating solutions to problems (Rossett, 1987). The methods of needs assessment may include interviews, performance reviews, focus groups, and surveys. The primary tool used for collecting needs assessment information for this study

was the survey method.

Survey methods are one of the most commonly used tools for conducting needs assessments. Although they seem to be very simple, they are very complex, and are frequently misused and interpreted incorrectly. This is not to say that they are ineffective -- in fact they are very effective when used correctly, for several reasons. First, surveys are a cost efficient means for gathering information from a large number of people spread over a wide geographic region. Second, because surveys can be administered to large number of respondents the results are more likely to be representative of the target population. Finally, they can yield results which are quantitative and easily reported because they are based on fixed choice questions. Rossett (1987) also reports some other advantages: the ability to promise and deliver anonymity; the extra time respondents get to think about their answers; as well, surveys create good public relations because they show that the organization cares about and values the opinions of its target audience.

Some concerns have been raised as to whether the perceived learning needs of physicians, as measured by needs assessments, accurately reflect actual learning needs. In one study, Morris, Dickinson and Dorian (1997) conducted a survey of members of the Canadian Association of Emergency Physicians to assess learning needs. The authors used the survey method to determine perceived learning needs and also used scenarios to assess physician knowledge deficit. The results indicated that the perceived learning needs of the physicians did accurately reflect actual learning needs as assessed by areas of knowledge deficit. In a review of CME for general practice, Cantillon and Jones (1999) agreed that needs assessment was an important component for CME planning, but the authors cautioned against an over-reliance on physicians' self-reported assessments of their own learning needs. It is important therefore, to use a variety of methods in collecting information concerning learning needs and to "triangulate" or use different sources of information to cross-check needs assessment findings.

Literature Review

Cardiovascular disease (CVD) is the leading cause of death and morbidity in most Western Societies (National Heart, Lung, and Blood Institute Report, 1994). In 1995, CVD related diseases accounted for 37% of all deaths in Canada (Heart Disease and Stroke in Canada 1997, Health Canada) and the direct costs (medical care) of this disease comprise a large proportion of the total health care expenditures in Canada. A Health Canada report published in 1997 reported that in 1995, cardiovascular diseases alone accounted for \$7.3 billion or 17% of the total direct costs of illness (Heart Disease and Stroke in Canada 1997, Health Canada).

The onset and incidence of CVD has been linked to certain physiological and life-style risk factors including high blood pressure, elevated serum cholesterol, and smoking. A number of studies have shown that these factors can be effectively managed or controlled to have a positive influence in the etiology of CVD and associated morbidity and mortality rates (Boekeloo et al., 1988; Mann and Putnam, 1989; MacDonald & Daub, 1990; Mann and Putnam, 1990; Tannenbaum et al., 1990; Eaton et al., 1998; Stafford et al., 1998). McBride et al. (1998) report that the results from several clinical trials demonstrate a significant benefit from cholesterol management for patients with CVD, showing a reduction in morbidity and mortality rates upwards of 30 - 50%.

There is a general consensus in the literature that general practice is an appropriate setting for screening, detecting, monitoring, and treating CVD risk factors. Many of the preventive measures which have demonstrated effectiveness in CVD morbidity and mortality reduction can be performed by primary care physicians in office-based practices. Several authors (Coppola et al., 1997; Straand and Rokstad, 1997; Stafford et al., 1998) have identified a variety of physician preventive activities which can be performed by the family physician. These include screening, counseling and pharmacotherapies which focus on the risk factors of smoking, hyperlipidemia, hypertension, obesity and sedentary life-style.

The problem however, is that many of these preventive activities are not regularly or adequately provided, particularly lifestyle counselling, behavior modification, or cholesterol screening. A lack of knowledge, abilities and/or attitudes on the part of primary care physicians appear to be major contributing factors towards the deficiencies in office-based preventive

activities (Murray et al., 1993; Stafford et al., 1998). Several studies have revealed that family physicians demonstrate a broad understanding of recommendations for healthy eating. However, many exhibit high levels of confusion in translating knowledge into practical dietary advice and display low confidence in their abilities to provide effective lifestyle counselling and behavior modification services to their patients (Bradley et al., 1988; Francis et al., 1989; Kluger et al., 1991; Murray et al., 1993).

In one study, Steptoe (1999) aimed to assess physicians' attitudes towards CV health promotion, opinions about efficacy, and perceptions of skills in lifestyle counselling. Although physicians' attitudes toward health promotion were positive, a lack of training in lifestyle counselling was perceived to be a major problem. A majority of the sample felt that lifestyle counselling was difficult and that their influence on patients' behaviour was limited. Only a small number of physicians believed they were very effective in helping people change their lifestyles. Mann and Putnam (1990) also conducted a study to explore physicians' perceptions of factors that facilitate or inhibit the integration of CVD preventive activities into primary care. Physicians consistently stated that they had an important role to play in the control of CVD risk factors including screening, detecting risk, providing management, counseling and follow-up. However, these activities were not always implemented systematically and respondents believed that they were not very effective in counseling, enhancing patient compliance or otherwise changing behavior. Helman (1997) and Langer et al. (1989) have reported that physicians' believe that the main obstacles to nutrition counseling are lack of time, lack of confidence, and inadequate nutrition knowledge.

A further problem related to CVD preventive activities is the poor effect which clinical practice guidelines have had on physicians' practices. Despite the dissemination of several sets of national guidelines on CVD management over the past two decades, researchers have found that continued variations in the way physicians treat patients persist (Maiman, Greenland, Hildreth & Cox, 1991; Fahey & Silgay, 1994; Meyers & Steinle, 1997; McBride et al., 1998). In one study, Stafford et al. (1998) found that clinical practice guidelines were having limited effect on physicians' practices as many CVD patients were not receiving recommended cholesterol screening services and management.

A number of studies have demonstrated that family physicians exhibit significant

deficiencies in detecting and treating hypercholesterolemia (Bradley et al., 1988; Francis et al., 1989; Langer et al., 1989; Eaton et al., 1998; Beaulieu et al., 1998). Eaton et al. (1998) reported that the frequency of cholesterol counselling for patients with diagnosed hypercholesterolemia was less than 50%, reflecting less than optimal management of this important risk factor for coronary heart disease. Bradley et al. (1988) carried out a three year in-patient medical record audit of physician identification and management of high cholesterol in patients with coronary heart disease. The results demonstrated that physicians had not been giving the identification and treatment of elevated cholesterol levels a high priority in patients with documented coronary heart disease.

In Canada, a study by MacDonald and Daub (1990) revealed that physicians in Alberta demonstrated deficiencies in their knowledge of cardiovascular disease and were not identifying major CVD risk factors in their patients. Another investigation by Grant et al. (1998) found that Quebec physicians were aware of important risk factors for CVD but differed in attitudes toward efficacy of treatment. Several authors have suggested that few Canadian family physicians have adopted or are applying clinical practice guidelines related to the management of cardiovascular related diseases appropriately (Langer et al., 1989; Beaulieu, Dufresne, and LeBlanc, 1998; MacLean et al., 1999). MacLean et al. (1999) report that, in Canada, major differences were observed in the impact of various guidelines with respect to the percentage of patients who were tested, provided with a lipid profile, and eligible for diet and/or drug therapy.

Variations in the management of cardiovascular disease have also been reported by investigators in other regions of the world. Boekeloo, Becker, LeBailly and Pearson (1988) report that physicians from the John's Hopkins Hospital had not been routinely identifying and treating elevated cholesterol levels. In fact, a report by Stafford and Blumenthal (1998) concluded that primary care physicians in the U.S. varied substantially in their cardiovascular disease prevention practices. As well, Lavin, Nauss and Newburger (1992) reported a considerable variation in the pharmacologic management of pediatric dyslipidemias in the New England region of the United States and Lip, Zarifis, Watson & Beevers (1996) have indicated extensive variation in the treatment of patients with atrial fibrillation in England, Wales and Scotland.

The Need for CME in CVD

The role of family physicians in the management and treatment of cardiovascular disease has changed, particularly with regards to their responsibility for providing health information and preventive counseling. The literature clearly shows that CME is needed and recommended as a means for addressing the gaps in physicians' knowledge, skills and attitudes towards CVD prevention and management, including nutrition and diet, cholesterol identification and management, and pharmacological management of hypertension (Bradley et al., 1988; Francis et al., 1989; Shea et al., 1990; MacDonald & Daub, 1990). Both Kluger et al.(1991) and Straand and Rokstad (1997) reported that physicians believed they would be more effective in patient lifestyle modification if they were given support through CME. Helman (1997) also reported that general practitioners expressed interest in learning more about nutrition and recognized that there was still little coherent teaching on the subject which was specifically tailored for GPs. Stafford et al. (1998) recommended more aggressive implementation of clinical practice guidelines, while MacDonald & Daub (1990) reported that enhanced outpatient training and CME would be appropriate mechanisms for responding to the lack of uniformity in prevention practice.

A number of studies of the effectiveness of CME in enhancing CVD practice have been reported. A number of these have demonstrated measurable success in increasing physician knowledge of appropriate CVD practices (White, Albanese, Brown & Caplan, 1985; Ockene et al., 1995; Mann, Lindsay, Putnam & Davis, 1996; Borduas et al., 1998). In one study, a CME program addressing office management of hypertension was found to promote positive clinical change which was maintained at a 12 month post education period (Jennett et al., 1986). Ockene et al. (1996) also revealed a direct effect of CME on changes in physicians' performance of nutrition counselling, and Jennett et al. (1989) indicated that a CME program on the management of hypertension was effective in improving clinical behavior.

The evidence also suggests that problem or case-based learning formats and multidisciplinary training approaches have been used successfully and learning outcomes have been very positive. Borduas et al. (1998) found that an interactive, problem-based, small group workshop guided by local trained facilitators and experts was an effective teaching tool in successfully transferring clinical practice guidelines into practice. In another CME project Mann

et al. (1996) found that multidisciplinary, case-based learning was an effective means for achieving promoting health professional collaboration and increasing physician CVD prevention practices. The multidisciplinary case-based sessions, including physicians, nurses, dieticians, and pharmacists enabled physicians to learn about the roles and contributions of other health professionals in CVD management. The major outcomes were positive changes in physician dietary counseling behaviour and lower patient low-density lipoprotein levels (Mann et al., 1996). Similarly, Czerwinski et al. (1997) found that physicians participating in a collaborative CME lipid disorders training program reported increased collaboration practices which led to improved patient outcomes.

Conclusions

The literature has clearly demonstrated that several problem areas exist as it pertains to physicians' management of cardiovascular disease. National guideline recommendations have not been transferred appropriately into clinical practice. The impediments to this transfer are varied and include: divergent guideline recommendations, resulting in confusion on behalf of the physician population (MacLean et al., 1999); inadequate dissemination of guidelines; and physicians' perceptions that guidelines do not have relevance to their individual practices. There appears to be a strong need for continuing medical education which prepares physicians adequately to perform preventive tasks related to CVD. According to the literature, these programs should be sensitive to individual and regional variations in topic, time, location and format preferences. These differences may explicitly apply to Canada where there are significant regional variations in the prevalence of cardiovascular disease (Health Canada, 1997). The following needs assessment results should provide information which can assist CME program providers in organizing and planning CME to address these variations.

Survey Methodology

A questionnaire-survey was used as the needs assessment tool for collecting information on the perceived Cardiovascular Disease (CVD) continuing education needs of physicians in

Canada. A total of 4,105 survey-questionnaires were distributed to a random sample of physicians throughout Canada between October and December 1999. The random sample was selected from lists of registered physicians supplied by provincial or territorial medical societies and/or the College of Family Physicians of Canada (CFPC). A letter from the director of CME, Faculty of Medicine was forwarded to all provincial or territorial medical society directors requesting their endorsement of the survey and the provision of address lists of registered family physicians and general practitioners for their province or territory. The medical societies of the North West Territories, Yukon Territories, Alberta, Quebec, New Brunswick, Prince Edward Island and Newfoundland and Labrador endorsed the survey and provided, free of charge, the mailing lists for physicians in their province or territory.

The Ontario medical society endorsed the survey but requested payment for the physician address lists. The provinces of British Columbia, Saskatchewan, Manitoba, and Nova Scotia did not endorse the survey but, with the exception of Nova Scotia, did provide address lists for the physicians in their provinces. The address lists for Nova Scotian family physicians was obtained from the Division of Continuing Medical Education, Faculty of Medicine, Dalhousie University.

One exception to the reliability of the medical society supplied address lists was for the province of Quebec. In Quebec, participation in the Quebec Medical Association is voluntary and only 30% of Quebec physicians are registered. Of the 1438 registered physicians, 1129 were identified as Francophones and 309 as Anglophones. Because of the large proportion of Francophone physicians the investigators decided to distribute needs assessment surveys in Quebec to Francophone physicians only, with the english surveys being translated to french.

The survey sample size, 4,105 physicians, was based on the number of variables measured by the survey questionnaire. In order to ensure an adequate response rate it was determined that approximately 100 participants per survey variable would need to be surveyed. The survey included approximately 20 measurable variables, therefore the required sample was originally targeted to be 2000 physicians. Estimating a response rate of only 50%, the sample size was subsequently increased to 4,105 to account for non-responders. The proportion of surveys to be distributed among each of the provinces was calculated to ensure an adequate response rate and representative sample of physician views and opinions from regions with a smaller physician population. Therefore, surveys were distributed to approximately 14.2% of

the actual provincial population in all provinces except for PEI (50%), Yukon (100%) and North West Territories (100%) where larger samples were selected. Table 1 demonstrates the sample size and proportions selected per province.

Table 1 Proportion of Physician Population Surveyed by Province

	Number of physicians surveyed (% of provincial physician population)
Newfoundland	81 (14.2%)
Prince Edward Island	47 (50%)
Nova Scotia	131 (14.2%)
New Brunswick	93 (14.2%)
Quebec	1073 (14.2%)
Ontario	1387 (14.2%)
Manitoba	143 (14.2%)
Saskatchewan	123 (14.2%)
Alberta	337 (14.2%)
British Columbia	595 (14.2%)
Yukon Territory	43 (100%)
North West Territories	52 (100%)

In order to increase the response rate to the survey a multiple questionnaire mail-out strategy was followed. The first mail-out of the survey occurred during mid-October 1999 for all provinces except Quebec where the survey questionnaires were distributed during the first week of November. A cover letter explaining the purpose of the study and requesting physician participation was attached to the questionnaire. A postcard which respondents could return to enter a prize draw for a Palm Pilot computer was also forwarded to the respondent sample. A second mail-out occurred approximately two weeks after the first, during the first and second weeks of November 1999, and encompassed a reminder postcard only. A third mail-out took place during the last week of November and the first week of December 1999. This mail-out included a cover-letter asking physicians, who had not already done so, to forward their completed questionnaire and was attached to a second copy of the questionnaire. This final mailing requested that participants respond by December 18, 1999.

This report summarizes the results from all surveys which were received up to and including Jan 31, 2000. Of the 4,105 surveys that were distributed, 1,503 were returned before January 31, 2000 for a response rate of 36.6%. A review of similar survey studies of physicians' self-reports of practice patterns in the area of CVD revealed comparable response rates between 29% and 56% (Tannenbaum et al., 1990; MacDonald & Daub, 1990; Friedmann et al., 1996; Strandberg et al., 1998).

The questionnaire was designed to collect information on physicians' perceived CVD continuing education needs, interests, and preferences. The survey was comprised of questions which were divided into three sections: background information (demographic data); therapeutic information; and educational formats. The total number of closed-ended and open-ended questions was 17, with the exception of Alberta. Alberta questionnaires entailed 19 questions, including two additional questions pertaining to Alberta physicians' knowledge and use of the Alberta Clinical Practice Guidelines: "Modifiable Risk Factors in Adults at High Risk for Cardiovascular Events". These additional questions were only added to surveys distributed to Alberta physicians and upon the request of the Alberta Medical Society.

The demographic section of the survey included questions concerning respondents' province of practice, size of community where practice was located, gender, age, year of graduation from medical school, and physician type. Two further questions in this section also

asked respondents to indicate their opinion concerning the importance of MAINPRO credits and their level of agreement that accreditation meant continuing education programs were credible and non-biased. Demographic question types were of a nominal and ordinal nature, while the two opinion questions used likert type scales.

The second section, therapeutic information, collected information on respondents' perceived CVD learning needs, as well as physicians' self-reports of problems experienced when managing patients with CVD. One question in this section also asked physicians to indicate the number of CVD patients they see in a month by using an interval scale with the following categories: 0- 4; 5 - 9; 10 - 19; 20 - 49; and 50 +. Data concerning respondents' perceived CVD learning needs was collected through a question which asked physicians to indicate their current versus desired level of knowledge in 11 conditions pertaining to CVD. Two likert-type scales ranging from 1 - 5 (1 = little and 5 = extensive) were provided for both Current Knowledge level and Desired Knowledge level. The difference in the scores between these two knowledge levels provided some indication of where self-reported knowledge gaps existed for each of the 11 conditions. As a follow-up to this question, and an opportunity to collect specific information surrounding physicians' specific CVD learning interests, an open-ended question also allowed physicians to elaborate on any specific CVD topics which may have been related to the conditions identified in the previous question.

The final questions in this section were concerned with physicians' perceptions of patient-centered problems surrounding the management of CVD. Using a nominal checklist scale, respondents were asked to check which problem they experienced when managing patients with CVD. The problems listed included: compliance with lifestyle; compliance with medications; do not attend referral appointments; do not adhere to tests that are ordered; do not follow-up with you; and decline medications. An "other" category enabled physicians to identify any specific problems other than those which were listed that influenced their management of CVD. All of these problem areas were related specifically to patient related compliance behaviour and not the performance or behaviours of the physicians themselves. A follow-up open-ended question allowed respondents to elaborate on any suggestions or solutions that they had for the above mentioned problems.

The final section of the survey was concerned with collecting information on physicians'

preferences for CME educational format, time and day of attendance or participation in CME, and opinions concerning what respondents believed contributed to successful CME. A checklist identifying 11 different educational formats ranging from small group learning workshops to hospital rounds was provided and physicians were asked to check their three most preferred formats. Questions concerning day or time of participation preference used a nominal scale and respondents were asked to select their preferred day or time for participation.

Questionnaires were coded and analyzed using the Statistical Package for the Social Sciences (SPSS 9.0). Descriptive statistics were used to present the basic frequency of responses across categories and cross-tabulation was used to compare responses on the basis of province of practice location, size of community, gender, age, year of graduation from medical school, and physician type. The sum responses for some items may not total 1,503 and this represents missing values or respondents who did not provide a response to that particular item.

The demographics of the sample population and the actual population of Canadian physicians were compared using the Chi Square test. Chi Square tests the proportions actually observed in a study with proportions expected, to see if they are significantly different. Expected proportions are usually the frequencies which would be expected if the groups were equal. The Wilcoxon Signed-Rank test was also used for testing the difference between the perceived current and desired levels of CVD knowledge reported by the physicians. As well, open-ended qualitative responses were coded and analyzed (frequency) using the Ethnograph v5.0 software.

The results of this study are based on the responses from the 1,503 physicians who returned their questionnaires out of a random sample of 4,105. Therefore, the major limitation of the results is based on the low response rate and whether the physicians who responded, and their responses, truly represent or reflect the perceptions, views, and opinions of physicians practicing in Canada. Another limitation of the results from this needs assessment study is that they represent the self-reported perceived (felt) learning needs of respondents and may not represent the actual learning needs of physicians.

The format of the questionnaire and the study design was approved by the Human Investigations Committee, Memorial University of Newfoundland and the Health Care Corporation of St. John's. The questionnaire was piloted with a group of 17 family physicians

within the province of Newfoundland prior to distribution. These physicians provided feedback on the format and wording of the survey items and their responses were incorporated into revisions to the final survey draft.

Background Information (Demographics)

This section of the survey was designed to gather background information on the demographic characteristics of the respondents. Specifically, questions were asked about respondents' province of practice, size of community in which practice was located, gender, age and year of graduation from medical school, and physician type. A summary of the numerical responses to the demographic-type questions are provided in Table 2. The following pages of this report discuss and present the results of each demographic question in descriptive, graphical formats. A series of bar and pie charts are used to demonstrate the frequency and percentage of survey responses.

The first question in the demographic section asked respondents to identify the province or territory in which they were currently practicing by using a nominal checklist scale. Figure 1 provides an overview of the distribution of survey respondents by province of practice. The results reveal that the majority of respondents were practicing in either Ontario (35.9%) and Quebec (22.8%), with Ontario physicians comprising the largest proportion of respondents to the survey. Respondents from the Yukon (1.4%) and Northwest Territories (1.4%) comprised the smallest proportion of respondents to the survey. A Chi-square test was conducted to compare the proportion of respondents (by province) versus the actual proportion of family physicians in the actual population (by province). The Chi-square revealed a significant difference ($p=.000$) at the $<.001$ probability level for the respondent sample of British Columbia physicians. The actual proportion of British Columbian family physicians comprising the family physician population in Canada is 15.2% (CMA, 1999), however BC physicians only comprised 10.9% of the total survey respondent population and are therefore under represented. The Yukon and Northwest Territories, Newfoundland, and Prince Edward Island respondents were slightly over represented in the sample population and this over representation can be attributed to the larger sample of physicians which were surveyed from each of these provinces. Nevertheless, the results do suggest that the sample population responding to the survey is representative of the actual distribution of family physicians and general practitioners by province in Canada.

Table 2 Demographic Characteristics of Survey Respondents

	Frequency (%)	
Province		
BC	164	(10.9)
AB	153	(10.2)
SK	46	(3.1)
MB	56	(3.7)
ON	539	(35.9)
QUE	343	(22.8)
NB	38	(2.5)
NS	45	(3.0)
NF	47	(3.1)
P.E.I.	30	(2.0)
N.W.T.	21	(1.4)
YK	21	(1.4)
Gender		
Male	999	(66.8)
Female	496	(33.2)
Size of community that you practice in		
< 10,000	373	(25.0)
10,001 - 50,000	341	(22.8)
50,001-150,000	229	(15.3)
>150,000	550	(36.8)
Age group		
25-44	748	(49.9)
45-54	502	(33.5)
55-64	183	(12.2)
65 or more	66	(4.4)
Year of graduation from medical school		
< 1969	222	(14.8)
1970-1979	444	(29.7)
1980-1989	499	(33.4)
> 1990	331	(22.1)
Status		
Family physician CCFP certified	706	(47.5)
Family physician not CCFP certified	721	(48.6)
Family physician FCFP certified	41	(2.8)
Other	7	(1.1)

Province of Practice

Figure 1 Respondents' Province of Practice



Community Size

Figure 2 Community Size of Practice Location

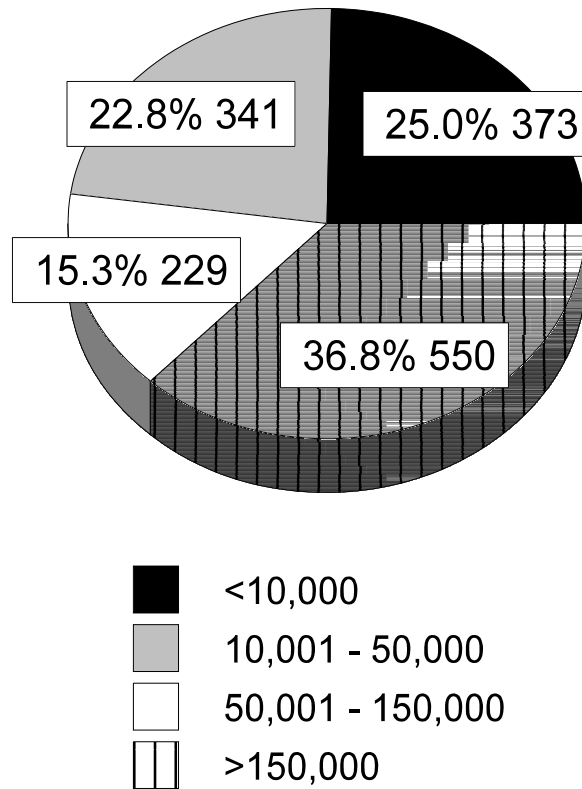


Figure 2 presents a pie chart demonstrating the distribution of respondents by the size of community in which they reported practicing. The original item on the survey asked respondents to identify their location of practice according to one of the following categories: < 10,000); 10,001 - 50,000; 50,001 - 150,000; or > 150,000. The results reveal that 25.0% of respondents reported that they practiced in a community with a population of less than 10,000 persons, 22.8% reported practicing in a community with a population between 10,001 and 50,000 persons, 15.3% practiced in a community with a population between 50,001 and 150,000 persons, and 36.8% of respondents reported that they practiced in a community with a population base greater than 150,000. Respondents who practiced in a community with a population greater than 150,000 persons represented the largest proportion of respondents to the survey.

According to data reported by Ng, Wilkins, Pole and Adams (1997) of Statistics Canada,

in 1993 communities with less than 10,000 persons represented approximately 23% of Canada's population, but only 9% of the country's physicians. Most (86%) of the 5,300 physicians in these small communities were in general practice or family medicine, while the remaining 730 were specialists. Based on these figures, approximately 4558 physicians in family medicine or general practice were working in communities with a population of less than 10,000, representing about 14.6% of the actual Canadian general practice or family medicine physician population in 1993 (57,291). This data suggests that the survey sample over represents a larger proportion of physicians from communities with a population less than 10,000. The survey sample represents 25.0% of physicians from communities with a population less than 10,000 persons, as compared to the actual physician distribution of 14.6% (Ng et al., 1997).

Gender

Figure 3 Gender

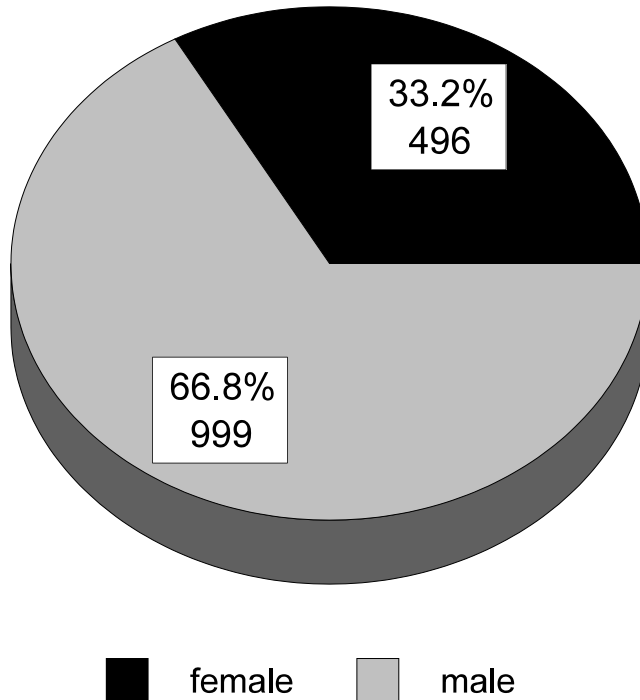


Figure 3 presents a graphical representation of the distribution of respondents by gender. A significant majority (66.8%) of survey respondents were male, while 33.2% of survey respondents were female physicians. According to data reported by the Canadian Medical Association the actual gender-distribution of physicians in Canada during 1999 was 67.3% male and 32.7% female (CMA, 1999). A Chi-square test was conducted to compare the proportion of male and female survey respondents to the actual proportion of male and female general practitioners and family medicine physicians in the general physician population. The Chi-square revealed no significant difference ($p = .733$) at the $<.05$ probability level between the respondent sample and the actual physician population in Canada. Therefore, the survey respondents are representative of the actual proportion of male and female physicians in Canada.

Respondents' Age

Figure 4 Respondents' Age

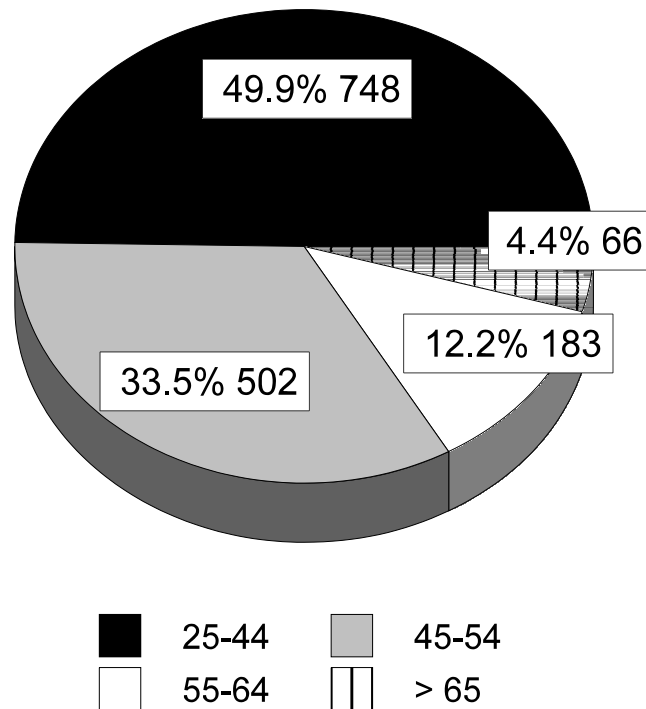


Figure 4

presents a pie chart demonstrating the distribution of the respondent sample by age group. The largest proportion of respondents were between the age of 25 - 44 years (49.9%). Respondents aged 45 - 54 comprised 33.5% of the sample, those aged 54 - 64 comprised 12.2%, while respondents who were 65 or more comprised 4.4% of the respondent sample. According to data from the Canadian Medical Association (1999), the actual distribution of physicians in Canada by age is very similar to the respondent population. Physicians who are 44 or younger comprise 46.7% of the population of general practitioners in Canada (as compared to the survey sample of 49.9%). Physicians aged 45 - 54 comprised 30.5%, physicians aged 55 - 64 comprised 14.4%, and those who were older than 65 comprised 8.4% of the actual population of GP's in Canada. These numbers suggest that the survey respondents were representative of the physician population of Canada on the basis of age.

Year of Graduation

Figure 5 Year of Graduation

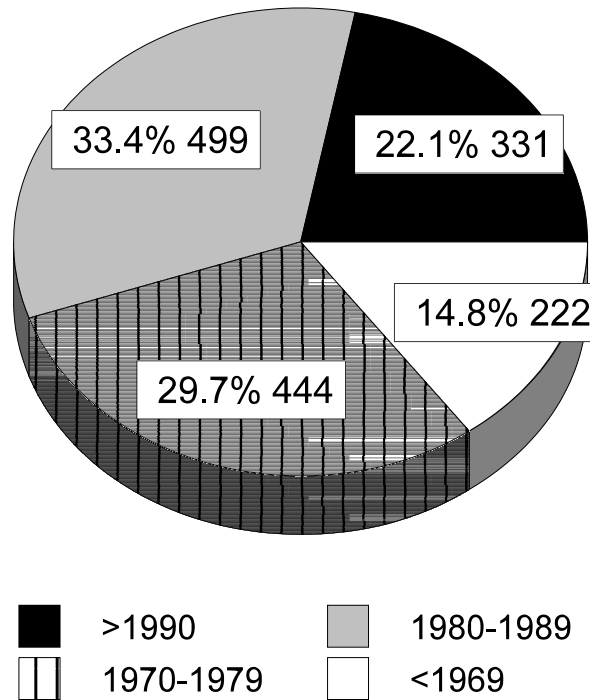


Figure 5 presents a pie chart representing the distribution of survey respondents by year of graduation from medical school. The results reveal that the largest proportion of respondents were graduates from medical school between the years 1980 to 1989 (33.4 %). A large number of respondents (29.7%) were also graduates of medical school between 1970 - 1979, while 14.8% were graduates of medical school before 1969 and 22.1% were graduates of medical school since 1990. There was no data available for drawing a comparison between the sample population and the actual Canadian physician population on the basis of year of graduation from medical school. However, given the possible correlation between age and year of medical school graduation, it is likely that the year of graduation characteristics of the sample, like age, is representative of the actual Canadian physician population.

Physician Type

Figure 6 Physician Type

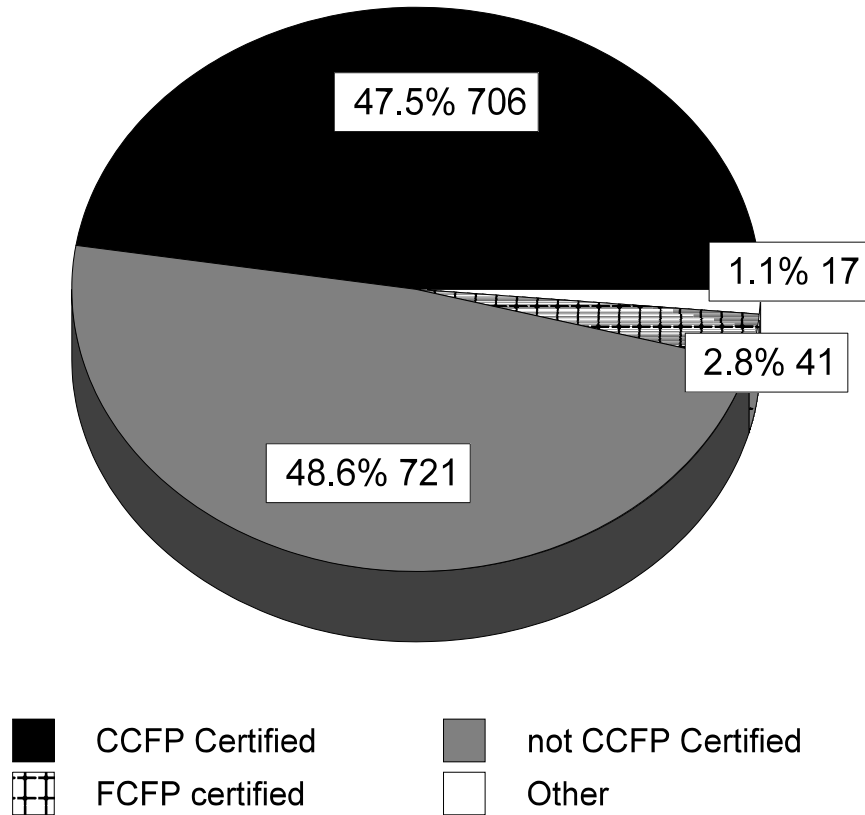


Figure 6 demonstrates the distribution of respondents by physician type. Physician type was defined as either a CCFP certified family physician, non-CCFP certified family physician, or FCFP certified family physician. The results reveal that the majority of respondents were either CCFP certified family physicians (47.5%) or non CCFP certified family physicians (48.6%). Only 2.8% of the respondent population were FCFP certified family physicians. A small number of respondents (1.1%) indicated physician types which did not correspond to those categories which were listed on the questionnaire. These respondents classified themselves as an “other” physician type, including FRCS certified, public health physician, or as a resident in family medicine. Data from the provincial chapters of the College of Family Physicians of Canada revealed that 37.7% (11,016) of the family physician/general practitioner (FP/GP) population are certificants of the College of Family Physicians of Canada. FCFP certified physicians comprise

2.7% (782) of the actual FP/GP population in Canada. A Chi-square test was conducted to compare the proportion of survey respondents to the actual physician population on the basis of physician type. The Chi-square revealed a significant difference ($p = .000$) at the $<.001$ probability level between the respondent sample and the actual physician population in Canada. The survey sample represents a larger proportion of CCFP family physicians than the actual physician population in Canada.

Importance of MAINPRO Credits

Table 3 Respondents’ Opinion of Importance of MAINPRO Continuing Education Credits by Province of Practice Location

Province	Important to very important	Somewhat important	Not important
BC*	48 (31.0%)	56 (36.1%)	51 (32.9%)
AB	63 (42.0%)	54 (36.0%)	33 (22.0%)
SK**	23 (50.0%)	15 (32.6%)	8 (17.4%)
MB**	30 (54.5%)	23 (41.8%)	2 (3.6%)
ON	246 (46.1%)	201 (37.6%)	87 (16.3%)
QUE	148 (45.8%)	115 (35.6%)	60 (18.6%)
NB**	25 (69.4%)	8 (22.2%)	3 (8.3%)
NS	19 (42.2%)	20 (44.4%)	6 (13.3%)
NF	18 (38.3%)	20 (42.6%)	9 (19.1%)
P.E.I.	14 (46.7%)	9 (30.0%)	7 (23.3%)
N.W.T.*	7 (33.3%)	8 (38.1%)	6 (28.6%)
YK	9 (42.9%)	9 (42.9%)	3 (14.3%)
Overall	650 (44.4%)	538 (36.8%)	275 (18.8%)

Table 3 presents the results of respondents’ opinion towards the importance of MAINPRO continuing education credits by their province of practice. MAINPRO continuing education credits are assigned to continuing medical education programs which are accredited by the College of Family Physicians of Canada (CFPC) and have been planned and organized in accordance with the criteria established by the CFPC. The results reveal that a larger percentage of physicians in Manitoba (54.5%), New Brunswick (69.4%) and Saskatchewan (50.0%) felt that MAINPRO credits were either “important” or “very important” for their continuing education**. However, physicians from British Columbia and the Yukon Territories had a less favorable

opinion of MAINPRO credits, with a larger percentage of physicians from these provinces indicating that MAINPRO were only “somewhat important” or “not important”*. Overall, the results reveal that the largest proportion of survey respondents felt that MAINPRO credits were either “important” or “very important” (44.4%) to their continuing education.

Table 4 presents the results of respondents’ opinion towards MAINPRO continuing education credits based on the demographic characteristics of size of community, gender, age, year of graduation from medical school, and physician type. The results reveal that a larger proportion of respondents who practice in communities with populations greater than 10,000 persons are of the opinion that MAINPRO credits are important to very important. A Chi-square test indicated that a significant difference existed between physicians’ responses based on the size of community in which they practiced ($p = .001$). A smaller proportion of physicians who practiced in communities with a population of less than 10,000 persons felt that MAINPRO credits were important to very important.

A Chi-square test also revealed a significant difference between male and female physicians’ ($p = .000$) opinions of the importance of MAINPRO credits. A majority of female physicians felt that MAINPRO credits were important to very important (52.7%), whereas only 40.5% of male physicians were of the same opinion. A larger proportion of younger physicians also held stronger opinions of MAINPRO credits with 48.5% of physician aged 25-44 reporting that MAINPRO credits were important to very important as compared to only 36.5% of physicians aged 55-64 having the same opinion. A Chi-square test also revealed a significant difference between age groups and opinion towards MAINPRO credits at the $<.05$ probability level ($p = .040$). The year of respondents’ graduation from medical school also had a similar effect on opinion towards MAINPRO credits with a majority of physicians graduating since 1990 (58.0%) reporting MAINPRO credits as important to very important ($p = .000$).

A majority of physicians who were members of the College of Family Physicians of Canada, either CCFP (57.2%) or FCFP (65.0%), believed that MAINPRO credits were important to very important. These physicians were more likely to have a favorable opinion of MAINPRO as compared to physicians who were not members of the College.

Table 4 Respondents' Opinion of Importance of MAINPRO Continuing Education Credits by Demographic Characteristics

	Important to very important	Somewhat important	Not important
Size of Community (Practice Location)			
< 10,000	137 (37.4%)	140 (38.3%)	89 (24.3%)
10,001- 50,000	140 (42.4%)	118 (35.8%)	72 (21.8%)
50,001- 150,000	110 (49.3%)	81 (36.3%)	32 (14.3%)
>150,000	262 (48.9%)	193 (36.0%)	81 (15.1%)
Gender			
Male	396 (40.5%)	376 (38.5%)	205 (21.0%)
Female	253 (52.7%)	159 (33.1%)	68 (14.2%)
Age Group			
25-44	353 (48.5%)	256 (35.2%)	119 (16.3%)
45-54	205 (41.8%)	180 (36.7%)	106 (21.6%)
55-64	65 (36.5%)	76 (42.7%)	37 (20.8%)
65 or more	27 (41.5%)	25 (38.5%)	13 (20.0%)
Year of Graduation (Medical School)			
<1969	74 (34.1%)	95 (43.8%)	48 (22.1%)
1970-1979	169 (39.0%)	160 (37.0%)	104 (24.0%)
1980-1989	220 (45.0%)	180 (36.8%)	89 (18.2%)
>1990	185 (58.0%)	102 (32.0%)	32 (10.0%)
Physician Type			
CCFP certified	399 (57.2%)	238 (34.1%)	61 (8.7%)
Not CCFP certified	209 (29.9%)	281 (40.1%)	210 (30.0%)
FCFP Certified	26 (65.0%)	13 (32.5%)	1 (2.5%)
Other	10 (71.4%)	3 (21.4%)	1 (7.1%)

Credibility of Accredited CME

Table 5 Respondents' Opinion of Credibility of Accredited CME Programs by Province of Practice Location

Province	Strongly Agree or Agree	Uncertain	Disagree or Strongly Disagree
BC**	92 (57.9%)	41 (25.8%)	26 (16.4%)
AB**	93 (62.8%)	41 (27.7%)	14 (9.5%)
SK*	40 (87.0%)	4 (8.7%)	2 (4.3%)
MB	38 (70.4%)	11 (20.4%)	5 (9.3%)
ON	385 (72.1%)	96 (18.0%)	53 (9.9%)
QUE	254 (74.9%)	65 (19.2%)	20 (5.9%)
NB*	29 (78.4%)	7 (18.9%)	1 (2.7%)
NS	31 (68.9%)	11 (24.4%)	3 (6.7%)
NF*	38 (82.6%)	5 (10.9%)	3 (6.5%)
P.E.I.*	24 (80.0%)	6 (20.0%)	---
N.W.T.	14 (66.6%)	6 (28.6%)	1 (4.8%)
YK**	10 (50.0%)	5 (25.0%)	5 (25.0%)
Overall	1,048 (70.9%)	298 (20.1%)	133 (9.0%)

Table 5 presents the results of respondents' opinion concerning the credibility of accredited continuing education programs. The results reveal that a majority of physicians in Canada (70.9%) view accredited programs as credible and non-biased. A large percentage of respondents from the provinces of Saskatchewan (87.0%), Newfoundland (82.6%), New Brunswick (78.4%), and Prince Edward Island (80.0%) reported positive opinions of accreditation and felt "strongly" or "very strongly" that accredited programs were credible and non-biased*. Physicians from British Columbia, Alberta, and the Yukon were somewhat more skeptical about accreditation**. A smaller proportion of respondents from these provinces

reported favorable views of accreditation. In fact, only 57.9% of British Columbian respondents (versus 87.0% of Saskatchewan) agreed or strongly agreed that an accredited continuing education program proved the program was credible and non-biased.

Table 6 presents the results of respondents' opinion towards the credibility of accredited CE based on the demographic characteristics of size of community, gender, age, year of graduation from medical school, and physician type. A Chi-square test of the difference between respondents' opinion of the credibility of accredited CE on the basis of the size of community in which they practiced revealed no significant difference ($p = .956$). Overall, a majority of physicians from all community sizes agreed or strongly agreed that accredited CE programs were credible and non-biased. Similarly, a majority of both male (71.0%) and female (70.8%) respondents agreed or strongly agreed that accredited CE programs were credible and a Chi-square test also indicated that there was no significant difference ($p = .522$) between physicians' opinion towards accredited CE on the basis of gender.

A majority of physicians across all age groups also agreed or strongly agreed with the credibility of accredited programs. However, a significant difference was found to exist ($p=.029$) at the $< .05$ probability level. A larger proportion of older physicians were more likely to agree or strongly agree that accredited programs were non-biased than younger physicians, those between the ages of 25 and 44. Year of graduation from medical school had a similar effect. A smaller proportion of graduates from medical school since 1990 agreed or strongly agreed that accredited programs were non-biased or more credible.

The results of respondents' opinion of accreditation based on physician type also revealed that a majority of physicians, regardless of physician type, are of the opinion that accredited CE programs are credible and non-biased. A majority of CCFP physicians (70.1%), not CCFP physicians (70.6%), and FCFP certified physicians (75.6%) agreed or strongly agree that accredited programs are credible and non-biased. The strong and favourable response of not-CCFP certified physicians was interesting given this group's opinion towards MAINPRO credit CME programs, which are accredited programs.

Table 6 Respondents' Opinion of Credibility of Accredited CE Programs by Demographic Characteristics

	Strongly Agree or Agree	Uncertain	Disagree or Strongly Disagree
Size of Community (Practice Location)			
< 10,000	254 (69.4%)	79 (21.6%)	33 (9.0%)
10,001- 50,000	237 (70.3%)	67 (19.9%)	33 (9.8%)
50,001- 150,000	165 (73.0%)	41 (18.1%)	20 (8.8%)
>150,000	388 (71.6%)	108 (19.9%)	46 (8.5%)
Gender			
Male	700 (71.0%)	192 (19.5%)	94 (9.5%)
Female	345 (70.8%)	103 (21.1%)	39 (8.0%)
Age Group			
25-44	500 (67.8%)	156 (21.2%)	81 (11.0%)
45-54	361 (73.1%)	92 (18.6%)	41 (8.3%)
55-64	135 (75.0%)	35 (19.4%)	10 (5.6%)
65 or more	51 (77.3%)	14 (21.2%)	1 (1.5 %)
Year of Graduation (Medical School)			
<1969	164 (75.2%)	44 (20.2%)	10 (4.6%)
1970-1979	318 (72.4%)	81 (18.5%)	40 (9.1%)
1980-1989	354 (72.0%)	91 (18.5%)	47 (9.6%)
>1990	209 (64.3%)	80 (24.6%)	36 (11.1%)
Physician Type			
CCFP certified	488 (70.1%)	138 (19.8%)	70 (10.1%)
Not CCFP certified	501 (70.6%)	150 (21.1%)	59 (8.3%)
FCFP Certified	31 (75.6%)	6 (14.6%)	4 (9.8%)
Other	16 (94.1%)	1 (5.9%)	---

Therapeutic Information

This section of the survey was designed to collect information related to respondents' CVD practice profiles and perceived CVD learning needs, and the self-reported problems which physicians experienced in managing patients with CVD.

Patients with Cardiovascular Disease

The first question in this section asked physicians to identify the number of patients which they saw in a month by selecting one of several numerical categories: 0-4; 5-9; 10-19; 20-49; and 50+. Table 7 presents the results of the number of patients with CVD which respondents' indicated they saw each month (by province of practice location). Overall, the largest proportion of patients seen by physicians in Canada was 50+ (38.5%) per month, followed by 20 - 49 (37.4%) patients per month. A majority of Atlantic Canadian physicians reported that they see 50 or more patients with CVD per month: New Brunswick (52.6%); Nova Scotia (54.5%); Newfoundland (50.0%); and PEI (60.0%) physicians*. Respondents from Quebec (30.0%) and British Columbia (32.7%) reported seeing a smaller proportion of 50 or more patients per month with CVD**. The reports from physicians in the Yukon and North West Territories also revealed a lower proportion of patients seen with CVD, however these results should be read cautiously given the possible influence of population size and distribution within these geographic regions.

These results are supported in part by data from Health Canada (1997) which demonstrate regional variations in the cardiovascular mortality rates across the country. In fact, there is a east-west gradient with Atlantic Canada having consistently higher rates of cardiovascular disease mortality than Western Canada. Newfoundland men and women have the highest rates at 317 and 294 per 100,000 population, while British Columbia has the lowest rates at 226 for males and 219 for females per 100,000 (Health Canada,1997). The provincial rates of smoking, high blood pressure and obesity parallel the cardiovascular disease gradient (Health Canada, 1997). The authors of the 1997 Health Canada report conclude that the differences in cardiovascular disease mortality rates in the country may be partially explained by differences in

Table 7 Respondents' Report of Patients Seen with Cardiovascular Disease by

Province of Practice Location

Province	0-4	5-9	10-19	20-49	50+
BC**	3 (1.9%)	6 (3.7%)	26 (16.0%)	74 (45.7%)	53 (32.7%)
AB	4 (2.7%)	6 (4.0%)	23 (15.3%)	59 (39.3%)	58 (38.7%)
SK	1 (2.2%)	1 (2.2%)	8 (17.8%)	17 (37.8%)	18 (40.0%)
MB	3 (5.4%)	3 (5.4%)	7 (12.5%)	20 (35.7%)	23 (41.1%)
ONT	23 (4.3%)	19 (3.6%)	72 (13.6%)	189 (35.7%)	226 (42.7%)
QUE**	22 (6.5%)	19 (5.6%)	64 (18.8%)	133 (39.1%)	102 (30.0%)
NB*	---	2 (5.3%)	5 (13.2%)	11 (28.9%)	20 (52.6%)
NS*	---	1 (2.3%)	4 (9.1%)	15 (34.1%)	24 (54.5%)
NF*	1 (2.2%)	1 (2.2%)	5 (10.9%)	16 (34.8%)	23 (50.0%)
PEI*	---	---	4 (13.3%)	8 (26.7%)	18 (60.0%)
NWT	2 (9.5%)	4 (19.0%)	8 (38.1%)	5 (23.8%)	2 (9.5%)
YK	1 (4.8%)	2 (9.5%)	8 (38.1%)	7 (33.3%)	3 (14.3%)
Overall	60 (4.0%)	64 (4.3%)	234 (15.8%)	554 (37.4%)	570 (38.5%)

the prevalence of risk factors.

Table 8 presents the results of respondents' reports of the number of patients with CVD they see per month based on the demographic characteristics of community size of practice location, gender, age, year of medical school graduation, and physician type. A Chi-square test revealed that there was a significant difference between the size of community in which a physician practiced and the number of patients with CVD which they saw per month ($p = .004$). A larger proportion of physicians practicing in communities with a population of less than 10,000 persons indicated that they saw more than 50 patients per month with CVD as compared to communities with larger populations. This is not surprising given that Ng et al. (1997) reported that in communities with a population of less than 10,000 persons there were approximately 1,175 people for every doctor, whereas in communities with a population larger than 100,000 persons there were 389 people for every physician. Therefore, the larger the patient population the greater the likelihood that a physician would see a larger proportion of certain disorders.

As well, a larger proportion of male physicians (47.5%) reported seeing more than 50 patients with CVD per month as compared to female physicians (19.9%). A Chi-square test also revealed a significant difference ($p = .000$) between male and female physicians on the basis of the number of patients they see with CVD. Female physicians reported that they saw a smaller number of patients with CVD than their male counterparts.

Younger physicians, and those who have graduated since 1990, reported that they saw a smaller number of patients with CVD than older physicians, and those who graduated from medical school before 1990. A Chi-square test revealed a significant difference ($p = .001$) between year of graduation and the number of patients seen with CVD. Over 44.2% of physicians who graduated between 1970 - 1979 were seeing more than 50 patients per month with CVD as compared to only 29.9% of physicians who graduated since 1990.

Current vs Desired Knowledge

A second question in this section asked physicians to rate their current versus desired knowledge levels in a number of areas related to the management of CVD. Two five-item likert

Table 8 Respondents' Report of Patients Seen with Cardiovascular Disease by Demographic Characteristics

	0-4	5-9	10-19	20-49	50+
Size of Community (Practice Location)					
< 10,000	4 (1.1%)	11 (3.0%)	54 (14.5%)	137 (36.8%)	166 (44.6%)
10,001- 50,000	9 (2.7%)	15 (4.4%)	54 (16.0%)	134 (39.6%)	126 (37.3%)
50,001- 150,000	13 (5.8%)	12 (5.3%)	29 (12.8%)	88 (38.9%)	84 (37.2%)
>150,000	34 (6.3%)	26 (4.8%)	94 (17.5%)	190 (35.3%)	194 (36.1%)
Gender					
Male	33 (3.3%)	34 (3.4%)	117 (11.8%)	335 (33.9%)	470 (47.5%)
Female	27 (5.5%)	30 (6.1%)	116 (23.8%)	218 (44.7%)	97 (19.9%)
Age Group					
25-44	23 (3.1%)	33 (4.4%)	135 (18.1%)	298 (40.1%)	255 (34.3%)
45-54	22 (4.5%)	23 (4.7%)	54 (10.9%)	175 (35.4%)	220 (44.5%)
55-64	12 (6.7%)	5 (2.8%)	32 (17.9%)	62 (34.6%)	68 (38.0%)
65 or more	3 (4.8%)	2 (3.2%)	13 (20.6%)	18 (28.6%)	27 (42.9%)
Year of Graduation (Medical School)					
<1969	13 (6.0%)	8 (3.7%)	30 (14.0%)	75 (34.9%)	89 (41.4%)
1970-1979	19 (4.3%)	18 (4.1%)	56 (12.8%)	152 (34.6%)	194 (44.2%)
1980-1989	21 (4.2%)	14 (2.8%)	82 (16.6%)	189 (38.2%)	189 (38.2%)
>1990	7 (2.1%)	23 (7.0%)	64 (19.5%)	136 (41.5%)	98 (29.9%)

scales were provided to respondents with one scale requiring physicians to rate their current knowledge in the specific area, and the second their desired knowledge in the area. The knowledge “gap”, that is the difference between respondents’ desired versus current knowledge provided a good indication of physicians’ perceived learning needs. Table 9 presents the results of physicians’ reports of perceived “current knowledge” versus perceived “desired knowledge”. A Wilcoxin test was performed to assess the significance of the difference between perceived current and desired knowledge levels for all topic areas. The results reveal a significant difference between respondents’ perceived current knowledge level versus desired knowledge level for all topics identified. Arrhythmia was found to have the greatest perceived gap in terms of difference between the mean ranked scores of perceived current knowledge and desired knowledge ($Z = -31.11$). Peripheral Vascular Disease ($Z = -28.87$), Female with CVD ($Z = -28.17$), and Congestive Heart Failure ($Z = -27.54$) also revealed the largest gaps between perceived current and desired knowledge levels.

Physicians were also provided the opportunity to specify any other knowledge or skill areas in which they would like to develop or enhance their competencies pertaining to CVD. A number of comments were made by the respondents and these were coded using the Ethnograph 5.0 text-based data analysis software and analyzed using the constant comparison technique. Seven common categories were identified from the respondents’ individual comments and included: congenital heart disease and valvular heart disease; medications for treatment and prevention; acute diagnosis and treatment; aortic aneurysm and peripheral vascular disease; stroke; and psychiatry and social effects of CVD. Table 10 presents an overview of the common categories as well as examples of the themes represented by the categorical descriptions.

The next question in the Therapeutic Information section of the survey asked physicians to identify any specific topics of interest as they related to the conditions which were identified in the previous question (i.e. hypertension, congestive heart failure, etc.). This was an open-ended item, therefore respondents were able to identify the condition which was of most interest to them and also specify the topics or issues which were related to that condition. The comments to this question were also coded and analyzed using the Ethnograph 5.0 software and the constant comparison technique. Comments were compared and contrasted until common themes and

Table 9 Wilcoxin Ranked Means Test of the Difference Between Respondents' Current vs Desired Knowledge (* Negative ranks; ** Positive ranks)

	Current Knowledge (Mean)	Desired Knowledge (Mean)	Mean Rank	Sum of Ranks	Z	Sig.
Arrhythmia	2.99	4.36	427.79* 645.56* *	8983.50* 814702.5 0**	-31.11	0
Peripheral Vascular Disease	3.34	4.34	526.14* 581.93* *	21045.00 * 651175.0 0**	-28.87	0
Female with CVD	3.49	4.4	544.68* 548.63* *	20153.00 * 581003.0 0**	-28.17	0
Congestive Heart Failure	3.57	4.4	612.61* 549.65* *	30630.50 * 579329.5 0**	-27.54	0
Over 75 with CVD	3.46	4.36	508.50* 533.46* *	20848.50 * 545731.5 0**	-27.43	0
Coronary Artery Disease	3.77	4.47	626.98* 503.79* *	26960.00 * 490693.0 0**	-26.96	0
Prior Myocardial infarction	3.63	4.41	577.90* 513.83* *	24849.50 * 508178.5 0**	-26.94	0
Diabetes	3.81	4.53	566.32* 496.80* *	26050.50 * 473449.5 0**	-26.37	0
Angina Pectoris	3.79	4.48	602.58* 497.57* *	31334.00 * 474181.0 0**	-26.16	0

Hypertension	3.88	4.49	652.27* 475.24* *	38484.00 * 433422.0 0**	-24.74	0
Hyperlipidemia	3.89	4.44	542.61* 429.73* *	43408.50 * 343351.5 0**	-21.29	0

Table 10 Respondents' Report of Other Therapeutic Conditions

Other Condition(s)	Frequency
Congenital Heart Disease and Valvular Heart Disease	
Cardiomyopathies	2
Valvular diseases not requiring replacement	2
Pediatric cardiac disease	5
Congenital heart disease	4
CVD in athletes	2
Valvular heart disease	3
Medications for Treatment and Prevention	
Drug interactions with CV meds	4
Current Rx modalities - best for use with multiple comorbidi	1
ACE/ B- blockers all drugs in families	1
HRT wrt + CVD	2
Hormone therapy and CVD	1
HRT	1
Cardiac pharmacology	1
Prevention	
Prevention of CVD	1
Actuarial forecasting	2
Preventive counselling	1

Dietary management, lifestyle counseling	1
CHD - prevention, homocysteine importance	2
Hyperlipidemia in children	1
Familial CAD	1
Hyperglycerides	1

Table 10 Respondents' Report of Other Therapeutic Conditions (continued)

Other Condition(s)	Frequency
Acute Diagnosis and Treatment	
LVH	1
Acute MI/ Pul edema/unstable angina	1
Emergency cardiac markers	1
Cardiac rehabilitation	1
Endothelial dysfunction	1
Eye manifestation "retina" diabetes, hypertension	1
Traumas e.g. contusion/bruising	1
CAD among end stage renal disease population	1
Silent ischemia	1
CVD and multisystem problems (e.g. renal insufficiency)	1
Cor pulmonale	1
Aortic Aneurysm and Peripheral Vascular Disease	
DM and PVD	1
AAA, phlebothrombosis, Factor 5 Leiden etc.	1
Abdominal aortic aneurysm	1
Stroke	
Cerebro - vascular disease	1
Stroke	1
Preventative approach to TIA	1

Psychiatry and Social Effects of CVD

Psychoneurosis, marital dysfunction	1
Psychiatric treatment and obesity	1
Depression	1

broad categories emerged giving an overall representation of the underlying topics identified by the physicians. Table 11 presents the results.

Arrhythmia-related topics were identified most frequently by the respondents. Over 427 separate comments were coded for topics related to Arrhythmia. The topics which physicians identified in order of response frequency included general information on the condition, information pertaining to Atrial Fibrillation, office treatment and management of Arrhythmia, pharmaceutical therapies, treatment and management of Atrial Fibrillation, pharmaceutical therapies for Atrial Fibrillation, diagnostic testing, test interpretation, and Arrhythmia and Post Myocardial Infarction.

Congestive Heart Failure received the next largest number of responses based on coded comments made by respondents (n = 221). The common topic categories which were identified for Congestive Heart Failure included office treatment and management, pharmaceutical therapies, general information on the condition, diagnostic testing, and testing CHF in the elderly. Hypertension (n = 199), Diabetes (n = 196), and Cardiovascular Disease (n = 187) were other conditions in which a large number of physicians had identified an interest in learning about related topics.

Table 11 Respondents' Report of Therapeutic Topics of Interest

	Summary of descriptive statements (“topics of interest”)	Frequency
Angina Pectoris	Office treatment and/or management	34
	General information	33
	Pharmaceutical therapies (medication regimen, new drugs, etc.)	25
	Diagnostic testing (tests used for diagnosis)	15
	Prevention strategies	2
	Treating angina in the elderly	2
Arrhythmia	General information	130
	Information on Arrhythmia pertaining to Atrial Fibrillation	94
	Office treatment and/or management	61
	Pharmaceutical therapies (medication regimen, new drugs, etc.)	49
	Treatment and/or management of Atrial Fibrillation	31
	Pharmaceutical therapies (medication regimens, new drugs, etc.) for Atrial Fibrillation	29
	Diagnostic testing (tests used for diagnosis)	21
	Test Interpretation	9

Table 11 Respondents' Report of Therapeutic Topics of Interest (continued)

Summary of descriptive statements ("topics of interest")		Frequency
Coronary Artery Disease		
	Office treatment and/or management	31
	General information	27
	Pharmaceutical therapies (medication regimens, new drugs, etc.)	17
	Diagnostic testing (tests used for diagnosis)	16
	Treatment of female Coronary Artery Disease	4
	Prevention strategies	4
Congestive Heart Failure		
	Office treatment and/or management	78
	Pharmaceutical therapies (medication regimens, new drugs, etc.)	74
	General information	45
	Diagnostic testing (tests used for diagnosis)	15
	Treating CHF in the elderly	9
Cardiomyopathy		
	Office treatment and/or management	3
	General information	2
	Diagnostic testing (tests used for diagnosis)	1
	Pharmaceutical therapies (medication regimens, new drugs, etc.)	1

Table 11 Respondents' Report of Therapeutic Topics of Interest (continued)

	Summary of descriptive statements (“topics of interest”)	Frequency	
Cardiovascular Disease	General Information	55	
	Pharmaceutical therapies (medication regimens, new drugs, etc.)	52	
	Office treatment and/or management	32	
	Diagnostic test interpretation	17	
	Diagnostic tests	15	
	Prevention strategies	11	
	Possible drug interactions	5	
	Diabetes	Office treatment and/or management	65
		Pharmaceutical therapies (medication regimens, new drugs, etc.)	62
General Information		38	
Treating Diabetes and Hyperlipidemia		8	
Treating Diabetes and Hypertension		7	
Diagnostic testing (tests used for diagnosis)		6	
Treating Diabetes and Cardiovascular Disease		5	
Prevention strategies		5	

Table 11 Respondents' Report of Therapeutic Topics of Interest (continued)

	Summary of descriptive statements (“topics of interest”)	Frequency
Female with CVD		
	General information	30
	Office treatment and/or management	14
	Pharmaceutical therapies (medication regimens, new drugs, etc.)	7
	Diagnostic testing (tests used for diagnosis)	6
	Symptom Identification	5
	Treating females with CVD and Coronary Artery Disease	5
Hyperlipidemia		
	Office treatment and/or management	65
	General information	47
	Pharmaceutical therapies (medication regimens, new drugs, etc.)	39
	Prevention strategies	9
	Treating Hyperlipidemia and CVD in the elderly	9
	Diagnostic testing (tests used for diagnosis)	6
Hypertension		
	Office treatment and/or management	78
	Pharmaceutical therapies (medication regimens, new drugs, etc.)	58
	General information	50
	Treating Hypertension and CVD in the elderly	7
	Diagnostic testing (tests used for diagnosis)	6

Table 11 Respondents' Report of Therapeutic Topics of Interest (continued)

	Summary of descriptive statements (“topics of interest”)	Frequency
Ischemia		
	General information	3
	Office treatment and/or management	3

	Diagnostic testing (tests used for diagnosis)	2
	Pharmaceutical therapies (medication regimens, new drugs, etc.)	2
	Diagnostic test interpretation	2
<hr/>		
Prior Myocardial Infarction		
	Office treatment and/or management	48
	Pharmaceutical therapies (medication regimens, new drugs, etc.)	32
	General information	18
	Prevention strategies	10
	Diagnostic testing (tests used for diagnosis)	6
<hr/>		
Peripheral Vascular Disease		
	Office treatment and/or management	53
	Diagnostic testing (tests used for diagnosis)	23
	General information	18
	Pharmaceutical therapies (medication regimens, new drugs, etc.)	13
	Prevention strategies	5

Table 11 Respondents' Report of Therapeutic Topics of Interest (continued)

	Summary of descriptive statements (“topics of interest”)	Frequency
Over 75 with CVD		
	General Information	13
	Office treatment and/or management	10
	Pharmaceutical therapies (medication regimens, new drugs, etc.)	6
	Treating Hypertension and CVD in the elderly	5
	Treating Congestive Heart Failure and CVD in the elderly	3

Other Topics

Office treatment and/or management of Valvular Heart Disease	4
General information on Valvular Heart Disease	3
General information on Syndrome X	3
Treatment of pediatric CVD	2
Heart Attack	2

Problems with Managing CVD Patients

Another item in this section of the survey also asked physicians to identify the problems they experienced when managing patients with CVD. A list of possible patient-centered problem areas was provided and respondents were required to check one of the problems from this list. All of the problems which were listed were related solely to patient-centred management problems, that is problems which are related to the behaviour of the patient and not the physician. Table 12 presents the results of respondents' reports of perceived problems in managing patients with CVD. "Compliance with lifestyle" (85.3%), "compliance with medication" (38.9%), and "do not follow up with you" (18.0%) were the three problem areas which were reported the most by respondents to the survey.

Table 12 Respondents' Report of Problems Experienced in Managing Patients with CVD

	Rank	Frequency (%)
Compliance With Lifestyle	1	1282 (85.3%)
Compliance With Medications	2	585 (38.9%)
Do Not Follow Up With You	3	270 (18.0%)
Decline Medications	4	257 (17.1%)
Do Not Attend Referral Appointments	5	107 (7.1%)
Do Not Adhere To Tests That Are Ordered	6	100 (6.7%)

The checklist also provided a category called "other" which allowed physicians to report or elaborate on any problems they experienced in managing patients with CVD. These responses were analyzed using Ethnograph 5.0 and five common categories of problems were observed as a result of the analysis: specialist or system issues; treatment and medication; smoking, weight control, motivation, and lifestyle issues; lack of patient understanding; and interaction with other illnesses. The treatment and medication category encompassed the largest number of reports (n = 22) from the respondents. The responses in this category dealt with problems related to use of herbal remedies, patients' inability to tolerate and afford medications, side effects of drugs, and patients compliance with medication usage. The specialist and systems issue

category included 20 reports and encompassed problems related to patient referral, specialist assistance for consultation, and access to tests. The smoking, weight control and lifestyle category included 9 reports from the respondents, the lack of patient understanding category had 13 reports and dealt with problems and issues surrounding patient education, while the interaction with other illnesses category included 6 reports from respondents which focused on issues with patients who had other illnesses which compounded CVD problems.

The final item in the section related to Therapeutic Information asked physicians to comment on any suggestions or solutions which they could suggest to address the problems they had identified in the previous questions (i.e. patient compliance, compliance with medication, do not attend referral appointments, etc.). Again, it is important to consider that all of these problem areas were listed for the respondents to check and they were all related to patient behaviours which physicians believed were barriers to effective CVD management. The open-ended responses to this question were coded using Ethnograph 5.0 and analyzed using the constant comparison method. Table 13 presents an overview of the common categories which were observed, as well as the frequency of coded statements which fall within each category. A large number of respondents suggested that one solution to these problems was to organize and deliver relevant public and/or patient education campaigns and materials (n = 279). A large number also believed that increased counselling time and some form of compensation for this time (n = 91) was another possible solution to some of the problems. Closer follow-up (n = 61), persistence and patience (n = 48), increase familial support (n = 46), and improved medication regimens (n = 44) were other categories which received a high number of comments.

Table 13 Respondents' Suggestions and Solutions to Problems in the Management of CVD

Description of Category	Frequency
Relevant public/patient education via media campaigns, video, patient handouts, community education programs, etc.	279
Increased counselling time for patients and some form of compensation for this time	91
Closer follow-up with patients	61
Be persistent and patient, keep trying, use slow steps	48
Increased patient support from family, friends, community, doctors, etc. and involve supporting persons in treatment of patient	46
Improved Medication (simplify regimen [once per day], decrease cost, increase insurance coverage, decrease side effects, better knowledge of drug interactions)	44
Make the patient responsible for his/her own health, including the use of a fee payer system as a means for increased compliance	27
Promotion of community and individual exercise programs and lifestyle management programs	27
Use of motivation and encouragement to promote compliance and lifestyle change in patient	27
Improve counselling skills of physicians	24
Use of positive reinforcement to promote compliance and lifestyle change	23
Reinforce primary prevention in public education programs. Prevention strategies for CVD should begin in grade school and continue throughout life.	23
Increased funding and availability of registered dietitians, home care nurses, fitness instructors, etc.	22
Use of a multidisciplinary approach to lifestyle change and treatment compliance (i.e. supervision by medical team of doctors, specialists, nurses, etc; and the use of a variety of treatment strategies such as traditional meds, herbal meds, exercise programs, alternative medicine, etc.)	19
Increase cessation of smoking by increasing cost of cigarettes, increasing anti-smoking lobbying, etc.	15

Table 13 Respondents' Suggestions and Solutions to Problems in the Management of CVD (continued)

Description of Category	Frequency
Provide relevant, personalized patient result handouts to each patient including recognition of any progress.	13
Improve doctor-patient relationship fostering improved communication and honesty	13
Use other people (cases) as examples of best and worst case scenarios	9
Increase access to specialists and timely investigations	9
Financial support for supervised diet and exercise programs	7
Increase government resources and funding for health care	6
Increase physician consultation with specialists	4
Changing the food industry to promote healthy food choices only.	4
Eliminate government intervention in health care billing system, allowing physicians to be paid for counselling time with patients	2
Decrease patient workload to allow more time for exercise and stress free living	2
Use proactive approach to treatment	2

Educational Format

The third section of the survey was designed to collect information on respondents' opinions of their preferred educational format for learning, preferred day and time of week for participating in CME, as well as opinions of the things which they felt contributed to successful CME.

Preferred Educational Format

Table 14 presents the results of respondents' report of the type of educational format they would prefer for learning about CVD. The actual survey question asked physicians to select (check) up to three of their most preferred formats from a check list of 11 formats. Small Group Learning workshops was the most preferred educational format and was selected by 70.6% of respondents. Other preferred formats included: Part of CME Course (50.9%); Pharmaceutical Company Supper Meeting (35.3%); and Lecture (34.5%). The influence of demographic characteristics such as province of practice location, community size, gender and age were also assessed to determine whether these factors influenced educational format preferences. The analysis revealed that there were no differences in ranked educational format preferences based on province of practice location, size of community, or gender. A larger proportion of younger respondents aged 25 - 44 (27.8%), or those who had graduated since 1990 (32.9%), indicated a preference for ACLS/ATLS style training when compared with older physicians. However, it is worth noting that this type of educational format still only ranked fourth or fifth in the total rankings of preferred educational formats.

This question also listed an "other" category which enabled physicians to identify any specific educational format preferences other than those which were already mentioned. For the most part, the respondents reported the same formats which had already been identified in the checklist including problem-based learning, small-group practice-based learning, weekend pharmaceutical sponsored CME workshops, CD-ROM and Internet. One theme did emerge from these open-ended comments and focussed on the use of "static materials" such as journals, books, or review articles in order to learn. This format was not included in the original checklist, but several respondents identified it as a preferred format (n = 6).

Table 14 Respondents' Report of Preferred Educational Format

	Rank	Frequency (% of survey sample)
Small Group Learning Workshops	1	1061 (70.6%)
Part of CME Course	2	765 (50.9%)
Pharmaceutical Company Supper Meetings	3	531 (35.3%)
Lecture	4	519 (34.5%)
CD ROM (in your office or at home)	5	391 (26.0%)
Internet (on-line learning)	6	329 (21.9%)
ACLS/ ATLS style	7	323 (21.5%)
Preceptorship / Clinical Traineeship	8	181 (12.0%)
Hospital Rounds	9	241 (16.0%)
Video Conferencing Program	10	94 (6.3%)
Audio Conferencing Program	11	33 (2.2%)

Preferred Day(s) and Time(s) for CME Participation

Another item in the Educational Format section asked physicians to select, using a checklist, which days of the week they would prefer to participate in CME. Respondents were permitted to check one or more days of any of the weekdays listed (Monday to Friday). The results (Table 15) reveal that Wednesday (35.9%) was the day of the week which physicians most preferred for participating in CME. Fridays (28.7%) and Thursdays (25.7%) were also selected by a large proportion of respondents. The results from an analysis of the effect of demographic characteristics such as size of community, gender, age group, and physician type on preferred weekday for CME participation suggested that none of these factors significantly influenced physicians' preferences of the day of week for participating in CME.

Table 15 Respondents' Report of Preferred Weekday for CME

	Rank	Frequency (% of survey sample)
Wednesday	1	540 (35.9%)
Friday	2	432 (28.7%)
Thursday	3	386 (25.7%)
Tuesday	4	283 (18.8%)
Monday	5	178 (11.8%)

As a follow-up question to preferred day of the week for CME participation, physicians were also asked to identify the time of day that they would prefer attending CME. This was an open-ended question and the responses were analyzed using Ethnograph 5.0 and the constant comparison technique. A number of common categories emerged from the data and these are presented in Table 16. The results reveal that a large proportion of physicians would prefer to participate in CME if it were held in the evening, after 5 pm (30.1%), followed by morning (4.6%) or afternoon participation (4.0%).

Table 16 Respondents' Report of Preferred Weekday Time for CME

	Rank	Frequency (% of survey sample)
Evening (after 5 pm)	1	452 (30.1%)
Morning	2	69 (4.6%)
Afternoon	3	60 (4.0%)
Afternoon and Evening	4	55 (3.7%)
Noon	5	54 (3.6%)
Daytime (9am -5pm)	6	45 (3.0%)
Anytime	7	33 (2.2%)
All Day	8	23 (1.5%)

Respondents were also asked to indicate their preference regarding weekend CME

participation. The categories which were listed included Saturday (full day), Saturday (half day), Sunday (full day), and Sunday (half day) and physicians were asked to check one of the given categories. The results reveal (Table 17) that a large proportion of respondents would prefer to participate in CME if it occurred during Saturday (half day) (41.5%). A large number of physicians also indicated that they would prefer attending CME during Saturday (full day) (23.5%). The large proportion of respondents who did not respond to this question, indicated by missing values, suggests that those individuals who selected a preferred weekday participation may not have preferred to participate in CME on a weekend.

Table 17 Respondents’ Report of Preferred Weekend Day and Time for CME

	Rank	Frequency (% of survey sample)
Saturday, Half Day	1	623 (41.5%)
Saturday, Full Day	2	353 (23.5%)
Sunday, Full Day	3	43 (2.9%)
Sunday, Half Day	4	63 (4.2%)
Missing	----	421 (28.0%)

An open-ended question also asked respondents to indicate “other” preferred weekend CME attendance or participation times. Using the constant comparison technique again, a number of common categories emerged from the data. These categories are presented in Table 18. The results reveal that a larger proportion of respondents would prefer to participate in CME during Saturday and Sunday (half days) (3.1%). Other responses included Saturday and Sunday (full days) (1.7%), Saturday (full day) and Sunday (half day) (1.5%), Saturday (half or full day) (1.1%), and Anytime on Weekend (1.0%). However, only a small proportion of respondents who responded to the survey actually completed this question, therefore these responses should not be judged as a reflection of the preferences of the majority of respondents.

Table 18 Respondents' Report of "Other" Preferred Weekend Days for CME

	Rank	Frequency (% of survey sample)
Saturday and Sunday (half days)	1	47 (3.1%)
Saturday and Sunday (full days)	2	25 (1.7%)
Saturday (full day) and Sunday (half day)	3	22 (1.5%)
Saturday (half or full day)	4	17 (1.1%)
Anytime on Weekend	5	15 (1.0%)

Perceptions of Factors Influencing Successful CME

Table 19 presents the results of the respondents' report of factors which contribute to a successful CME program. This item was an open-ended question and physicians were asked to list the three things which they believed contributed to a successful CME event. The comments from the respondents were coded and analyzed using Ethnograph 5.0, and a number of common categories emerged as a result of the constant comparison of the themes of the physician's reports. The categories of successful CME factors which were observed included: content relevancy, speaker qualities; learning format; supplemental learning resources; location, time and duration; learning atmosphere; food and refreshments; social activities/family; cost; accreditation; sponsorship; and follow-up. The categories which reported the largest number of responses were content relevancy, speaker qualities, and learning format.

Content relevancy emerged as a category based on physician's reports that the information which was transmitted or provided through a CME event had to be comprehensive, timely, evidence-based, and relevant to the practices of general practitioners, family physicians, and in certain instances to those who practiced in rural and remote areas. The category "speaker qualities" referred to physician's perceptions that the success of a CME event was dependant on the expertise and the presentation and instructional abilities of the speaker. Quality referred to both expertise in the content and the ability to convey the important information of the content area; and process expertise, that is the ability to organize and present the information in an

Table 19 Respondents' Report of Factors Contributing to Successful CME

Successful CME Descriptive Elements	Frequency
Content Relevancy	
Information presented is relevant or immediately applicable to GP clinical practice (rural and urban)	716
Interesting topic(s), interesting information presented	330
Precise, focussed information/presentation. No wasted time. More emphasis on main points/specific objectives, avoiding information overload.	140
Presentation of up-to-date/ timely information.	114
Quality of information/presentation. Program should be well-prepared, informative, efficient, comprehensive, have realistic objectives and include only valid, scientifically proven, information.	112
Specific recommendations to take home (back to practice)	47
Information should be evidence-based	37
Non-biassed presentation of information, no pharmaceutical company involvement	42
Speaker Qualities	
Credible speaker who is experienced and well prepared, presents at a GP level, respects knowledge level of participants, is enthusiastic and knowledgeable and is a good communicator who understands the limitations of rural practice	714
Presentation should be lively, interesting, clear, and well prepared.	109
Specialists included for consultation	6

Table 19 Respondents' Report of Factors Contributing to Successful CME (continued)

Successful CME Descriptive Elements	Frequency
Learning Format	
Interactive session, participant actively involved in learning via discussion groups, demonstrations, etc.	224
Good organization/format/agenda. Well prepared program whether it be lecture, rounds, workshop, etc.	107
Small group format	98
Short lectures or presentation of medical information. Avoid information overload. May be several short lectures (20-30 mins) in one day or a limit of 3-4 hours of education per day.	85
Problem based or case based presentation of information	73
Allotted time for questions and answers	70
Time schedule of seminar should be followed, presenters should not go over allotted time frame	32
Workshop format	27
Hands-on training of new tools/ treatments	25
Adequate A-V/ presentation technology (Power Point, etc.)	15
Supplemental Learning Resources	
Slides, AV aids used during seminar and/or well written handouts/ summaries/ take home points to be provided prior to, during or at the end of CME. This includes practice guidelines, algorithms, annotated bibliographies, notes, etc..	187
Location, Time and Duration	
Location or venue of CME (close to home, vacation destination, etc.)	230
Time and duration of conference	104
Convenient program which is accessible and available	30

Table 19 Respondents' Report of Factors Contributing to Successful CME (continued)

Successful CME Descriptive Elements	Frequency
Learning Atmosphere	
Comfortable and pleasant learning atmosphere. A non-intimidating, relaxed environment which promotes collegiality.	69
Fun and entertaining learning environment	23
Participants in seminar (similar experiences, some are familiar, etc.)	5
Food and Refreshments	
Food served or available	56
Refreshments/ beverages to be provided during and after seminar	11
Social Activities/Family	
Social activities/events included such as sight seeing, tours, receptions, etc.	52
Spouse and/or family included in program activities	29
Cost	
Cost to attend seminar should be reasonable	43
Accreditation	
An accredited program from which CME credits will be gained	31
Sponsorship	
Event sponsored by pharmaceutical company	5
Follow-up	
Follow-up to ensure application to practice, Feedback on seminar performance, Pre and post testing to be included as a measure of knowledge gained	19

interactive manner which was responsive to the learning and practice needs of the audience. The category of learning format also emerged from the comments of the physicians who responded to the survey. This category referred to respondents' perceptions that the success of a CME program was also dependent on how it was organized and the type of learning methods which were used to facilitate learning.

The final question on the survey provided respondents with the opportunity to make any comments related to the survey, their CME needs, management of CVD, or other areas of concern. The comments were coded and analyzed with Ethnograph 5.0 using the constant comparison technique of qualitative data analysis. Several common categories were identified from the analysis. The largest number of comments were related to the nature and format of CME programs, and many respondents made comments related to these points. Generally, of the physicians who made comments, a majority believed that practice-based, small-group learning which is based on simulated clinical case studies is a preferred format for learning:

“Useful CME is theme based, accessible, and reasonably priced with practical and well presented talks.”

“Traditional, expert-led, didactic CME is of very limited value.”

“I facilitate a practice-based small group for the past 4 years. This is by far the best way for me to learn. The modules are very well written, and strongly evidence-based. The meetings lead to change in practice, and these changes are often revisited and reinforced at subsequent meetings.”

“Often CME speakers talk about what they know - not what we need to know. CME really needs to address the lives of busy practitioners, include info to take with them back to the practice in the community and especially for me in the how to do things i.e. doses / regimes / expected outcomes etc, not anecdotal info that I cannot apply.”

“Best speakers are ones who relate to GPs and teach us what we need to know and how we can better handle problems.”

“Teaching for family Docs by family Docs.”

“On-line courses and CD-ROMS would be very helpful.”

“Consultants bring their slide shows and conference style lectures to family physicians. I can always look up differential diagnosis, causes, etc. I would like to be presented with the problem, make diagnosis, treat, and then compare it to the answer.”

“Educational format through newsletters or journals is very helpful.”

“Important to work with clinical cases.”

“CME must be free and flexible, facilitated by multi-media. It mustn't be influenced by governments under the pretext of subsidization of health care. The doctor is not a civil servant. He is an autonomous professional who must be conscious of his intellectual autonomy. Also, the choice of treatments and diverse medications must not be dictated by governments for whom keeping cost down is a priority. These choices are the doctors for whom the sole responsibility is the health of his patient.”

“It is my experience that daytime CME events are increasingly difficult to attend as overhead costs increase and obligations outside medicine increase.”

“Time and cost is biggest issue. We don't get paid for 2-3 weeks of continuing education per year, time away from office translates to \$500-\$800 loss. I'd love to do tons more CME but this is a huge factor.”

“Too many are hung up on CPGs and not teaching concepts. Too many presenters have poor skills / universities or companies should offer teaching skill programs.”

“Specialists or resource people not as primary teachers. Let FPs conduct CME/ support FPs teaching each other.”

“Internet based CME with e-mail Q&A to reps could supplement time consuming office visits.”

Several physicians also made comments noting the difficulties that rural and remote physicians experience in accessing CME:

“Needs of rural and remote CME only just being now addressed.”

“Rural MD - hard to access courses and learn procedures.”

“Quality CME in a rural setting without considerable expense.”

“There should be more CME programs for GPs working in remote areas of NWT who work with little resources in difficult situations.”

Some respondents also made comments concerning the treatment of elderly patients:

“We often make the elderly sick with our medications. How can we chose the right treatments and specific medications for the patient?”

A number of physicians also commented that CME which allowed physicians to bring or involve their families in some way would be attractive, particularly CME which occurred on weekends:

“Family events work well.”

“I have a young family - this largely influences where I go.”

“Prefer weekend getaways where able to be with family and yet able to access education CME. Difficult to exclude family with so little free time.”

“Depending on how far one has to drive, facilities for family and extra programs for spouses become more important.”

Comments on the difficulty in accessing MAINPRO C credits were also made by some physicians:

“I really need MAINPRO C credits and find very few CMEs that have them.”

“MAINPRO = OK but for MAINPRO C = very difficult to achieve - woman with 3 children.”

“The current requirement for MAINPRO C credits is anxiety provoking as these courses are few and far between.”

“There is a shortage of MAINPRO C options for CME.”

Finally, a small number of respondents reported strong opinions on pharmacy sponsored CME:

“I purposely suspect corporate manipulation at all meetings, but generally most meetings are genuine and productive.”

“Also, pharmaceutical company sponsored events always seem to end up promoting the company’s products at least indirectly.”

Conclusions

- < MAINPRO accredited programs were perceived as being important or very important for approximately 45% of the survey. Physicians practicing in Manitoba, New Brunswick, and Saskatchewan held stronger opinions of the importance of MAINPRO credits than their colleagues in British Columbia and the Yukon Territories. A majority of physicians who were members of the College of Family Physicians of Canada, either CCFP (57.2%) or FCFP (65.0%), were more likely to have a favorable opinion of MAINPRO when compared to physicians who were not members of the College. Although, the somewhat “low” proportion of college members who did ascribe a level of importance to MAINPRO was surprising, given the role of CFPC accredited programming for satisfying mandatory continuing education requirements. Several issues are raised from this finding: What is the nature of the CME programming which is important or very important to those CCFP physicians who do not perceive MAINPRO as important or very important? Why do these CCFP physicians ascribe such a low level of importance to MAINPRO accredited programs?

- < A larger proportion of respondents who practice in communities with populations greater than 10,000 persons are of the opinion that MAINPRO credits are important to very important. A smaller proportion of physicians who practice in communities with a population of less than 10,000 reported that MAINPRO credits were important to very important. In all likelihood, a larger number of physicians who are not certificants of the College of Family Physicians practice in smaller communities in Canada and this may suggest a rationale for the difference in opinion. Physicians who are not members of the College of Family Physicians are not required to participate in MAINPRO accredited programs. A finding from a CME needs assessment survey conducted by the Faculty of Medicine (1997) in Newfoundland and Labrador revealed that a smaller number of CCFP physicians practice in rural communities when compared to larger towns and urban areas.

- < Female physicians and younger physicians (aged 25 - 44) reported stronger opinions of

the importance of MAINPRO credits than male physicians and older physicians (aged 55 - 64) respectively. The difference between younger and older physicians' opinions of MAINPRO may be partly explained by the fact that a larger proportion of recent graduates of medical school are members of the College of Family Physicians of Canada, indicating the requirement for participation in MAINPRO accredited programs.

However, the difference between physicians' opinions of MAINPRO credits on the basis of gender is interesting and warrants further investigation. Do female physicians value the importance of continuing education programs or even lifelong learning more so than male physicians? What are the factors underlying this difference in values between the sexes?

- < A majority of physicians in Canada (70.9%) view accredited programs as credible and non-biased. A large percentage of respondents from the provinces of Saskatchewan, Newfoundland, New Brunswick, and Prince Edward Island reported positive opinions of accreditation and felt "strongly" or "very strongly" that accredited programs were credible and non-biased. However, physicians from British Columbia, Alberta, and the Yukon were somewhat more skeptical and pessimistic of accreditation. A smaller proportion of respondents from these provinces reported favorable views of accreditation
- < Older physicians were more likely to agree or strongly agree that accredited programs were non-biased than younger physicians. Younger physicians appear to be more skeptical of accreditation.
- < A majority of Atlantic Canadian physicians reported that they see 50 or more patients with CVD per month: New Brunswick (52.6%); Nova Scotia (54.5%); Newfoundland (50.0%); and PEI (60.0%) physicians. However, respondents from Quebec (30.0%) and British Columbia (32.7%) reported seeing a smaller proportion of 50 or more patients per month with CVD. These results are supported by data from Health Canada (1997) which reveals that the morbidity and mortality rates of CVD are highest in the Atlantic provinces. These results would also suggest that the need for CME in the area of CVD

could have the greatest implications for physicians in this region of the country.

- < Physicians practicing in communities with a population of less than 10,000 persons reported that they saw a larger proportion of patients with CVD as compared to physicians in communities with larger populations. Younger physicians, and those who have graduated since 1990, reported that they saw a smaller number of patients with CVD than older physicians. As well, a larger proportion of male physicians (47.5%) reported seeing more than 50 patients with CVD per month as compared to female physicians (19.9%). These findings have important implications in terms of the segment of physicians who could possibly benefit the most from CVD-focussed CME: rural, male, and older family physicians and general practitioners.

- < Physicians reported that the largest knowledge gaps in terms of current vs desired knowledge existed in the areas of Arrhythmia, Peripheral Vascular Disease, Female with CVD, and Congestive Heart Failure. When asked, Arrhythmia-related topics were identified the most by the respondents and these included: general information on the condition; information pertaining to Atrial Fibrillation; office treatment and management of Arrhythmia; pharmaceutical therapies; treatment and management of Atrial Fibrillation; pharmaceutical therapies for Atrial Fibrillation; diagnostic testing; test interpretation; and Arrhythmia and Post Myocardial Infarction.

- < The patient management areas in which the greatest perceived problems were experienced included: compliance with lifestyle; compliance with medication; and patients that do not follow up. A large number of respondents suggested that the main solutions to these problems included: organizing and delivering relevant public and/or patient education campaigns; and increasing counselling time and some form of compensation for this time.

- < The majority of physicians responding to this survey preferred: Small Group Learning educational formats; Wednesdays as the day of the week for participating in CME; and

CME that occurred in the evening, after 5 pm. If CME was to occur on weekends, more physicians would prefer to participate if it took place during Saturday (half day).

- < The factors which the respondents' believed contributed the most to the success of a CME event included content relevancy, speaker qualities, and learning format.

References

- Beaulieu MD, Dufresne L, LeBlanc D. Treating hypertension. Are the right drugs given to the right patients? *Canadian Family Physician* 1998; 44: 294-302.
- Boekeloo BO, Becker DM, LeBailly A, Pearson TA. Cholesterol management in patients hospitalized for coronary heart disease. *American Journal of Preventive Medicine* 1988; 4(3): 128-32.
- Borduas F, Carrier R, Drouin D, Deslauriers D, Tremblay G. An interactive workshop: An effective means of integrating the Canadian Cardiovascular Society clinical practice guidelines on congestive heart failure into Canadian family physicians' practice. *Canadian Journal of Cardiology* 1998; 14(7): 911-916.
- Canadian Medical Association. CMA Masterfile 1998.
- Canadian Medical Association. CMA Masterfile 1999.
- Canadian Medical Association. CMA Masterfile 2000.
- Cantillon P, Jones R. Does continuing medical education in general practice make a difference? *British Medical Journal* 1999; 318 (May 8): 1276-1279.
- Coppola WGT, Whincup PH, Walker M, Ebrahim S. Identification and management of stroke risk in older people: a national survey of current practice in primary care. *Journal of Human Hypertension* 1997; 11: 185-191.
- Czerwinski BS, Hyman DJ, Jones EV, Scott LW, Jones PH. Physician education in hyperlipidemia management: The impact on collaboration. *Southern Medical Journal* 1997; 90(7): 685-690.
- Eaton CB, Monroe A, McQuade W, Eimer MJ. Cholesterol testing and management: A national comparison of family physicians, general internists, and cardiologists. *Journal of the American Board of Family Practice* 1998; 11(3): 180-6.
- Fahey T, Silagy C. General practitioners' knowledge of and attitudes to the management of hypertension in elderly patients. *British Journal of General Practice* 1994 Oct; 44(387): 446-9.
- Francis J, Roche M, Mant D, Jones L, Fullard E. Would primary health care workers give appropriate dietary advice after cholesterol screening? *BMJ Clinical Research ED*. 1989 Jun 17; 298(6688): 1620-2.

Friedmann PD, Brett AS, Mayo-Smith MF. Differences in Generalists' and Cardiologists' perceptions of cardiovascular risk and the outcomes of preventive therapy in cardiovascular disease. *Annals of Internal Medicine* 1996; 124: 414-421.

Grant AM, Niyonsenga T, Dion I, Delisle E, Xhignesse M, Bernier R. Cardiovascular disease. Physician attitudes toward prevention and treatment. *Canadian Family Physician*. 1998 Apr; 44: 780-7.

Health Canada, Health Protection Branch, Laboratory Center for Disease Control. Heart disease and stroke in Canada 1997. Available from URL: www.hc-sc.gc.ca/hpb/lcdc/bcrdd/hdsc97/s05_e.html.

Helman A. Nutrition and general practice: an Australian perspective. *American Journal of Clinical Nutrition* 1997; 65(suppl): 1939S-42S.

Jennett PA, Laxdal O, Hayton R, Klaassen D, Mainprize G, Spooner J, Swanson R, Wickett R, Wilson T. The effects of continuing medical education upon family physician performance in the office management of hypertension. *Proceedings of the Annual Conference on Research in Medical Education* 1986; 25: 145-50.

Jennett-PA, Wilson TW, Hayton RC, Mainprize GW, Laxdal OE. Desirable behaviours in the office management of hypertension addressed through continuing medical education. *Canadian Journal of Public Health* 1989; 80: 359-362.

Kluger CZ, Morrison JA, Daniels SR. Preventive practices for adult cardiovascular disease in children. *The Journal of Family Practice* 1991; 33(1): 65-72.

Langner NR, Hasselback PD, Dunkley GC, Corber SJ. Attitudes and practices of primary care physicians in the management of elevated serum cholesterol levels. *Canadian Medical Association Journal* 1989; 141: 33-38.

Lavin A, Nauss AH, Newburger JW. A survey of pediatric management of dyslipidemias in New England. *Pediatric Cardiology* 1992; 13: 76-79.

Lip GYH, Zarifis J, Watson RDS, Beevers DG. Physician variation in the management of patients with atrial fibrillation. *Heart* 1996; 75: 200-205.

MacDonald N, Daub B. Knowledge and attitudes of physicians about lipids. *Canadian Family Physician* 1990; 36: 673-677.

MacLean GR, Petrasovits A, Connelly PW, Little JA, O'Connor B. Impact of different blood lipid evaluation and treatment guidelines on the proportion of Canadians identified and treated for elevated blood cholesterol. Canadian Heart Health Surveys Research Group. *Canadian Journal of Cardiology* 1999; 15(4): 445-51.

Maiman LA, Greenland P, Hildreth NG, Cox C. Patterns of physicians' treatments for referral patients from public cholesterol screening. *American Journal of Preventive Medicine* 1991; 7(5): 273-279.

Mann KV, Lindsay EA, Putnam RW, Davis DA. Increasing physician involvement in cholesterol-lowering practices. *The Journal of Continuing Education in the Health Professions* 1996; 16: 225-240.

Mann KV, Putnam RW. Physicians' perceptions of their role in cardiovascular risk reduction. *Preventative Medicine* 1989; 18: 45-58.

Mann KV, Putnam RW. Barriers to prevention: Physician perceptions of ideal versus actual practices in reducing cardiovascular risk. *Canadian Family Physician* 1990; 36: 665- 670.

Mann KV, Weld Viscount P, Cogdon A, Davidson K, Langille DB, Maccara ME. Multidisciplinary learning in continuing professional education: The Heart Health Nova Scotia Experience. *The Journal of Continuing Education in the Health Professions* 1996; 16: 50-60.

McBride P, Schrott HG, Plane MB, Underbakke G, Brown RL. Primary care practice adherence to National Cholesterol Education Program guidelines for patients with coronary heart disease. *Archives of Internal Medicine* 1998; 158: 1238-1244.

Meyers DG, Steinle BT. Lipid screening and treatment by cardiologists have not improved. *Kansas Medicine* 1997 Winter-Spring; 97(3-4): 14-7.

Morris BAP, Dickinson G, Dorian P. Emergency arrhythmia management: An assessment of learning needs. *Canadian Journal of Cardiology* 1997; 13(Suppl A): 7A-11A.

Murray S, Narayan V, Mitchell M, Witte H. Study of dietetic knowledge among members of the primary health care team. *British Journal of General Practice* 1993; 43(371): 229-31.

National Heart, Lung, and Blood Institute Report of the task force on research and prevention of cardiovascular disease. Washington, DC: US Department of Health and Human Services, Public Health Service, National Institutes of Health, 1994

Ng E, Wilkins R, Pole J, Adams OB. How far to the nearest physician? *Health Reports* 1997; 8(4): 19-31.

Ockene JK, Ockene IS, Quirk ME, Herbert JR, Saperia GM, Luippold RS, Merriam PA, Ellis S. Physician training for patient-centered nutrition counselling in a lipid intervention trial. *Preventive Medicine* 1995; 24: 563-570.

Office of Professional Development. Report of the 1997 Continuing Medical Education Needs Assessment Survey Results 1997.

Rossett A. Training Needs Assessment. Englewood Cliffs (NJ): Educational Technology Publications; 1987.

Stafford RS, Blumenthal D. Specialty differences in cardiovascular disease prevention practices. *Journal of the American College of Cardiology* 1998; 32(5): 1238-43.

Step toe A, Doherty-S, Kendrick T, Rink E, Hilton S. Attitudes to cardiovascular health promotion among GPs and practice nurses. *Family Practice* 1999; 16: 158-163.

Straand J, Rokstad K. Are prescribing patterns of diuretics in general practice good enough? A report from the More & Romsdal Prescription Study. *Scandinavian Journal of Primary Health Care* 1997; 15(1): 10-15.

Strandberg TE, Pitkanen A, Larjo P, Hirvonen P, Kohvakka A. Attitude changes of general practitioners towards lowering LDL cholesterol. *Journal of Cardiovascular Risk* 1998; 5(1): 43-6.

Tannenbaum TN, Sampalis JS, Battista RN, Rosenberg ER, Joseph L. Early detection and treatment of hyperlipidemia: physician practices in Canada. *Canadian Medical Association Journal* 1990; 143(9): 875-881.

Vetrovec GW, Gardin JM, Gregory JJ, Herrmann HC, Rutherford BD, Weiner BH, Williams RG, Collishaw K, Ganslaw LS. Adult cardiovascular physician resources and needs assessment. Report of the 1992 and 1993 American College of Cardiology Surveys on Physician Training and Resource Requirements. *Journal of The American College of Cardiology* 1995; 26(5): 1125-32.

White CW, Albanese MA, Brown DD, Caplan RM. The effectiveness of continuing medical education in changing the behavior of physicians caring for patients with acute myocardial infarction. A controlled randomized trial. *Annals of Internal Medicine* 1985; 102: 686-692.

Appendices