

PRACTICE PATTERNS AND OPINIONS OF MANITOBA PHYSICIANS
WITH RESPECT TO HIGH BLOOD PRESSURE

BY

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A Thesis

Submitted to the Faculty of Graduate Studies in
Partial Fulfillment of the Requirements for the
Degree of

MASTER OF EDUCATION

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Winnipeg, Manitoba

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Abstract

Physicians are recognized as key health care professionals in the overall planning, delivery, and evaluation of quality health care. The purpose of this study was to determine the current practice patterns and opinions of Manitoba physicians toward four major aspects of high blood pressure prevention and control, namely, detection, diagnosis, treatment/management, and follow-up. It also examined the relationship between the physician's area of specialty, length of time in the practice of medicine, and gender, and the reported practice patterns and opinions. The study was based upon the recommendations outlined in an Algorithm prepared by the Manitoba Coalition for Healthy Blood Pressure. A total of 1035 physicians classified as general, family or internal medicine practitioners were sent a forty-one item, self-administered questionnaire. Of these, 453 responses were received for an overall response rate of 43.7%, and a revised response rate of 50.6%. Frequency distribution and percentages initially were conducted on all variables. Cross-tabulations and chi-square tests of significance were conducted on a sub-sample of family and general practitioners to determine relationships between the specified independent physician variables and selected dependent variables. Physicians (68.6%) reported that they would take a blood pressure as part of a new patient work-up and/or periodic exam but not on every patient visit as recommended. Fifty-three percent indicated they recommended annual blood pressure checks. Only 5.4% reported the recommendations of bi-yearly blood pressure checks. In the diagnosis, physicians (75%) reported seeing their patients more frequently than every two months as recommended. Appropriate practice patterns were reported by most physicians in the treatment/management and follow-up of mild to moderate high blood pressure. Statistically significant relationships were found between the physician's area of specialty, practice length and gender, and dependent variables related to the diagnosis, treatment and follow-up. No statistically significant relationships were computed in the detection of high blood pressure. The findings indicate that, in general, Manitoba physicians are reporting appropriate practice patterns related to the prevention and control of mild and moderate high blood pressure.

CHAPTER 1

Introduction

A major challenge for health care professionals is the development and continuation of an effective, consistent approach to the prevention and control of high blood pressure. The thrust in recent years has been toward the inclusion of strategies in program development for: 1) its early detection; 2) comprehensive diagnostic "work-up"; and 3) effective long term management of patients. These include research into the feasibility and effectiveness of mass screening programs (Leigh, Guisinger & Fech, 1989; Foote & Erfurt, 1983; Bass, Donner & McWhinney, 1982; Christie, 1979; Shapiro et al., 1978; Roistacher et al., 1977; Adler, 1976); high blood pressure registers (Nissinen, Tuomilehto, Jyrski, Salonen & Pekka, 1981); worksite prevention and control programs (Alderman, 1984; Foote & Erfurt, 1983); educational programs for health care professionals (Evans et al., 1986 & 1984; Inui, Yourtree & Williamson, 1976; Rocella & Ward, 1984) as well as research into and the development of "cues to action" to assist the patients in complying with their therapeutic regimen (Cameron & Best, 1987; Green, 1987; Haynes, Wang, & Da Mota Gomes, 1987; Leventhal & Cameron, 1987; Ruffalo, Garbedian-Ruffalo, & Pawlson, 1985; Breckenridge, 1983; DiMatteo & DiNicola, 1982; Haynes et al., 1982; Janz, Becker & Hartman, 1982; Powers & Wooldridge, 1982; Haynes, Taylor & Sackett, (eds), 1979; Schmidt, 1977; Haynes et al., 1976; Caldwell, Cobb, Dowling, & DeJongh, 1970; Marston,

1970).

High blood pressure is now considered to be a major health care problem worldwide. Because it is viewed as largely asymptomatic in nature, it is often referred to as the "silent killer" (Capriotti, 1989; Wilber & Barrow, 1972).

High blood pressure is not only accepted as a risk factor in the development of the cardiovascular diseases (MacLeod, Colburn, MacLean & Sinclair, 1986) but, in itself, is considered a complex and multifaceted disease entity (Kaplan, 1986). Its salient risk factors appear to be rooted in both the biological and environmental arenas and include age, gender, race, heredity, obesity, a high fat/high cholesterol and/or high sodium diet, exposure to continuous high stress situations with an inability to handle them effectively, sedentary lifestyles, increased alcohol intake and, more recently, the use of some medications such as oral contraceptives (Connell, 1987; Kaplan, 1986; Herd & Weiss, 1984; Stamler & Stamler, 1984).

Literature relating the intake of sodium to high blood pressure still remains controversial (Joint National Committee on Detection, Evaluation and Treatment of High Blood Pressure, 1988; Kaplan, 1986; Herd & Weiss, 1984). Several well-controlled studies in recent years, however, appear to demonstrate that the reduction of sodium intake can effect a lowered blood pressure (Elliot, 1989; McGregor et al., 1982). Research also is now focusing on the effects of nutritional intake of other electrolytes such as potassium, magnesium and calcium (Beilin, 1987; Clark, 1989; Cutler & Brittain, 1989; Luft, 1989; Fodor, 1989; Kaplan, 1986) on blood pressure.

The diagnosis of, and life long treatment regimen for high blood pressure can have a tremendous impact on individuals. They may be required to incorporate a combination of behavioural lifestyle changes, such as dietary modification, weight loss, medication therapy, regular exercise, and relaxation programs in their daily living. Research into the initiation and maintenance of these lifestyle changes has identified several influential factors within the health care system (Wilson, Purdon & Wallston, 1988; Green, 1987; Haynes et al., 1987; Greenland, Levenkron & Smith, 1987; Haynes, 1985; Ruffalo et al., 1985; Earp, Ory & Strogatz, 1982; Janz et al., 1982; Powers & Wooldridge, 1982; Baksaas & Helgeland, 1980; Falco, Woelke & Deichmann, 1980; Haynes et al., 1979; Schmidt, 1977). Two major factors identified consistently in the literature as being critical to the overall success or failure in managing patients with long term illnesses such as high blood pressure are: 1) the role of the physician within the health care team, and 2) the physician-patient relationship.

Role of the Physician in High Blood Pressure Prevention and Control

Physicians are recognized as key health care professionals who are responsible to their patients, other members of the health care team, and society in general for the overall planning, delivery and evaluation of quality health care. Valente, Sobal, Muncie, Levine & Antlitz (1986) state that physicians are in a unique position and, therefore, may be effective in influencing their patients' attitudes and behaviours regarding disease prevention, health promotion, and risk reduction.

Physicians assume several roles within the health care team. As early as 1937, physicians were referred to as "therapeutic agents" (Houston, 1937). Gerber and Nehemkis (1986) believe that although other members of the health care team may have considerably more contact with the patient, it is the "physician as the head of the multidisciplinary team who often lays the foundation for the patient's understanding of and attitude towards their illness" (p. 9). Downey, Cresenta, and Berenson (1989) state that physicians "can validate and reiterate health promotion messages of other allied health professionals" (p. 291). Physicians have been cited frequently as major change agents, role models, counsellors and/or health educators (Downey et al., 1989; Kligman, Levin, Serif & Magill, 1988; Demak & Becker, 1987; Valente et al., 1986; Pederson, 1982; Stokols, 1975).

Physicians are expected to remain current with the ever-changing medical technology and to incorporate recommendations whenever appropriate. In 1959, Coleman, Menzel & Katz identified that "whatever the ultimate significance of a new practice may be, its immediate fate, once it has been launched from the laboratory or research clinic, rests in the hands of the practicing physician in the field" (p. 1). New developments in science and technology have dramatically changed the role of the physician in our society from the compassionate and understanding general practitioner of yesteryear to that of the highly trained specialist (Brody, 1980). Geertsma, Parker & Whitbourne (1982) noted that the decisions made by individual physicians about their practice behaviours will have an impact on the level of care provided in the health care system and ultimately in all improvements of health

care.

Physicians are referred to as the "gatekeepers" to the hospital and health care system and exert a tremendous influence on the utilization of the available medical resources (Bertakis & Robbins, 1987; Rosenblatt & Moscovice, 1984). They are an essential link to the medical specialties. Physicians also are considered to be influential in the success or failure of patient-related programs within the hospital setting and/or the community (Kottke, Foels, Hill, Choi & Fenderson, 1984).

Several studies have supported the hypothesis that the general public recognizes the physician as being a reliable, credible and perhaps the single best source of health information (Inter-Society Commission for Heart Disease Resources. Atherosclerosis Study Group and Epidemiology Study Group, 1970; Levy, 1978; Valente et al., 1986). This hypothesis was recently supported in a study of blood pressure knowledge, beliefs and behaviours among a randomized sample of Manitoba citizens (Hamilton, 1987). In the analysis of the data, doctors were found to be the most frequently mentioned source of health information in all age groups, with the trend increasing with age. "Eighty-six percent of those over 65 years of age reported that they use a doctor/clinic for health information ($p = .0001$)".

Specific to worksite prevention and control programs for high blood pressure, Bornia and Alderman (1976) view the physicians as the "initiators" and "directors". Along with other members of the health care team, they believe physicians should provide appropriate instruction about the medical aspects of the treatment and management of

high blood pressure and ensure the overall standards of excellence through regular quality assurance audits of the program. Their goal should be to ensure that their patients, the consumers of health care, are the recipients of a quality product.

MacLeod et al. (1986) state that in Canada, the major responsibility for high blood pressure management will remain with the private physician/general practitioner with whom about 90 per cent of physician/patient contacts are made.

As important as the physician's role is, it cannot be carried out in isolation. The quality and effectiveness of the interactions between an individual and his/her physician referred to as the patient-physician relationship is also crucial to the management of high blood pressure.

Physician-Patient Relationship and High Blood Pressure

Living with high blood pressure, as with any long term illness, means living with a medically prescribed therapeutic regimen. The incorporation, change and maintenance of specific lifestyle behaviours and attitudes by the affected individuals is required. Their compliance or non-compliance with the physician's recommendations is usually considered as a measure of their fidelity.

Health care delivery for disease management and/or prevention, and more recently health promotion, has traditionally taken place within the confines of personal encounters between physicians and their patients (Bornia & Alderman, 1976). These encounters, referred to in the literature as the provider-patient or physician-patient relationship,

are now recognized as being critical to the compliance with, and overall success or failure of the prescribed medical regimen (Demak & Becker, 1987; Gerber & Nehemkis, 1986; DiMatteo & DiNicola, 1982; Peck & King, 1982; Haynes, et al., 1979; Schmidt, 1977).

The importance of the physician-patient relationship has long been revered. In recent years, however, research into the dynamics of physicians' practices and attitudes, the patient's satisfaction with their physicians, and their compliance with long term medical regimens has been able to identify significant factors concerning this relationship. These factors include physician gender, behaviours, culture and characteristics as well as those of the patient, the quality of the communication (verbal and non-verbal) and information exchange between the physician and the patient, the type of relationship that can be established, social influence and power, and the impact of other health care workers (Rosenberg, Gorman, Snitzer, Herbst & Lynne, 1989; Roter, Hall & Katz, 1988; Demak & Becker, 1987; Gjerdingen et al., 1987; Like & Zyzanski, 1987; Stiles, Scherwitz, Hennrikus & Vallbona, 1987; Gerber & Nehemkis, 1986; Manassis, 1986; Mendez, Shymansky & Wolraich, 1986; Ogle, Henry, Durda & Zivick, 1986; Ross & Phipps, 1986; Ley, 1985; Coleman, 1985; Weisman & Teitelbaum, 1985; Freeling & Harris, 1984; Tabak, 1987; Pendleton & Hasler, (eds), 1983; Comstock, Hooper, Goodwin & Goodwin, 1982; DiMatteo & DiNicola, 1982; Becker & Maiman, 1980; Brody, 1980; Falco et al., 1980; Kelly, 1980; Haynes et al., 1979; Svarstad, 1974; Stokols, 1975; Davis, 1971; Marston, 1970; Szasz & Hollender, 1956).

Rewucki (1984) in her study focusing on the relationship between

lifestyle modifications of stroke prone individuals in Manitoba and their perceptions of support from health professionals supports the importance of the physician-patient relationship. "Physicians were named three times as often as providers of emotional support in lifestyle change than were the nurses" (p. 87), a result which was somewhat expected because of the nurse's decreased contact time with the patient. Another significant finding was that, although physicians and nurses were cited equally as providers of information, subjects who had maintained behavioural lifestyle changes did so because of their physician's instructions.

The data from the research of Hamilton (1987) and Rewucki (1984) are relevant to this study in that they offer a patient's perspective of some of the Manitoba physician's practice patterns - the purpose of this study.

Purpose of the Study

MacLeod et al. (1986) believe that although programs can be developed for the prevention and control of high blood pressure through the public health system, the worksite, and various voluntary and professional organizations, the major responsibility for the control of high blood pressure and utilization of these resources will remain with the private physician. Their research identified the need for more information about the nature and determinants of the Canadian physicians' treatment practices for high blood pressure, prior to further strategy evolution and program development.

The purpose of this descriptive study was to assess the current practices and opinions of Manitoba physicians toward the detection, initial diagnosis, treatment, and long term management of high blood pressure. In order to accomplish this task, measurable criteria in the form of a self-administered questionnaire were developed. These criteria were based upon the recommendations, in the form of a clinical algorithm, to physicians from the Manitoba Coalition for Healthy Blood Pressure. These recommendations, essentially, served as the conceptual framework for this study.

Conceptual Framework for Data Collection

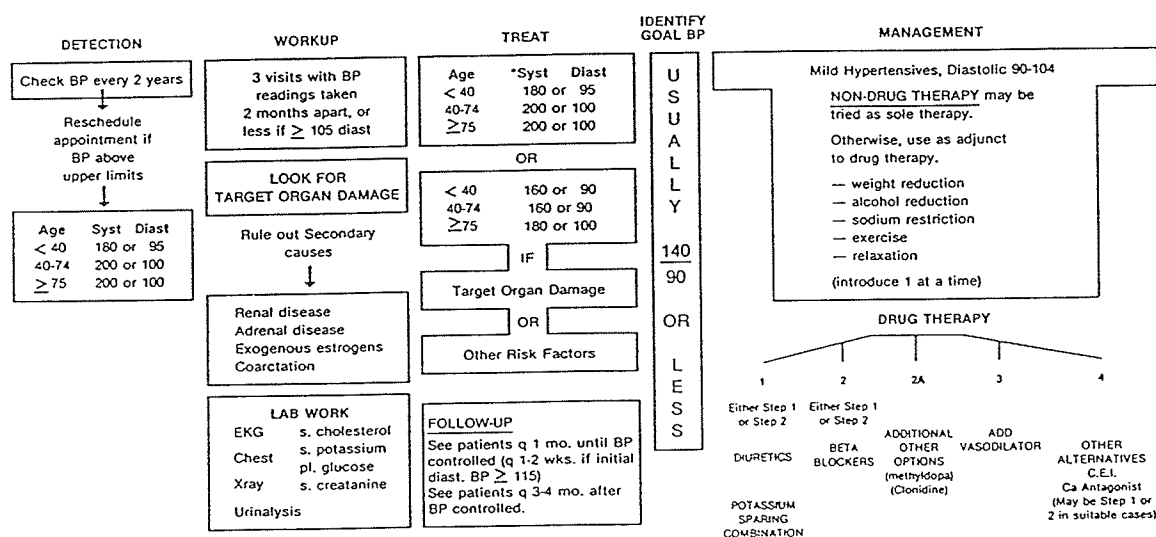
In November 1985, approximately twenty professional and non-professional health agencies formed the Manitoba Coalition for Healthy Blood Pressure. The major task of this Coalition was to develop a viable Action Plan for the effective prevention and control of high blood pressure to be implemented provincially.

A key strategy in the Action Plan (1988) focused on the establishment and promotion of guidelines/criteria for physicians to utilize in the effective detection, diagnosis, treatment, and long term management of high blood pressure. To this end, a sub-committee of the Coalition composed of representatives from the Manitoba Medical Association, Department of Medicine & Family Medicine at the University of Manitoba, College of Family Practice of Canada (Manitoba Chapter), Provincial Medical Office and Manitoba Association of Registered Nurses prepared a compact yet concise clinical algorithm (hereafter referred to

as the Algorithm) entitled Recommendations for Hypertension Management (see Table 1).

This Algorithm delineates recommendations based on those of the Canadian Hypertension Society (Logan, (ed)), (1984) regarding the detection, diagnosis, and management of high blood pressure. An 8" x 4" laminated copy of the Algorithm was sent to practitioners in Family Practice and Internal Medicine within the Province of Manitoba with a covering letter (Appendix A) stating that the recommendations will likely change in the next few years. Physicians were encouraged to respond with any feedback regarding the information in the letter and/or the Algorithm itself. This Algorithm served as the conceptual framework for this study.

Table 1. Algorithm of Recommendations for Hypertension Management
Manitoba Coalition for the Prevention and Control of Hypertension



*Systolic recommendation may change within 1-2 years.
Funded by an Educational Grant from Miles Canada Inc.

Statement of the Research Questions

The research questions formulated for this investigation were:

1. What are the reported practice patterns and opinions of Manitoba physicians toward the four major areas of high blood pressure prevention and control: detection, diagnosis, treatment, and follow-up (comprised of surveillance, compliance, patient and professional education)?
2. What is the relationship between the physician's area of specialty, length of time in the practice of medicine, and gender and their reported practices and opinions?

The data pertinent to these research questions were collected through a postal survey of the total population of physicians registered with the Manitoba Medical Association who were classified as general or family practitioners and internists as of October, 1989. The survey was a 41-item, self-administered questionnaire that required approximately 20 minutes to complete.

Definitions

ALGORITHM: An algorithm is a generic term used to describe "a set of rules for solving a problem in a finite number of steps" (Stein, 1975, p.34).

CASE FINDING: This term, as defined in the Task Force Report to the Conference of Deputy Ministers of Health (1980), denotes the "detection of a disease by means of various tests or procedures by a physician or other health care worker who has an ongoing, explicit or tacit relationship with the person under assessment" (p. 13). Most often, it occurs during the course of intercurrent care. In the situation, the "follow-up of high-risk persons is the responsibility of the health worker who has done the initial classification" (p. 13) or case-finding. "Case-finding" and "case-detection" were used synonymously in this thesis.

CLINICAL ALGORITHM: A clinical algorithm (also referred to as a protocol) is an explicit description of appropriate steps to be taken in the care of a patient with a particular problem. It should include the appropriate history, physical examination, and laboratory data to be obtained in order to make a diagnosis, and makes precise recommendations for the treatment based on this data. Clinical algorithms include branching logic which allows recommendations to be individualized according to the patient's age, sex, past illness, current medications, and current clinical findings (Komaroff, 1982).

COMPLIANCE: This term is used to describe the "extent to which a person's behaviour (in terms of taking medications, following diets, or executing lifestyle changes) coincides with medical or health advice" (Haynes et al., 1979, p. 1). In the use of this term, Haynes et al. (1979) imply a "no-fault" nonjudgmental approach to following or not

following a particular treatment regimen. The regimen is based on three premises: that the diagnosis made by the physician is correct, that the therapy will do more good than harm, and that the patient is an informed willing participant. The third premise deals with the ethical issues involved with compliance -- it presumes a "negotiated mutual contract - informed consent - and mutual responsibility for outcome" (p. 115). It suggests a physician/patient reciprocal freedom, responsibility, and satisfaction. This term has been used interchangeably with the term "adherence".

HIGH BLOOD PRESSURE: Blood pressure elevation has been divided into four separate classifications by the Joint National Committee on the Detection, Evaluation and Treatment of High Blood Pressure (1988, 1984) based on the diastolic measurement. These include: 1) high normal blood pressure (85-89 mm Hg), 2) mild high blood pressure (90-104 mm Hg), 3) moderate high blood pressure (105-114 mm Hg), and 4) severe high blood pressure $\geq$ 115 mm Hg).

Systolic blood pressure elevation is also considered when the diastolic blood pressure is less than 90 mm Hg. The three classifications are: 1) normal blood pressure (140 mm Hg), 2) borderline isolated systolic high blood pressure (140-159 mm Hg), and 3) isolated systolic high blood pressure ($\geq$ 160 mm Hg) (Joint National Committee, 1984). As Herd and Weiss (1984) point out, "the majority of vascular complications of hypertension are observed in patients with even lower levels of blood pressure, [however] the usual definition of hypertension is blood pressure equal to or greater than 140 mm Hg

systolic and 90 mm Hg diastolic" (p. 789). "High blood pressure" is used synonymously with "hypertension" in this manuscript.

SCREENING: Defined by the Commission of Chronic Illness (1977), screening is the presumptive identification of unrecognized disease or defect, by the application of tests, examinations and/or other procedures that can be readily applied. A screening test is not intended to be diagnostic. Screening tests sort out apparently well persons who probably have the disease from those who probably do not. Persons with positive or suspicious findings must be referred to their physicians for diagnosis and necessary treatment. Screening tests should be able to be carried out by someone other than physicians, and are usually a single contact. In the Task Force report to the Conference of Deputy Ministers of Health (1980) entitled Periodic Health Examination, the population to be screened is specified as unselected, and that screening is done without an explicit or tacit ongoing relationship between the health care professional and the individual being screened.

SURVEILLANCE: In this manuscript the term surveillance was defined as an organized program of monitoring individuals' high blood pressure on a regular basis at any of several sites. These sites can include the physician's office, worksites, health units, emergency departments and/or ambulatory health care facilities (MacLeod et al., 1986).

Limitations of the Study

The limitations inherent in this study were similar to other studies which employ a self-administered postal questionnaire for data collection. These included:

1. The questionnaire was designed with a fixed number of responses. Although these responses were formulated to offer the subject a variety of choices, they did not allow for individuality in each participant. To ameliorate this limitation, a response of "other" was included whenever appropriate, and the participant was encouraged to make further comment, i.e., "please specify".
2. Response rate to the postal questionnaire was dependent upon several physician factors including: commitment/interest in the research topic, time allotment, clinical experience in the research area, and attitudes to questionnaires in general and motivation in their completion.
3. The quality of the data collected was dependent upon the commitment of the subjects to the research topic at hand. It was anticipated that the physicians would respond to the questions in a manner which will reflect the actual practice activities, rather than the physicians' perceptions of the researcher's expectations of the responses.
4. Due to financial limitations a second mailing of the questionnaire was not conducted. If accomplished, a second mailing may have improved the overall response rate.

Prior to the implementation of this study a literature review relevant to the topic was conducted and is presented in Chapter Two.

Chapter 2

Review of the Literature

Introduction

Numerous research studies have been published in the last 20 years regarding physicians' roles, knowledge, attitudes, and/or practice patterns towards various topics including: AIDS (Boyton & Scambler, 1988; Searle, 1987), blood cholesterol treatment (Langer, Hasselback, Dunkley & Corber, 1989; Superko, Desmond, de Santos, Vranizan & Farquhar, 1988; Schucker et al., 1987), the diagnosis and treatment of cancer (Fink & Sheehan, 1988; Williams & Williams, 1988; Holland, Geary, Marchini & Tross, 1987), health behaviours in general (Wells, Ware & Lewis, 1984), health promotion activities (Valente et al., 1986; Orleans, George, Houtt & Brodie, 1985; Catford & Nutbeam, 1984; Wechsler, Levine, Idelson, Rohman & Taylor, 1983), nutritional counselling (Kottke et al. 1984), obesity (Price, Desmond, Krol, Sayder & O'Connell, 1987), organ donation (Falvo, Woehlke & Tippy, 1987), smoking practices among physicians (Bureau of Research & Planning, 1968), smoking cessation in patients (Fortmann, Sallis, Magnus & Farquhar, 1985; Wells et al., 1984; Green & Horn, 1968), patient substance abuse (Gottlieb, Mullen & McAlister, 1987), stress management (Gottlieb & Mullen, 1987), utilization of medical resources (Hartley,

Charlton, Harris & Jarman, 1987; Hartley, Epstein, Harris & McNeil, 1987; Dunn, Norton, Nelson & Bestvater, 1986), the physicians' professional appearance (Gjerdingen et al., 1987), and patient education (Spronk & Warmenkoven, 1983). Research also has focused specifically on the physicians' knowledge, attitudes and/or practices regarding high blood pressure prevention and control (United States (U.S.) Department of Health & Human Services, 1989; Bucknell, Morris & Mitchell, 1986; Cloher & Whelton, 1986; Gallup & Cotugno, 1986; Lichenstein, Sweetnam & Elwood, 1986; Logan & Haynes, 1986; Birkett et al., 1986; Fortmann et al., 1985; Dunn, Hilditch, Chipman, Hardacre & Morrison, 1984; Kurji & Haines, 1984; Bass et al., 1982; Thomson, Alderman, Wassertheil-Smoller, Rafter & Samet, 1981; Engelland, Alderman & Powell, 1979; Fulton, Kellett, Maclean, Parkin and Ryan, 1979; U.S. Department of Health, Education & Welfare, 1979; Rudnick, Sackett, Hirst & Holmes, 1977; Hodes, Rogers & Everitt, 1975).

In Canada, the primary care physicians have the main responsibility for the overall management of high blood pressure (MacLeod et al., 1986). Therefore, the physicians' knowledge, opinions, and medical practices will play a critical role in the overall success or failure of health care programs developed to prevent and/or reduce this disease entity. This literature review will present an analysis of the research focusing on the physician's medical patterns of practices and opinions as they relate to the four major areas of concern in blood pressure prevention and control. These include: 1) detection (screening and case-finding), 2) diagnosis and treatment, 3) compliance and surveillance, and 4) professional and patient education.

Disease Detection - An Overview

Detection of a disease entity in an individual can be accomplished by a number of methods such as mass community screening, case finding, and long term surveillance.

A common belief is that the detection of a disease in a general population through a mass screening program, before its usual clinical presentation, should lead to a more effective intervention, and a reduction in morbidity and mortality (Christie, 1979). Screening programs can offer health professionals a cross-sectional view of the prevalence of a disease entity within a population at large. The primary goal of screening programs is to identify within a large group of apparently well persons, those who have a high probability of having the disease under study, at the lowest possible cost. Four distinct groups are usually revealed: 1) individuals with the disease, 2) those without, 3) individuals with the disease reported negative, and 4) those without the disease reported positive. The validity of these four groups is usually dependent upon the sensitivity and specificity of the screening test utilized. Once these groups are identified, screening programs are to direct the affected individuals to the appropriate health care facilities so that they may be given a diagnostic work-up, confirmation of the presence or absence of the disease, and treatment, and to discourage the use of these facilities by individuals who do not require them (Booth, Safer & Leventhal, 1986). Junger and Wilson (1968) have postulated ten principles upon which mass screening programs should be developed.

Over the years the debate continues regarding the need for and validity of mass screening programs for the detection of several diseases in a population. Topics for discussion in the literature have included the nature of the disease process, the accuracy of the screening test, the national economic and personal costs of the screening process, as well as the risks and ramifications to the health care system and individual as they relate to the identification of false positives and negatives (Friedman, 1974).

There are organizational problems inherent in screening programs which may or may not have an impact on their success or failure. These include: 1) lack of physician involvement in program planning and/or compliance in implementation (Lowden, 1978; Rodney, Beabor, Johnson & Quan, 1985), 2) participants in screening programs may not be a truly random sample of the general population (Berkson et al., 1980), and 3) linkage and follow-up to a physician and/or medical facility for diagnosis and treatment may not occur when left up to the screened individuals (Booth et al., 1986; Velez, Anderson, McFall & Magruder-Habib, 1985; Foote & Erfurt, 1983; Christie, 1979).

Screening programs have been shown to be beneficial in the identification of diseases such as cancer (Williams & Williams, 1988; Berner, Frame & Dickinson, 1987). Case-finding by physicians, on the other hand, may offer a more viable approach to the identification of diseases such as high blood pressure (Birkett et al., 1986; Bass et al., 1982; Barber et al., 1979; Cypress, 1979; Reid et al., 1977; Rudnick et al., 1977).

Physicians and the Detection of High Blood Pressure

There appears to be a general consensus among the medical profession in recent years, that an organized approach to the detection of high blood pressure is a necessary component in the overall prevention and control of this disease entity (Joint National Committee, 1984 & 1988; MacLeod et al., 1986; Bass, 1985; Hilditch, 1985; Logan, 1984; Foote & Erfurt, 1983).

The utilization of screening programs in the detection of high blood pressure has been subject to medical discussion over the years. Because of the usually silent or asymptomatic nature of the disease itself, it would appear, initially, that screening would be highly beneficial to both the population at large, and to the health care system. To this end, the validity and effectiveness of blood pressure screening programs utilizing different interventions, in a variety of areas has been examined. These have included the community (home, shopping malls) (Abbott, Alstad & Yeo, 1989; Birkett et al., 1986; Bass et al., 1982; Handa & Wolf, 1982; Berkson et al., 1980; Roistacher et al., 1977; Stahl, Laurie, Neill & Kelley, 1977), the worksite (Leigh et al., 1989; Foote & Erfurt, 1983), the school (Downey et al., 1989; Fixler & Laird, 1983), and the emergency department (Capriotti, 1989) and the barbershop (Pepe, 1989). However, screening programs for high blood pressure in the past have experienced similar problems as in other such programs for other reasons (Booth et al., 1986; Foote & Erfurt, 1983; Barber et al., 1979; Christie, 1979; Cypress, 1979; Roistacher et al., 1977; Reid et al., 1977).

As a framework for a literature review, Adler (1976) utilized the principles as outlined by Junger and Wilson (1968). He concluded that because only the first three criteria could be fulfilled when screening for high blood pressure (the remaining seven were weak at that time) the evidence could not support a need for wide-scale screening. He cautioned, however, that "this did not preclude an individual general practitioner from measuring the blood pressure on all or a specific group of his patients should they present to him in the first instance be it with dyspepsia, an ingrowing toe nail, or any symptom whatsoever" (p. 171). Essentially, he concluded that case-finding for high blood pressure by physicians would be a more appropriate approach to detection rather than mass screening of a population. One major problem in the literature stems from a general confusion with regard to the definitions of, and differentiation between the terms "screening" and "case-finding" (Adler, 1976; Haynes et al., 1979), thus skewing the quality and interpretation of the research data.

Hilditch (1985) also presents a discussion in favour of case-detection in the family's physicians's office rather than screening programs. Briefly, he views the advantages of the former as being:

- a greater part of the population is reached through case-detection in the physicians' office. Over 90% of the population will be seen by their physician within five years. Research cited indicated that well organized programs usually reach less than 10% of the population.
- screening clinics require extra personnel, time, and money.
- Taking a blood pressure on each patient visit is simple and

requires little extra time and effort.

- many of those individuals attending screening programs are already known as having an elevated blood pressure.
 - even when persons are identified with high blood pressure, many do not actively seek follow-up for diagnosis and possible treatment.
- There could be several reasons for this action: disinterest, anxiety, and fear of treatment to name a few. Case-detection in the physician's office eliminates the need for linkage between detection and diagnosis.

It is believed that the majority of Canadians annually visit their physician's office (MacLeod et al., 1986). One of the concerns with case-finding centers on actual practices of physicians. In essence, the question must be asked: "Do physicians actually check their patients' blood pressures regularly and at every visit to their office"?

In 1975, Hodes et al. sent a questionnaire to a random sample of 10% of general practitioners in England and Wales regarding their attitudes towards various aspects of high blood pressure management. From the 62% of respondents, only 11% indicated that they always measured the blood pressure of their middle-aged patients, regardless of the reason for the visit. Eighty-seven percent stated they did so sometimes. The research identified that older physicians and those in single or two-partner practices were most likely to always measure the blood pressure.

In two separate British studies, patient records and progress notes were examined to determine the effectiveness of case-finding by general practitioners. Results indicated that physicians from various areas of London had different practices. Kurji and Haines (1984) reported that

47% of patients in North West London visiting their physicians over a ten year period had no blood pressure measurement recorded. In the inner and outer London areas, Michael (1984) reported that blood pressures were recorded during a five year period in 22% and 43% respectively of patient records.

In a five-year study of hypertension "screening" (one would question whether or not this was indeed case detection), in 34 community-based family practices in Southwestern Ontario, Canada, Bass et al., (1982) identified in the baseline data collection that no physician had an organized approach to high blood pressure detection or follow-up. One of the striking characteristics of this group of physicians was that they were, on the whole, recent graduates from a medical education program. In this experimental study, organized hypertension screening and management programs were instituted. At the end of five years, data revealed that the screening rate was 71%, most likely due to the increased awareness of the importance of the detection of high blood pressure.

Dunn et al., (1984) conducted a survey of Ontario, Canada, physicians to determine their stated practices in the diagnosis and management of high blood pressure. Data collected indicated that "depending on the patient's age, between 20% and 30% of the respondents thought that blood pressure should be measured at every visit" (p. 987). They identified that community physicians screened patients and scheduled follow-up more frequently than did those physicians with academic appointments. Another interesting datum revealed that older physicians screened patients more frequently and were more likely to

have specific methods for follow-up.

Birkett et al., (1986) evaluated the prevalence and control of high blood pressure in two major Canadian cities through a controlled descriptive survey. One major fact that became evident was that the family physicians can effectively detect high blood pressure through organization of their practices. Because the data revealed that only a small percentage of the population screened was unaware or not under treatment, the authors recommended that a more productive approach might be targeted at the physicians with regard to case-detection, treatment and compliance.

Most of the research to date focuses on the detection of high blood pressure in those persons 18 years and older. One study measuring the validity of mass blood pressure screening in children (Fixler & Laird, 1983) concluded that mass screening in children, as in adults, was not a valid approach due to the poor yield and potential for psychological damage through misclassification. They did recommend, however, that blood pressure measurement for case-detection should be a routine procedure in the pediatrician's office practice. In this manner anxiety can be easily alleviated and education can commence in a controlled setting.

From their review of the literature pertaining to cardiovascular health promotion activities in children, Downey et al., (1989) proposed that "medicine and education must work together to promote the most effective preventive child health care with physicians, health professionals, and educators collaborating on heart disease prevention beginning early in life" (p. 292). This can also be beneficial in

baseline data collection and detection of high-risk children. The physicians' role in and input into various health promotion programs is crucial.

The Manitoba Coalition recommendations regarding case-detection state that every adult patient's blood pressure should be regularly checked by their physician or delegate every 2 years. If there is an elevated measurement, a follow-up appointment should be scheduled.

Physicians and the Diagnosis of High Blood Pressure

Once patients have been identified as having a blood pressure above the recommended upper limits through either a screening program or case-detection, a careful diagnostic work-up must be conducted prior to a valid diagnosis by the physician. The components for this work-up include: 1) a regular pattern of patient visits to their physicians for a prescribed time period to confirm the sustained elevated blood pressure, 2) specific laboratory and x-ray examinations to reveal any organ damage and/or potential reversible secondary causes, and 3) the ruling out of secondary causes. It is important to remember that almost 95% of all high blood pressure cases are of unknown or mixed etiology, and therefore have no specific cure. Secondary causes, which include renal and adrenal diseases, exogenous estrogens as well as coarctation of the aorta, account for less than 5% of all cases of high blood pressure, but may be reversible or curable (Kaplan, 1986).

One significant concern surrounding the diagnosis of high blood pressure lies in its operational definition. The debate centers on the

level at which an individual should be classified as "hypertensive".

The usual definition of hypertension is "blood pressure equal to or greater than 140 mm Hg systolic and 90 mm Hg diastolic" (Herd & Weiss, 1984, p. 789). Pickering (1972) believed that one cannot truly identify a dividing line between the normotensive and hypertensive, based on a set of arbitrary numbers. Instead, it should be accepted that "the relationship between arterial pressure and mortality is quantitative; the higher the pressure, the worse the prognosis" (p. 570). Conversely, he admits that physicians tend to feel more secure in dealing with precise criteria, even if they are basically arbitrary. Because of this, there have been attempts over the years to define a set of criteria by which an individual's blood pressure can be measured and evaluated (Joint National Committee, 1988; Logan, (ed), 1984). These have taken into account such indicators as the average of several readings, the degrees of severity (based on the diastolic reading), and other factors such as age, sex, and gender.

Kaplan (1986) has organized several well known factors involved in high blood pressure in his conceptual definition. Essentially, he proposes that high blood pressure should be "that level of blood pressure at which the benefits (minus the risks and costs) of action exceed the risks and costs (minus the benefits) of inaction" (Kaplan, 1986, p. 2). This conceptual definition does have merit in that it encompasses several aspects related to the diagnosis of high blood pressure, rather than simply numerical measurement, and appears to be more pertinent to current health care activities related to blood pressure.

"The diagnosis of high blood pressure in adults is confirmed when the average of two or more diastolic measurements on at least two subsequent visits is 90 mm Hg or higher, or when the average of multiple systolic measurements on two or more subsequent visits is consistently greater than 140 mm Hg" (Joint National Committee, 1988, p. 1024).

The actual procedure of blood pressure measurement is also a concern in the diagnostic work-up. In itself, it is one of the most common and simplest of diagnostic procedures that the physician or delegate can perform in the diagnosis of high blood pressure. It is relatively painless to the patient, requires little time, and is usually inexpensive once the initial equipment is purchased. Unfortunately, it can be one of the most inaccurate of measurements, depending upon several factors (Pickering, 1989; Constant, 1987; Kaplan, 1986; Neufeld and Johnson, 1986; Hunt, Frolich, Moser, Rocella & Keighley, 1985; Logan, (ed), 1984; Maxwell, Schroth, Waks, Karam & Dornfield, 1982). These include the actual procedure utilized, the uncertainties in the identification and interpretation of the Korotkoff sounds, physician/ delegate bias toward expected values and/or bias and error in rounding off readings, actual misreadings of the gauge, and/or recording of the readings. Other factors related to the patient as well as the physician-patient relationship, the office environment, and time allowed for the office visit will further complicate this otherwise simple procedure. For example, this research has indicated that physicians and their delegates actually can trigger an elevated blood pressure measurement by merely performing the procedure. This has often been referred to as the "white coat syndrome" or "white coat hypertension"

(Pickering, 1984).

Equipment factors include the type of gauge utilized and its calibration, the appropriateness of cuff size and its placement, the stethoscope quality and placement, and the presence of environmental and artefact noise while the measurement is taken.

In order to minimize these factors while obtaining valid blood pressure measurements, recommendations outlining the type of equipment to be utilized and the appropriate protocol have been published (Joint National Committee, 1988; Hunt et al., 1985; Logan, (ed), 1984).

A significant concern in blood pressure measurement lies in the interpretation of and confusion regarding which Korotkoff phase in the auscultation would be considered the true diastolic reading, i.e. phase IV, (muffling of sounds) or phase V, (disappearance of sounds). In the literature this has been referred to as "diastolic anarchy" and the "diastolic dilemma" (Bucknell et al., 1986). Recent studies attempting to determine physicians' practices have supported the hypothesis that a discrepancy still exists (Bucknell et al., 1986; Hodes et al., 1975).

Hodes et al., (1975), in their survey of general practitioners in England and Wales, identified three different groups of practices in their physicians: 1) 31% responded that they utilized phase IV, 2) 42% utilized phase V, and 3) 27% utilized both in their evaluation and diagnosis of high blood pressure. An interesting datum revealed that the older physicians preferred phase V, while the younger group preferred phase IV.

Fulton et al., (1979) conducted a study in the Lothian, Edinburgh Health Board area, and included 3 questions from the Hodes et al. (1975)

study. When asked which phase was utilized in diastolic blood pressure measurement, 43% of general practitioners reported they used phase 4 (muffling), while 29% used phase 5 (disappearance). Twenty-eight percent indicated they used both phase 4 and 5 in the diagnosis of high blood pressure.

Bucknell et al., (1986) surveyed physicians and requested that they classify themselves into one of three categories. The 60% response rate revealed that 55.4% considered themselves general physicians, 29.9% were cardiologists, and 14.7% of physicians identified themselves as having an interest in cardiology. Approximately two-thirds of the general physicians (59.6%) reported that they used phase IV, cardiologists were evenly divided (46.5%) between IV and V, and those "with an interest in cardiology" (63.3%) used phase V.

There have been two national surveys conducted by the U.S. Department of Health, Education and Welfare, initially in 1977 and a follow-up one decade later in 1987. Both surveys addressed the physicians' reported knowledge, attitudes, and reported behaviour to the four major aspects in high blood pressure prevention and control in relation to the recommendations set forth by the Joint National Committee (JNC) in 1977 (I) and 1984 (III). The format of the 1987 survey was similar to its predecessor, however, the style, appearance, and format was streamlined significantly to decrease the required completion time, and perhaps increase the response rate.

In 1977, in the diagnosis of high blood pressure, approximately 73% of physicians did so in the recommended manner, as it relates to frequency of visits and blood pressure readings at each visit, as

compared to an increase to 81% in 1987.

Recommended diagnostic lab tests and procedures, in general, were utilized appropriately. "While the JNC recommendations regarding the content of a diagnostic work-up have not changed much since 1977, the 1987 respondents were more frequently conducting recommended exams and tests than was the case in 1977.

Research by Cloher and Whelton (1986) surveyed Maryland physicians to determine their attitudes towards patients with high blood pressure. Their results indicated that the "respondents recommended initial laboratory investigations more frequently" in overall comparisons, than that of the 1977 national survey.

In the research by Kurji and Haines (1984), on the detection and management of high blood pressure in north west London, the examination of 900 patient records by 18 physicians revealed that 74 patients were being treated. It was interesting to note that in contrast to the reported U.S. recommendations, 34 (46%) of these patients were started on antihypertensive medications after only one blood pressure reading.

Thomson et al., (1981) also reported from their study that almost all of the responding institutions surveyed were utilizing the recommended tests as part of the initial work-up. There was a reported tendency to the more frequent use of intravenous pyelography and urine vanilmandelic acid determinations, and urine microbiological cultures.

In summary, the diagnosis of high blood pressure constitutes a complex process, involving several patient visits to the physician and various laboratory tests for its assessment and evaluation prior to the actual initiation of treatment. The actual process of diagnosing a

patient as hypertensive (also known as "labelling effects") "can have adverse effects of many kinds, including increases in work absenteeism, decreases in marital satisfaction, impaired self-concept, increased symptoms of depression, and decreased self-perceived health status" (Inui, 1985, p. 166). Therefore, it is critical that the physician's diagnosis is appropriate.

Physicians and the Treatment of High Blood Pressure

After the diagnosis of high blood pressure has been established, the physician is then responsible for the initiation of an appropriate treatment regimen for its control, and for the long term management of the patient. The physician can initiate one of three major treatment approaches; the choice is usually dependent upon the age and severity of the blood pressure elevation and the presence/absence of other complications (Joint National Committee, 1988). These treatments include: 1) solely a non-drug therapy, 2) drug therapy, 3) a combination of both.

The non-drug therapies are largely patient-centered and are clearly outlined in the literature (The Canadian Consensus Conference on Non-Pharmacological Approaches to the Management of High Blood Pressure, 1989; Joint National Committee, 1984 & 1988). Behavioural lifestyle changes such as weight reduction, alcohol and sodium restriction, smoking cessation, stress management, modification of dietary fats, and the incorporation of a regular exercise program have all been shown to have positive effects on high blood pressure.

Depending on the severity of the high blood pressure, the physician may choose to initiate drug therapy prior to and/or adjunctive to the non-drug therapy. The reduction of a diastolic blood pressure greater than 104 mm Hg. with drugs clearly decreases cardiovascular mortality and morbidity; patients with a mild to moderate diastolic blood pressure elevation (90 - 104 mm Hg.) have also been shown to be protected from the complications of high blood pressure when treated early with antihypertensive drugs (Joint National Committee, 1988).

The most effective approach to the treatment of mild to moderate high blood pressure may be the combination of both aforementioned therapies. Initially, the physician may recommend his/her patients to incorporate one or more of the non-drug therapies. If the blood pressure has not improved over a specific period of time, s/he may then include one or more of the recommended drugs.

Whatever approach is utilized, physicians are strongly urged to individualize the recommended stepped-care therapy in treating their patients with high blood pressure (Joint National Committee, 1988; Schoenberger, 1987; Logan, (ed), 1984). Steps based on these national recommendations for the management have been outlined in the Algorithm prepared by the Manitoba Coalition for Healthy Blood Pressure (Table 1).

The literature reviewed has offered only a small number of physician surveys on the treatment of high blood pressure (U.S. Department of Health & Human Services, 1989; Bucknell et al., 1986; Cloher & Whelton, 1986; Logan & Haynes, 1986; Dunn et al., 1984; Thomson et al., 1981; Engelland et al., 1979; Fulton et al., 1979; U.S. Department of Health and Welfare, 1979). The data from different countries reveal that, in

the treatment of high blood pressure, there is an overall reported fidelity by physicians with the recommended guidelines.

Specific to the 1987 national U.S. survey (U.S. Department of Health & Human Services, 1989), were a number of significant findings relevant to the treatment of high blood pressure.

Physicians indicated that they frequently utilized non-drug therapy, both before and adjunctive to the drug therapy. The existing data indicated that this was a positive trend (for non-drug therapy) since 1977.

The practice of drug therapy had also changed over the past decade. The majority of physicians reported initiating drug therapy at lower mild diastolic blood pressures in contrast to their 1977 counterparts.

The single ingredient formulation of hydrochlorothiazide was reported to be the most frequently utilized diuretic as the initial drug of choice.

Physicians and the Follow-up of High Blood Pressure

After the diagnosis has been established, and an appropriate treatment plan has been prescribed, the patient and the physician then begin to participate in the long term management of the high blood pressure. The activities involved in this task can be categorized into one of three major sections: 1) related patient and physician education, 2) patient and physician compliance with all aspects of the treatment regimen, and 3) patient surveillance. Each of these sections will now be addressed.

1) Patient and Physician Education

The physician plays a critical role in the patient's education related to high blood pressure as s/he is the individual responsible for overall treatment plan. Patient education, essentially, "is the process of influencing a patient's behaviour, producing changes in knowledge, attitudes, and skills that are required to maintain or improve health. The process may begin with the imparting of factual information, but it also includes the interpretation and integration of the information in such a manner as to bring about attitudinal or behavioural changes which benefit the patient's health status" (National Task Force on Training Physicians in Patient Education, 1979, p. 3). The legal precedents emerging in the 1980's have, and will continue to place increased importance on the individual patient, in terms of the adequacy of information provided, the patient's level of understanding of that information, and the duty to inform patients of the risks of their refusal to undergo any form of treatment (McCaughrin, 1981). Physicians, therefore, need to be aware of the critical nature of their role in patient education, not merely in the ethical, moral, and professional sense, but also in the legal sense.

In the previous section, it was identified that when the blood pressure elevation is mild, the physician may choose to employ a non-drug therapy, namely changes in one or more of the patient's "risk" habits. Initially, the patient will usually seek help with this endeavour from his/her physician. The question then becomes "how

effective are physicians in their role of 'health educator'?"

The literature revealed several responses to this question. Spronk and Warmenhoven (1986) identified that many physicians have difficulty with explanation due to their use of medical jargon and/or difficult words. Their own vast knowledge in the area of the human body and its functioning often leaves them struggling with the knowledge of the majority of their patients - they are unable to transform very complex information into elementary concepts. Physicians also felt somewhat frustrated when they received no response from their patients indicating whether or not they indeed understood what had been taught to them. Valente et al., (1986) revealed that only a small percentage of physicians considered themselves as being "very successful" in helping their patients modify their risk behaviours. They identified the fact that physicians recognized their importance in patient education and felt that they could be more effective if they had supports such as referral information to allied health personnel, literature for distribution to patients, and physician education in various subjects such as behaviour modification.

Similar findings were found in research focusing on physicians ability to counsel patients about smoking cessation (Wells et al., 1984), and nutrition counselling (Kottke et al., 1984).

Other factors affecting patient education have been identified in the literature. Langer et al., (1989), in their physician survey on elevated serum cholesterol levels, found that although physicians felt they could counsel patients about their diets, barriers such as time, practice organization and reimbursement impeded their patient education.

In their study regarding patterns of counselling techniques utilized by family practice physicians, Mullen & Tabak (1989) concluded that "study findings suggest that family physician counselling varies with the health habit and that [physician] background and practice variables are not associated with counselling approach" (p. 694).

Gottlieb & Mullen (1987) examined practices and attitudes regarding stress management in a random sample of Texas primary care physicians. Data revealed that "family practice physicians were more likely than internists or general practitioners to believe in the importance of stress management for health and to believe that they possessed the skills to counsel patients about stress.

Pederson (1982), in her review of patients' compliance with physician advice to quit smoking, offers physicians guidelines to follow if they are to undertake patient education and counselling in smoking cessation.

Physicians have a responsibility to their patients to keep abreast of advances in medical technology and theory. One must consider how this is best accomplished.

Physicians can obtain their knowledge through a variety of sources. These include journal articles, research abstracts, personal communication and consultation with their colleagues, participation in research conferences, and/or continuing medical education programs, and from pharmaceutical representatives (Manning & Petit, 1987; Thompson, 1988). The latter may offer an ethical concern for the physician (Thompson, 1988).

Continuing medical education has numerous definitions. Cohen &

Davis (1986) view the most useful as being "any and all ways by which a physician maintains his/her education after the completion of formal undergraduate and postgraduate training" (p. 348). A number of studies have been published regarding the impact of continuing medical education activities on physician's opinions and practices related to high blood pressure prevention and control.

Inui et al., (1976) conducted tutorials for physicians (working at the General Medical Clinic of the John Hopkins Hospital) in order for them to improve their effectiveness as managers and educators of patients with essential high blood pressure. This quasiexperimental study utilized "before" and "after" observations made on control and experimental groups of physicians and their patients. The data reported that after a single teaching session, physicians who received tutoring devoted more time to patient teaching, and had more appropriate patient beliefs regarding various aspects of high blood pressure, than those physicians in the control group. It was also reported that "patients of tutored physicians were more compliant with drug regimens and had better control of blood pressure than patients of the untutored physicians" (p. 646).

Sibley et al., (1982) conducted a randomized control study on continuing medical education programs covering clinical problems confronted by the general practitioners. The researchers discovered that, despite statistically significant gains in their knowledge of how to evaluate and manage a variety of conditions, the significance of the overall quality of care provided to patients did not improve.

Evans et al., (1984) conducted a randomized controlled trial,

testing a prepared educational package on high blood pressure for physicians. One important finding from the study was the significant correlation between the physician's amount of knowledge about the subject and the years since graduation; essentially, the knowledge decreases with length of time in practice. This study did demonstrate an improvement in knowledge with short weekly educational sessions.

Linn, Lewis & Leake (1987) focused on the educational needs of a faculty. General internists reported that effective continuing medical education programs for their subjects consisted of small group learning sessions being presented by an expert.

Putnam and Curry (1985) investigated the effect of a patient care appraisal process on the physician's management of a patient's problems through an experimental design. "When the physicians were involved in defining the optimal criteria of care for the [specified] medical conditions, their performance was significantly better than when they were not involved" (p. 1028). They attributed the finding to the physician's commitment to the standards and the knowledge that their work would be reviewed by their peers.

However, in a follow-up study to determine whether an intensive one-day workshop involving physicians in the development of criteria for the management of high blood pressure, Putnam and Curry (1989) reported contrasting data. They reported that "they found no evidence that participation in the patient care appraisal process had a positive effect on the short-term control or reduction of blood pressure" (p. 809). As an explanation, they felt that the data revealed that continuing medical education programs need to be developed with multiple

intervention strategies for sustained behavioural change rather than the singular approach.

From the literature review, it appears that the need for and effectiveness of continuing medical education is dependent on several factors, including patient feedback (Adamson, Tschann, & Gullion, 1988), the utilization of principles of adult education (Cohen & Davis, 1986); and the strategies employed for its implementation (Putnam & Curry, 1989; Evans et al., 1984 & 1986; Inui et al., 1976).

2) Patient and Physician Compliance with All Aspects of Treatment

Compliance with prescribed medical regimen has been demonstrated as one of the major contributing factors in the success or failure of individuals to achieve satisfactory, long-term blood pressure control. The enigmatic nature of compliance, and the physician's and patient's role in its achievement has been studied extensively in the last twenty years (Maiman et al., 1988; Wilson et al., 1988; Bosa, Milanes, Slater, Garrigo & Rivera, 1987; Cameron & Best, 1987; Falvo, 1985; Green, 1987; Haynes et al., 1987; Leventhal & Cameron, 1987; Breckenridge, 1983; Cohen, 1978; Schmidt, 1977; Davis, 1971). It now is recognized that both physician activities, behaviours, and attitudes, as well as those of the patient are responsible for the attainment of compliance with the prescribed treatment.

For example, if the physician expects the patient to take the medications, then s/he must prescribe a medication regimen that is appropriate to the needs and lifestyle of the patient. If the physician

requests the patient to return at regular intervals for follow-up, s/he must ensure that the patient is not left in the waiting room for an inordinate length of time prior to being examined. As well, if the physician expects the patient to adopt a more healthy lifestyle, then s/he must offer the patient the necessary education and support in order to achieve this goal.

MacLeod et al., (1986) believe that the "primary care physicians, as the principal therapists for high blood pressure, carry a major portion of the responsibility for improving compliance" (p. 14).

Over the years, strategies for the accomplishment of this task have been suggested to physicians. These include patient and physician factors as well as organizational factors within the physician's office (Evans, 1985; Palmer, 1985; Bass, 1985; Haynes et al., 1979).

3) Surveillance

Once the patient is under treatment, periodic surveillance or monitoring is essential. This can be accomplished in the physician's office, or in the community (i.e. the worksite) (Charlesworth et al., 1984; Ruchlin et al., 1984; Logan et al., 1983 & 1980; Drazen et al., 1982).

Data concerning the effectiveness of worksite surveillance programs for high blood pressure prevention and control have been inconsistent in the literature reviewed (MacLean, 1985; Foote & Erfurt, 1983; Logan et al., 1983).

In summary, it is evident that the physician plays a critical role

in the detection, diagnosis, treatment, and follow-up of patients with high blood pressure. As head of the multidisciplinary team, s/he is responsible for the overall organization, implementation and evaluation of the various program designed to prevent and control this enigmatic disease process. Therefore, it would seem reasonable to obtain the physician's perspective on the various aspects of the comprehensive approach to high blood pressure.

CHAPTER 3

Procedures

Introduction

This descriptive study was conducted to determine what the practices and opinions of Manitoba physicians were toward the detection, diagnosis and long term management of high blood pressure. It also attempted to determine whether or not there were relationships between three specific independent variables: 1) the physician's specialty, 2) length of time in the practice of medicine, and 3) gender, and these practices and opinions. These relationships were identified in the literature and have been discussed in the previous chapter.

There have been several methods utilized and evaluated for collecting data on physician knowledge, attitudes, and behaviours. These have included physician interview (face-to-face and/or telephone), patient interview, chart audit, videotaped sessions, standardized patients, use of laboratory and ambulatory facilities, and self-administered questionnaires (Park et al., 1989; Flavin & Gavin, 1988; Hartley et al., 1987; Pendleton & Wakeford, 1987; Epstein & McNeill, 1986; Gerbert & Hargreaves, 1986; Dunn et al., 1986; Woodward, McConvey, Neufeld, Norman & Walsh, 1985; Engelland et al., 1979; Parkin et al., 1979). A posted, self-administered questionnaire was considered to be the most cost-effective and convenient instrument to be utilized in the

collection of these data from Manitoba physicians.

This chapter presents the methodology utilized in the development and implementation of this study.

Methodology

Subjects

The 1035 subjects of this study were members of the Manitoba Medical Association (MMA) and currently registered as practitioners in either family practice (general practice and certified family practice) and/or internal medicine. Because all physicians must be registered with the MMA, the study population was considered to be a true representation of Manitoba physicians. The total population within these two categories was invited to participate in the survey and the actual number of physicians representing each category was unknown at the time of questionnaire's mailing. Six physicians were excluded from the study because of their participation during the validation stages of the questionnaire.

In October, 1989, a computer-generated mailing list, in the form of self-adhesive labels, of these subjects was obtained with the authorization of the MMA's Public Health Issues Committee.

Variables

There were three independent variables considered: 1) the

physician's specialty, 2) the physician's length of time in the practice of medicine, and 3) the physician's gender.

The dependent variables were the physician's reported practices and opinions regarding the detection, diagnosis, treatment and follow-up measures related to high blood pressure.

Instrument

A forty-one item, closed-ended, self-administered, questionnaire was the instrument developed to collect the data: thirty-five questions dealt with physician practice behaviours and opinions and six questions focused on the physicians' demographics and practice characteristics (see Appendix B).

Instrument Development

The procedures involved in the development and implementation of the questionnaire for this study were based on those recommendations by Dillman (1978) in his total design method. Slight modifications to the design, as recommended by Hoddinott and Bass (1986) and S. N. Hoddinott (personal communication, October, 1989), also were incorporated. The Algorithm: Recommendations for Hypertension Management (1989), prepared and circulated by the Manitoba Coalition for Healthy Blood Pressure (see Table 1), served as the conceptual framework in the questionnaire development.

Questionnaire Construction

The questionnaire consisted of five major sections. Section I through section IV corresponded with the four major sections of the Algorithm and included: detection, diagnosis, treatment/management and follow-up of high blood pressure. Section V collected data concerning the physician's practice characteristics and demographics.

A pool of closed-ended questions concerning the four major sections under investigation were gleaned, initially, from similar studies (U.S. Department of Health & Human Services, 1989; Bucknell et al., 1986; Logan & Haynes, 1986; and U.S. Department of HEW, 1979). Appropriate questions were then selected, modified and/or developed to address specific areas within the Algorithm.

Questionnaire Validation

In order to determine face validity, the 66-item, draft questionnaire, printed on 8 1/2 x 11 inch, white bond paper, was circulated to a total of seven physicians, five of whom were members of the original diagnosis and management sub-committee of the Manitoba Coalition for Healthy Blood Pressure. The remaining two physicians were internists. A copy also was sent to the Chairperson of the Coalition for comment.

Initially, the physicians were contacted by phone and introduced to the nature and purpose of the survey. Each then was asked to review the

draft questionnaire for content and appropriateness. Comments and recommendations were encouraged. Upon verbal agreement, the physicians were sent the draft questionnaire, a covering letter reiterating the purpose of the survey and the review, and a self-addressed, stamped return envelope. All questionnaires were returned and reviewed.

In general, the physicians expressed positive comments regarding the comprehensiveness of the questionnaire. Suggestions were made regarding the initial instructions to participants, grammar, punctuation, question repetition and/or relevance, and the simplification of the more complex questions, as well as incorporation of case-studies. Holmes et al., (1989) have demonstrated that the use of case-studies can be an efficient approach in analyzing practice patterns and decision-making in hypertension management. Their results did indicate, however, that physicians tended to make the diagnosis of hypertension incrementally, over several patient visits, with no specific point when the diagnosis occurs. There also may be fewer tests ordered in actual clinical practice, due to restraints such as, finances, staffing, availability of, and/or accessibility to the necessary laboratory facilities. In order to adequately determine practice patterns, Holmes et al. (1989) recommend that a combination of actual practice-derived data as well as written judgement cases should be pursued. Two questions focusing on the drug therapy for patients with high blood pressure were designed as simple case-studies. Physicians were presented with a description of a 45 year old white male patient with a diastolic blood pressure of 110 mm Hg, asked to indicate 1) initial and 2) subsequent drug therapy of choice (if initial choice was not effective).

One major concern voiced by all physicians was the length of the questionnaire, and the amount of time that would be required in order to complete it. Since it has been reported in the literature that questionnaire length and format can affect the response rate (Mullner, Levy, Byre, and Mathews, 1982; Dillman, 1978; Gullen & Garrison, 1973) this concern could not be ignored. As a result, 25 questions identified by the physicians as unnecessary were deleted from the questionnaire. It was expected that completion of the questionnaire would take no longer than 20 minutes.

An outline of the questionnaire including the recommendation from the Algorithm (the left hand column), and the question source (the right hand column) is presented in Appendix C.

Questionnaire Production and Implementation

After the proposed research had received approval from the Ethics Committee (Faculty of Education), the Examining Committee, and upon completion of revisions, the questionnaire was prepared for printing. The final text was reduced by approximately 75 - 77%, thus enabling 2 pages to be printed on one 8 1/2 x 14 inch page. The questionnaires were printed professionally on 70 lb. offset paper with black ink, compiled, folded and saddle stitched. The title/back page was printed in a Roland tint (Siesta Tan), and the inside pages were printed in Alpaca Ivory. Green (1984) stated that "the right colors can promote attention, stimulate interest, create desire, and generate a favorable and positive action". To this end, a resource developer and graphics

artist were consulted prior to final color selection. The resulting booklet was 18 pages in length (including title and back page and measured 8 1/2 x 7 inches. These dimensions were slightly larger than those recommended by Dillman (1974) but in accordance with the modifications of Dillman's methodology made by Hoddinott and Bass (1986).

The title page contained a small graphic design, title, brief description of the survey, as well as a mailing address. On the top right hand corner appeared an identification number which was manually written in. Printed on the inside of the front cover were simple instructions and an example on how to complete the questions. The back cover left adequate space for the physicians to comment on the survey, their approach to high blood pressure, and/or the Manitoba Coalition (see Appendix B).

A covering letter was printed on official Manitoba Coalition letterhead and signed by Dr. Richard Stanwick (Chairperson, MMA Public Health Issues Committee) and this researcher. The letter was general in its salutation and did not include the physician's name. Dr. Stanwick's signature was xeroxed along with the letter. The researcher signed each letter with blue ink (see Appendix D).

Mailing envelopes were tan in color and labelled professionally with the return address. Since the Manitoba Coalition for Healthy Blood Pressure did not have an official mailing address at the time of the survey it was decided to use the Faculty of Education's address at the University of Manitoba to ensure credibility to the study. It was recommended by S. Hoddinott (personal communication, October, 1989) that

the use of a hospital's mailing address should be avoided.

Each outgoing envelope was then addressed with the self-adhesive labels supplied by the MMA, hand stamped with the required first-class postage, packed with a questionnaire, covering letter, and return (self-addressed, stamped) envelope. Care was taken to ensure that the contents were presentable and intact. Use of stamps and university address to effect an increased response rate were recommended by Maheux et al., (1989).

Seven to eight days post initial mailing, a reminder postcard was sent to those physicians who had not yet responded (see Appendix E). Dillman (1974) stated that the reminder postcard should be sent to all participants at a one week interval, since it offers thanks to those who have responded, and encourages those who have not. Due to financial constraints in this survey, reminder cards were only sent to those physicians who had not yet responded by the mailing date (Hoddinott and Bass, 1986), and a second questionnaire mailing was not conducted. A general thank you, in the form of an advertisement to all physicians, was published in the Manitoba Medical Newsletter at the end of the study.

Response Rate

In November, 1989, questionnaires were mailed out to 1035 Manitoba physicians registered and classified by the MMA as either family practice or internal medicine practitioners (there was no distinction made between the general and the certified family practice

practitioner). A total of 453 responses were received (in the form of returned questionnaires and/or phone calls) for an overall response rate of 43.8%. A breakdown of the time frame of response rate is presented in Table 2.

Table 2. Breakdown of the Time Frame for Response Rate

Total number of questionnaires mailed: 1035

Returned questionnaires/phone calls by the end of:

Week #1	278	(26.9%)
Week #2	58	(5.6%)
Week #3	48	(4.7%)
Week #4	21	(2.0%)
Weeks #5 + 6	20	(1.9%)
Weeks #7 + later	28	(2.7%)
Total number of responses:	453	(43.8%)

Of these, a total of 320 ($n = 320$) subjects, self-classified as general practitioners ($n = 190$), certified family practitioners ($n = 86$), and internists ($n = 44$) met the criteria for participation in the study.

There were 188 subjects deleted from the total study population. The reasons for these deletions are outlined in Table 3.

Table 3. Reasons for Deletion of Subjects from Study

	<u>n =</u>
Moved with no forwarding address	4
Self-classified or retired and/or not in practice at this time	31
Self-classified as physicians working in emergency departments/walk-in clinics or specialist consultation	8
Self-classified as working in other fields ("No" to question #1)	73
Classified as intern/resident	65
Spoiled questionnaire	1
Questionnaires received after deadline	6
Total	188

It was not anticipated that there would be interns/residents registered with the MMA. Because twenty-four had returned their questionnaires, a list was obtained from the University of Manitoba Faculty of Medicine and matched with the original mailing list. A total of sixty-five interns/residents ($n = 65$) were identified and deleted from the study population and the responses received also were deleted as they did not fit the criteria. Therefore, the final study population consisted of 847 subjects with responses received from 429 for an overall revised response rate of 50.6%. Similar results were obtained in another survey of physicians (and other health care professionals) conducted by the Heart and Stroke Foundation of Manitoba in 1987. The National U.S. Study on Physician's Knowledge, Attitudes & Reported

Behaviour (1989) reported a revised response rate of 59 percent.

Examination of Non-Responses

Subjects

Upon examination of the returned questionnaires, it became evident that some of the internal medicine practitioners were involved in research and not in direct patient care. As well, others were in specialty areas such as emergency, oncology, neurology, respirology, virology, pediatrics, gynecology and/consultation. In order to examine the characteristics of the non-responders, a decision was made to obtain another listing of the physicians indicating their specialty. This was not available, however, the MMA was able to prepare a computer-generated breakdown of the physicians into one of two categories: family practice and internal medicine. Lists of the respondents and non-respondents (by code number) in each category were then prepared. This enabled the researcher to at least clearly identify whether the non-responders were in family practice or internal medicine.

Another concern focused on those physicians who had retired and/or were not in active practice (due to illness and/or personal reasons) at this time. The MMA and the College of Physicians and Surgeons of Manitoba keep records of all paid members but do not differentiate members in either of the above mentioned categories. Thirty-one physicians responding indicated that they were retired and/or not in practice at this time and were removed from the total study population.

The actual number of physicians in these categories was unknown at the time of the survey and are therefore included in the study population as non-responders.

Through personal communication with a sample of "non-responding" physicians, a variety of reasons why questionnaires were not completed were offered. These included the length of questionnaire ("I had to do it in two separate sittings, and simply didn't have the time to complete it."), "no time", "busy clinics", "the practice does not have many patients with high blood pressure, therefore I didn't feel comfortable filling it out."

Questionnaire Characteristics

One of the concerns with the questionnaire was its length. Although it contained a reasonable number of questions, some of these were more complex and required more time and concentration. This concern was expressed by a small number of physicians.

Comments were shared by those physicians working in the rural areas regarding the nature of some of the questions. It was felt that the questionnaire was urban focused and not applicable to the needs of the rural population. Concern also was expressed that the questions were geared toward the needs of the young to middle-aged patients, without consideration of the older population with high blood pressure. This group may have special needs not identified nor addressed.

Several compliments were offered regarding the professional nature of the questionnaire, its organization, and its comprehensiveness.

Several physicians took the opportunity to utilize the back page in order to share their views on the high blood pressure in general, their specific practices, and some of their frustrations regarding the lack of facilities, time, organizations, and provincial support financially. These comments may have been reflective of the discussions between the MMA and the government regarding fee payment structures and arbitration during the time of the survey.

Questionnaire Processing

Upon return of the questionnaire, the code number and physician's name were deleted from the initial mailing list with a colored marker pen. The color indicated the week in which the response was received. Questionnaires were filed in numerical order and stored until the final deadline set for data entry. Six questionnaires were received after this deadline and were not included in the data entry.

The data from 320 eligible questionnaires received up to the set deadline were entered on an IBM compatible computer in ASCII text. The numerical code of each acted as the subject identification number.

Analysis of the data was completed through utilization of a SAS statistical package. A statistical consultant was employed for assistance in this segment of the study.

There were two major research questions formulated for this investigation. The first ("What are the reported practice patterns and opinions of Manitoba physicians towards the four major areas of high blood pressure prevention and control?") required that frequency

distributions for each of the dependent variables be generated.

In order to address the second question, ("What are the relationships between the physician's area of specialty, length of time in practice, and gender and their reported practice patterns and opinions?"), cross tabulations were conducted on the pertinent data. Chi-square tests of significance also were conducted.

CHAPTER 4

Analysis of Data

Introduction

The purpose of this descriptive study was to assess the current practice patterns and opinions of Manitoba physicians regarding various aspects of high blood pressure detection and management. Specific research questions formulated were:

- 1) What are the reported practice patterns and opinions of Manitoba physicians in four major areas: detection, diagnosis, treatment/management and follow-up.
- 2) What are the relationships between the physician's 1) specialty, 2) length of time in the practice of medicine, and 3) gender and their reported practices and opinions?

Utilizing the Algorithm prepared by the Coalition for Healthy Blood Pressure as the conceptual framework, a forty-one item, self-administered, closed-ended questionnaire was developed and distributed to 1035 physicians currently registered with the Manitoba Medical Association. A total of 453 physicians responded and the data from 320 eligible questionnaires were analyzed.

This chapter presents the data analyses of the characteristics of the subjects and the two research questions by means of frequency distributions, percentages, cross-tabulations and chi-square tests.

Characteristics of the Subjects

The data collected in questions 1, 36, 37, 38, 40, and 41 offered a quantitative description of the subjects and their practice characteristics.

The study population (n = 320) was composed of physicians self-classified as general practitioners, certified family practitioners, and internists. The physicians' practice demographics and characteristics are presented in Tables 4, 5, 6, 7, 8, and 9 and include: the physicians' classification, specialty, the length of time in medicine, the practice type, the practice location, and physician's gender.

Table 4. Number of Responses by Physician Classification

General Practitioners	190	(59.3%)
Certified Family Practice Physicians	86	(26.9%)
Internists	44	(13.8%)

There were several sub-specialties of internal medicine identified. These are outlined in Table 5. Three internists had completed the questionnaire but stated that they did not treat much hypertension due to the nature of their practice and patient population. Therefore, they were not included in the data analysis.

Table 5. Breakdown of Internists by Stated Specialty

Cardiology	3
Endocrinology	3
Gastroenterology	3
Geriatric Medicine	6
Hematology/Oncology	2
Nephrology	4
Tropical Medicine	1
Respiratory Medicine	1
Clinical Pharmacology	1
General Internal Medicine and/or unspecified	20

Table 6. Length of Time in the Practice of Medicine

Less than 3 years	35	(10.9%)
3 - 10 years	97	(30.3%)
11 - 20 years	76	(23.8%)
21 - 30 years	47	(14.7%)
Greater than 30 years	65	(20.3%)

Table 7. The Type of Principal Practice

Solo Physician Practice	68	(21.4%)
Two Physician Partnership	37	(11.6%)
Three - Ten Physician Group	144	(45.3%)
Over Ten Physician Group	49	(15.4%)
Other (subjects indicated they had university/hospital based practices)	20	(6.3%)

Table 8. Location of Practice by Population Size

Less than 1,000	14	(4.4%)
1,000 - 4,999	57	(17.8%)
5,000 - 24,999	44	(13.8%)
25,000 - 50,000	22	(6.9%)
Greater than 50,000	183	(57.2%)

Table 9. Physician Gender

Male	254	(79.6%)
Female	65	(20.4%)

In the data analysis, each of the four major steps in high blood pressure prevention and control were studied. These included: detection, diagnosis, treatment/management, and follow-up.

Data Analysis of Research Question 1

Research question 1 was: What are the reported practice patterns and opinions of Manitoba physicians toward the four major areas of high blood pressure prevention and control? In order to analyze the pertinent data, frequency distributions and percentages for each of the dependent variables were performed.

The recommendations stated in the analysis have been formulated by the Joint National Committee (1988) and the Canadian Hypertension Society (Logan, (ed), 1984). The abbreviated versions of these recommendations are outlined in the Algorithm by the Manitoba Coalition for Healthy Blood Pressure (1989), the conceptual framework for this study. The asterisks by specific criteria in the following tables indicate the recommended practice in this Algorithm.

I. The Detection of High Blood Pressure

Section I of the questionnaire focused on three major concepts

related to the detection of high blood pressure: the physician's practice regarding the frequency and regularity of blood pressure (BP) measurements (questions 2 & 3), the opinions toward and percentage of patients referred from screening programs (questions 4 & 5), and the equipment utilized in the actual measurement (questions 6 & 7).

Frequency and Regularity

The recommendations are that physicians should check the patient's blood pressure at each office visit, regardless of reason, and at regular 2 year intervals.

Question 2 offered 5 alternatives regarding frequency in the practice of high blood pressure detection. From a total of 318 responding physicians, 218 (68.6%) indicated that they would take the patient's blood pressure as part of a "new patient work-up" and/or periodic examination but not necessarily on every office contact. Only 94 (29.6%) selected the recommended response; that they would take a blood pressure measurement at every patient visit and/or at regular intervals. One physician (0.2%) stated the blood pressure would be taken only when the patient was symptomatic, and 5 (1.6%) responded to the "other" alternative, and specified that their practice would be dependent on the patient's age and medical history.

Table 10 presents the results of question 3 which focused on the recommendation for regular blood pressure checks. Three hundred and fifteen physicians responded.

Table 10. Recommendation for Regular Checks of Blood Pressure (N = 315)

Option	Frequency	%
I do not recommend regular checks	32	10.2
Every 6 months	40	12.7
Annually	168	53.3
* Every 2 years	17	5.4
Other	58	18.4

"Other" options offered by physicians indicated that regularity of blood pressure checks depended on the patient's age, sex, family history and current blood pressure.

In response to questions 4 & 5 regarding the importance of and referral from community-type screening programs, 73.2% of physicians felt that programs of this nature were moderately to very important; however, 85.3% indicated that under 25% of their patients with high blood pressure were referred to them from these programs; 12.5% of physicians stated that they did not know how many of their patients had been referred.

II. The Diagnosis/Work-up For High Blood Pressure

Section II focused on the practice patterns and opinions of Manitoba physicians toward the diagnostic work-up for mild or moderate high blood pressure. The recommended process includes a regular pattern of visits for blood pressure measurements, a medical history (to rule out secondary causes and/or target organ damage), physical examination, and certain laboratory tests.

The recommended practice states that the diagnosis should not be made based on one blood pressure measurement. Instead, the average of at least two measurements should be taken at each visit; the elevated measurement should be confirmed on at least 3 separate visits taken 2 months apart or less if the diastolic blood pressure is greater than 105 mm Hg.

Questions 8 & 9 addressed these recommendations and the results are presented in Tables 11 and 12.

Table 11. Procedure Used in the Diagnosis of Mild or Moderate High Blood Pressure (N = 320)

Procedure	Frequency	%
Single BP measurement	---	---
2 or more BP measurements during the same visit	13	4.1
Single BP measurement during each of 2 or more visits	43	13.4
2 or more BP measurements during each of 2 visits	101	31.6
* 2 or more BP measurements during each of 3 or more visits	163	50.9

Table 12. Utilization of Blood Pressure Measurements Taken at One Visit (N = 316)

BP Measurement	Frequency	%
No more than 1 BP measurement taken	16	5.1
The lowest reading (of 2 or more)	142	44.9
The last reading (of 2 or more)	68	21.5
An average of the readings	61	19.3
Other (stated that practice usually depended on the patient variables, i.e., age, sex, medical history, etc.)	29	9.2

Physicians also were asked to indicate the frequency of patient's visits recommended prior to their establishing a diagnosis of mild to moderate high blood pressure (question 13).

Recommended frequency of visits for mild - moderate high blood pressure is every 2 months apart or less if diastolic blood pressure is greater than 105 mm Hg.

The results of the physicians' reported practices regarding visit frequencies are presented in Tables 13a. and b.

Table 13a. Frequency of Visits While Establishing a Diagnosis of Mild High Blood Pressure (N = 318)

	Frequency	%
Weekly	47	14.8
Biweekly	96	30.2
Monthly	142	44.6
* Every 2 Months	28	8.8
Greater than 2 Months	5	1.6

Table 13b. Frequency of Visits While Establishing a Diagnosis of Moderate High Blood Pressure (N = 311)

	Frequency	%
Weekly	149	47.9
Biweekly	115	37.0
* Monthly	39	12.5
Every 2 Months	8	2.6
Greater than 2 Months	---	---

It is recommended that the 5th Korotkoff phase be utilized for the diastolic blood pressure measurement. A total of 241 (75.3%) physicians responded that they utilized the 5th Korotkoff phase, or when the sound disappeared. Seventy-five physicians (23.4%) utilized the 4th phase (when the sound muffled). Only four physicians (1.3%) indicated that they would utilize both phases in their diagnosis.

There are several steps recommended in the diagnostic work-up of a patient with suspected elevated blood pressure (mild to moderate DBP = 90 - 114 mm Hg) prior to the initiation of treatment. These include the medical history, an examination for possible secondary causes for the elevated blood pressure and target organ damage, and pertinent laboratory tests. Question 11 presented 25 specific recommended actions/tests which can be taken by the physicians. The results to these are presented in Table 14. The frequency indicates the number of physicians who would/would not do the action. The number of physicians responding to each action is also stated.

There were a number of diagnostic tests/assessments specified in the "other" category by the physicians. These included complete blood count (and sedimentation rate) (12), thyroid function studies (11), calcium (6), triglycerides (5), uric acid (5), checking the blood pressure in both arms (3), checking for femoral pulses (2), alcohol screening (1), renal ultrasound (1), vitamin B12 level (1), creatine phosphokinase, lactic dehydrogenase, and serum glutamic oxaloacetic transaminase (1), gamma-glutamyl transferase (1), liver function tests (1), and phosphate (1).

Table 14. Actions/Tests Done Most Frequently in the Diagnostic Work-Up of Patients with Suspected Elevated Blood Pressure (Mild to Moderate)

Action/Test	N	Frequency % "yes"		Frequency % "no"	
** Take a family history	319	301	94.4	18	5.6
** Take a patient history	318	311	97.8	7	2.2
** Examine the eye grounds	317	267	84.2	50	15.8
** Examine for peripheral edema	317	219	69.1	98	30.9
** Examine for carotid bruit	317	209	65.9	108	34.1
** Examine the heart	317	310	97.8	7	2.2
** Examine abdomen for flank bruit or mass	317	220	69.4	97	30.6
** Do a sitting BP	317	286	90.2	31	9.8
** Do a supine BP	317	176	55.5	141	44.5
** Do a standing BP	317	100	31.5	217	68.5
** Take height, weight	317	281	88.6	36	11.4
Order a urine culture	317	64	20.2	253	79.8
* Order a urinalysis	317	297	93.7	20	6.3
* Order a serum creatinine	317	257	81.1	60	18.9
Order a creatinine clearance	317	32	10.1	285	89.9
Order a serum urea	317	247	77.9	70	22.1
* Order serum electrolytes	317	244	77.0	73	23.0
Order serum folic acid	317	6	1.9	311	98.1
* Order chest x-ray	317	212	66.9	105	33.1
* Order electrocardiogram (EKG)	317	265	83.6	52	16.4
Order intravenous pyelography (IVP)	317	30	9.5	287	90.5
Order plasma renin assay	317	2	0.6	315	99.4
Order urine vanilmandelic acid/ catecholamines (VMA)	317	16	5.0	301	95.0
* Order serum cholesterol	317	244	77.0	73	23.0
* Order serum glucose	317	246	77.6	71	22.4
* Algorithm (1989) recommendations					
** Joint National Council (1988) recommendations					

III. The Treatment/Management for Mild to Moderate High Blood Pressure

Section III collected data regarding the physician's practice patterns and opinions on the treatment for mild to moderate high blood pressure. The goal blood pressure measurement is 140/90 or less. The recommendations for treatment include: 1) solely non-drug therapy, 2) drug therapy, and/or 3) a combination of both.

Non-drug therapy includes the behavioural lifestyle changes such as weight, alcohol and sodium reduction (if indicated), exercise, stress reduction and relaxation. Physicians are encouraged to incorporate one activity at a time. Patient education in these lifestyle changes may be required.

In order to assist patients with their non-drug therapies physicians were asked (question 16) to indicate all the community resources/agencies they utilized for referral (see Table 15).

Other community resources specified by physicians included: Alcoholics Anonymous (n = 2), Weight Watchers (n = 2), Emotions Anonymous (n = 1), and counselling (n = 1).

Physicians also were asked to indicate how referrals were made to these agencies (question 17). From the 222 eligible physicians (98 stated they did not refer), 66.7% of physicians stated that the nursing/ clerical staff made the appointment with the agency, 25.7% stated they recommended the patients to the agency, but did not make the actual appointment, and 7.7% did not recommend any specific agency but left it to the patient's discretion.

Table 15. Physicians' Choice of Community Referral Agencies for Non-Drug Therapy

Community Referral Agency	N	Physician Practice (Response = Yes)	
		Frequency	%
Do not refer	313	98	(31.3)
Nutritionist services	314	186	(59.2)
Reh Fit/Fitness Program	314	86	(27.4)
Health Spa	314	13	(4.1)
Lung Association	314	28	(8.9)
Heart Foundation	314	16	(5.1)
Diabetes Foundation	314	58	(18.5)
Kidney Foundation	314	6	(1.9)

Question 14 requested that physicians indicate when they "prescribed specific non-drug therapies". The alternatives included: 1) only before drug therapy, 2) both before and adjunctive to drug therapy, 3) only after drug therapy initiated, and 4) non-drug therapy not recommended (see Table 16).

Other non-drug therapies specified by physicians included: reduction of caffeine-intake (4), stress reduction (3), calcium therapy (1), reduction of sugar intake (1), marital counselling (1), family screening (1), and enrolling in hypertension clinic (1). Physicians stated that these should be initiated both before and adjunctive to drug therapy.

In question 15, physicians were given three categories of blood pressure elevation: 90 - 94 mm Hg, 95 - 99 mm Hg, and 100 - 104 mm Hg.

Table 16. Usage of Non-Drug/Drug Therapies

	<u>Only Before</u> Drug Therapy	<u>Both Before &</u> <u>Adjunctive</u> <u>to Drug</u> <u>Therapy</u>	<u>Only After</u> Drug Therapy Initiated	Do Not Recommend
	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)
Weight reduction if overweight (N = 317)	31 (9.8)	285 (89.6)	1 (0.3)	1 0.3
Reduced sodium consumption (N = 315)	39 (12.4)	259 (82.2)	5 (1.6)	12 (3.8)
Relaxation, meditation and/ or biofeedback (N = 280)	32 (11.4)	117 (41.8)	2 (0.7)	129 (46.1)
Regular exercise (N = 313)	27 (8.6)	271 (86.6)	5 (1.6)	10 (3.2)
Reduced alcohol consumption (N = 309)	34 (11.0)	245 (79.3)	6 (1.9)	24 (7.8)
Dietary potassium supplementation (N = 267)	5 (1.9)	25 (9.3)	133 (49.8)	104 (39.0)
Modified fat diet (N = 280)	24 (8.6)	194 (69.3)	8 (2.8)	54 (19.3)
Smoking cessation (N = 314)	38 (12.1)	271 (86.3)	1 (0.3)	4 (1.3)

For each range they were asked to indicate how many months they would try to reach the desired blood pressure goal with solely non-drug therapy (see Table 17).

Table 17. Number of Months with Solely Non-Drug Therapy

WAIT:	DBP - 90 - 94 mm Hg		DBP - 95 - 99 mm Hg		DBP - 100 - 104 mm Hg	
	Frequency (%) (N = 308)		Frequency (%) (N = 307)		Frequency (%) (N = 306)	
Less than 3 mos:	46	(14.9)	117	(38.1)	260	(85.0)
4 - 6 mos:	110	(35.7)	122	(39.7)	40	(13)
6 - 12 mos:	74	(24.0)	57	(18.6)	6	(2.0)
12 + mos:	78	(25.3)	11	(3.6)	---	----

When drug therapy is indicated for blood pressure control the recommendations involve a four-step approach. Initially, diuretics (step 1), or beta-adrenergic blockers (step 2) may be employed. Step 2A incorporates additional options, such as other adrenergic inhibitors (i.e. methyldopa or clonidine). Step 3 recommends the addition of a vasodilator. Step 4 involves the addition of other alternatives such as a calcium antagonist. The Algorithm states that step 4 may evolve as step 1 or 2 in suitable cases. The major recommendation is that the physician individualizes the treatment to meet the patient's needs. Questions 19 and 20 presented physicians with a hypothetical patient situation and requested the physician to indicate their initial drug therapy of choice (19), followed by their second choice if the diastolic blood pressure control was not achieved (20). Physicians were allowed to select as many of the specified drugs as necessary (see Table 18).

Table 18. Physician's Drug Therapy of Choice (N = 317)

Drug Groups	Initial Drug(s) of Choice (%)	Subsequent Drug(s) of Choice (%)
Loop diuretics (Furosemide, etc.)	11 (3.5)	14 (4.4)
Potassium-sparing diuretics (Spironolactone, etc.)	27 (8.5)	30 (9.5)
Thiazide or related diuretics (Hydrochlorothiazide, etc.)	128 (40.4)	163 (51.4)
Beta-adrenergic blockers (Atenolol, Propranolol, etc.)	157 (49.5)	154 (48.6)
Alpha-1 adrenergic blockers (Prazosin, etc.)	11 (3.5)	18 (5.7)
Other adrenergic inhibitors (Methyldopa, Clonidine, etc.)	8 (2.5)	23 (7.3)
Calcium slow-channel blockers (Nifedipine, Verapamil, etc.)	56 (17.7)	107 (33.8)
Angiotensin-converting enzyme inhibitors (Captopril, etc.)	101 (31.9)	159 (50.2)
Other vasodilators (Hydralazine, Minoxidil, etc.)	9 (2.8)	28 (8.8)

A related question (21) to drug choice asked physicians: "Based on your clinical experience, to what extent do the side effects of the following drugs make a difference in the pharmacological management of high blood pressure"? This question was included to determine whether or not the side effects of specific drugs would be taken into consideration by physicians (see Table 19) in their treatment of high blood pressure.

Table 19. Impact of Drug Side Effects on Physician Usage

Side Effects:					
	Rarely a problem	A problem but I use the drug whenever needed	A problem but I <u>sometimes</u> use the drug	A problem and I do <u>not</u> use the drug	I do not use the drug for other reason
RESERPINE (N = 303)	9 (3.0%)	5 (1.7%)	16 (5.3%)	151 (49.8%)	122 (40.3%)
HYDROCHLORO- THIAZIDE (N = 310)	95 (30.6%)	160 (51.6%)	50 (16.1%)	2 (0.6%)	3 (1.0%)
HYDRALAZINE (N = 299)	36 (12.0%)	75 (25.1%)	114 (38.1%)	28 (9.4%)	46 (15.4%)
METHYLDOPA (N = 306)	44 (14.4%)	74 (24.2%)	120 (39.2%)	42 (13.7%)	26 (8.5%)
PRAZOSIN (N = 286)	36 (12.6%)	54 (18.9%)	71 (24.8%)	27 (9.4%)	98 (34.4%)
NIFEDIPINE (N = 306)	96 (31.4%)	150 (49.0%)	43 (14.1%)	2 (0.7%)	15 (4.9%)
PROPRANOLOL (N = 307)	43 (14.0%)	154 (50.2%)	85 (27.7%)	12 (3.9%)	13 (4.2%)
CLONIDINE (N = 284)	19 (6.7%)	40 (14.1%)	59 (20.8%)	52 (18.3%)	114 (40.1%)
CAPTOPRIL (N = 308)	160 (51.9%)	117 (38.0%)	22 (7.1%)	3 (1.0%)	6 (1.9%)
ATENOLOL (N = 300)	108 (36.0%)	150 (50.0%)	29 (9.7%)	5 (1.7%)	8 (2.7%)
ENALAPRIL (N = 300)	150 (50.0%)	95 (31.7%)	19 (6.3%)	3 (1.0%)	33 (11.0%)

A number of physicians specified drugs which were not included. Overall, they considered these drugs to be rarely a problem or, if problematic, they utilized them only when necessary. These drugs

included diltiazem (n = 4), verapamil (n = 4), minoxidil (n = 2), diazide (n = 2), timolol (n = 1), lopressor (n = 1), metoprolol (n = 1), pinodolol (n = 1), acebutalol (n = 1), metalazone (n = 1), and terazosin (n = 1).

IV. Follow-up of Mild to Moderate High Blood Pressure

Data analysis focused on 3 areas of follow-up for high blood pressure: 1) patient surveillance, 2) patient compliance, 3) patient and physician education.

1) Patient Surveillance

The recommendations to physicians regarding follow-up state that patients should be seen 1) every month until their blood pressure is controlled, then 2) every 3 - 4 months once the blood pressure is stabilized.

Table 20 presents the physician response to questions 23 and 24, which focused on the physicians' reported practice patterns on the frequency of return visits for patients, 1) while their blood pressure was being brought under control, and 2) once their blood pressure was stabilized.

When asked whether or not physicians would refer their patients with high blood pressure to a worksite or community surveillance program for their regular follow-up, 311 physicians responded. Of these, 31.5% of physicians responded affirmatively, whereas 67.8% indicated that they

would not refer. Home blood pressure monitoring is also considered a viable alternative for patient surveillance. Tables 21 and 22 present results focused on physicians' opinions and practice patterns re: home blood pressure monitoring and adjustment of drug prescription based on these results.

Table 20. Physician Practice Patterns Re: Frequency of Follow-up Visits (%)

Mild		Moderate	
(1)	(2)	(1)	(2)
BP being brought under control (N = 318)	Stabilized BP (N = 318)	BP being brought under control (N = 317)	Stabilized BP (N = 317)
Weekly	13 (4.1)	---	---
Twice a month	82 (25.8)	2 (0.6)	159 (50.2)
Monthly	188 (59.1*)	30 (9.4)	63 (19.9*)
Quarterly	31 (9.7)	178 (56.0*)	4 (1.3)
Semi-annually	4 (1.3)	90 (30.8)	1 (0.3)
Yearly	---	10 (3.1)	---

Table 21. Frequency of Recommendation for Home Blood Pressure Monitoring (N = 319)

Category	Physician Practice (%)	
Rarely/Never	146	(45.8)
Occasionally	132	(41.4)
Frequently	35	(11.0)
Almost/Almost Always	6	(1.9)

Table 22. Physician Adjustment of Drug Therapy Based on Home Blood Pressure Monitoring (N = 209)

<u>Category</u>	<u>Physician Practice (%)</u>
Rarely/Never	60 (28.7)
Some of the Time	110 (52.6)
Most of the Time	34 (16.3)
All/Almost All of the Time	5 (2.4)

2) Patient Compliance

Physicians were asked to identify how frequently they would employ six recommended strategies to encourage patient compliance with their antihypertensive drug therapy (see Table 23).

Question 31 addressed the issue of when physicians usually tell their patients that they have a concern with their blood pressure (see Table 24).

Another related aspect in long term follow-up of patients with high blood pressure involves patient and physician continuing education needs.

In general, when asked about different materials required for patient education, physicians indicated that all forms of audio-visual aids would be useful to a greater or lesser degree (see Table 25).

Table 23. Physician Use of Strategies for Patient Compliance with Drug Therapy (%)

	Often	Occasionally	Hardly Ever
Use less complicated drug regimens (N = 309)	81.2	17.8	1.0
Educate patients or give literature (N = 309)	64.1	30.1	5.8
Tailor patient's regimen to daily habits (N = 305)	61.0	32.5	6.6
Alarm patient about severity of condition (N = 302)	20.5	51.0	28.5
See patient more often (N = 306)	31.7	52.0	16.3
Involve patient's significant other in treatment (N = 297)	29.6	46.8	23.2

Table 24. Frequency Distribution re: Physician Informing Patient about Blood Pressure Concerns (N = 313)

DBP	Physician's Practice (%)	
85 - 89 mm Hg	7	(2.2)
90 - 94 mm Hg	104	(33.2)
95 - 99 mm Hg	116	(37.1)
100 - 104 mm Hg	66	(21.1)
105 - 114 mm Hg	15	(4.8)
115 mm Hg or higher	4	(1.3)
I do not tell them	1	(0.3)

Table 25. Physician Opinions re: Need for Selected Audio Visual Aids in Patient Education (Reported in percentages)

	Slide Programs	Audio/video tapes	Printed Materials	Flip charts/posters for physicians office	None	3 or More
Educational Materials On: Basic information re: High blood pressure (N = 309)	2.3	11.0	47.9	23.3	3.2	12.3
Importance of taking drugs (N = 306)	1.6	10.5	52.6	14.7	11.1	9.5
Coping with drug side effects (N = 295)	1.7	9.2	57.6	9.2	14.2	8.1
Stress management (N = 300)	1.7	22.0	45.7	8.7	10.0	12.0
How to monitor blood pressure at home (N = 284)	2.1	18.7	37.3	6.0	27.8	8.1
Importance of diet in high blood pressure (N = 305)	2.3	10.2	60.7	12.5	3.6	10.8

Physicians also were requested (question 35) to indicate which recommended continuing medical education activities would be useful/not useful to them (see Table 26).

Table 26. Physician Responses to Usefulness of Continuing Medical Education/Patient Management Aids (Reported in percentages)

	Useful	Not Useful
Expert advice available by telephone (N = 301)	56.5	43.5
Computer assistance in diagnosis and treatment (N = 292)	28.8	71.2
A newsletter on high blood pressure (N = 301)	70.1	29.9
Algorithm - Recommendations for hypertension management distributed by the Manitoba Coalition for Healthy Blood Pressure (N = 296)	77.4	22.6
Continuing medical education programs to update physicians in the detection and diagnosis of high blood pressure (N = 307)	88.9	11.1
Treatment protocols for use by non-physician personnel under your supervision (N = 299)	30.8	69.2
Materials to train your office personnel in such tasks as data collection, patient education and monitoring (N = 293)	47.8	52.2
Computer assistance in patient follow-up (N = 296)	50.3	49.7
Postcards for patient reminders re: appointment (N = 298)	48.7	51.3
Reference lists for resources/community programs which foster lifestyle modification/change (N = 300)	76.7	23.3
Standardized patient record which will provide comparison for blood pressure readings over time (N = 299)	78.3	21.7

Summary of Research Question 1

Frequency distributions and percentages of the dependent variables were used in the data analysis of research question 1. These have revealed that, in general, Manitoba physicians are following the recommended practices related to the four major aspects of high blood pressure prevention and control.

The significant deviations from the recommendations as stated in the conceptual framework (the Algorithm) and the reported practices indicate that physicians prefer to see their patients more frequently during the detection and diagnostic phase.

During the treatment phase, reported practices indicated that physicians most frequently utilized a combination of the recommended non-drug and drug therapies. The majority of physicians reported that they did consider the side effects of drugs in their drug regimen. Physicians also reported their utilization of identified community referral agencies, as well as taking an active part in linking their patients up with these resources.

In the follow-up phase, physicians reported that they would see their patients at regular intervals, and would incorporate recommended compliance-enhancing strategies whenever possible.

Research Question 2

The second research question investigated whether or not significant relationships existed between three independent physician-related

variables: 1) area of specialty (physician type), 2) length of time in the practice of medicine (practice length), and 3) gender and their specific reported practice patterns and opinions toward the four major areas of high blood pressure prevention and control. It was decided that since there were only 44 internists from a variety of sub-specialties, that this group would not be included in this section of the analysis. Therefore, the general practitioners (GP) (n = 190) and family practice practitioners (FP) (n = 86) were selected as the two groups for comparison. In order to determine these relationships, cross-tabulations and chi-square tests of significance were performed on these data.

Characteristics of the Sub-Sample

As an initial step, cross-tabulations and chi-square tests of significance were performed on the physician's independent variables to be examined: 1) area of specialty, 2) length of time in the practice of medicine, 3) gender. Only one significant relationship relevant to the specified variables was identified.

There was a statistically significant relationship between the length of time in the practice of medicine and the physician's gender ($\chi^2 = 29.443$, $p = < .0000004$). The majority of female physicians in the sub-sample were in their first ten years of practice (70.8%) as compared to their male counterparts who were more evenly distributed over a 30 year period (0 - 10 years (33.9%), 11 - 30 years (42.52%)).

I. The Detection of High Blood Pressure

There were no significant relationships identified between the physician's area of specialty, length of time in medicine, and gender and those variables involved with the detection of high blood pressure.

II. The Diagnosis/Work-Up for High Blood Pressure

1) Area of Specialty

There was a statistically significant difference in the percentage of family practitioners (FP) who reported utilizing the fifth Korotkoff sound in the determination of the diastolic blood pressure measurement (85.9%) as compared to the general practitioners (GP) (73.9%) ($\chi^2 = 4.15$, $p < .05$).

There also were three statistically significant differences in tests involved in the diagnostic work-up (and ruling out of secondary causes) of patients. These are outlined in Table 27.

Table 27. Differences in the Diagnostic Work-Up Between GPs and FPs

Variable	Physician Type		Significance
	GP	FP	
Examine for Peripheral edema	73.2%	52.3%	$\chi^2 = 10.64$ $p < .01$
Creatinine Clearance	13.7%	2.3%	$\chi^2 = 7.18$ $p < .01$
Chest X-ray	69.5%	55.8%	$\chi^2 = 4.29$ $p < .05$

2) Length of Time in the Practice of Medicine

There were several statistically significant relationships between the length of time the physicians have been in the practice of medicine and their reported practice patterns and opinions regarding the diagnostic work-up of patients with elevated blood pressure.

When asked to describe the best procedure physicians utilized in the diagnosis of mild or moderate high blood pressure, physicians in their first 10 years of practice (63.6%) indicated the recommended practice; that they would take 2 or more blood pressure measurements during each of three or more visits, as compared to 48.0% of physicians practising medicine from 11 - 30 years. Of those physicians practising medicine greater than 30 years, only 30.8% selected this practice. Instead, this latter group indicated they did two or more blood pressure measurements during each of two visits (43.1%), compared to 23.5% (0 - 10 years) and 34.1% in the 11 - 30 year group. Of those physicians indicating they used only 2 or more blood pressure measurements during the same visit or a single blood pressure measurement during each of two or more visits, 12.9% were in the first 10 years of medicine, 17.9% for 11 - 30 years, and 26.2%, greater than 30 years. These relationships were statistically significant ($\chi^2 = 19.705$ $p < .01$).

Table 28 presents data revealing the physician's practices with regard to the blood pressure measurements utilized in the diagnosis of high blood pressure. The options included the lowest or last reading or an average of the readings.

There was a significant difference between the length of time the physicians have been in the practice of medicine and their practice patterns ($\chi^2 = 11.12$ $p < .05$).

Table 28. Practice Length and Practices Regarding Blood Pressure Measurement Utilized in the Diagnosis of High Blood Pressure

BP Measurement	0 - 10 years	11 - 30 years	30+ years
Lowest	61.2%	51.0%	35.3%
Last	19.8%	24.0%	39.2%
Average	19.0%	25.0%	25.5%

There also were significant differences in reported practice patterns and practice length in the diagnostic work-up of patients with elevated high blood pressure (Table 29).

Table 29. Differences in Diagnostic Work-Up of Patients Based on Length of Time in the Practice of Medicine

Variable	Length of Time in Medicine			Significance
	0 - 10	11 - 30	30+	
Family History	96.2%	96.7%	85.9%	$\chi^2 = 10.695$ $p < .01$
Standing BP	22.7%	34.1%	45.2%	$\chi^2 = 10.46$ $p < .01$
Weight/Height	82.6%	92.7%	93.6%	$\chi^2 = 8.30$ $p < .02$
Serum Electrolytes	81.1%	81.3%	59.7%	$\chi^2 = 13.007$ $p < .01$
Chest X-ray	56.8%	72.4%	77.4%	$\chi^2 = 10.808$ $p < .01$

3) Gender

There were only two significant differences between male and female physicians in their diagnostic work-up of patients with elevated blood pressure.

Female physicians take a sitting blood pressure more often (98.5%) than male physicians (88.1%), a difference which was statistically significant ($\chi^2 = 5.206$ $p < .05$).

There also was a statistically significant difference in the percentage of male physicians who reported ordering a chest x-ray (69.7%), compared to female physicians (55.4%) ($\chi^2 = 4.159$ $p < .05$).

III. The Treatment/Management for High Blood Pressure

1) Area of Specialty

There were two major statistically significant relationships between the physician's area of specialty and their reported practices in the treatment of high blood pressure.

When asked for how many months physicians try to reach the desired blood pressure goal with solely non-drug therapy (when the pre-treatment DBP is 95 - 99 mm Hg), a statistically significant difference existed in the reported practices of GPs and FPs (see Table 30).

Table 30. Physician Type and Length of Time for Solely Non-Drug Therapy
 (DBP 95 - 99 mm Hg) ($\chi^2 = 8.364$ $p < .02$)

Variable	GP	FP
< 3 mos	45.7%	26.8%
4 - 6 mos	37.6%	48.8%
6 - 12 mos	16.8%	24.4%

There also was a statistically significant difference in the percentage of FPs who reported utilizing the beta-adrenergic blockers as the initial drug of choice (63.5%), as compared to the GPs (45.7%), ($\chi^2 = 6.716$ $p < .01$).

2) Length of Time in the Practice of Medicine

There were a number of statistically significant relationships between the practice length and the selection of non-drug therapies (Table 31), the length of time that physicians would maintain their patients on solely non-drug therapies (Table 32), and the classifications of drugs chosen as the initial therapy of choice (Table 33).

Table 31. Practice Length and Reported Practices for Selection of Non-Drug Therapies Both Before and Adjunctive to Drug Therapy

Non-Drug Therapy	Practice Length (yrs)			Significance
	0 - 10	11 - 30	30+	
Weight Reduction	96.2%	88.6%	80.6%	$\chi^2 = 12.46$ $p < .01$
Sodium Reduction	92.2%	87.6%	72.4%	$\chi^2 = 11.95$ $p < .01$
Modified Fat Diet	85.0%	62.9%	82.5%	$\chi^2 = 6.97$ $p < .05$
Smoking Cessation	95.3%	89.3%	67.8%	$\chi^2 = 28.94$ $p < .001$

Table 32a. Practice Length and Length of Time for Solely Non-Drug Therapy for DBP 90 - 94 mm Hg ($\chi^2 = 12.267$, $p < .01$)

	< 6 months	> 6 months
0 - 10 yrs	40.8%	59.2%
11 - 30 yrs	52.9%	47.1%
30+ yrs	67.8%	32.2%

Table 32b. Practice Length and Length of Time for Solely Non-Drug Therapy for DBP 95 - 99 mm Hg ($\chi^2 = 26.33$, $p < .001$)

	< 3 months	4 - 6 months	6 - 12 months
0 - 10 yrs	25.8%	49.2%	25.0%
11 - 30 yrs	52.9%	43.0%	14.9%
30+ yrs	67.8%	20.8%	15.5%

Table 33. Practice Length and Initial Drug of Choice for Treatment of High Blood Pressure

Drug Classification	Practice Length (yrs)			Significance
	0 - 10	11 - 30	30+	
Loop Diuretics	2.3%	0.8%	10.9%	$\chi^2 = 13.757$ $p < .01$
Potassium-Sparing Diuretics	3.1%	10.7%	15.6%	$\chi^2 = 9.885$ $p < .01$
Thiazides/Related Diuretics	36.6%	36.9%	54.7%	$\chi^2 = 6.82$ $p < .05$

3) Gender

In the use of non-drug therapies, both before and adjunctive to drug therapy, female physicians will recommend relaxation/biofeedback therapy more frequently (64.9%) than male physicians (42.0%), a difference which was statistically significant ($\chi^2 = 8.298$, $p < .01$).

Female physicians also will recommend a modified fat diet more frequently (89.8%), as compared to their male counterparts (75.3%) ($\chi^2 = 4.049$, $p < .05$).

There was a statistically significant difference in the length of time female and male physicians would maintain their patients on non-drug therapy (see Table 34).

Table 34. Physician Gender and Length of Time Patients Maintained on Solely Non-Drug Therapy (DBP 95 - 99 mm Hg) ($\chi^2 = 9.004$, $p < .02$)

Length of Time	Male Physician	Female Physician
< 3 mos	43.1%	25.4%
4 - 6 mos	40.5%	44.4%
6 - 12 mos	16.4%	30.2%

IV. Follow-Up of Patients with High Blood Pressure

1) Area of Specialty

In response to the recommended frequency of return office visits for patients 1) while their blood pressure is being brought under control, and 2) once their blood pressure was stabilized, there were statistically significant differences between the reported practices of GPs and FPs as presented in Tables 35a, 35b, 36a and 36b.

Table 35a. Frequency of Return Office Visits for Mild BP (Being Brought Under Control) and Area of Specialty ($\chi^2 = 6.175$, $p < .05$)

Frequency	GP	FP
< monthly	33.3%	22.4%
monthly	53.4%	69.4%
> monthly	13.2%	8.2%

Table 35b. Frequency of Return Office Visits for Moderate BP (Being Brought Under Control) and Area of Specialty ($\chi^2 = 6.512$, $p < .05$)

Frequency	GP	FP
weekly	33.2%	18.8%
twice monthly	47.8%	62.4%
monthly	19.0%	18.8%

Table 36a. Frequency of Return Office Visits for Stabilized Mild High Blood Pressure and Physician Type ($\chi^2 = 9.409$, $p < .01$)

Frequency	GP	FP
once/twice monthly	14.8%	2.3%
quarterly	55.2%	64.7%
semi-annually	30.0%	32.9%

Table 36b. Frequency of Return Office Visits for Stabilized Moderate High Blood Pressure and Physician Type ($\chi^2 = 6.807$, $p < .01$)

Frequency	GP	FP
monthly	41.1%	23.4%
quarterly	58.9%	76.6%

In the investigation of compliance-enhancing strategies, family practice physicians utilized a less complicated drug regime more frequently (90.5%) as compared to the general practitioners (78.8%), a difference which was statistically significant ($\chi^2 = 4.65$, $p < .05$).

General practitioners also reported that they often alarmed their patients regarding their blood pressure measurement (26.0%), as compared to family practice practitioners (11.9%), ($\chi^2 = 9.18$, $p < .02$).

2) Length of Time in the Practice of Medicine

The only significant relationship between practice length and the frequency of return office visits for stabilized moderate high blood pressure, indicated that physicians practising medicine for 30+ years saw their patients monthly (53.3%), as compared to physicians practising medicine from 11 - 30 years (30.1%) and from 0 - 10 years (28.9%). Conversely, 71.1% of physicians practising medicine for less than 10 years saw their stabilized patients (in the same category) quarterly, as compared to physicians in the 11 - 30 years group (69.9%) and the 30+ years group (46.7%) ($\chi^2 = 12.076$, $p < .01$).

When using less complicated drug regimens to enhance patient compliance, physicians in the first 30 years of medicine reported that they often use this strategy (84.65%) compared to those physicians practising for longer than 30 years (70.7%), a difference which is statistically significant ($\chi^2 = 6.24$, $p < .05$).

Table 37 presents the data regarding the strategy of alarming the patient about his/her elevated blood pressure and the practice length.

Table 37. Practice Length and Use of Strategy of Alarming the Patient Regarding Blood Pressure Measurement ($\chi^2 = 20.435$, $p < .001$)

Practice Length	Often	Occasionally	Never
0 - 10 yrs	27.6%	53.5%	18.9%
11 - 30 yrs	16.9%	54.2%	28.8%
30+ yrs	12.3%	38.6%	49.1%

3) Gender

There was only one statistically significant difference between male and female physicians in relation to compliance-enhancing strategies. Female physicians reported that they would educate their patients on high blood pressure more frequently (84.1%), compared to male physicians (63.4%) ($\chi^2 = 8.765$, $p < .01$).

Summary of Research Question 2

Research question 2 investigated whether or not significant relationships existed between specific independent physician variables and selected dependent variables related to the conceptual framework. The preceding section has outlined those relationships which were found to be of statistical significance.

As evidenced from the data analysis of the second research question, it is clear that the physician's specialty, length of time in the practice of medicine, and gender may influence significantly a number of their practice patterns and opinions.

Discussion of Results

The purpose of research question 1 was to collect data from Manitoba physicians regarding their reported practice patterns and practices toward four major areas of high blood pressure prevention and control.

The data were analyzed through frequency distributions and percentages, and compared to the recommendations set forth in the Algorithm which acted as the conceptual framework for the study. This discussion will outline these recommendations and the actual reported practices and opinions.

I. The Detection of High Blood Pressure

RECOMMENDATION: CHECK BLOOD PRESSURE EVERY 2 YEARS.

The data analysis revealed that the majority of physicians reported that they take a patient's blood pressure annually (53.3%) versus bi-annually (5.4%) as recommended by the Algorithm.

The Canadian Hypertension Society (Logan, (ed), 1984) does recommend yearly checks if the patient's "diastolic blood pressure is above 90 mm Hg on some occasions but not on others" (p. 1-9). A small number of physicians qualified their responses by indicating that they take blood pressures as part of the "yearly" physical examination. Thirty-one percent of physicians selected the response of "every 6 months" or "other" and stated that their practice depended on the current status of the patient (age, sex, family history, and present blood pressure).

An interesting finding was that approximately 10% of physicians did not recommend regular checks.

A related recommendation regarding case-detection of high blood pressure not clearly stated in the Algorithm, but in the guidelines from the Canadian Hypertension Society (Logan, (ed), 1984), Periodic Health Examination (1980), and the Joint National Committee (1988) encourages

physicians to take a patient's blood pressure at each and every office visit, regardless of the reason for the visit. Only 30% of physicians indicated that this was their current practice. This compares with Dunn et al., (1984) who found that depending on the patient's age, between 20% and 35% of physicians surveyed felt that blood pressure should be taken at each and every visit.

This response may be due to a number of factors such as the physician's attitude toward high blood pressure, physician-patient relationship, patient's general health appearance and the nature of the visit. For example, if the patient has seen the physician recently, or if the patient does not present with symptoms and/or characteristics of a potential blood pressure elevation, the physician may not deem the procedure necessary. If the patient is in distress, the physician may expect an elevated blood pressure in response to the situation, and therefore, feel the measurement would be inappropriate. MacLeod et al., (1986) describe the physician's offices as busy, crisis-oriented centres where patients come with problems or complaints of an acute nature. They believe that this environment is not conducive to routine monitoring of blood pressure. If the physicians are committed to active case-detection for high blood pressure, it then can be postulated that it becomes their responsibility to create a positive office environment through the incorporation of various strategies. Bass (1985) recommended that case-detection be a joint effort between the physician and his staff. Strategies may include delegation of blood pressure measurement, flagging patient files, mailed reminder cards, and the availability of appropriate and sufficient equipment, among others.

This may need to include a educational sessions with the office staff.

Finally, there may not be the time during the office visit to perform a routine blood pressure measurement due to patient volume, although research has not supported this hypothesis (Hilditch, 1985).

II. The Diagnosis/Work-up for High Blood Pressure

RECOMMENDATION: 3 VISITS WITH BLOOD PRESSURE READINGS TAKEN 2 MONTHS APART, OR LESS IF DIASTOLIC $\geq$ 105.

The majority of physicians (50.9%) indicated that they follow the recommended procedure. This compares to 47% of physicians who chose the same response in the 1987 U.S. National study by Birch and Davis Associates from which this question was derived.

Thirty-two percent of physicians reported that they would take two or more blood pressure measurements during each of two visits. This practice might be considered appropriate if one were following the guidelines from the Joint National Committee (1988) which recommends at least two or more subsequent visits after an initial elevated blood pressure is discovered. Approximately 13% of physicians stated they would base their diagnosis on single blood pressure measurements during each of two or more visits. Possible explanation for their practice may be related to the physician's country of initial medical education/practice and length of time in the practice of medicine. Kurji & Haines (1984) reported that in North West London, 46% of 74 patients were initiated on antihypertensive drugs after a single blood pressure measurement. They did have concerns about this practice because their

literature review revealed that "only about 40% of those who initially register a high reading will be classified as hypertensive after 3 sets of readings" (p. 905). The physician's practice length also was shown to have a significant relationship with this variable.

When asked to indicate the frequency of these visits, physicians reported that they would see the patient biweekly to monthly (75%) for mild high blood pressure, and weekly to biweekly (75%) for moderate high blood pressure. The recommended action is to see the patient every two months to allow sufficient time for patients to adjust to the lifestyle modifications as required, and/or drug therapy. The reported visit frequency may indicate that Manitoba physicians prefer to follow their patients with elevated blood pressure more closely while establishing a diagnosis. It is important to remember that this practice, albeit conservative, is at the expense of the patient (ie: time from work, wages lost), and the health care system, but to the physician's economic benefit.

When asked which blood pressure reading they utilized in the determination of high blood pressure, a total of 74.2% of physicians reported that they used the lowest or an average of the readings. Related recommendations from the Canadian Hypertension Society state that "it is acceptable to use either the average or the minimum reading in the arm with the higher pressure as a guide for the need for further assessment" (Logan, (ed), 1984).

As for the usage of the 5th Korotkoff phase as the diagnostic measurement, although approximately 75% indicated this response as their reported practice, further analysis showed a significant difference in

practice between the general and family physician. The concern with utilization of the incorrect phase in the determination of the diastolic blood pressure and diagnosis focuses on the ultimate selected treatment. Many patients may be misdiagnosed, and therefore, "under" or "over" medicated (Constant, 1987).

RECOMMENDATION: LOOK FOR TARGET ORGAN DAMAGE, RULE OUT SECONDARY CAUSES, AND PERFORM APPROPRIATE LAB WORK.

Overall, Manitoba physicians do perform the required laboratory tests and diagnostic procedures in order to look for, rule out, and collect baseline data on their patients with suspected elevated blood pressure.

One significant difference in practice patterns related to the examination for peripheral edema. General practitioners (73%) reported their performance of this procedure versus the family practitioners (52%). No explanation can be offered for this finding. Family practitioners also indicated that they performed chest x-rays and creatinine clearances less frequently. This may be due to the fact that the educational program in family practice stresses the cost-effectiveness and cost containment in ordering diagnostic tests. These tests also may not provide useful data in the initial assessment, but may be required at a later time.

The data from this study regarding the utilization of diagnostic procedures and lab tests by physicians were very similar to that of the 1987 U.S. national study.

III. Treatment/Management for Mild to Moderate High Blood Pressure

RECOMMENDATION: UTILIZATION OF SOLELY NON-DRUG, DRUG, AND/OR A COMBINATION OF THERAPIES.

The data indicated that the majority of physicians would employ non-drug therapy as an adjunctive to drug therapy. A small percentage of physicians indicated that they would utilize the non-drug therapies only before or only after the initiation of drug therapy. Approximately 70% of physicians indicated that they would refer their patients to various community referral agencies for assistance in effecting the non-drug therapies. The three most frequently utilized agencies included: nutritionist services (59.2%), Reh-Fit/Fitness programs (27.4%), and the Diabetes Foundation (18.5%). About seventy percent of physicians reported that they did assist their patients in linking up with these agencies by making the necessary appointments. These findings regarding the physicians' approach to non-drug therapies were similar to other physician surveys (Gottlieb & Mullen, 1987; Price et al., 1987; Valente et al., 1986).

Data revealed that such independent variables as physician gender and practice length did have an effect on their reported practice patterns related to the treatment of high blood pressure. Physicians practicing medicine for a longer period of time may have an older patient population which would explain their practice patterns.

The majority of physicians believed that they would wait up to six months for the blood pressure to improve with solely non-drug therapy prior to the initiation of drug therapy. It is important to note,

however, that there was an inverse relationship between the severity of the blood pressure measurement and the length of time the physician would wait. For a DBP of 100 - 104 mm Hg, 85% of physicians would wait less than three months versus 15% for a DBP of 90 - 94 mm Hg.

A significant finding related to the physician's area of specialty demonstrated that the family practitioner would wait a longer time period (4 - 6 mos, 49%) before initiating drug therapy, than the general practitioner (4 - 6 mos, 39%). This performance may be indicative of the specialized family practice education these practitioners receive. The data are consistent with the findings by Borgiel et al., (1989).

RECOMMENDATION: WHEN DRUG THERAPY IS INDICATED: A LATERAL STEP APPROACH IS RECOMMENDED: 1) DIURETIC, 2) BETA BLOCKER, 2A) ADDITIONAL OPTIONS, 3) VASODILATOR, AND 4) OTHER ALTERNATIVES. PHYSICIANS ARE ENCOURAGED TO INDIVIDUALIZE DRUG TREATMENT TO MEET THE NEEDS OF THE PATIENTS.

When drug therapy was indicated, the four most utilized drug/drugs initially chosen included 1) the beta-adrenergic blockers (49.5%), 2) the thiazide or related diuretics (40.4%), 3) the angiotensin-converting enzyme (ACE) inhibitors (31.9%), and 4) the calcium slow-channel blockers (17.7%).

Subsequent drug/drugs of choice utilized when a satisfactory response to the initial drug/drugs of choice was not achieved included: 1) thiazides or related diuretics (51.4%), 2) angiotensin-converting enzyme inhibitors (50.25%), 3) beta-adrenergic blockers (48.6%), and 4) calcium slow-channel blockers (33.8%).

These results in general are consistent with the Algorithm's recommendations, and similar to those of the 1987 U.S. national study. Physicians appear to be utilizing the appropriate drug regimens in the treatment of high blood pressure. The use of beta-adrenergic blockers for the initial therapy rather than the thiazides may be indicative of the availability of newer, effective beta-blockers. It also is interesting to note the use of the ACE inhibitors and calcium slow-channel blockers as initial drugs. This is consistent with the 1987 U.S. study and that by Sinclair, Jackson & Beaglehole (1989).

For interest, physicians were asked to indicate whether or not drug side effects influenced their use. Data analyzed supported the practice that physicians did consider drug side effects in their drug therapy.

IV. Follow-up of Mild to Moderate High Blood Pressure

RECOMMENDATION: SEE PATIENTS EVERY MONTH UNTIL BP IS CONTROLLED.
SEE PATIENTS EVERY 3 - 4 MONTHS AFTER BP IS
CONTROLLED.

The analyzed data demonstrated that, overall, physicians do see their patients in the recommended time periods, both while their BP is being brought under control, and once it is stabilized.

In order to enhance patient compliance with the long term management of high blood pressure, physicians indicated that they did incorporate a number of strategies. Those strategies utilized often included: 1) use of a less complicated drug regimen (81.2%), 2) education of patients (64.1%), 3) tailor the patient's regimen to daily habits (61.0%), and 4) see the patient more often (31.7%).

All physicians indicated that educational material in all forms would be useful.

Finally, the physicians did identify which continuing medical education (CME)/patient management aids that would be useful to them. Primarily, physicians felt that CME programs to update physicians in all aspects of high blood pressure prevention and control would be useful (88.9%). Other aids identified as being useful included: standardized patient records (78.3%), reference lists for resources/community referral agencies for lifestyle changes (76.7%), and a newsletter on high blood pressure and related activities (70.1%).

The Algorithm which acted as the conceptual framework for this study was found to be useful by 77.4% of physicians.

In summation, the data collected have provided information regarding specific professional and practice characteristics of Manitoba physicians and their reported practice patterns and opinions towards the four major aspects of high blood pressure prevention and control.

CHAPTER 5

Summary and Recommendations

Introduction

There were two central foci in this descriptive study: 1) to assess the practice patterns and opinions of Manitoba physicians toward the detection, initial diagnosis, treatment and long term management of high blood pressure, and 2) to determine whether or not significant relationships existed between the physician's specialty area, practice length and gender and these practice patterns and opinions. An Algorithm of recommendations from the Manitoba Coalition for Healthy Blood Pressure served as the conceptual framework for the development of a forty-one item, self-administered postal questionnaire. A total of 1035 physicians registered with the Manitoba Medical Association as general and/or family practice practitioners and internists constituted the study population. The overall response rate of 43.8% was achieved, however, this rose to a revised rate of 50.6% (N = 320) when ineligible responses were deleted from the study population.

Data analysis of the two research questions included: 1) frequency distributions and percentages of all dependent variables, and 2) cross-tabulations and chi-square tests of significance between the three physician-related independent variables and specific dependent variables related to the Algorithm.

This chapter will offer a summary of the results of the data analysis related to the two research questions and physicians' comments, implications for program development for high blood pressure prevention and control, and concluding statements.

Summary of Results

The results of this study have served three major purposes. 1) They have offered a quantitative documentation of the various current practice patterns and opinions of a specific group of Manitoba physicians toward the detection, diagnosis, management and follow-up of high blood pressure prevention and control. 2) They also have defined more clearly whether or not identified physician characteristics are germane to their practice patterns and opinions. 3) They have outlined the fidelity of Manitoba physicians to the Algorithm prepared and circulated in April 1989 by the Manitoba Coalition for Healthy Blood Pressure.

In the broader perspective, the results have offered the opportunity for comparisons between the practices and opinions of Manitoba physicians and those of their counterparts in other Canadian provinces and countries.

In general, Manitoba physicians reported practice patterns that are consistent with current recommendations in the Algorithm and the literature. As with the study by Dunn et al., (1984) physicians tend to see patients more frequently during the detection and diagnostic phases. Consistent with the findings of Lichtenstein et al., (1986), diastolic pressure measurement is considered an important factor in the scheduling

of these visits.

Responses to the questions regarding the specific treatment regimens indicated that the physicians' practices were similar to those of their counterparts in the U.S. (U.S. Department of Health and Human Services, 1989) in that they most frequently have employed non-drug therapies, both before and adjunctive with the drug therapies. They also have utilized and/or recommended various community referral agencies to assist patients in achieving their behavioural lifestyle modifications.

In the follow-up, physicians responded that they see their patients at regular intervals, and have incorporated a variety of patient education strategies.

The data from this study and the physicians' comments concerning the Algorithm and the questionnaire have generated a number of recommendations for the Manitoba Coalition for Healthy Blood Pressure, the Medical faculty and the Manitoba Medical Association members responsible for the (continuing) medical education at the undergraduate and graduate level, and for other individuals and professionals interested in the prevention and control of high blood pressure.

Recommendations for Program Development and Further Research

The recommendations from this study focus on the needs of four specific groups: 1) the target population (those patients with high blood pressure), 2) the physicians responsible for the overall medical management, 3) the members of the Coalition for Healthy Blood Pressure, and 4) the community, in general.

1. The Target Population

Recommendation: A number of physicians identified five "patient populations" in Manitoba whose needs may not be addressed adequately by the current Algorithm recommendations and/or community resources. These included the elderly, the North American Indians and/or immigrants, the disadvantaged and/or impoverished, those living in the rural communities, and long term institutions. As these groups of individuals constitute a major concern in high blood pressure (as well as overall cardiovascular) prevention and control, it is recommended that their needs more clearly be delineated and examined. Once this task is accomplished, the Algorithm will require appropriate revision.

It also is recommended that the community physicians responsible for these groups be included in this process as they may be the most knowledgeable of the needs and required changes.

2) Physicians

Recommendation: There are two groups of physicians whose needs must be addressed: the undergraduate, and the practicing physician.

Undergraduate

It is recommended that the faculty members responsible for the medical education at an undergraduate level review the results of this

study to determine the discrepancies in practice patterns and opinions related to the effective prevention and control of high blood pressure. These should be considered in the development, implementation, and evaluation of the curriculum. Perhaps introduction, discussion, and clinical application of the Algorithm during the undergraduate years would be an effective teaching strategy.

Medical education also must address several issues related to patient education including: the critical nature of this aspect of medicine in the overall patient management and compliance, the physician's role and responsibilities, the role, qualifications and responsibilities of other members of the health care team, and the need for a coordinated, team approach to achieve the goals in effective patient education.

Practicing Physician

The data support the fact that practice patterns regarding active case-finding and detection are indeed being conducted by Manitoba physicians to some degree, but that there are discrepancies related to their regularity and frequency. This area may require further investigation to identify the economic, educational and/or other barriers influencing these practices.

The continuing medical education needs of physicians also must be addressed. Seventy-seven percent of physicians indicated that programs of this nature concerning an update on the prevention and control of high blood pressure would be useful. Investigation into the most

appropriate and effective strategies by which these can be accomplished needs to be examined. The planning committee responsible for the development of these programs also must include the needs of physicians caring for the special patient populations identified above.

Recommendation: There were several comments concerning the Manitoba Health Service Commission's medical review committee's recommended "profile standards" and impact on medical care. Some physicians also questioned the professional ethics of actively soliciting the patient's return office visits through the utilization of follow-up phone calls and/or postcards as visit reminders. It is recommended that these needs be further examined, clarified, and communicated to the physician community.

Because a coordinated, consistent approach to high blood pressure prevention and control is paramount, further research also is needed concerning the related practice patterns of the other members of the health care team in Manitoba.

3) Coalition for Healthy Blood Pressure

Recommendation: In September 1989, an Action Plan (of activities) was developed by an ad hoc committee of the Coalition. It is recommended that the Coalition review the results of this study related to the physicians' identified needs and compare them with the recommendations set forth in the Action plan. Continuing medical education/patient education management aids specified by physicians as being useful

included: a newsletter on high blood pressure (for physicians and patients), continuing medical education programs to update physicians on the prevention and control of high blood pressure and Coalition activities, reference lists for resources/community programs which foster lifestyle modifications, standardized patient records, and various patient education material.

The Coalition then must make a concerted effort to ensure that the Action Plan now be activated to meet these needs. It also is recommended that data related to the physicians' utilization of various community referral agencies be shared with the specific agencies, to heighten their awareness of their current impact in the medical community. Because these agencies are members of the Coalition, they may be able to assume responsibility for implementing certain activities outlined in the Action Plan, thus encouraging their involvement.

Overall, a coordinated effort will need to continue in order for the Action Plan to have an impact on the effective prevention and control of high blood pressure in Manitoba.

4) The Community

Recommendation: The patient with high blood pressure must be considered, by all, as the most critical member of the health care team. Without the patient's active participation in all aspects related to high blood pressure diagnosis, treatment, and long term management, then the efforts by the professionals may be compromised. It is recommended, therefore, that all health care professionals assume a responsibility in public

education. Because the physicians have been identified by the general community as the most reliable resource for their educational needs, physicians must prepare themselves for this most important role. They also must recognize the abilities of the other members of the health care team and support them in their public education activities.

Conclusion

In conclusion, it can be stated that the Manitoba physicians who participated in this study do, in general, report appropriate practice patterns and opinions related to the effective prevention and control of high blood pressure. The critical nature, morbidity and mortality of this disease, as well as society's concern regarding escalating health care costs, makes it imperative that physicians responsible for the overall management of patients with high blood pressure be knowledgeable and competent.

To this end, efforts by all individuals concerned must be energized.

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APPENDIX A

April 1989

Manitoba Physicians

About two years ago a group of health professionals representing over twenty agencies and organizations came together to work toward the prevention and control of high blood pressure in Manitoba. The Manitoba Coalition for the Prevention and Control of High Blood Pressure (Hypertension Coalition) agreed to cooperate, participate and pool resources in addressing hypertension.

The Coalition identified as one of its first priorities the need for an algorithm for the management of hypertension. Under an educational grant from Miles Canada, the coalition is taking the opportunity of forwarding to you this plasticized algorithm with recommendations having been put together by a sub-committee of the coalition consisting of:

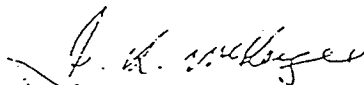
Dr. John K. McKenzie, Chairman and
Dr. Paul Mitenko, Department of Medicine, University of Manitoba;
Dr. Frank Martin, representing the Manitoba Chapter,
College of Family Physicians of Canada;
Dr. A. A. Campbell, Medical Officer of Health;
Dr. Robin Krause, Associate Head, Department of Family Medicine;
Dr. Sheldon Koven, representing the Manitoba Medical Association;
Mrs. Leona Forsythe, representing M.A.R.N.

This committee has attempted to produce workable guidelines which include detection, workup, decision to treat, and management including drug management. We believe that this will be very useful for the many practitioners who manage hypertension especially in Family Practice and Internal Medicine. It should be noted that the recommendations which are based on the recommendations of the Canadian Hypertension Society, are likely to change in the next few years especially as new drugs are introduced. It should be noted, for instance, that, already since these recommendations were initially formulated the Canadian Hypertension Society is recommending converting enzyme inhibitors, calcium blocking drugs and centrally acting agents, as third-line drugs. In the U.S., Diuretics, B-blockers, and also converting enzyme inhibitors and calcium antagonists are recommended as first-line drug therapy for hypertension. Because of lack of long-term data on the latter drugs and cost considerations, we do not believe such recommendations are yet warranted. It is recommended that common side-effects of drugs be made known to patients when medication is commenced and the side-effect inquiry of patients by physicians be routine. We would be interested to have any feedback that you may have on it.

Yours truly,



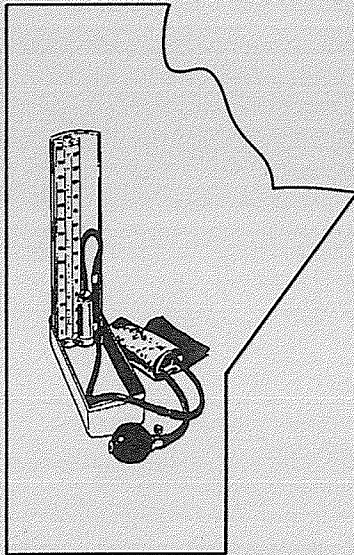
D. E. Gelskey, MPH, Dr PH
Chair
Manitoba Coalition for the
Prevention & Control of
High Blood Pressure



J. K. McKenzie, MD FRCP(C)
Chair
Sub-Committee on Diagnosis
and Treatment
Manitoba Coalition for the
Prevention & Control of
High Blood Pressure

No:

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HIGH BLOOD PRESSURE IN MANITOBA

THE PHYSICIAN'S PERSPECTIVE

A survey prepared for the MANITOBA COALITION FOR HEALTHY BLOOD PRESSURE on the detection, diagnosis, management and follow-up of high blood pressure by Manitoba physicians.

Participation in this survey is voluntary, and all responses shall remain confidential. If you wish to make any comments, these can be written in the margins beside specific questions, or in the space provided at the end of the survey.

**MANITOBA COALITION FOR HEALTHY BLOOD PRESSURE
C/O ROOM 410
FACULTY OF EDUCATION BUILDING
UNIVERSITY OF MANITOBA
WINNIPEG, MANITOBA
R3T 2N2**

HOW TO ANSWER QUESTIONS

This survey seeks information regarding your opinions and practices towards the management of high blood pressure.

Almost all of the questions can be answered by circling the number which corresponds to your answer. For example:

Which of these best describes your profession?

1. LAW

② MEDICINE

3. OTHER

In some questions you are asked to specify your answer in the space provided.

I. DETECTION OF HIGH BLOOD PRESSURE:

This section of the questionnaire seeks your practices and opinions regarding the detection of high blood pressure.

1. In your medical practice, do you ever treat adult patients (18 years of age and over) for high blood pressure? (Circle number of your answer)

1 YES

2 NO

→ (If your answer to question #1 is NO - STOP. This questionnaire is designed for physicians currently providing patient care to adults. However, we would appreciate it if you would please return the questionnaire in the enclosed, self-addressed, stamped envelope for accuracy of response rate. Thank you).

2. Which of the following best describes your practice for detecting high blood pressure in your adult patients? (Circle number)

1 TAKE BLOOD PRESSURE AS PART OF A "NEW PATIENT" WORKUP AND/OR PERIODIC PHYSICAL EXAMINATION, BUT NOT NECESSARILY ON EVERY CONTACT WITH YOUR OFFICE

2 TAKE BLOOD PRESSURE AT EVERY PATIENT VISIT TO YOUR OFFICE AND/OR AT REGULAR INTERVALS

3 TAKE BLOOD PRESSURE ONLY WHEN PATIENT IS SYMPTOMATIC

4 TAKE BLOOD PRESSURE ONLY WHEN PATIENT ASKS FOR IT TO BE TAKEN

5 OTHER (specify) _____

3. If you recommend regular checks of blood pressure for all your patients, what is the usual frequency of these checks? (Circle number)

1 I DO NOT RECOMMEND REGULAR CHECKS

2 EVERY 6 MONTHS

3 ANNUALLY

4 EVERY 2 YEARS

5 OTHER (specify) _____

4. What percentage of your patients with high blood pressure have been referred to you through screening programs (worksite, shopping malls, Emergency room)? (Circle number)
- 1 UNDER 25%
 - 2 25% - 49%
 - 3 50% - 75%
 - 4 GREATER THAN 75%
 - 5 DO NOT KNOW
5. How important do you feel community **screening** (only one measurement taken) programs are in the detection of high blood pressure? (Circle number)
- 1 VERY IMPORTANT
 - 2 MODERATELY IMPORTANT
 - 3 NOT IMPORTANT
6. What type of sphygmomanometer do you usually use to measure blood pressure? (Circle number)
- 1 ANEROID (i.e., DIAL TYPE) SPHYGMOMANOMETER
 - 2 MERCURY SPHYGMOMANOMETER
 - 3 SEMI - AUTOMATED DEVICE
7. If you use a non-automated device for blood pressure measurement, which part of the stethoscope do you **most commonly** use for auscultation?
- 1 BELL
 - 2 DIAPHRAGM

II. DIAGNOSIS / WORK-UP FOR HIGH BLOOD PRESSURE:

Now we would like to know your practices and opinions in the diagnosis of high blood pressure.

8. Which one of the following **best** describes the procedure you use in diagnosing mild or moderate high blood pressure? (Circle number)
- 1 SINGLE BP MEASUREMENT
 - 2 TWO OR MORE BP MEASUREMENTS DURING SAME VISIT
 - 3 SINGLE BP MEASUREMENT DURING EACH OF TWO OR MORE VISITS
 - 4 TWO OR MORE BP MEASUREMENTS DURING EACH OF TWO VISITS
 - 5 TWO OR MORE BP MEASUREMENTS DURING EACH OF THREE OR MORE VISITS
9. If you take more than one blood pressure measurement at one visit, which of the following do you usually use? (Circle number)
- 1 I DO NOT TAKE MORE THAN ONE BP MEASUREMENT
 - 2 THE LOWEST READING
 - 3 THE LAST READING
 - 4 AN AVERAGE OF THE READINGS
 - 5 OTHER (specify) _____
10. Which indicator do you use for the diastolic blood pressure (DBP) measurement? (Circle number)
- 1 MUFFLED SOUND (4th PHASE KOROTKOFF)
 - 2 SOUND DISAPPEARS (5th PHASE KOROTKOFF)
 - 3 OTHER (specify) _____

11. In your diagnostic work-up of a patient with suspected elevated blood pressure (mild to moderate), which of the following would you most frequently do?
(Circle all numbers that apply)

MILD TO MODERATE BLOOD PRESSURE (DBP = 90 - 114 mmHg)

- 1 TAKE A FAMILY HISTORY
- 2 TAKE A PATIENT HISTORY
- 3 EXAMINE THE EYE GROUNDS
- 4 EXAMINE THE PERIPHERAL EDEMA
- 5 EXAMINE THE CAROTID BRUIT
- 6 EXAMINE THE HEART
- 7 EXAMINE THE ABDOMEN FOR BLANK BRUIT OR MASS
- 8 DO A SITTING BLOOD PRESSURE
- 9 DO A SUPINE BLOOD PRESSURE
- 10 DO A STANDING BLOOD PRESSURE
- 11 TAKE THE WEIGHT, HEIGHT
- 12 ORDER A URINE CULTURE
- 13 ORDER A URINALYSIS
- 14 ORDER A SERUM CREATININE
- 15 ORDER A CREATININE CLEARANCE
- 16 ORDER A SERUM UREA
- 17 ORDER A SERUM ELECTROLYTES
- 18 ORDER A SERUM FOLIC ACID
- 19 ORDER A CHEST X - RAY
- 20 ORDER AN ELECTROCARDIOGRAM
- 21 ORDER AN IVP
- 22 ORDER A PLASMA RENIN ASSAY
- 23 ORDER A URINE VMA OR CATECHOLAMINES
- 24 ORDER A SERUM CHOLESTEROL
- 25 ORDER A SERUM GLUCOSE
- 26 OTHER : _____
- 27 _____
- 28 _____

12. How many **separate** patient visits are usually necessary before you establish a diagnosis of mild or moderate high blood pressure? (Circle number in each category)

MILD (DBP 90 - 104 mm Hg)

- 1 ONE
- 2 TWO
- 3 THREE
- 4 FOUR
- 5 MORE THAN FOUR

MODERATE (DBP 105 - 114 mm Hg)

- 1 ONE
- 2 TWO
- 3 THREE
- 4 FOUR
- 5 MORE THAN FOUR

13. How **often** do you usually see a patient for these visits while establishing a diagnosis of mild or moderate high blood pressure? (Circle number in each category)

MILD (DBP 90 - 104 mm Hg)

- 1 WEEKLY
- 2 BIWEEKLY
- 3 MONTHLY
- 4 EVERY TWO MONTHS
- 5 > TWO MONTHS

MODERATE (DBP 105 - 114 mm Hg)

- 1 WEEKLY
- 2 BIWEEKLY
- 3 MONTHLY
- 4 EVERY TWO MONTHS
- 5 > TWO MONTHS

III. TREATMENT / MANAGEMENT FOR HIGH BLOOD PRESSURE

Now we would like to have your opinions and practices on the treatment of high blood pressure.

14. In your treatment of patients with mild high blood pressure, when do you recommend each of the following non-drug therapies? (Circle number for each non-drug therapy)

	<u>Only Before</u> Drug Therapy	<u>Both Before &</u> <u>Adjunctive To</u> Drug Therapy	<u>Only After</u> Drug Therapy Initiated	Do Not Recommend
WEIGHT REDUCTION IF OVERWEIGHT	1	2	3	4
REDUCED SODIUM CONSUMPTION	1	2	3	4
RELAXATION, MEDITATION AND/ OR BIOFEEDBACK	1	2	3	4
REGULAR EXERCISE	1	2	3	4
REDUCED ALCOHOL CONSUMPTION	1	2	3	4
DIETARY POTASSIUM SUPPLEMENTATION	1	2	3	4
MODIFIED FAT DIET	1	2	3	4
SMOKING CESSATION	1	2	3	4
OTHER (specify) _____	1	2	3	4
_____	1	2	3	4

15. For how many months do you try to reach the desired blood pressure goal with non-drug therapy before you decide to begin treatment with drugs for patients with the following diastolic blood pressure measurements? (Circle number for each category)

PRE - TREATMENT DBP (mm Hg) IS:	I WAIT: ≤ 3 mos.	4-6 mos.	6-12 mos.	12 + mos.
90 - 94	1	2	3	4
95 - 99	1	2	3	4
100 - 104	1	2	3	4

16. To which community resources / agencies do you currently refer your patients for assistance with non-drug treatments? (Circle as many as apply)

- 1 I DO NOT REFER MY PATIENTS ----- GO TO QUESTION 19
- 2 NUTRITIONIST SERVICES
- 3 REH FIT / FITNESS PROGRAMS
- 4 HEALTH SPA
- 5 LUNG ASSOCIATION
- 6 HEART FOUNDATION
- 7 DIABETES ASSOCIATION
- 8 KIDNEY FOUNDATION
- 9 OTHER (specify) _____

17. How are referrals made to these agencies? (Circle number)

- 1 MY NURSING / CLERICAL STAFF WILL MAKE THE APPOINTMENT WITH THE AGENCY.
- 2 I RECOMMEND MY PATIENTS TO THE AGENCY, BUT MY OFFICE DOES NOT MAKE THE ACTUAL APPOINTMENT.
- 3 I DO NOT RECOMMEND ANY SPECIFIC AGENCY; I LEAVE IT UP TO MY PATIENTS' DISCRETION.

18. In how many of your patients can you control mildly elevated blood pressure (DBP = 90 - 104 mm Hg) for a **prolonged** (> 6 months) time period with non-drug therapy only? (Circle number)

- 1 MOST OF MY PATIENTS
- 2 SOME OF MY PATIENTS
- 3 ONLY A FEW OF MY PATIENTS
- 4 ALMOST NONE OF MY PATIENTS
- 5 NONE OF MY PATIENTS

19. Suppose that you have a 45-year-old white male patient with a DBP of 110 mm Hg, but without other risk factors or contraindications. You have decided on drug therapy. What is your initial therapy of choice for this particular patient? Which of the following drug classes (as combination or separate drugs) would you use for the SPECIFIC treatment regimen? (Circle ALL the numbers that apply to the ONE treatment regimen you would most commonly use).

- 1 LOOP DIURETICS (Furosemide, etc.)
- 2 POTASSIUM - SPARING DIURETICS (Spironolactone, etc.)
- 3 THIAZIDE OR RELATED DIURETICS (Hydrochlorothiazide, etc.)
- 4 BETA - ADRENERGIC BLOCKERS (Atenolol, Propranolol, etc.)
- 5 ALPHA - 1 ADRENERGIC BLOCKERS (Prazosin, etc.)
- 6 OTHER ADRENERGIC INHIBITORS (Methyldopa, Clonidine, etc.)
- 7 CALCIUM SLOW - CHANNEL BLOCKERS (Nifedipine, Verapamil, etc.)
- 8 ANGIOTENSIN - CONVERTING ENZYME INHIBITORS (Captopril, etc.)
- 9 OTHER VASODILATORS (Hydralazine, Minoxidil, etc.)

20. If DBP control is not achieved by the preceding treatment, what SPECIFIC treatment regimen would you use? Please indicate the drug class (es) you would continue using as well as other drug class (es) you would add. (Circle ALL the numbers that apply to the ONE treatment regimen you would use now).

- 1 LOOP DIURETICS (Furosemide, etc.)
- 2 POTASSIUM - SPARING DIURETICS (Spironolactone, etc.)
- 3 THIAZIDE OR RELATED DIURETICS (Hydrochlorothiazide, etc.)
- 4 BETA - ADRENERGIC BLOCKERS (Atenolol, Propranolol, etc.)
- 5 ALPHA - 1 ADRENERGIC BLOCKERS (Prazosin, etc.)
- 6 OTHER ADRENERGIC INHIBITORS (Methyldopa, Clonidine, etc.)
- 7 CALCIUM SLOW - CHANNEL BLOCKERS (Nifedipine, Verapamil, etc.)
- 8 ANGIOTENSIN - CONVERTING ENZYME INHIBITORS (Captopril, etc.)
- 9 OTHER VASODILATORS (Hydralazine, Minoxidil, etc.)

21. Based on your clinical experience, to what extent do the side effects of the following drugs make a difference in the pharmaceutical management of high blood pressure? (Circle number for each drug)

SIDE EFFECTS:

	Rarely a problem	A problem but I use the drug when- ever needed	A problem but I <u>some-</u> <u>times</u> use the drug	A problem and I do <u>not</u> use the drug	I do not use the drug for other reasons
RESERPINE	1	2	3	4	5
HYDROCHLORO- THIAZIDE	1	2	3	4	5
HYDRALAZINE	1	2	3	4	5
METHYLDOPA	1	2	3	4	5
PRAZOSIN	1	2	3	4	5
NIFEDIPINE	1	2	3	4	5
PROPRANOLOL	1	2	3	4	5
CLONIDINE	1	2	3	4	5
CAPTOPRIL	1	2	3	4	5
ATENOLOL	1	2	3	4	5
ENALAPRIL	1	2	3	4	5
OTHER (specify)					
_____	1	2	3	4	5
_____	1	2	3	4	5

22. When do you usually like to try a new drug? (Circle number)

- 1 SOON AFTER IT IS RELEASED
- 2 AFTER A FEW COLLEAGUES HAVE TRIED IT WITH SUCCESS
- 3 WHEN IT IS IN FAIRLY COMMON USE

IV. FOLLOW - UP

We would also like to have your opinions and practices on
the follow-up of patients with high blood pressure

23. What is your usual recommended frequency of return office visits for patients **while their blood pressure is being brought under control?** (Circle number for each category).

PRE-TREATMENT CATEGORY	WEEKLY	TWICE A MONTH	MONTHLY	QUARTERLY	SEMI- ANNUALLY	YEARLY
<u>MILD</u> HIGH BLOOD PRESSURE	1	2	3	4	5	6
<u>MODERATE</u> HIGH BLOOD PRESSURE	1	2	3	4	5	6

24. What is your usual recommended frequency of return office visits for patients with **stabilized high blood pressure** ? (Circle number for each category).

PRE-TREATMENT CATEGORY	WEEKLY	TWICE A MONTH	MONTHLY	QUARTERLY	SEMI- ANNUALLY	YEARLY
<u>MILD</u> HIGH BLOOD PRESSURE	1	2	3	4	5	6
<u>MODERATE</u> HIGH BLOOD PRESSURE	1	2	3	4	5	6

25. Which of the following methods do you **usually** employ to arrange the next appointment for your patients with high blood pressure? (Circle number)

- 1 ARRANGE NEXT APPOINTMENT EACH TIME PATIENT IS SEEN
- 2 CONTACT PATIENT WHEN HE / SHE IS DUE FOR NEXT APPOINTMENT
- 3 ASK PATIENT TO CALL YOUR OFFICE AT A LATER DATE TO ARRANGE NEXT APPOINTMENT
- 4 OTHER (specify) _____

26. When a patient with high blood pressure misses a follow-up appointment, which procedure is usually carried out in your office? (Circle number)

- 1 WAIT FOR THE PATIENT TO ARRANGE OWN FOLLOW-UP APPOINTMENT
- 2 HAVE SOMEONE IN YOUR OFFICE TELEPHONE THE PATIENT
- 3 TELEPHONE THE PATIENT YOURSELF
- 4 MAIL A NOTE OR A NEW APPOINTMENT TIME TO THE PATIENT
- 5 OTHER (specify) _____

27. How often do you use the following strategies to encourage patients with poor compliance to take their antihypertensive medications? (Circle number in each row)

	<u>OFTEN</u>	<u>OCCASIONALLY</u>	<u>HARDLY EVER</u>
USE LESS COMPLICATED DRUG REGIMENS	1	2	3
EDUCATE PATIENTS OR GIVE THEM LITERATURE ON HIGH BLOOD PRESSURE	1	2	3
TAILOR PATIENT'S REGIMEN TO DAILY HABITS	1	2	3
ALARM PATIENT ABOUT THE SEVERITY OF HIS / HER CONDITION	1	2	3
SEE PATIENT MORE OFTEN	1	2	3
INVOLVE PATIENT'S SIGNIFICANT OTHER IN HIS / HER TREATMENT	1	2	3

28. How often do you train your patient or their significant other to take the patient's blood pressure at home? (Circle number)

- 1 RARELY OR NEVER --- GO TO QUESTION 31
- 2 OCCASIONALLY
- 3 FREQUENTLY
- 4 ALWAYS OR ALMOST ALWAYS

29. Does it help to have the patient monitor his / her blood pressure at home? (Circle number)
- 1 IT REALLY DOES NOT HELP
 - 2 IT HELPS A LITTLE
 - 3 IT HELPS A LOT
 - 4 I DO NOT KNOW
30. Do you adjust a patient's prescription, based upon his home monitoring blood pressure measurement? (Circle number)
- 1 RARELY OR NEVER
 - 2 SOME OF THE TIME
 - 3 MOST OF THE TIME
 - 4 ALL OR ALMOST ALL OF THE TIME
31. At what diastolic blood pressure do you usually tell patients that you have a concern with their sustained high blood pressure reading? (Circle number)
- 1 85 - 89 mm Hg
 - 2 90 - 94 mm Hg
 - 3 95 - 99 mm Hg
 - 4 100 - 104 mm Hg
 - 5 105 - 114 mm Hg
 - 6 115 mm Hg or higher
 - 7 I DO NOT TELL THEM
32. Would you refer your patients with high blood pressure to a worksite or community surveillance program for their regular follow-up?
- 1 YES
 - 2 NO

33. In what form or forms would materials on each of the following patient education topics be helpful to you and / or your staff in managing high blood pressure? (Circle ALL the numbers that apply for EACH topic.)

EDUCATIONAL MATERIALS ON:	Slide Programs	Audio/video tapes	Printed materials	Flip charts/posters for physician's office	None
BASIC INFORMATION RE: HIGH BLOOD PRESSURE	1	2	3	4	5
IMPORTANCE OF TAKING DRUGS	1	2	3	4	5
COPING WITH DRUG SIDE EFFECTS	1	2	3	4	5
STRESS MANAGEMENT	1	2	3	4	5
HOW TO MONITOR BLOOD PRESSURE AT HOME	1	2	3	4	5
IMPORTANCE OF DIET IN HIGH BLOOD PRESSURE	1	2	3	4	5
OTHER (specify) _____	1	2	3	4	5
_____	1	2	3	4	5

34. In your practice, do you have one or more of the following allied health professionals to assist you in the management of high blood pressure? (Circle number in each category)

	<u>YES</u>	<u>NO</u>
REGISTERED NURSE	1	2
REGISTERED NUTRITIONIST	1	2
PHARMACIST	1	2
PHYSIOTHERAPIST	1	2
HEALTH EDUCATOR	1	2

35. The following have been suggested as aids to help physicians manage patients with high blood pressure. Indicate whether or not you feel these aids can be useful in your practice. (Circle number for each item)

	<u>USEFUL</u>	<u>NOT USEFUL</u>
EXPERT ADVICE AVAILABLE BY TELEPHONE	1	2
COMPUTER ASSISTANCE IN DIAGNOSIS AND TREATMENT	1	2
A NEWSLETTER ON HIGH BLOOD PRESSURE	1	2
ALGORITHM - "RECOMMENDATIONS FOR HYPERTENSION MANAGEMENT" DISTRIBUTED BY THE MANITOBA COALITION FOR HEALTHY BLOOD PRESSURE	1	2
CONTINUING MEDICAL EDUCATION PROGRAMS TO UPDATE PHYSICIANS IN THE DETECTION AND DIAGNOSIS OF HIGH BLOOD PRESSURE	1	2
TREATMENT PROTOCOLS FOR USE BY NON-PHYSICIAN PERSONNEL UNDER YOUR SUPERVISION	1	2
MATERIALS TO TRAIN YOUR OFFICE PERSONNEL IN SUCH TASKS AS DATA COLLECTION, PATIENT EDUCATION AND MONITORING	1	2
COMPUTER ASSISTANCE IN PATIENT FOLLOW-UP	1	2
POSTCARDS FOR PATIENT REMINDERS RE: APPOINTMENT	1	2
REFERENCE LISTS FOR RESOURCES / COMMUNITY PROGRAMS WHICH FOSTER LIFESTYLE MODIFICATION / CHANGE	1	2
STANDARDIZED PATIENT RECORD WHICH WILL PROVIDE COMPARISON FOR BLOOD PRESSURE READINGS OVER TIME	1	2
OTHER (specify)_____	1	2
_____	1	2

V. PRACTICE DEMOGRAPHICS AND CHARACTERISTICS.

This section focuses on your practice demographics and characteristics.

36. At present, are you: (Circle number)

- 1 GENERAL PRACTITIONER
- 2 CERTIFIED FAMILY PRACTICE PHYSICIAN
- 3 INTERNIST (Specify subspecialty if any) _____

37. How many years have you been practising medicine? (Circle number)

- 1 < 3 YEARS
- 2 3 - 10 YEARS
- 3 11 - 20 YEARS
- 4 21 - 30 YEARS
- 5 > 30 YEARS

38. Is your principal practice a: (Circle number)

- 1 SOLO PHYSICIAN PRACTICE
- 2 TWO PHYSICIAN PARTNERSHIP
- 3 THREE TO TEN PHYSICIAN GROUP
- 4 OVER TEN PHYSICIAN GROUP
- 5 OTHER (specify) _____

39. Where have you obtained the most helpful information related to high blood pressure prevention and control in the last five years? (Circle as many as apply)

- 1 JOURNALS (Specify) _____
- 2 CONTINUING MEDICAL EDUCATION PROGRAMS
- 3 COLLEAGUES
- 4 OTHER (Specify) _____

40. What is your gender?

- 1 MALE
- 2 FEMALE

41. Is your practice located in a population of : (Circle number)

- 1 < 1,000
- 2 1,000 - 4,999
- 3 5,000 - 24,999
- 4 25,000 - 50,000
- 5 > 50,000

THIS IS THE END OF THE QUESTIONS.

Any comments you wish to make about the future efforts of the Coalition will be appreciated, either on the space below or in a separate letter.

This image shows a full page of blank, lined paper. It features approximately 20 evenly spaced horizontal black lines across its entire width, typical of notebook or legal stationery. The paper is otherwise completely empty, with no margins, text, or other markings.

THANK YOU.

APPENDIX C

HIGH BLOOD PRESSURE IN MANITOBA - THE PHYSICIAN'S PERSPECTIVE

SECTION I: DETECTION FOR HIGH BLOOD PRESSURE (HBP):

Section I of the questionnaire related to the procedures/activities employed by physicians in the detection of high blood pressure and contained 7 questions.

Question one identified whether or not the participant was qualified to complete the questionnaire. If the physicians did not treat any adults for high blood pressure, or were not currently practicing medicine, they were requested to return the questionnaire to assist with the accuracy of the response rate.

RECOMMENDATION TO PHYSICIAN RE:	QUESTION STATEMENT	QUESTION NUMBER	QUESTION SOURCE
	Which of the following best describes your practice for detecting HBP in your adult patients?	2	Birch & Davis Associates (1987) Logan & Haynes (1986) (modified)
Check BP every 2 years & reschedule appointment if BP above upper limits.	If you recommend regular checks of BP for all your patients, what is the usual frequency of these checks?	3	Developed for Study
	What % of your patients, with HBP have been referred to you through screening programs?	4	Developed for Study

RECOMMENDATION TO PHYSICIAN RE:	QUESTION STATEMENT	QUESTION NUMBER	QUESTION SOURCE
	How important do you feel community screening programs are in the detection of HBP?	5	Developed for Study
	What type of sphygmomanometer do you usually use to measure BP?	6	Logan & Haynes (1986)
	If you use a non-automated device for measurement, which part of the stethoscope do you most commonly use for auscultation?	7	Developed for Study

SECTION II: DIAGNOSIS/WORK-UP FOR HIGH BLOOD PRESSURE:

Section II focused on the physicians' practices and opinions regarding the diagnostic work-up and diagnosis of high blood pressure. This section contained 6 questions.

RECOMMENDATION TO PHYSICIAN RE:	QUESTION STATEMENT	QUESTION NUMBER	QUESTION SOURCE
	Which of the following best describes the procedure you use in diagnosing mild or moderate high blood pressure?	8	Birch & Davis Associates, (1987)
	If you take more than 1 BP measurement at one visit, which of the following do you usually take?	9	Logan & Haynes (1986) (modified)
	What indicator do you use for diastolic BP measurement?	10	Logan & Haynes (1986) (modified)

RECOMMENDATION TO PHYSICIAN RE:	QUESTION STATEMENT	QUESTION NUMBER	QUESTION SOURCE
Rule out secondary causes <u>Lab Work</u> EKG Chest x-ray Urinalysis S. cholesterol S. potassium S. glucose S. creatinine	In your diagnostic work-up of a patient with suspected elevated blood pressure (mild or moderate), which of the following would you most frequently do?	11	Birch & Davis Associates, 1987 (modified)
3 visits with BP readings taken 2 months apart or less if DBP $\geq$ 105 mmHg.	How many separate patient visits are usually necessary before you establish a diagnosis of mild or moderate HBP?	12	Logan & Haynes (1986) (modified)
	How often do you see a patient while establishing a diagnosis of mild or moderate HBP?	13	Developed for study

SECTION III: TREATMENT/MANAGEMENT FOR HIGH BLOOD PRESSURE:

Section III focused on the treatment/management of high blood pressure by the physicians and contained 9 questions.

RECOMMENDATION TO PHYSICIAN RE:	QUESTION STATEMENT	QUESTION NUMBER	QUESTION SOURCE
Goal BP 140/90 or less			
Mild High Blood Pressure (DBP 90-104mmHg.): NON-DRUG THERAPY may be tried as sole therapy.	In your treatment of patients with HBP, when do you recommend each of the following non-drug therapies?	14	Birch & Associates (1987) (modified)

RECOMMENDATION TO PHYSICIAN RE:	QUESTION STATEMENT	QUESTION NUMBER	QUESTION SOURCE
Otherwise, use adjunct to drug therapy.	For how many months do try to reach the desired BP goal with non-drug therapy before you decide to begin treatment with drugs for patients with the following diastolic BP measurements?	15	Birch & Associates (1987) (modified)
	To which community resources do you currently refer your patients for assistance with non-drug treatments?	16	Developed for study
	How are these referrals made to these agencies?	17	Developed for study
	In how many of your patients can you control mildly elevated HBP for a prolonged time period with non-drug therapy only?	18	Birch & Davis Associates (1987) (modified)
<u>DRUG THERAPY:</u> Begin with diuretics or beta blockers/	Indicate the drug protocol you would employ in the treatment of mild or moderate HBP in the defined situation.	19	Birch & Davis Associates (1987) (modified)
<u>Additional Other Options</u>	Indicate the drug protocol you would employ in the defined situation.	20	Birch & Davis Associates (1987) (modified)
Add Vasodilator or other alternatives C.E.I. Ca Antagonist (may be Step 1 or 2 in suitable cases)	Based on your clinical experience, to what extent do the side effects of the following drugs make a difference in the pharma- ceutical management of HBP?	21	Birch & Davis Associates (1987) (modified)
	When do you usually like to try a new drug?	22	Logan & Haynes (1986) (modified)

SECTION IV: FOLLOW-UP:

Section IV focused on the practices and opinions of physicians regarding follow-up activities to encourage and/or ensure compliance with the treatment plan. This section contained 13 questions.

RECOMMENDATION TO PHYSICIAN RE:	QUESTION STATEMENT	QUESTION NUMBER	QUESTION SOURCE
See patients q 1 mo. until BP controlled (q 1- 2 wks if initial DBP $\geq$ 115)	What is your usual recommended frequency of return office visits for patients while their BP is being brought under control?	23	Birch & Davis Associates (1987) (modified)
	What is your usual recommended frequency of return office visits for patients with stabilized HBP?	24	Birch & Davis Associates (1987) (modified)
	Which of the following methods do you usually employ to arrange the next appointment for your patients with HBP?	25	Logan & Haynes (1986)
	When a patient with HBP misses a follow-up appointment, which pro- cedure is usually carried out in your office?	26	Logan & Haynes (1986) (modified)
	How often do you use the following strategies to encourage patients with poor compliance to take their antihypertensive medications?	27	Birch & Davis Associates (1987) (modified)
	How often do you train patients or their signifi- cant other to take the patient's BP at home?	28	Birch & Davis Associates (1987) (modified)

RECOMMENDATION TO PHYSICIAN RE:	QUESTION STATEMENT	QUESTION NUMBER	QUESTION SOURCE
	Does it help to have patients monitor their BP at home?	29	Birch & Davis Associates (1987) (modified)
	Do you adjust a patient's prescription based upon his home monitoring of BP?	30	Birch & Davis Associates (1987) (modified)
	At what DBP do you usually tell patients that you have a concern with their sustained HBP reading?	31	U.S. DHEW (1979) (modified)
	Would you refer patients with HBP to worksite or community surveillance program for their regular follow-up?	32	Developed for study based on criterion of Birch & Davis Associates (1987)
	In what form would materials on each of the following patient education topics be helpful to you/your staff in managing HBP?	33	Birch & Davis Associates (1987) (modified)
	Do you have one or more of the following allied health professionals to assist you in the management of HBP?	34	Birch & Davis Associates (1987) (modified)
	The following have been suggested as aids to help physicians manage patients with HBP. Indicate whether or not you feel these aids can be useful in your practice.	35	Birch & Davis Associates, (1987) and U.S. DHEW (1979) (modified)

SECTION V: PHYSICIAN DEMOGRAPHICS AND CHARACTERISTICS:

Section V contained 6 items collecting the physician demographics and practice characteristics. This information was required in the statistical analysis of the research questions.



MANITOBA COALITION FOR HEALTHY BLOOD PRESSURE
COALITION MANITOBAINE POUR UNE TENSION ARTERIELLE SAIN

Dear Physician:

A major challenge for health care professionals today is the comprehensive approach to the prevention and control of high blood pressure. The physician as head of the multidisciplinary health care team plays a critical role in the overall assessment, planning, implementation and evaluation of the various programs to achieve this goal.

In order to be of assistance to physicians, the Manitoba Coalition for Healthy Blood Pressure is interested in learning what physicians in Manitoba think about high blood pressure, and what they do about it in their practices. All general practice, family practice and internal medicine practitioners registered with the Manitoba Medical Association are being invited to participate in a survey collecting this information.

The questions will focus on four major areas of high blood pressure prevention and control: 1) detection, 2) initial diagnosis, 3) treatment, and 4) follow-up. It is recognized that the demands on your time as a practising physician are great. Therefore, the questionnaire has been designed to take approximately 20 minutes to complete. Your participation is greatly needed and appreciated.

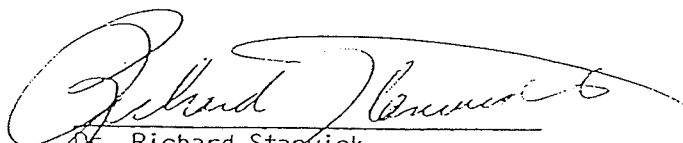
Your name and address are not required on the questionnaire. You may be assured of complete confidentiality. The identification number in the upper right hand corner of the questionnaire is for mailing and follow-up purposes only. After completion of the study, all identification data will be destroyed.

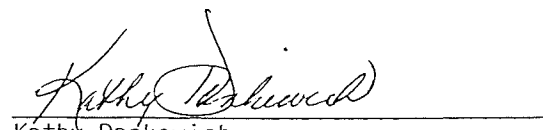
You may receive an executive summary of the study upon request to the Manitoba Coalition for Healthy Blood Pressure.

If you have any questions concerning this questionnaire, please contact Kathy Dankewich, the principal investigator, in writing to the above address or by phone (237-2978).

Thank you for your help.

Yours truly,


 Dr. Richard Stanwick
 Chairperson
 Public Health Issues Committee
 Manitoba Medical Association


 Kathy Dankewich
 Principal Investigator

APPENDIX E

November, 1989

Last week, a questionnaire seeking your practice patterns and opinions in relation to high blood pressure prevention and control was mailed to you. All general practice, family practice and internal medicine practitioners registered with the Manitoba Medical Association were invited to participate.

If you have already completed and returned it to me, please accept my sincere thanks. If not, please do so today. Your participation will assist us in determining the current diagnosis and treatment patterns in use for Manitobans with high blood pressure.

If, for some reason, you did not receive the questionnaire, or it has been misplaced, please call me (237-2978) and I will send you another one in the mail today.

Sincerely,


Katherine Dankewich