The Prevention and Control of High Blood Pressure in Canada

Report of a Federal/Provincial Working Group

Canada

Health and Welfare Canada

Santé et Bien-être social Canada

The Prevention and Control of High Blood Pressure in Canada

Submitted in 1983 to
the Federal/Provincial
Advisory Committee on
Community Health Services
by The Federal/Provincial
Working Group on the Prevention
and Control of High Blood Pressure
in Canada

Published by the authority of the
Minister of National Health and Welfare

Également disponible en français sous le titre
"Prévention et contrôle de l'hypertension
artérielle au Canada"

Printed 1986

PREFACE

In February, 1982, the Federal/Provincial Advisory Committee on Community Health Services recommended to the Deputy Ministers of Health that a Working Group be established to develop a strategy for the prevention and control of high blood pressure in Canada. Following the acceptance of the recommendation, a four-person committee was appointed.

We, the members of the Working Group, hope that this report will assist in the development of measures which will lead to improvement in the prevention and control of high blood pressure in Canada.

Ella B. MacLeod, R.N., M.S., Chairman

Harold N. Colburn, M.D., M.P.H.

David R. MacLean, M.D., C.C.F.P., M.H.Sc.

Gerald E. Sinclair, M.D., F.R.C.P.(C)

ACKNOWLEDGEMENTS

The contribution of numerous organizations, associations and individuals who gave of their time to attend meetings, answer questionnaires and present papers was very much appreciated by the Working Group. Special thanks are extended to the officers and members of the Canadian Hypertension Society for their advice and their timely Report of the Workshop on the Status of Hypertension in Canada, May, 1982.

The assistance provided by Mr. Graham Ward, Coordinator of the National High Blood Pressure Education Program (U.S.A.), is gratefully acknowledged; for his presentation on the American programs, and assistance in obtaining resource information, and to his successor, Dr. Edward Roccella, for continuing support.

The opportunity to discuss and learn about programs in the United States, was very beneficial, and the Working Group is appreciative of the hospitality given by Dr. John Southard and colleagues of the Maryland High Blood Pressure Program, and Dr. A. Ostfeld, Dr. D. D'Atri and associates of the Connecticut High Blood Pressure Program during our visits to their States.

The Working Group also wishes to thank federal and provincial departmental associates, particularly Ms. Helen Clow, Ms. Saundra Chatterton, Dr. Helen Johansen, Dr. Pierre Lavigne, Dr. Eric Nicholls and Dr. Andrés Petrasovits for advice and assistance; as well as thank translation, secretarial, and computer services for their work throughout the project.

TABLE OF CONTENTS

PAGE

INTRODUCTION, SUMMARY AND RECOMMENDATIONS

INTRODUCTION

High blood pressure is recognized as a major risk factor in the development of cardiovascular diseases such as stroke, heart attack and kidney failure. These diseases are responsible for a large proportion of the disabilities and premature deaths in our society. Three recent population-based studies, the Nutrition Canada Survey, the Canada Health Survey, and the Canada Fitness Survey demonstrated that there are a large number of Canadians with uncontrolled hypertension. There is effective treatment available for high blood pressure. Consequently, the prevalence suggests it is not being optimally detected or treated. The potential for primary prevention of hypertension is also worthy of consideration.

Prevention and control of high blood pressure would be a major step in reducing disability and death in Canada. It would also lessen the financial and social burdens, on the family and health care system, of this major public health problem. Governments, professional and voluntary health organizations, and individuals are showing an increasing concern about it. Because of the magnitude of the problem and because it appeared that there were opportunities and a need to do more about it, the Federal/Provincial Working Group on the Prevention and Control of High Blood Pressure in Canada was established to examine the issue.

Input from knowledgeable persons was seen as crucial to the Working Group in carrying out its mandate. Representatives of professional associations and health-related organizations were consulted at a meeting in August, 1982. Numerous organizations and individuals were consulted by questionnaire. Discussions with the Coordinator of the U.S. National High Blood Pressure Education Program provided insight into American blood pressure control programs. Visits were made to well-established and successful high blood pressure control programs in Connecticut and Maryland. In addition, pertinent literature was reviewed.

The report that follows is the result of the year's examination of the issues. In the first instance, it is meant to stimulate a nation-wide effort to prevent and control high blood pressure in Canada. It outlines our findings, the magnitude of the problem, and our views about the components of a successful control program. It is intended to provide useful ideas for program innovation. The report does not recommend particular standards of measurement or treatment. These are important tasks that have been and are being addressed by others such as the Ontario Council of Health Task Force on Hypertension and the Canadian Hypertension Society. The report does not address the issue of prevention as a separate entity. The possibilities for primary prevention of high blood pressure and cardiovascular disease generally are discussed, and secondary prevention of cardiovascular disease is implicit in the control of high blood pressure. Above all, it is hoped that the report will be a first step in the process of developing a coordinated approach to dealing with this key health issue in a more effective and efficient manner than has happened in the past.

It is hoped that the advisory committee will make this report available to all those engaged in the administration and delivery of health care, and that health professionals and their organizations will recognize high blood pressure as a major public health problem which warrants a comprehensive mobilization of resources. Education of the public, professionals and patients is critical. There is an urgent need to motivate governments, organizations, professionals and the general public to action. It is essential to establish and promulgate appropriate standards and guidelines to improve the detection, diagnosis, treatment and long-term follow-up of persons with high blood pressure.

We are confident that, through such actions, Canadians can achieve substantial further reductions in disability and untimely deaths which are due to the complications of high blood pressure.

SUMMARY

High blood pressure is one of the major risk factors for cardiovascular disease. Canadian surveys have estimated that 10 to 15 per cent of adult Canadians have high blood pressure. Many, especially males, are unaware they have it, and if aware, do not have it adequately under control. High blood pressure is among the most frequently diagnosed conditions, and results in numerous physician/patient contacts with considerable drug costs. The available information suggests that optimal control of high blood pressure in Canadians has not been achieved despite the availability of effective treatment measures and expenditures of substantial sums.

There is a multiplicity of standards for the diagnosis and treatment of high blood pressure. In Canada, there is a lack of coordinated control programs for high blood pressure. There are some screening activities, but few ongoing programs which systematically provide linkage to the health-care system or incorporate long-term follow-up or compliance strategies. There is also a shortage of Canadian educational materials on blood pressure in either official language.

The Working Group perceives two dominant issues in the failure to control high blood pressure in this country: *the lack of organized approaches to planning, professional and public education, detection, follow-up and evaluation services;* and *the pressures on medical practitioners to provide curative services and care for acute problems, rather than preventive services and follow-up of chronic problems.* These issues need to be addressed if the problem of bringing and maintaining under care persons with hypertension is to be overcome.

Baseline data and information, especially on current public and professional perceptions and practices, are needed to facilitate the development of strategies for the control of high blood pressure. In addition, there is a

need to establish coordinating mechanisms at the national and provincial level with a cooperative approach to programs and to develop resource materials.

The major responsibility for the control of high blood pressure should, of course, remain with private practitioners, especially family physicians, with whom about 90 per cent of physician/patient contacts are made for the care of high blood pressure. The public health system, worksites, and various voluntary and professional organizations should assist physicians with their task. The objectives of this integrated and comprehensive approach would include improving public awareness, motivating individuals to take action against risk factors, and reducing numbers and proportions of persons in the population with unacceptable blood pressure levels (with the resulting consequences). There are special opportunities to develop programs through realigning the priorities of local health units so that they can provide needed leadership and support services. In addition, work places are excellent sites for coordinated control programs which will reach large segments of the male population.

The proposed programs for the prevention and control of high blood pressure would have four basic strategies: education for the public at large, professionals and patients; a system for detecting and bringing persons with high blood pressure into care; a multifaceted approach to population surveillance; and a system which will ensure that those who are diagnosed will be maintained under care through the necessary follow-up, recall, and other assistance with compliance. The design of programs is not likely to be uniform across the country. A mix of strategies will be required and a variety of unique programs should develop, but within a common framework. To facilitate the development of cooperation among the various segments of the health services system and the implementation of the four basic strategies, two supporting strategies are needed, one to provide coordination and information exchange, the other to develop the information and data base required for planning, program development and evaluation.

The development of coordinated control programs requires some funding and substantial effort. However, the injection of large sums of money into the health care system should not be required. Rather, efforts to bring together voluntary, professional and government organizations to plan and develop appropriate measures would have a substantial, catalytic effect on mobilizing these groups to action.

RECOMMENDATIONS

Because of the potential benefit in reducing disability and untimely death from strokes and heart and kidney disease, the Working Group recommends that:

(1) *a national high blood pressure coordinating mechanism be established involving the Department of National Health and Welfare, voluntary and professional health organizations and others as appropriate;*

(2) *the national coordinating body give priority to public, professional and patient education programs and to the production and promulgation of objectives, goals, standards and guidelines for the development and implementation of Canadian policies and programs for high blood pressure prevention and control, and encompassing the detection, diagnosis, investigation and treatment of high blood pressure, training of health professionals and volunteers and the collection of data for planning and evaluation;*

(3) *provinces and territories, in cooperation with voluntary and professional health organizations and others as appropriate, organize within their jurisdictions coordinating bodies to plan, develop, promote, implement and evaluate community high blood pressure prevention and control programs which are integrated with, and supportive of, existing medical care services;*

(4) *Canadian high blood pressure control programs be based on the following strategies and goals:*

education: *to increase knowledge and action about high blood pressure and related risk factors among the public, health professionals and individuals with high blood pressure;*

surveillance: *to provide ready access for periodic blood pressure measurement at a variety of sites and to ensure linkage to a source for care;*

bringing into care: *to ensure the detection, evaluation and initiation of treatment for persons with high blood pressure;* and

maintaining under care: *to ensure follow-up, recall and other assistance with compliance for persons with high blood pressure;*

(5) *local health departments realign their priorities to allocate resources to the development of high blood pressure control programs;*

(6) *workplaces give high priority to development of high blood pressure control programs;*

(7) *federal, provincial and territorial governments take immediate steps to encourage and prepare health workers and policy makers from local health departments and employer/employee groups to participate in high blood pressure control programs;* and

(8) *the Medical Research Council, National Health Research and Development Program, the Canadian Heart Foundation, the Kidney Foundation of Canada and other funding sources allocate substantially increased resources to the research and data needs and to the development of an improved base of knowledge for the prevention and control of high blood pressure in Canada.*

CURRENT STATUS OF HIGH BLOOD PRESSURE IN CANADA

NATURE AND EXTENT OF HEALTH PROBLEM

High blood pressure is one of four major risk factors for cardiovascular disease in industrial countries, the others being elevated blood cholesterol levels, cigarette smoking and diabetes mellitus. These risk factors act independently as well as together. Their consequences - particularly ischemic heart disease and stroke - and other non-communicable or chronic diseases, have replaced infectious diseases as the major public health concerns in countries such as Canada. The four major risk factors for cardiovascular disease are amenable to prevention or control measures which can at least reduce disability, improve the quality of life or prevent untimely death.

Death rates for cardiovascular diseases, for reasons that are not well understood, have declined in recent years in Canada and in some other countries, especially the United States. However, cardiovascular diseases collectively remain the leading cause of death for both men and women and the leading cause of loss of life-years before age 70 in Canada. They are a major contributor to the costs of medical and hospital care and key causes of disability.

Risk increases steadily with blood pressure, with no cut-off point between "normal" and "abnormal" levels. The shape of the distribution curve of high blood pressure is such that the greatest proportion of persons considered to have high blood pressure is at the least elevated levels. Consequently, from a public health perspective, "mild" hypertension has a greater impact (population attributable risk) than more severe hypertension in causing consequences in the population.

Probably some 10 to 15 per cent of Canadians have high blood pressure, controlled or uncontrolled. The prevalence increases with age, one-quarter or more of persons 65 and over being affected.

The national surveys that obtained data on the prevalence of high blood pressure - Nutrition Canada, the Canada Health Survey, and the Canada Fitness Survey - did not collect data in a form specifically designed for high blood pressure programs. Moreover, blood pressure was determined at a single sitting and with a single measurement (except for some persons in the Canada Fitness Survey), and the numbers tested were not sufficient to generate reliable estimates of provincial or regional prevalence. Single measurements are likely to exaggerate the prevalence of high blood pressure, especially at lower levels, e.g., 90 to 100mm Hg diastolic. There is general agreement, however, that large numbers of Canadians have uncontrolled high blood pressure.

The 1978-79 Canada Health Survey, limited by single measurements, indicated that some 225,000 Canadians, mainly men, would almost certainly benefit from the initiation or improvement of high blood pressure treatment, and that at least a million more would probably benefit from steps to reduce their blood pressures and from regular follow-up. It is estimated that almost half a million persons, mostly women, knew that they had high blood pressure and were receiving medicine for heart disease or high blood pressure, but still had elevated blood pressures. A striking finding was the preponderance of males, the male/female ratio possibly being as high as four to one, with diastolic blood pressures of 105mm Hg or higher. The more recent Canada Fitness Survey suggests that the male/female ratio may be somewhat lower, in the order of two. Such sex differences appear to reflect different patterns of disease detection and compliance with treatment more than differences in the incidence of high blood pressure. About 60 per cent of physician/patient contacts for high blood pressure involve women.

Despite the general agreement that large numbers of Canadians have uncontrolled high blood pressure, there is an obvious need for specific studies which will provide more precise estimates.

Although there is much room for improvement in its detection, treatment and follow-up, high blood pressure already results in the substantial use of health services. This is not only because of its consequences, such as stroke, heart attack, heart failure and kidney failure, but also because the diagnosis and treatment of high blood pressure in itself represents a substantial proportion of physician/patient contacts.

The 1978-79 Canada Health Survey estimated that 1.4 million persons had consulted a health professional in the preceding 12 months for hypertension. This was exceeded only by the numbers of persons estimated to have consulted for arthritis and rheumatism, and for limb and joint disorders. The proportion of known hypertensives consulting a health professional was, along with diabetes, more than 90 per cent - higher than the proportion of persons with any other condition. This suggests that failure to control high blood pressure among large numbers of persons already identified and under treatment cannot be attributed primarily to loss of contact with their physicians.

Analysis of data provided by IMS (Intercontinental Medical Statistics) Canada Limited indicates that hypertension was the most frequently diagnosed condition in 1981, constituting 4.3 per cent of aggregate diagnoses and 8.5 million physician/patient contacts. Eighty-one per cent of patients were seen in doctors' offices, nine per cent in hospital. Nine per cent of visits were first visits and 91 per cent subsequent visits. The 1981-82 annual report of the Saskatchewan Medical Care Insurance Commission identified hypertension as third in number of services provided by physicians. This was exceeded only by general medical examinations (no specific diagnosis) and acute upper respiratory infection (except influenza). Hypertension accounted for 3.1 per cent of all physician services in Saskatchewan and 2.6 per cent or $2.98 million in payments to Saskatchewan physicians in 1981-82.

IMS Canada Limited's data provide estimates that total purchases of anti-hypertensive and/or diuretic drugs amounted to $93 million in 1981 or 8.3 per cent of the ethical (prescription and prescription-like drugs) market. The combined volume for drugstore and hospital purchases of beta-blockers alone in 1981 was estimated at $38 million, 3.4 per cent of the ethical market and an increase of nine per cent over the previous year. Such drugs, however, are used for treatment of other conditions as well as high blood pressure.

The May 1982 Canadian Hypertension Society Workshop on the Status of Hypertension in Canada concluded:

> *"The major problem related to drug therapy of hypertension is the maintenance of compliance.... A major problem exists in the dissemination and use of validated methods for detecting and correcting low compliance and drop-outs from hypertensive care."* [1]

The available information indicates that optimum value is not being obtained for the large amounts of money spent on the treatment of high blood pressure, and provides further justification for strategies to ensure that persons with high blood pressure remain under care and receive adequate care.

We see three actions as fundamental in attempting to reduce the toll of high blood pressure in Canada:

> *improved efforts to achieve goal blood pressures among the large numbers of persons whose blood pressure remains uncontrolled despite treatment;*
>
> *improved efforts to detect and treat the large numbers of persons who are not aware that their blood pressure is elevated;* and
>
> *improved efforts to reduce the disproportionate numbers of men with uncontrolled high blood pressure, whether this is due to a lack of detection or to inadequate treatment.*

---

[1] Report of the Workshop on the Status of Hypertension in Canada, The Canadian Hypertension Society, Montebello, May 1982, p. 9.

PRESENT WAYS AND MEANS OF CONTROL

The consultations carried out among Canadian organizations and individuals (Appendix) revealed a limited number of programs for high blood pressure control in Canada. Most of these were at the worksites of major industrial organizations. Screening and, to a lesser extent, health promotion, are carried out in an ad hoc fashion in most parts of the country. Some systematic screening is carried out by groups such as the Saskatchewan Heart Foundation. Most have been conducted in shopping centres or at health fairs on a one-time-only basis. Health promotion seems to be confined to printed and media material distributed in limited geographic areas and at industrial worksites. Except for some workplace programs, there is none which systematically provides linkage to the health care system following screening, or which incorporates long-term follow-up or compliance strategies except in an experimental or research mode.

The burden for the control of high blood pressure in Canada falls almost exclusively upon the interactions between individuals and their personal physicians. Some 90 per cent of physician/patient contacts for the care of high blood pressure in Canada are made by general practitioners.

The Working Group perceives two dominant issues in the failure to control high blood pressure in this country:

> *the lack of organized approaches to planning, professional and public education, detection, follow-up and evaluation services;* and
>
> *the pressures on medical practitioners to provide curative services and care for acute problems, rather than preventive services and care and follow-up of chronic problems.*

From the Working Group's perspective, the lack of organized approaches to high blood pressure control became obvious. However, more information is needed about the nature and determinants of physicians' treatment practices for high blood pressure. Knowledge about the relative importance of physician and patient factors in the apparent widespread failure to achieve goal blood pressures is essential to the development of effective strategies to improve control among persons known to have high blood pressure.

APPROACH TO REMEDIAL ACTION

WHY ORGANIZED ACTION IS NEEDED

It is possible that, by continuing to "muddle through," the impact of high blood pressure can be lessened. Certainly, death rates from stroke, the most directly related consequence of high blood pressure, are dropping sharply, although this decline began before the development of modern and effective drugs. Also, death rates from heart attack have declined in recent years.

It is clear, however, that there are many Canadians, especially men, with uncontrolled high blood pressure who have an elevated risk of strokes, heart attacks, heart and kidney failure and eye damage. These persons could be reached through systematic efforts to monitor the blood pressure of adults and to bring them under care, or help them remain under care. The outstanding example of the feasibility of this approach is the United States National High Blood Pressure Education Program, with its consortium of national organizations, government and voluntary, and its state and local ramifications. Although comparisons are difficult because of the lack of Canadian data, the United States appears to have a greater proportion of hypertensive persons who know they have high blood pressure, who are receiving treatment and who are adequately controlled. This success can be attributed to United States inroads in public and professional education and the development of needed screening, treatment and follow-up services. In fact, much of the public education about high blood pressure in Canada may be attributed to the spillover effect of the United States program via U.S. media reaching this country.

In addition to facilitating better control of existing high blood pressure, nationwide cooperative strategies are required to develop the potential for prevention of high blood pressure at the population level, as well as

for the individual whose blood pressure begins to creep up. To our knowledge, such strategies are not well developed anywhere in the world, and Canada has an opportunity to demonstrate leadership in this regard.

Consultations with various voluntary and professional groups across the country confirmed that there is widespread recognition of the inadequate effort being made to deal with high blood pressure and a genuine desire to participate in efforts to improve the situation. A major concern was the lack of Canadian resource materials in both official languages. The need for governments to develop policies was also mentioned. Key national organizations have indicated their willingness to participate in a national consortium to exchange information and facilitate the coordination of programs.

The advice received suggests the development of a substantial control program which would require funding, but not the injection of large sums of money into the health services system, to deal with high blood pressure. Efforts to bring together appropriate voluntary and professional groups to develop strategies and resource materials would have a substantial catalytic effect in mobilizing these groups to action. Indeed, the success of the United States program appears to be due to such an approach. The policy of the United States Federal Government* is to gradually reduce, rather than increase, its funding, as other national organizations and other levels of government become more actively involved.

Such an approach requires a common framework of objectives and goals and some means to monitor the degree of achievement. However, it provides for flexibility in the application of the specific measures required to achieve those objectives and goals.

---

* Personal Communication, Graham Ward

RESEARCH AND DATA GATHERING

Deficiencies exist in information required for policy and program development and evaluation, as well as for professional and public education.

The problem of obtaining data was addressed at the Workshop on the Status of Hypertension in Canada which was held by the Canadian Hypertension Society in Montebello, May 27-29, 1982. Among other measures, it was recommended that the society initiate and disseminate a single common protocol for community hypertension surveys and encourage past and future federal surveys (with their excellent sampling methods) to generate clinically credible estimates of hypertension.

The Canadian Hypertension Society has established a small committee to examine the above and other recommendations, to develop a common protocol and, if possible, develop a correction factor for single visit surveys. Some doubt has been expressed about whether general health or fitness surveys can afford to revisit participants to obtain "clinically credible" estimates of hypertension. Nor is there general agreement that one should apply the same criteria to population surveys as to the diagnosis of hypertension. The role of population surveys is to assist in program planning, development and evaluation. For these purposes, consistent quality of repeated surveys may be more important than diagnostic precision. For ethical reasons, it is necessary to inform an affected person that a survey has revealed an elevated blood pressure. It should be possible, therefore, to build into the design of surveys the follow-up needed to determine whether such persons have sustained elevations on repeat examinations and to ensure linkage with a source of care if needed.

The Health Promotion Directorate of Health and Welfare Canada is conducting a survey in 1985 on awareness, knowledge and perceptions about high blood pressure. The Canadian Hypertension Society is developing questions on knowledge, perceptions and behavior.

Agreement to use a common protocol at least for a few "core" questions and procedures, including knowledge, perceptions and behavior as well as blood pressure measurement, could be of great value in efforts to obtain data that can be pooled and compared. Acceptance of common "core" questions would permit groups using them to add other questions suited to their own needs. For example, a local health unit or even a province could carry out surveys before and during a program and know that the data obtained would have regional or national as well as local or provincial value.

The above activities and the occasional local survey can make important contributions to our knowledge about high blood pressure. However, more is required. The development of an adequate data base is essential, not only for planning purposes but for monitoring and evaluating programs. In addition to data on populations, it will be important to obtain information on institutional responses to the problem, including those of local, provincial and federal governments, hospitals and voluntary and professional organizations.

Special attention should be given to studies of the effectiveness of dietary measures in the prevention and control of high blood pressure, and to studies of the value of nutrition labelling. There should be community or workplace demonstration programs for the prevention and control of cardiovascular disease or hypertension itself, and the assessment of the effectiveness of systems to improve follow-up and compliance with therapeutic regimens. Experimental professional and public education programs, and other programs designed to impact more broadly on cardiovascular or general health, should be undertaken. Special attention should be given to the incorporation of adequate evaluation components in all programs.

The importance of expanding our base of knowledge about high blood pressure was highlighted in the above-mentioned workshop of the Canadian Hypertension Society. We endorse the following recommendations of the workshop:

"Since research in hypertension is essential to improve the management and control of hypertension, and since this aspect is underdeveloped in Canada, the Canadian Hypertension Society should encourage granting agencies and industries to designate career fellowships and scholarships, development grants and program grants in the field of hypertension research.

"The Society should promote workshop activities to identify problems of high priority and a consensus of strategies to investigate these problems.

"With regard to basic research, the Canadian Hypertension Society should promote and facilitate interaction between Canadian researchers who are often isolated in various parts of Canada. There is also a need to find ways to increase the interaction between basic and clinical research. The interest of basic scientists in research in human tissues should also be stimulated.

"With regard to clinical research, the Society should initiate and seek support for multicentre research projects which would involve the aspects of diagnosis, outcome, and interventions."[2]

The Society should also be encouraged to continue and expand its capacity to advise in the following subjects in which it has expressed special interest:

the standardization of methodological approaches in epidemiological studies;

education research, including the development of new approaches to undergraduate and continuing education for primary care physicians;

health services research, including the development of strategies to increase compliance with therapeutic regimens;

the promotion of clinical research activities and the development of research manpower resources in hypertension; and

---

2 Ibid., p. 16

the creation and maintenance of a directory of researchers and research projects in the field of hypertension in Canada.

Information is required to assist in determining what should be done about high blood pressure, not whether something should be done about it. The priority need is baseline data on public knowledge and perceptions about high blood pressure and on the practices of physicians and other health-care providers in connection with high blood pressure. Periodic surveys, especially designed for high blood pressure control purposes, are needed to monitor levels of awareness and of detected and undetected high blood pressure in the population.

The Working Group has concluded that control programs should be initiated without delay and without waiting for additional information.

GENERAL PRINCIPLES AND DIRECTIONS

A strategy for the control of high blood pressure in Canada should be developed within the framework of a comprehensive effort to reduce disability and untimely death from cardiovascular diseases.

In its recent report on the Prevention of Coronary Heart Disease (Ischemic Heart Disease), a World Health Organization Expert Committee (Technical Report Series 678, WHO, Geneva, 1982) has pointed out the need for a three-pronged approach:

> **a population strategy** - *for altering the lifestyle and environmental characteristics, and their social and economic determinants that are the underlying causes of mass ischemic heart disease;*
>
> **a high-risk strategy** - *for bringing preventive care to individuals at special risk;* and
>
> **secondary prevention** - *for averting recurrences and the progression of disease in those already afflicted.*

The Expert Committee's comprehensive plan for prevention of ischemic heart disease provides a sound basis for the development of strategies to deal with other cardiovascular diseases as well, especially stroke. It identifies the importance of the following:

> *the potential impact on population morbidity and mortality rates for cardiovascular diseases that could be achieved by reductions in cigarette smoking and even modest reductions in population levels of serum cholesterol and blood pressure;*
>
> *the potential value of changes in population patterns of diet and physical activity in preventing elevations of serum cholesterol, blood pressure and blood glucose (adult-onset or non-insulin dependent diabetes);* and
>
> *the value of identifying and treating individuals with high blood pressure, especially in the prevention of stroke, and heart and kidney failure.*

The results of the recent United States' Multiple Risk Factor Intervention Trial disappointed those involved in cardiovascular disease prevention. Findings, which were not statistically significant, indicate that risk factor reduction had benefit in reducing mortality due to ischemic heart disease, cardiovascular disease, and all causes in a substantial portion of the population, but this benefit was not demonstrated in the group as a whole. The unexpected reduction in risk factor levels in the Usual Care (Control) Group may have been a major factor in obscuring a true overall effect. In other words, the trial may have been a victim of the success over the past several years in improving lifestyle and the control of high blood pressure in the American population. The higher mortality in a sub-group of hypertensives in the Special Intervention (Experimental) Group who had electrocardiographic abnormalities appears to be a special problem and is being investigated. It is prudent, therefore, to continue to vigorously pursue efforts to reduce the major risk factors -- smoking, high blood pressure, and elevated blood cholesterol levels.

While more needs to be done to integrate programs to reduce smoking, achieve caloric balance, and reduce salt and fat intake and alcohol abuse, within a comprehensive effort to reduce the impact of cardiovascular diseases, at least some organized nationwide efforts are being made to deal with these risk factors. The same cannot be said for high blood pressure.

The need to develop high blood pressure control programs in Canada as part of a comprehensive effort to reduce the impact of cardiovascular disease was identified in the Heart-Lung Health Report submitted to the Federal/ Provincial Deputy Ministers of Health in 1981 by the Advisory Committee on Health Promotion, and by the Ad Hoc Committee on National Health Strategies in its 1982 report. The latter committee recommended the development and implementation of improved methods for the early detection and treatment of hypertension.

In the short-term, it is likely that focussing on the reduction of cigarette smoking, and on high blood pressure prevention and control, will have the greatest pay-off among the policies and programs developed within a comprehensive effort to reduce the risks of cardiovascular disease in Canada.

Detection, adequate treatment, and long-term follow-up of persons with high blood pressure should receive first priority in policies and programs for the affliction. The benefits of drug treatment, especially for moderately and seriously elevated levels of blood pressure, have been well demonstrated. However, to the extent possible, measures should be developed and introduced with the objective of preventing elevated blood pressure and avoiding or reducing drug use among large numbers of Canadians.

The World Health Organization Expert Committee points out that "the ultimate potential for prevention of high blood pressure in populations is illustrated by its virtually total absence in a few traditional, isolated, subsistence economies. The people are generally physically active, obesity is rare, and the sense of community is strong. Habitual salt intake is usually under three grams daily."[3] To this could be added the probability that their intake of potassium is high and of calories, low.

The possibility for primary prevention of high blood pressure by measures such as restricted salt intake, increased potassium intake, and weight control have not yet been well tested in societies such as Canada's. However, progress in public health is replete with examples of wide-scale actions taken before all the answers were in. In the case of high blood pressure, the measures proposed, except for salt restriction, are consistent with policies adopted to enhance lifestyles and health generally and are not new or different. They are included in the recommendations for a prudent diet made

---

[3] W.H.O. Expert Committee, Prevention of Coronary Heart Disease, Technical Report Series 678, World Health Organization, Geneva, 1982, p. 25.

by the Committee on Diet and Cardiovascular Disease reporting to the Minister of National Health and Welfare, 1976, and which have been incorporated into nutrition programs of the federal and provincial governments.

The WHO Scientific Group on the Primary Prevention of Essential Hypertension stated:

> *"A firm recommendation concerning the primary prevention of hypertension should be extended to populations at large only if the suggested research programmes have provided a more definite scientific basis. However, in populations with high average salt intake, educational measures should be undertaken immediately to explain the potential importance of reducing excessive salt intake. Similarly, in populations in which overweight is prevalent, information on the links between overweight and blood-pressure elevation should be addressed to the general public. Individuals who are obese or accustomed to an excessively high salt intake should be adequately counselled."*[4]

Efforts to prevent or postpone high blood pressure and its consequences should be seen as experimental and subject to modification as more is learned about their effectiveness and feasibility. Special emphasis should be given to the reduction of risk factors in children, especially those whose parents or siblings have high blood pressure or developed cardiovascular disease at an early age. Periodic monitoring of blood pressure should be encouraged and appropriate measures taken if blood pressure is creeping up. It should be underlined that various risk factors, especially high blood pressure, smoking, elevated blood cholesterol levels and diabetes mellitus, add to or compound one another in the development of, and mortality from, cardiovascular diseases.

Because high blood pressure is more common in families of hypertensives, special attention should be given to them and to persons who demonstrate a tendency toward elevated blood pressures at an early age. The control of

---

[4] W.H.O. Scientific Group, Primary Prevention of Essential Hypertension, Technical Report Series 686, World Health Organization, Geneva, 1983, p. 33.

obesity has particular appeal, despite the difficulties of losing weight and keeping it off, because of the association not only of weight with blood pressure, but also with diabetes and elevated blood cholesterol levels. The 1982 WHO Expert Committee Report on the Prevention of Coronary Heart Disease quotes data suggesting that the new occurrence of high blood pressure in adults might be reduced by as much as one-quarter in some black populations, and by as much as one-half in some white populations, through the control and prevention of overweight.

The major responsibility for the control of high blood pressure will remain with private physicians, especially general practitioners with whom about 90 per cent of physician/patient contacts are made for the care of high blood pressure. However, the public health system, the worksite, and various voluntary and professional organizations can assist physicians in their task. Such a comprehensive and coordinated approach, which incorporates efforts to prevent as well as control high blood pressure, should have the following objectives:

> *to improve public awareness of, knowledge of, and skills for dealing with, the continuum of blood pressures from acceptable to unacceptable levels, the causes, consequences and control of "high" blood pressure and the control of other risk factors for cardiovascular disease;*
>
> *to increase the numbers and proportions of persons who know their blood pressures and are able to identify and take action on factors that may contribute to increases;*
>
> *to reduce the numbers and proportions of persons who develop unacceptable levels of blood pressure;*
>
> *to increase the numbers and proportions of persons requiring medical treatment who are brought under care;*
>
> *to increase the numbers and proportions of persons requiring medical treatment who remain under care;* and
>
> *to decrease the numbers and proportions of persons with uncontrolled high blood pressure in the population.*

An essential element in achieving the above objectives is the widespread availability and accessibility of means for checking blood pressure, whether this is done in physicians' offices, hospitals, public health units, the workplace, community screening programs, or at home. This allows individuals to monitor their blood pressure to determine if they are "normal" naturally or because of treatment, and to detect whether they are "abnormal" because they are not receiving treatment or are not receiving adequate treatment. The Connecticut High Blood Pressure Program has demonstrated the value of hypertension control based on widespread screening for these purposes.

The proposed cooperative approach to the prevention and control of high blood pressure should have four basic strategies:

> **Education** - *for the public at large, health professionals and patients. It should include creating awareness, the importance of lifestyle, and the reduction of risk factors, the possibilities of prevention, the value of early detection and life-long compliance, and monitoring as part of a "Know Blood Pressure; Know Your Blood Pressure" program;*
>
> **Bringing Into Care** - *which includes detection and linkage to diagnosis and treatment for newly discovered hypertensives or those who have been lost to follow-up, and the professional education and training and the development of facilities needed to achieve this;*
>
> **Surveillance** - *which includes the development of various systems and techniques for monitoring blood pressures utilizing health professionals, volunteers and, as much as possible, existing facilities;* and
>
> **Maintaining Under Care** - *which includes systems that would provide the necessary follow-up, recall, and other assistance with compliance and the professional education and training and the development of facilities needed to achieve this.*

To facilitate the development of the cooperative approach among various segments of the health services system and the implementation of the four basic strategies, two supporting strategies are needed:

Coordination and Communication - *which includes the coordinating mechanisms and exchanges of information needed to develop and implement effective and efficient programs to prevent and control high blood pressure; and*

Knowledge Development, Research and Evaluation - *which includes acquiring the information and data base required for planning, program development and evaluation.*

Because of the unsatisfactory levels of high blood pressure control in Canada, emphasis must be given to the strategies of Maintaining Under Care and Bringing Into Care, in that order.

STRATEGIES FOR A CANADIAN PROGRAM

EDUCATION

The program advocated in this report has as one of its components the development of education programs for the public, for professionals and for the patient. The objectives of such programs are to promote awareness and knowledge of blood pressure, and factors associated with it; and to motivate professionals, organizations and the public at large to institute measures for the prevention and control of high blood pressure.

The individual is being recognized as a primary health care resource, and behaviour and lifestyles as principal determinants of health. There is increasing support for the concept that persons can and should assume personal responsibility for their own health and well-being. As a result, there is a trend toward emphasizing self-help by an active, informed and effective participant in health promotion and disease prevention.

Information alone cannot change behaviour. However, without knowing what to do and how to do it, one cannot act. Therefore, it is necessary to make the facts known as well as to seek methods to motivate people to act on knowledge gained. As hypertension is a major health problem, governments and health professionals have a responsibility to take the initiative in providing individuals with the necessary knowledge.

Successful programs for the control of high blood pressure have been instituted in the United States. In 1972, recognizing the serious consequences of widespread, uncontrolled high blood pressure, a large scale multidisciplinary program was launched. It was named the National High Blood

Pressure Education Program. It has as one of its goals, "increasing public awareness of the problem of hypertension."[5] Since the program was introduced, there is evidence that the number of hypertensives is declining, and individual awareness of elevated blood pressure has increased.

Accomplishments in controlling hypertension in the United States are an incentive and challenge to Canada. The Ontario Council of Health recommended that community-based hypertension programs focus upon public and professional education and motivation. The Canadian Hypertension Society advocates that a nation-wide program to improve the control of high blood pressure should also include the education of the general public.

For these reasons, it is advocated that education programs become an integral part of efforts to prevent and control high blood pressure in Canada. Such programs should be addressed to the public, health professionals and the patient.

Public Education Programs

Public education programs are probably best accomplished through well planned and coordinated strategies developed by inter-disciplinary committees. Persons from various levels of government, professional associations, voluntary health organizations and consumers should be involved. Under the broad umbrella of a comprehensive plan, all groups and individuals can complement each other's activities in blood pressure education.

Education programs are seen as long-term activities to impart general knowledge about blood pressure. They include: its measurement, persons at risk, effects of untreated high blood pressure, underlying risk factors such as obesity, excessive salt intake and alcohol, interactions with other risk

---

5 Ward, G.W., The National High Blood Pressure Education Program: An Example of Social Marketing in Action, Department of Health and Human Services, U.S.A.

factors including oral contraceptives and smoking, and measures that can be taken to influence lifestyle and reduce the odds of developing cardiovascular disease.

There is a lack of Canadian educational materials on high blood pressure in either official language. Some are distributed by the Canadian Heart Foundation and its affiliates, and by the Kidney Foundation of Canada, and some can be obtained from pharmaceutical firms. Excellent materials covering a wide variety of needs are available from the United States Government's National High Blood Pressure Education Program. These could be used in Canada pending the development of Canadian materials. To avoid duplication and to reduce costs, coordination between federal and provincial departments of health, and involvement of voluntary organizations, should be encouraged to facilitate the design, production and distribution of materials.

Marketing, that is the delivery of the message so that it reaches the target groups at risk, requires various channels of communication. Mass education programs are one way to get the message out, create awareness about blood pressure and encourage changes in lifestyles.

News media, television, radio, community groups and health fairs can reach a large segment of the population. Other avenues are local health units, worksites and schools. This type of marketing of education has proved successful in the United States National High Blood Pressure Education Program and such activities as the Community Health Improvement Program in Pennsylvania. Excellent guidelines for the development of strategies can be found in the Community Guide to High Blood Pressure Control prepared by the United States program.

Local health units have the professional resources and mechanisms for reaching groups within the community. High blood pressure must be considered a community health problem. The individualized medical care approach should be augmented by a public health outreach.

The worksite is an ideal setting for reaching individuals. Over half the adult population is involved in work-related activities. A program at the worksite can provide benefits to both employers and employees. A demonstration project carried out for the Ford Motor Company, Michigan, is an excellent one and it concluded "that the cost-effectiveness of ongoing hypertension control interventions justifies implementation of these programs at worksites."[6]

The American Heart Association and the Blue Cross/Blue Shield of Maryland have excellent guidelines for worksite hypertension programs. The worksite has the advantage of easy access to people, convenient facilities, good communication channels and some staff health personnel. In Canada, there are a large number of physicians and occupational health nurses working in a variety of work settings. Responses to the questionnaires indicated that some are already involved in blood pressure programs, including education; many more see this as an area that can be expanded.

Schools provide an excellent arena for developing awareness. By incorporating a blood pressure education program into the school health and/or science curriculum, one can create awareness, provide information and promote healthy lifestyles among young people. School awareness programs also have the potential of reaching large portions of the population as students carry the message to family and community groups.

---

6 Erfurt, J.C. and Foote, A., Hypertension Control in the Work Setting, Final Report, University of Michigan, Ann Arbor, 1982.

Professional Education Programs

Poor compliance with prescribed medical regimens has been demonstrated as one of the major contributing factors in the failure of individuals to achieve satisfactory, long-term blood pressure control. Primary care physicians, as the main therapists for high blood pressure, carry the major portion of the responsibility to deal with this issue.

Improved programs of undergraduate and continuing education for physicians appear to be required. In its May 1982 Workshop on The Status of Hypertension in Canada, the Canadian Hypertension Society concluded there was a discrepancy between the limited time spent on teaching about hypertension to medical students and the considerable time spent by the general practitioner in treating the disease. It was also reported at the workshop that physicians' knowledge of the management of hypertension is negatively correlated with time since graduation. The curricula of medical schools, therefore, should be examined and changed where necessary to ensure that medical students receive appropriate instruction on high blood pressure control. This education should not only provide basic knowledge and help develop technical skills, but also emphasize the role of the physician in prevention and control. Continuing medical education should update doctors on changing indications for treatment and on standards of care for this problem. Medical associations and university medical faculties should be encouraged to take the initiative in this regard.

Although primary care physicians have the main responsibility for the management of high blood pressure in this country, the involvement of other health care professionals is important and should be encouraged. Various health care providers need to be cognizant of blood pressure and skilled in measurement techniques. Stress must be placed on the importance of life-long

control. Unless health care providers are adequately trained and informed and realize the importance of passing their knowledge to others, significant opportunities to improve the situation can be lost.

Patient Education Programs

Education is an essential part of patient care. Providing individuals with knowledge about blood pressure enables them to become active participants in control of their condition.

Standards for patient education programs are required as well as various types of educational materials. The message should be straightforward and easily understood. It should include information about symptoms, complications, medications, other measures such as diet, exercise, quitting smoking, the importance of compliance and the need for regular follow-up. Patients and family should know that while high blood pressure is rarely cured, it can be controlled. They should realize the serious consequences of uncontrolled high blood pressure and that they cannot rely on symptoms to alert them to elevations in blood pressure. Important aspects of programs include the learning atmosphere, content of a program, and the involvement of family in giving support to the patient and helping in compliance.

Individual teaching is important, but there is a trend toward group sessions. In addition to more efficient use of professional time and resources, some patients may learn better by being group members and thereby become more committed to making and maintaining changes. A multidisciplinary approach may assist in fostering patient learning, as each health professional contributes a special skill and expertise in meeting the needs of the patient.

Health professionals have a responsibility for education and support of patients with high blood pressure on an individual basis. Organized group programs can be developed in hospitals, at worksites or in local health units. The goal of all education is to help the individual keep his or her blood pressure under control.

BRINGING INTO CARE

Public awareness of the significance of high blood pressure as a risk to health, and of the need for regular blood pressure measurement is essential. However, awareness education by itself is of limited value unless there is a mechanism for detecting those with high or potentially high blood pressure. Accordingly, a community program should include methods complementing efforts of physicians to bring those who require it into care.

The process of "bringing into care" depends on the following elements:

appropriate blood pressure measurement sites, easily accessible, e.g., physician's office, worksite, public health clinic;

accurate blood pressure measurement(s);

awareness by health professionals of the significance of blood pressure levels;

effective communication of the blood pressure reading and its significance to the individual; and

an undertaking to accept responsibility either to:

provide the evaluation, therapy, maintenance and surveillance necessary for blood pressure control; or

refer the person to an appropriate source for care, including follow-up to determine that linkage has occurred.

High blood pressure meets the criteria for early disease detection as enunciated by Wilson and Jungner and by Whitby. Benefits of well designed screening programs on awareness, detection and linkage have been demonstrated. In the United States, during the past ten years, a variety of community and state-wide control programs utilizing mass screening have been

developed. In Connecticut, for example, from 1974 to mid 1982, more than one million persons were screened and the unawareness rate for high blood pressure fell to eight per cent. Small community population screening has been demonstrated to be effective in Saskatchewan and Newfoundland.

In Canada, as a whole, the application of blood pressure screening programs to date has been discouraged because of concerns about ineffectual linkage and the potentially adverse effects of labelling which has been demonstrated in Eastern Canadian metropolitan worksites. Nonetheless, there is little evidence for an effective alternative to targeted community screening if reasonable objectives are to be achieved within a foreseeable time-frame. We are convinced that, as a minimum, periodic screening of high risk and hard-to-reach groups is necessary, and linkage with treatment and follow-up is essential.

It is likely that improvement in blood pressure detection by primary care physicians may be anticipated within the context of coordinated community programs. While this stimulus to improved high blood pressure detection by the primary care physician is important, other strategies are required if detection efforts are to be optimized, particularly among those who rarely seek the services of a physician. Blood pressure measurement of siblings and children of those with high blood pressure should be encouraged. Medical and nursing staffs of hospitals and emergency departments should be encouraged to identify and refer to a source for care those with suspected or uncontrolled high blood pressure. Physicians and nurses associated with industry and with community health clinics, as well as health facilities within schools and universities, should be encouraged to identify and refer to a source for care those with suspected or uncontrolled high blood pressure. Programs of public and professional education will aid the detection process.

It should be evident that an accurate blood pressure measurement is but one step in a process whereby those with elevated blood pressure levels are brought into care. A single, random, elevated blood pressure measurement requires further evaluation to determine the significance of blood pressure as

a risk to health in the individual. While emphasis has been placed on the need for public education, it is equally important to modify an attitude of uninterest in those professionals who, on determining that the blood pressure is elevated, take no action.

There is a multiplicity of standards for diagnosis of high blood pressure, along with a reluctance to label as hypertensive those who may not require pharmacologic therapy. These factors may hinder or confound efforts at community control. Accordingly, the consistent use of a standardized definition for high blood pressure (the cut-point between normality and abnormality), arbitrary though it may be, is essential for initiating the process of long-term monitoring and management of those with high blood pressure. Therapeutic decision-making requires clinical judgement and must be individualized. However, the identification of those at risk should be independent of a need for pharmacologic therapy.

Although the prevalence of hypertension is high in the elderly, blood pressure does not necessarily rise with age. Acceptance of high blood pressure and cardiovascular disease as anticipated and natural accompaniments of the aging process is pervasive. Systolic hypertension, in particular, is often ignored, although at any level of diastolic pressure, the risk of stroke rises with increasing systolic pressure.

Blood pressure reduction by pharmacologic means in those with moderate or severe hypertension is acknowledged to be beneficial and contributes to the reduction in cardiovascular and renal morbidity and mortality. While the benefit from blood pressure reduction may be equivocal or absent in some subsets of patients with only slightly elevated blood pressure, the benefit of appraisal, counselling, surveillance and periodic re-examination accrues to all. There are those who may be candidates for nonpharmacologic therapy, or interventions to modify other risk factors such as high lipid levels and cigarette smoking. Only through periodic re-examination will those patients expected to progress from mild to more severe hypertension be recognized so

that pharmacologic therapy will be initiated prior to the occurrence of complications. The development of target organ damage in persons with uncontrolled or suboptimally controlled hypertension represents a failure of the health care system in the identification, linkage, therapeutic or maintenance components of blood pressure control.

In some circumstances, there may be reason to believe that detection and linkage may not be followed by a vigorous treatment regimen, or with adherence to pharmacologic recommendations. Efforts at blood pressure control might then be staged. Selective screening programs would be initiated only following the clear demonstration that effective high blood pressure management and maintenance under care is available.

Community screening requires careful planning. Linkage is important and the adverse effects of labelling may be real. However, such effects may not be universal and are likely preventable. Unquestionably, needs in major urban centres and rural communities will be different. The design of programs for high blood pressure detection is not likely to be uniform across the country. A mix of strategies will be required, and a variety of unique programs should develop within a common framework for coordination and action.

SURVEILLANCE

The health-care system, which for the most part is crisis-oriented, is not optimally focused on health maintenance. On each occasion that a visit is made to a physician, or a hospital emergency or out-patient department, the blood pressure should be measured and recorded, and the values provided to the patient.

Since uncomplicated hypertension is usually unaccompanied by symptoms, optimum prevention of cardiovascular and renal disease necessitates blood pressure measurement at regular intervals throughout life. While the family physician should play the key role in high blood pressure detection, reliance for blood pressure determination solely on the caprice of intercurrent acute illness is unlikely to be an effective strategy for population surveillance.

While the prevalence of hypertension in children is low, blood pressure should be routinely measured in children. It is important to recognize those whose blood pressure lies beyond the ninety-fifth percentile, since blood pressure levels in children tend to follow a track. The higher the blood pressure in youth, the more likely it is that hypertension will develop in middle age. Accordingly, such children require surveillance and annual re-examination.

For those persons fortunate enough to remain well, blood pressure surveillance solely by physicians may be hit and miss, costly, time-consuming and inconvenient. The public should have access to convenient, regular (probably annual) blood pressure measurement. Blood pressure surveillance can be carried out in physicians' offices, at worksites, in health units, and in hospital emergency and out-patient departments. These can be ideal places for blood pressure surveillance and the determinations may be made either by professional staff or trained volunteers. Physician involvement in the development of such surveillance programs would help assure linkage to care.

The development of permanent blood pressure surveillance sites, and the promotion of regular blood pressure surveillance, would complement case-finding in physicians' offices. The need for population screening may thereby be minimized. Blood pressure surveillance sites would also provide a convenient and appropriate locus for public education regarding cardiovascular disease risk factors in general and high blood pressure in particular.

Whenever a clearly elevated blood pressure is recognized, referral to a physician should be recommended with appropriate follow-up strategies to ensure that linkage has occurred. If the blood pressure reading is normal, the result should be recorded and the individual advised to obtain another measurement in one year's time. Where borderline values are found, more frequent surveillance might then be recommended.

Blood pressure surveillance sites, if developed, should operate within the framework of community blood pressure control programs.

MAINTAINING UNDER CARE

Maintaining under care those individuals whose blood pressure has been found to be elevated above clinically acceptable limits is an essential component of community programs for the control of high blood pressure. It is by emphasis here that a control program will have the greatest impact. Unless individuals continue adequate treatment, resources expended in detection, linkage, diagnosis and evaluation are wasted. Emphasis on this phase of a control program is probably the most cost-effective maneuver.

Poor compliance is one of the major contributing factors in the failure of individuals to achieve satisfactory long-term blood pressure control. Some studies have shown that many patients who are placed on treatment will discontinue treatment within 12 months. Of those who remain on therapy, many will not take enough of their medication for adequate blood pressure control.

Compliance, for the purpose of this report, can best be defined as the extent to which patients will adhere to prescribed medical regimens, whether they be keeping appointments, taking medications or adhering to healthy lifestyles. Why people fail to comply is not clear. However, the common lack of symptoms of high blood pressure appears to contribute significantly to the problem.

Clinicians have long recognized the silent nature of this condition in which individuals, more often than not, feel well even with marked elevations of blood pressure. They usually suffer no pain, no disturbance of motor function, none of the usual signs and symptoms which motivate people to seek consultation and treatment from a physician. To further complicate matters, such an individual, once diagnosed and placed on therapy, may feel worse for the experience, because of the side effects of drugs or difficulties in losing weight or controlling salt intake.

Primary care physicians, as the principal therapists for high blood pressure, carry a major portion of the responsibility for improving compliance. To achieve this, they must be aware of the extent of the problem and be provided with knowledge of strategies for corrective action.

Canadian research has contributed substantially to understanding this aspect of high blood pressure control. Educational programs designed to bring this information to the primary care physician are essential. Emphasis should be placed on detection, diagnosis and treatment, while at the same time, stressing that intervention to improve and maintain compliance is often required as long as there exists the need to treat high blood pressure.

Periodic surveillance of individuals with high blood pressure is essential for improved patient compliance. Patient recall systems are seen as a mechanism for achieving such monitoring. They are also seen as part of a comprehensive program for the long-term follow-up of individuals with high blood pressure. Depending on the nature and extent of the program, follow-up systems could vary from the simple monitoring of missed appointments in the doctor's office to a sophisticated, computerized network operating on a provincial basis, perhaps through provincial medical care plans. A computerized hypertension registry is an integral part of the high blood pressure control program in Connecticut, U.S.A. This system is able to notify individuals who have missed appointments. Enrollment in this system is voluntary and measures have been taken to ensure the confidentiality of patient information. Recall systems, although desirable, need not be of the magnitude of the one in Connecticut.

Since the majority of Canadians use the health care system on an annual basis, it has been assumed that detection, linkage, treatment and follow-up will occur automatically. Clearly, this is not happening. Physicians' offices are busy, crisis-oriented centres where patients come with problems or complaints of an acute nature. This environment appears not to be conducive to the long-term follow-up of patients who feel well. Most doctors'

offices do not have recall systems for missed appointments. To focus all efforts to control high blood pressure in the primary care physician's office may not be consistent with the realities of family practice. The less than optimal results which have occurred to date appear to result at least in part from asking more of the primary care system than it can realistically deliver.

It is recognized, of course, that primary care physicians have the key role in high blood pressure control, particularly with regard to diagnosis and ongoing treatment. However, the United States' experience has demonstrated that, in many instances, high blood pressure control cannot be adequately accomplished by the physician alone. High blood pressure control must be regarded as a community health problem. It requires a coordinated, multi-disciplinary approach which encompasses various levels of government, health care professionals, voluntary health organizations and the public. To be successful, a control program must have a broad base of involvement and support. What follows are suggestions on how elements of the present health care system can become integral components in the long-term follow-up of individuals with high blood pressure. It is realized that modifications may be required to suit local needs and conditions.

Involvement of provincial health departments is needed for successful long-term high blood pressure control. They have well developed, organizational structures which are geared to community programming, staffed by a wide spectrum of health care professionals including doctors, nurses, nutritionists, health educators and health planners. For public health to take a lead role in high blood pressure control would represent a major shift from the prevention of acute disease to the prevention of chronic disease, a change in emphasis which is overdue.

Local health units could develop a close liaison with primary care physicians for the continued surveillance of individuals with high blood pressure. The community health nurse is seen as being instrumental in this task. Central to the program would be community outreach, with the

establishment of formal referral networks between private physicians and local health departments. Involvement would be on a voluntary basis with the consent of all three parties concerned--the patient, the doctor and the health department. The nurse would operate under the guidance of the private physician within the overall framework of an agreed-upon program protocol.

Local health units would assist, upon request, in the regular follow-up of patients with high blood pressure. This could be carried out in the home or in clinics. Health departments have the resources and staff to institute effective recall systems and other measures to improve compliance. If found to have a blood pressure which was unacceptable, the patient would be referred back to the physician for examination. Within an environment which emphasizes prevention, health unit staff could address other risk factors as well as high blood pressure.

The worksite can effectively participate in maintaining persons under care. There are many successful worksite programs operating in the United States. The questionnaires to organizations and individuals in Canada revealed a high degree of interest in becoming involved in high blood pressure control in the Canadian work place. The response also indicated that many large and small industries have occupational health services. Some have blood pressure control programs. Most provinces have a group of health care professionals, mainly nurses, working in the occupational health field. The enthusiasm shown in their responses should be encouraged and the necessary assistance with planning and literature be provided.

Soliciting the cooperation of these professionals is, of course, central to the development of a program at the worksite for the maintenance of care of individuals with high blood pressure. Regular monitoring of blood pressure on referral from the patient's physician can occur with minimal disturbance of the normal work routine. For this to come about, an agreed-upon protocol is required which encompasses testing procedures, data collection, and recall

based on a confidential health record system. Both management and labor should be encouraged to support such programs, with care being taken to assure individuals with high blood pressure that participation will not affect their employment. Apart from the monitoring of blood pressure, the worksite would serve as an area to institute educational programs.

Some research into blood pressure screening at the worksite has raised concerns about adverse effects of labelling and increased absenteeism. These concerns are not shared by those operating worksite programs which have become well established in the United States.

In addition to worksite programs, Canadian control efforts might involve other major groups of health care providers not usually associated with high blood pressure, namely the pharmacist and the dentist. Both these professional groups have an opportunity to favourably influence the long-term follow-up of individuals with high blood pressure. The pharmacist is in a unique position to educate on compliance issues and reinforce the physician's message to patients, particularly regarding dosage regimens and side effects of medication. By monitoring and displaying an active interest in a patient's blood pressure, the dentist can contribute significantly to long-term follow-up and control as well as to the patient's safety during dental procedures.

The Working Group would suggest that dental and pharmaceutical associations be asked to support and participate in community-based programs for high blood pressure control.

THE COMMUNITY RESPONSE

COORDINATION

There is need to develop informed working partnerships at the federal, provincial and community levels, involving voluntary agencies, professionals (including professional groups and associations) and governments, whereby resources are mobilized and organized into effective, continuing programs for high blood pressure control.

Having acknowledged the propriety of high blood pressure control programs, the WHO Expert Committee on Arterial Hypertension in 1978 recognized a world-wide requirement for a wide range of public actions that would be adapted to local (i.e., national, provincial and regional) circumstances, resources and constraints. Such programs, it said, should be specific (i.e., adequately focused on hypertension), but at the same time they should form part of a comprehensive program covering many other important aspects of health. Further, it indicated that it was essential to have the full cooperation of health personnel, public health authorities and the public.

In spite of efforts on the part of governments, voluntary agencies, epidemiologists and other research-oriented physicians, population control programs for hypertension are not in place in this country. Consequently, Canadians do not receive maximum benefit from available scientific knowledge and the striking advances in pharmacologic therapy developed during the past 10 to 20 years.

What is lacking is COORDINATION. In the United States, the National High Blood Pressure Education Program of the National Heart, Lung, and Blood Institute was initiated on the premise that the primary missing ingredient of a comprehensive mechanism to control high blood pressure was the coordination of resources. Thus, the concept of coordination was instituted. In his

report to the U.S. Senate, Graham Ward, then coordinator of the program, indicated that preventive efforts can succeed in a cost-effective fashion, provided that the activities and policies of disparate participants are coordinated into a whole.

The diverse needs to be met across Canada commend the formation of a national coordinating mechanism, together with independent provincial coordinating bodies linking resources of voluntary agencies, medical colleges, and health departments with professionals actively engaged in the detection and control of high blood pressure. In densely populated areas, the development of regional and/or local programs linked with a provincial body would appear to be appropriate.

Community programs of population surveillance, high blood pressure detection and control would thereby be linked to activities concerned with the accumulation, inventory and distribution of high blood pressure information, with the setting of standards, with research and evaluation, together with programs of awareness and education (public and professional) at local, provincial and national levels. Enthusiasm for the development of a coordinating council was evident at a meeting held in August 1982, involving a variety of interested agencies, associations and Health and Welfare Canada, together with the Working Group.

Accordingly, a coordinating body for hypertension control in Canada should be formed at the national level, with government as a catalyst. A coordinator would be appointed. Membership might include representatives of government, professional groups and interested committed voluntary agencies. An appropriately funded secretariat would be required to support activities of the coordinating body. Each provincial government should advocate and, through its Department of Health, actively participate in the formation and operation of a provincial coordinating group for high blood pressure control.

ROLES AND SITES

The main effort to prevent and control high blood pressure, as the term "community response" implies, must be concentrated in the communities in which people live, work, worship, play and go to school. An individual may belong to different communities representing his or her home, place of employment, religion, choice of recreation or school. Thus, there are a variety of opportunities to develop effective community responses and a variety of roles and sites for effective interventions.

Many groups and individuals have potential roles in modifying or compensating for impediments to the improved control of high blood pressure in Canada, and there are many potential sites for such efforts. The U.S. National High Blood Pressure Education Program has recognized these opportunities and has successfully involved a wide variety of health professionals, as well as citizens and other groups, in coordinating committees and programs. Many of these groups have developed their own programs through their own professional associations or other means. In addition to nurses and physicians, they include the American Red Cross, Blue Cross, dentists, optometrists, pharmacists, hospitals, health departments, employers and employees. Some excellent models have been developed which could be adapted to Canadian needs.

Priority should be given to the development of programs in two sites -- local health departments and the workplace. Their purpose would be to support and assist physicians in improving the control of high blood pressure.

It is proposed that local health departments assume responsibility for ensuring the development of local coordinating committees, community plans for the prevention and control of high blood pressure, liaison with and support of medical and other professional organizations, collection of baseline data on needs (including surveys of knowledge, perceptions and blood pressures where feasible), development of community programs, monitoring of changes in the community and the provision of periodic reports. To act as a focal point

does not necessarily mean that local health departments should carry out all or even any of the services required, other than probably those of planning, coordinating and monitoring. Thus, they should not have to be deterred by undue concerns about resource implications and other priorities since it would be possible, with some adjustments, to integrate present efforts into such activities.

The potential for developing workplace programs has been amply demonstrated in Canada as well as the United States. Occupational health nurses are a particularly receptive group and their interest in developing programs to prevent and control high blood pressure has been shown through personal contact as well as the special survey. It should be noted that many occupational health nurses are particularly keen about health promotion, and some have already initiated programs for lifestyle modification which could have an impact on blood pressure. In addition to this receptivity of the key health care providers in the workplace, the workplace offers the advantage of being able to reach men, among whom there is a greater prevalence of uncontrolled hypertension, and who are less likely to participate in programs at other sites.

The roles of provincial and federal governments and of provincial and national coordinating committees have been described in the section on coordination. While local health departments and workplaces should assist in the provision of services to individuals, governments and coordinating committees at provincial and national levels should have special responsibilities for the development of policies, goals and standards, educational materials, programs and evaluation.

The enthusiasm with which a large number of professional and other groups have become involved in high blood pressure programs in the United States is a good indication of the potential for growth of Canadian programs, once a basic framework is in place.

RESOURCE IMPLICATIONS

It is recognized that new financial resources are not readily available. It will be necessary for funds for high blood pressure prevention and control to be obtained largely by realigning other priorities. Rather than being a problem, this circumstance presents an opportunity in the case of public health departments to reduce and/or shift resources from some traditional programs which may not be needed as much as the control of high blood pressure.

The Working Group sees high blood pressure control as a testing ground within health departments for increasing emphasis on prevention and control of chronic diseases, which are today's leading health problem. Restructuring the work of public health staff and the involvement of volunteer organizations could help reduce "add-on" costs. Similarily, many persons working in the occupational health field gave the impression that they see possibilities for, and would welcome, shifts in their priorities to include blood pressure programs.

Increased budgets are needed for research and data-base development, coordination, and public, professional and patient education. Due to increased numbers of persons being investigated, treated and monitored by physicians, there could also be an impact on medicare costs and costs to drug plans.

The control strategies recommended in this report, especially assisting persons with high blood pressure to adhere to treatment, are seen as cost-effective. It must be remembered that very large sums of money are already being spent on the treatment of high blood pressure and its consequences, much of it without achieving the benefit desired. A relatively modest additional investment would go a long way towards ensuring that better value is obtained for the large amounts that will inevitably continue to be spent on this problem.

CONCLUSIONS

Many Canadians have elevated blood pressures. Many are unaware that their blood pressure is elevated, and many who do know do not have it optimally controlled, particularly males. This situation exists in the face of the high incidence of patient/physician contacts for high blood pressure and the significant amount spent on treatment, and suggests that full value is not being obtained for money spent.

The Working Group is unaware of the existence of any coordinated high blood pressure programs in Canada, which systematically provide detection, linkage and follow-up on a community scale. There is a lack of educational materials and literature. There is need for baseline data and information on current public and professional perceptions and practices, and for standards and guidelines. It is imperative that these issues be addressed and that strategies and programs be initiated to reduce the consequences of this leading health problem.

Coordinated action involving governments and professional and voluntary organizations is crucial to the development of policies and programs for a comprehensive, nation-wide control effort.

A community approach integrated with, and complementary to, present measures is required. It would encompass risk factor reduction and control measures through four strategies: education, bringing into care, surveillance and maintaining under care. High priority should be given to the involvement of local health units and the workplace in expanded efforts to reduce the impact of high blood pressure on the health of Canadians.

The report does not suggest the development of a huge program or the injection of large sums of money into the health-care system. Rather, realigning priorities, utilizing existing manpower and facilities, and bringing together appropriate organizations would have a substantial effect in helping control high blood pressure in Canada.

REFERENCES

Abboud, M.A., Essential Benign Hypertension (Analysis of Data provided by IMS Canada Ltd.) Bureau of Drug Quality, Drugs Directorate, Health Protection Branch, Health and Welfare Canada, March, 1982.

American Heart Association, Worksite High Blood Pressure Control Programs, Baltimore, Maryland, 1982.

Apostolides, A.Y., G. Cutter and J.F. Kraus et al, Impact of Hypertension Information on High Blood Pressure Control Between 1973 and 1978, Hypertension, 1980, 2:708-713.

Arnold, Charles B., et al, Advances in Disease Prevention, Volume I, Springer Publishing Company, New York, 1981.

Baitz, T. and A. Shimizu, Blood Pressure Surveys: Are They Worth It? Canadian Family Physician, 1977, 23:728-731.

Balfe, J.W., Hypertension in Children, Annals of Royal College of Physicians and Surgeons of Canada, 1982, 15:589-594.

Berkson, D.M., M.C. Brown and H. Stanton et al, Changing Trends in Hypertension Detection and Control: The Chicago Experience, American Journal of Public Health, 1980, 70:389-393.

Blumenthal, S., R.P. Epps and R. Heavenrich et al, Report of the Task Force on Blood Pressure Control in Children, Pediatrics, 1977, 59(SUPPL):797-820.

Blue Cross/Blue Shield of Maryland, High Blood Pressure Control at the Worksite, Blue Cross/Blue Shield of Maryland, 1982.

Buck, C.W., The Persistence of Elevated Blood Pressure First Observed at Age 5, Journal of Chronic Disease, 1973, 26:101-104.

Canada Health Survey (Health and Welfare Canada; Statistics Canada), The Health of Canadians, Report of the Canada Health Survey, 1978-79, Supply and Services Canada, 1981.

Canadian Hypertension Society, Report Of The Workshop On The Status Of Hypertension In Canada, Montebello, May 27-29, 1982, The Canadian Hypertension Society, 1982.

Carey, R.M. and C.R. Ayers, Labile Hypertension: Precursor of Sustained Essential Hypertension?, American Journal of Medicine, 1976, 61:811-814.

Carey, R.M., R.A. Reid and C.R. Ayers et al, The Charlottesville Blood Pressure Survey: Value of Repeated Blood Pressure Measurements, Journal of the American Medical Association, 1976, 236:847-851.

Charleson, E., M. Alderman and L. Melcher, Absenteeism and Labelling in Hypertension Subjects: Prevention of an Adverse Impact in Those at High Risk, American Journal of Medicine, 1982, 73:165-170.

D'Atri, D.A., E.F. Fitzgerald and D.H. Freeman Jr. et al, The Connecticut High Blood Pressure Program: A Program of Public Education and High Blood Pressure Screening, Preventive Medicine, 1980, 9:91-107.

Erfurt, J.C. and A. Foote, Hypertension Control in the Work Setting, Final Report, University of Michigan, Ann Arbor, 1982.

Fodor, J.G., Prevalence of Hypertension in Canada, Prepared for Canadian Hypertension Society Meeting, May 27-29, 1982, Montebello, P.Q.

Garbus, S.B., Evaluation of a Mass Hypertension Screening Program, Preventive Medicine, 1981, 10:340-352.

Genest, J., et al, Screening Programs for Hypertension, Canadian Medical Association Journal, 1974, 3:147-149.

Gifford, R.W., Isolated Systolic Hypertension in the Elderly: Some Controversial Issues, Journal of the American Medical Association, 1982, 247:781-785.

Gillum, R.F., W.B. Stason and M.C. Weinstein, Screening for Hypertension: A Rational Approach, Journal of Community Health, 1978, 4:67-72.

Greenberg, R., Developing Mass Education for Community Health Programs, Health Education, 1982, 21:6-10.

Grimm, R.J., Jr., R.V. Leupker, H. Taylor and H. Blackburn, Long-Term Effects of a Blood Pressure Survey on Patient Treatment in a Community, Circulation, 1982, 65:946-950.

Haynes, R. Brian, Margaret Mattson, and Tilmer Engebretson, Editors, Patient Compliance to Prescribed Antihypertensive Medication Regimens: A Report, U.S. Department of Health and Human Services, NIH Publication No. 81-2101, October, 1980.

Haynes, R.B. et al, Management of Patient Compliance in the Treatment of Hypertension, Report of the NHLBI Working Group, Hypertension, 1982, 4:415-423.

Haynes, R.B., E.S. Gibson and D.W. Taylor et al, Process Versus Outcome in Hypertension: A Positive Result, Circulation, 1982, 65:28-33.

Haynes, R.B., D.L. Sackett and D.W. Taylor, The Practical Management of Low Compliance with Antihypertensive Therapy - A Guide for the Busy Practitioner, Clinical and Investigative Medicine, 1978, 1:175-180.

Haynes, R.B., D.W. Taylor and D.L. Sackett et al, Can Simple Clinical Measurements Detect Patient Noncompliance?, Hypertension, 1980, 2:757-764.

Hill, Martha and Sue Foster, Nursing Actions to Promote the Four-Step High Blood Pressure Control Process, Nursing, 1982, 12:14-15.

Hill, Martha and Sue Foster, Seeking and Finding All Those Patients with High Blood Pressure, Nursing, 1982, 12:12-13.

Ingelfinger, J.R., Pediatric Hypertension, Major Problems in Clinical Pediatrics, W.B. Saunders, Philadelphia, 1982, 24:93-110.

Jesse, M.J., J.A. Hokanson and B. Klein et al, Blood Pressure in Childhood: Initial Recording Versus One Year Follow-Up, Circulation, 1976 54(SUPPL II):11-23, 0083A (Abstract).

Johansen, H.L., Hypertension in Canada: Risk Factor Review and Recommendations For Further Work, Canadian Journal of Public Health, 1983, 74:123-128.

Kannel, W.B., P. Sorlie and T. Gordon, Labile Hypertension: A Faulty Concept?, The Framingham Study, Circulation, 1980, 61:1183-1187.

Kaplan, M.N., Therapy for Mild Hypertension: Toward a More Balanced View, Journal of the American Medical Association, 1983, 249:365-367.

Kochar, M.S., H.D. Itskovitcz and C. Panagis, Hypertension Control Among Patients Referred by a Community Blood Pressure Screening Program, Journal of Chronic Disease, 1979, 32:493-497.

Lalonde, Marc, A New Perspective on the Health of Canadians, Government of Canada, Ottawa, 1974.

Leonard, A.R., A. Ingra and A. Hawthorne, Status of High Blood Pressure Control in California: A Preliminary Report of A Statewide Survey, Heart and Lung, 1981, 10:255-260.

Logan, A.G., B.J. Milne and C. Achber et al, Cost Effectiveness of a Worksite Hypertension Treatment Program, Hypertension, 1981, 3:211-218.

Marshall, C.L., Toward an Educated Health Consumer, U.S. Department of Health, Education and Welfare, Public Health Service, National Institutes of Health, Bethesda, Maryland, 1977. DHEW pub. no. 77-881.

McAlister, N.H., Should We Treat 'Mild' Hypertension?, Journal of the American Medical Association, 1983, 249:379-382.

McCallum, B.B. et al, Community Guide to High Blood Pressure Control, U.S. Department of Health and Human Services, National Institutes of Health, December, 1981.

McEwen, E.D., Have Lalonde's Health Care Ideas Died of Neglect?, Financial Post, October 14, 1978.

Morisky, Donald E., et al, Five-Year Blood Pressure Control and Mortality Following Health Education for Hypertensive Patients, American Journal of Public Health, 1983, 73:153-162.

Moser, M., Beyond Hypertension Awareness: Detection is Not Enough!, Urban Health, June, 1976, 5:60-80.

Moser, M., On Management of 'Mild Hypertension', Archives of Internal Medicine, 1981, 141:1587-1588.

Mroczek, W.J., Diagnosis and Treatment of Hypertension, American Health Journal, 1973, 85:718.

Mustard, J.F. et al, Report of the Committee on Diet and Cardiovascular Disease, Department of National Health and Welfare, Ottawa, 1976.

National Conference on High Blood Pressure Control in the Work Setting, Washington, October 1976, High Blood Pressure Control in the Work Setting: Issues, Models, Resources, Prepared by MSD Health Information Services, Pennsylvania.

Ostfeld, A.M., The Elderly Hypertensive Patient: Epidemiologic Review, New York State Journal of Medicine, 1978, 78:1125-1129.

Paffenbarger, R.S., M.C. Thorne and A.L. Wing, Chronic Disease in Former College Students, VIII, Characteristics in Youth Predisposing to Hypertension in Later Years, American Journal of Epidemiology, 1968, 88:25-32.

Pickering, T.G., Treatment of Mild Hypertension and the Reduction of Cardiovascular Mortalities; the 'Of or By' Dilemma, Journal of the American Medical Association, 1983, 249:399-400.

Rudd, P. et al, Department of Medicine, Stanford University Medical Center, Long-Term Consequences of Hypertensive Labeling, Clinical Research, 1983, 31:37A.

Rudnick, K.V., D.L. Sackett, S. Hirst and C. Holmes, Hypertension in a Family Practice, Canadian Medical Association Journal, 1977, 117:492-497.

Rudnick, K.V., Screening for Hypertension: Case Finding, Canadian Family Physician, 1979, 25:1170-1172.

Sackett, D.L., R.B. Haynes and E.S. Gibson et al, Randomized Clinical Trial of Strategies for Improving Medication Compliance in Primary Hypertension, Lancet, 1975, 1:1205-1207.

Sackett, D.L. et al, Report of the Task Force on Hypertension, Ontario Council of Health, 1977.

Sackett, D.L., D.W. Taylor and R.B. Haynes et al, The Short-Term Disadvantages of Being Diagnosed Hypertensive, Clinical Research, 1977, 25:266A.

Sackett, D.L., Screening for Disease: Cardiovascular Diseases, Lancet, 1974, 2:1189-1191.

Shapiro, A., J. Bleho and M. Curran et al, Problems in the Control of Hypertension in the Community, Canadian Medical Association Journal, 1978, 118:37-40.

Shekelle, R.V., A.M. Ostfeld and H.L. Klawans, Jr., Hypertension and Risk of Stroke in an Elderly Population, Stroke, 1974, 5:71-75.

Shirreffs, Janet, The Relevance of Health Education to Health Activation and Self-Care, Journal of School Health, 1978, 48:419-422.

Silverberg, D.S., Long-Term Follow-Up of a Hypertension Screening Program, Canadian Medical Association Journal, 1976, 114:425-428.

Silverberg, D.S., E.S.O. Smith, B. Juchli and E. VanDorsser, Use of Shopping Centres in Screening for Hypertension, Canadian Medical Association Journal, 1974, 111:769-774.

Stamler, R., F.C. Gosch and J. Stamler et al, A Hypertension Control Program Based on the Workplace, Report of the Chicago Centre, Journal of Occupational Medicine, 1978, 20:618-625.

Stamler, R. and J. Stamler, "Where Do We Go in Hypertension Screening?, Urban Health, 1978, 7:8-9, 16.

Veterans Administration Cooperative Study Group on Antihypertensive Agents, "Effects of Treatment on Morbidity in Hypertension, Results in Patients With Diastolic Blood Pressure Averaging 115 through 129 mm Hg," Journal of the American Medical Association, 1967, 202:1028-1034.

Ward, Graham, W., The National High Blood Pressure Education Program: An Example of Social Marketing in Action, National High Blood Pressure Education Program, National Heart, Lung and Blood Institute, National Institutes of Health, Public Health Service, Department of Health and Human Services, U.S.A., 1984.

Weinstein, Milton C., Cost Effectiveness Analysis in Medicine, Australian Medical Association Gazette, June, 1982, p. 25 f.f.

Whitby, L.G., Screening for Disease: Definitions and Criteria, Lancet, 1974, 11:819-822.

White, Carl W. et al, Effective Cardiovascular Health Education in the Young: An Elusive Goal, Evaluation and the Health Professions, 1978, 1:57-70.

World Health Organization/International Society of Hypertension, Mild Hypertension Liaison Committee, Trials of the Treatment of Mild Hypertension: An Interim Analysis, Lancet, 1982, 1:149-156.

W.H.O. Expert Committee, Prevention of Coronary Heart Disease, Technical Report Series 678, World Health Organization, Geneva, 1982.

W.H.O. Expert Committee, Arterial Hypertension, A Report, Technical Report Series 628, World Health Organization, Geneva, 1978.

W.H.O. Scientific Group, Primary Prevention of Essential Hypertension, Technical Report Series 686, World Health Organization, Geneva, 1983.

Wilson J.M.G. and G. Jungner, Principles and Practice of Screening for Disease, Geneva, World Health Publication, Health Paper 34, 1968, p. 14.

Wyka, Cheryl A., et al, Group Education for the Hypertensive, Cardio-Vascular Nursing, 1980, 16:1-5.

APPENDIX

FINDINGS FROM QUESTIONNAIRE TO ORGANIZATIONS AND ASSOCIATIONS

FINDINGS FROM QUESTIONNAIRE TO OCCUPATIONAL HEALTH NURSES

LETTER TO AND PARTICIPANTS AT NATIONAL MEETING - AUGUST, 1982

QUESTIONNAIRE TO ORGANIZATIONS AND ASSOCIATIONS ON HIGH BLOOD PRESSURE PROGRAMS

SUMMARY OF FINDINGS

The hypertension questionnaire was designed by the Working Group to serve as a consultation on high blood pressure prevention and control. It was distributed to a number of individuals and organizations who were perceived to have an interest and/or role in high blood pressure control in Canada. The Working Group wished to obtain information on the level and type of control activity in this country, with particular reference to control programs operating on a community basis. In addition, the questionnaire was designed to solicit opinion from respondents on what, in their view, should be done to control this condition in the future.

The organizations and individuals who received the questionnaire represented a variety of disciplines falling into the following categories. For all organizations listed, questionnaires were sent to national offices as well as provincial divisions where applicable.

Academic Community - included here were the medical, nursing, pharmaceutical and dental faculties of all Canadian universities where such faculties exist.

Volunteer Agencies - included here were the Heart Foundations and Kidney Foundations.

Professional Bodies - included here were provincial medical and nursing associations, dental and pharmaceutical associations, The College of Family Physicians of Canada and its provincial chapters, The Canadian Hypertension Society, hospital associations and the Canadian Public Health Association, including the provincial divisions.

Service Agencies - included here were the various federal and provincial health departments, District Health Councils (located in Ontario) and branches of the Victorian Order of Nurses throughout Canada.

Industry - included here were a number of occupational health physicians and nurses, plus the directors of employee health programs in a wide spectrum of industries throughout the country.

Private Physicians - included here were a number of physicians engaged in private practice. These individuals were generally associated with universities and have been involved in hypertension research or have expressed interest in hypertension control through involvement in the Canadian Hypertension Society.

Seven hundred and forty-eight questionnaires were distributed, with 397 returns, for a response rate of 53 per cent. The selection of the individuals and organizations to receive the questionnaire was carried out in a subjective manner. The results of the questionnaire, therefore, may be somewhat biased in favor of overestimating the level of interest in controlling this condition in the country as a whole.

TABLE I gives a summary of the programs carried out by respondents over the past two years. In no case were more than 25 per cent of respondents involved in programs related to the particular activities on which information was requested, e.g., public education, follow-up, etc. Of those who indicated some programs in these specific areas, only a few had involvement in more than one area. There were no programs identified which were all-encompassing or complete, e.g., programs which involved education, detection, diagnosis, treatment and follow-up. High blood pressure detection was the most frequent area of control activity, with 25 per cent of respondents indicating programs in this area. Efforts here primarily involved screening, operating throughout most areas of the country on a rather ad hoc basis. Some screening was being carried out on a provincial basis. However, the vast majority was carried out in such places as shopping centres or health fairs on a one-time basis.

Educational programs targeted to patients and/or the public were primarily confined to printed and/or media material which was being distributed over limited geographical areas. In some instances, samples of this material accompanied the completed questionnaire and it would appear that the majority had its origins in the United States. The professional education programs were confined primarily to medical and nursing students. Very few respondents mentioned programs targeted to practising health care professionals.

TABLE I

PROGRAMS CARRIED OUT IN THE PAST TWO YEARS IN THE PREVENTION OR CONTROL OF HIGH BLOOD PRESSURE (PERCENTAGE OF RESPONDENTS)

PROGRAM ACTIVITY	YES	YES, BUT DISCONTINUED	NO
Public Education	17.6	4.5	77.8
Professional Education	21.9	3.5	74.6
Patient Education	23.2	2.8	74.0
High Blood Pressure Detection	25.4	6.5	68.0
Diagnosis and Treatment	17.4	1.5	81.1
Follow-up	21.7	2.5	75.8
Other*	7.9	1.3	90.8

*virtually all replies in this category concerned individual research projects

In more specific terms, the involvement of each individual class or group of questionnaire recipients can be summarized as follows:

Academic Community - respondents in this group indicated that their activities were confined to the teaching of the technical aspects of diagnosis and treatment of hypertension to their students. Some nursing schools had

sponsored student projects which involved screening on a limited basis as a community project. However, these were short-lived endeavors, usually discontinued after the student project was stopped.

Volunteer Agencies - these groups indicated they were involved primarily in screening projects and funding of hypertension research to a limited degree.

Professional Bodies - these agencies had little or no involvement in hypertension control at the present time. The College of Family Physicians indicated there were some studies carried out in family practices in Ontario with the help of the college where hypertension diagnosis and follow-up was incorporated into the study.

Service Agencies - most government agencies are not involved at the present time in hypertension control, either at a provincial or a federal level. This includes health departments, district health councils, the various central offices of the federal government and provincial governments. A variety of nursing organizations, such as the Victorian Order of Nurses and some nursing departments in health units who did respond to the questionnaire, indicated that hypertension was one of the conditions for which they followed patients, usually at the request of a private physician. Some of these nursing agencies, particularly the Victorian Order of Nurses, had conducted shopping centre and health fair screening programs.

Industry - respondents of this group indicated that there were a variety of screening programs with some follow-up being conducted in the workplace. These efforts, however, did not appear to be well organized and usually took the form of individual blood pressure measurements on workers, with some referral to private physicians and some follow-up if requested by a physician. Nurses seemed to be carrying out most of this activity. It should be pointed out that interest in control programs for hypertension at the worksite was very high among the occupational health groups who returned the questionnaires.

Private Physicians - most physicians who responded to the questionnaire were specialists who were involved in hypertension research and/or involved in hypertension speciality clinics which dealt with difficult diagnostic and treatment problems. Most of these physicians were attached to universities and some did indicate involvement with community screening projects on a limited scale.

TABLE II and TABLE III reinforce the impression gained from the data contained in TABLE I, i.e., little is being planned or carried out to address the problem of the control of hypertension in Canada in a coordinated and comprehensive fashion, particularly at a community level.

TABLE II

OTHER ACTIVITIES CARRIED OUT IN THE PAST FIVE YEARS IN PREVENTION OR CONTROL OF HIGH BLOOD PRESSURE (PERCENTAGE OF RESPONDENTS)

ACTIVITY	YES	NO	NO RESPONSE
Research	20.7	46.3	33.0
Assessing Level of Blood Pressure Control in Community	7.6	49.9	42.6
Participation in Task Force, Etc.	14.4	45.8	39.8
Preparation of Reports, Etc.	10.1	46.3	43.6
Other Activities	10.3	35.3	54.4

TABLE III

PLAN TO BEGIN OR EXPAND ACTIVITIES IN THE PREVENTION OR CONTROL OF HIGH BLOOD PRESSURE (PERCENTAGE OF RESPONDENTS)

ACTIVITY	YES	NO	NO RESPONSE
Plan to Begin	15.1	50.9	34.0
Plan to Expand	14.4	48.9	37.0

TABLE IV outlines the respondents' views on their role or their organizations' roles in high blood pressure control. Detection, public education, research and follow-up were chosen by a high percentage of respondents. Unfortunately, the questionnaire was not designed to correlate these control activities with the type of organization or discipline of the respondent.

TABLE IV

PERCEIVED ROLE OF INDIVIDUAL RESPONDENT OR OWN ORGANIZATION IN THE PREVENTION OR CONTROL OF HIGH BLOOD PRESSURE (PERCENTAGE OF RESPONDENTS)

ACTIVITY	%
Control (Broad)	4.0
Detection	25.7
Prevention	3.5
Public Education	19.5
Follow-up	9.9
Physician Education	5.7
Nursing Education	5.2
Research	10.8
Funding for Research	1.0
Funding for Program	1.0
Treatment	3.1
Program Development	2.1
Coordination	1.7
Health Professional Education	5.2
Employee Education	2.1

TABLE V summarizes the help required by the respondents to begin high blood pressure control activities. The highest percentage (28 per cent) suggested they would require financial support. Qualified personnel and education materials rank second and third in priority at 21 per cent and 13 per cent respectively.

TABLE V

HELP REQUIRED IN HIGH BLOOD PRESSURE PREVENTION AND CONTROL ACTIVITIES (PERCENTAGE OF RESPONDENTS)

HELP NEEDED	%
Research Funding	9.3
Research Support	7.3
Program Funding	28.3
Working Model	3.2
More Publicity (HBP)	5.7
Health Promotion	2.4
Coordination	5.3
Qualified Personnel	21.5
Program Development	2.4
Program Evaluation	1.2
Education Materials	13.4

TABLE VI summarizes the results of question 14 on the questionnaire. This question listed the names of a variety of organizations which might have an involvement in high blood pressure control and lists the types of activities in which these organizations could be involved. Most of the respondents confined themselves to this format, using the organizations listed and the activity example given in the preamble to the question.

TABLE VI

PERCEIVED ROLES OF VARIOUS ORGANIZATIONS IN THE PREVENTION OR CONTROL OF HIGH BLOOD PRESSURE (PERCENTAGE OF RESPONDENTS)

ACTIVITY / ORGANIZATION	Policy and Program Development	Public Education	Professional Education	Surveillance	Coordination	Detection	Diagnosis and Treatment	Tracking and Follow-up	Program Evaluation	Funding	Research	Consultation	Health Promotion
National Health and Welfare	26.8	25.8	7.8	4.5	8.1	1.4	<1.0	<1.0	5.6	10.1	4.7	<1.0	3.9
Provincial Health Departments	25.7	20.9	5.9	6.3	15.3	4.7	<1.0	1.6	6.8	7.6	1.6	<1.0	2.9
Local Health Units	8.0	23.5	4.2	13.3	7.6	18.9	5.1	10.7	4.2	1.3	<1.0	<1.0	1.8
Medical Associations	7.2	19.7	28.7	3.0	3.6	11.8	14.3	4.8	2.2	1.0	<1.0	2.0	1.2
Nursing Associations	7.1	26.1	28.2	3.5	2.4	14.7	3.5	6.0	3.7	0.0	1.1	1.5	2.4
Public Health Associations	12.2	35.1	19.3	3.3	5.7	9.5	<1.0	3.5	4.4	1.1	2.5	<1.0	1.9
Dental Associations	3.8	31.9	33.5	2.7	1.6	22.2	1.0	1.6	<1.0	0.0	0.0	<1.0	<1.0
Hospital Associations	11.0	28.7	23.4	3.4	4.5	9.4	6.0	3.0	3.4	3.0	<1.0	1.5	1.9
Pharmaceutical Associations	6.8	37.8	31.4	1.4	1.4	3.0	2.4	2.7	1.0	5.7	3.4	2.0	1.0
Business Associations	7.8	26.6	3.6	5.7	3.3	27.8	2.7	8.4	1.2	1.5	1.8	4.2	5.7
Union Groups	5.4	30.5	4.1	1.9	2.5	12.1	<1.0	2.9	<1.0	2.5	<1.0	4.8	5.7

TABLE VI indicates that a high percentage of respondents feel that the national and provincial departments of health should be involved in policy and program development, plus play a role in public education, coordination and funding. Local health units were deemed to have a role in public education, surveillance and detection, plus patient tracking and follow-up. This result is somewhat surprising in light of the fact that questionnaires were not sent directly to local health units and they were consequently not well represented among those who returned questionnaires. Professional associations were considered to have a role in professional and public education and detection plus diagnosis and treatment. Business, industry and employee representatives were deemed to have a role in promoting worksite control programs among their employees and/or union members. All organizations listed were deemed to have a role in public education by a high percentage of the respondents. One could conclude from the latter unanimity that public education should be a priority in control efforts.

The questionnaire closed with a rather open-ended question, asking for general comments and opinions. This question was not answered by many. Those who did reply displayed a wide variety of opinions on the importance of high blood pressure as a health problem in the country. Some suggested that hypertension was a severe problem, while others expressed the view that hypertension control was not particularly important and should be given a low priority. A number of respondents indicated that community screening should not be carried out due to the possibly harmful consequences of labelling hypertensives. This view was sufficiently widespread to indicate that any future control programs encompassing screening should address the labelling issue.

In conclusion, the questionnaire's results confirm a lack of well organized, coordinated programs for high blood pressure control in Canada. This state of affairs was in sharp contrast to the high level of interest among the respondents in participating in control efforts. One could conclude, therefore, that efforts designed to mobilize and coordinate existing resources for high blood pressure control in this country would meet with some success.

QUESTIONNAIRE FOR OCCUPATIONAL HEALTH NURSES ON HIGH BLOOD PRESSURE PROGRAMS

SUMMARY OF FINDINGS

The questionnaire was designed by the Federal/Provincial Working Group on the Prevention and Control of High Blood Pressure in Canada and critiqued by presidents of provincial Occupational Health Nurses' Associations. Through the cooperation of the latter, it was distributed to 2150 occupational health nurses in nine provinces (there are no occupational health nurses in Prince Edward Island). The purpose was to find out:

(a) Which types of business or organization are currently employing occupational health nurses;
(b) To what extent blood pressure control programs are being carried out at worksites, and what is included in these programs;
(c) If there are no programs, the reasons and what would be needed to initiate them;
(d) The opinions of occupational health nurses regarding such programs.

There was a return of 921 completed questionnaires (43%) which represented 758 organizations with 1,331,563 employees in eight provinces (one province did not participate). Organizations were classified in 10 broad categories. Of these, the greatest response was from manufacturing (36.7%) and government (31.1%) (See TABLE 1). This would seem to indicate that the majority of occupational health nurses are employed in these two areas. The total number of employees served was 889,655. Of this number approximately 50% were men. There were 578 nurses working alone. There were 180 organizations that had teams of nurses, 80.5% of which consisted of 2 to 5 nurses, with 72% of these teams serving organizations with 500-5000 employees.

Out of the 758 organizations where occupational health nurses are employed, 499 (65.8%) indicated they had some form of blood pressure program. Of these, 13% were in operation for less than one year, 48.7% had been functioning 1 - 5 years, 21% functioning 6 - 10 years, and 17.2% for more than 10 years, the latter being in manufacturing (38%) and government (30%) organizations.

Sixty-eight per cent of manufacturing organizations which employ occupational health nurses carry out some form of blood pressure program. These make up 37.9% of total programs reported.

The data in TABLE 2 indicate no relationship between the presence of blood pressure programs and the percentage of male employees.

As shown in TABLE 3, of the 499 organizations which indicated that they carried out a high blood pressure program, 85.8% included awareness education; 86.6% had some activity of case finding/screening; 85.2% made referrals to physicians; 90.8% did follow-up of patients with high blood pressure; and 78.8% did some patient education for those with the diagnosis.

TABLE 1

RESPONSES/PROGRAMS/BY TYPE OF ORGANIZATION

	Farming Fishing Forestry	Mining Oil	Manufac-turing	Construction	Transportation Storage	Communication Utility	Wholesale Retail	Finance Real Estate Insurance	Government Education Human Resources	Accommodation Food Beverage	TOTAL
Number of responses	17	70	278	21	10	43	39	24	236	20	758
Percentage of total responses	2.2	9.2	36.7	2.8	1.3	5.7	5.1	3.2	31.1	2.6	100
Number with program	12	48	189	13	7	33	27	14	146	10	499
Percentage with program	70.6	68.6	68.0	61.9	70	76.7	69.2	58.3	61.9	50	65.8
Percentage of total programs	2.4	9.6	37.9	2.6	1.4	6.6	5.4	2.8	29.3	2.0	100

TABLE 2

MALE EMPLOYEES/PROGRAMS BY TYPE OF ORGANIZATION

	Farming Fishing Forestry	Mining Oil	Manufac-turing	Construction	Transportation Storage	Communication Utility	Wholesale Retail	Finance Real Estate Insurance	Government Education Human Resources	Accommodation Food Beverage	TOTAL
Percentage with staff over 50% male	88.2	90	87.7	95.2	100	83.7	46.1	16.6	36.4	85	67.7
Percentage with staff under 50% male	11.8	10	12.3	4.8	0	16.3	53.9	83.4	63.6	15	32.3
Number with program	12	48	189	13	7	33	27	14	146	10	499
Percentage with program	70.6	68.6	68.0	61.9	70.0	76.7	69.2	58.3	61.9	50	65.8
Number with no program	5	22	89	8	3	10	12	10	90	10	259
Percentage with no program	29.4	31.4	32.0	38.1	30.0	23.3	30.8	41.7	38.1	50	34.2

TABLE 3

PROGRAM COMPONENTS/BY TYPE OF ORGANIZATION

	Farming Fishing Forestry	Mining Oil	Manufac-turing	Construction	Transportation Storage	Communication Utility	Wholesale Retail	Finance Real Estate Insurance	Government Education Human Resources	Accommodation Food Beverage	TOTAL
Total with program	12	48	189	13	7	33	27	14	146	10	499 (100%)
Number with awareness education	12	42	159	10	7	28	26	14	120	10	428 (85.8%)
Number with case finding & screening	12	44	161	8	5	26	25	12	130	9	432 (86.6%)
Number with referral	11	43	164	5	5	25	26	13	125	8	425 (85.2%)
Number with follow up	12	41	172	11	7	31	25	13	131	10	453 (90.8%)
Number with patient education	11	37	154	6	6	28	22	11	108	10	393 (78.8%)

Ninety-three percent of the 428 organizations that had awareness education as part of their program included other lifestyle factors which affect one's blood pressure as part of their educational program (TABLE 4). In addition, many respondents made comments as to the value of blood pressure programs. These included such things as:

a program opens doors for other health matters;
employees are very receptive;
excellent way to reduce absenteeism and disability and help those diagnosed;
found programs to be motivation for employees to stop smoking, etc;
excellent way to communicate re other health risks;
since not ill, good way to access health care for those who usually don't;
should reduce money spent on health care in the future.

Of the 758 organizations responding to the questionnaire, 259 (34.2%) reported that they did not have formal blood pressure programs (TABLE 2). However, many indicated that there was some contact regarding blood pressure with employees, such as: I accept referrals; many come voluntarily; is incorporated into a health promotion program; their blood pressure is taken when checking hearing and vision; blood pressure done at annual medical examination; and I disseminate literature, give talks and show films.

One hundred and thirty-four (51.7%) of those without a formal blood pressure program indicated they plan to institute one. TABLE 5 shows that 85.8% plan to include awareness education, 74.6% plan to do case finding, 73.9% will establish a referral system, 85.1% will provide follow-up care of those diagnosed, and 75.4% will institute a patient education component.

TABLE 4

COMPONENTS OF AWARENESS EDUCATION PROGRAM/BY TYPE OF ORGANIZATION

	Farming Fishing Forestry	Mining Oil	Manufac-turing	Construction	Transportation Storage	Communication Utility	Wholesale Retail	Finance Real Estate Insurance	Government Education Human Resources	Accommodation Food Beverage	TOTAL
Number with awareness education	12	42	159	10	7	28	26	14	120	10	428 (100%)
Awareness only	1	5	13	1	0	1	1	1	6	0	29 (6.8%)
Smoking	11	35	134	9	7	27	19	12	95	10	359 (83.9%)
Salt	10	32	125	8	6	25	18	9	77	9	319 (74.5%)
Weight	11	35	136	7	7	27	22	12	101	10	368 (86.0%)
Exercise	9	32	118	5	6	21	17	10	91	9	318 (74.3%)
Stress	7	31	109	5	6	23	17	9	92	8	307 (71.7%)
Other	6	5	38	4	1	5	8	2	17	0	86 (20.1%)

TABLE 5

PLANS TO START A PROGRAM/COMPONENTS/BY TYPE OF ORGANIZATION

	Farming Fishing Forestry	Mining Oil	Manufac-turing	Construction	Transportation Storage	Communication Utility	Wholesale Retail	Finance Real Estate Insurance	Government Education Human Resources	Accommodation Food Beverage	TOTAL
Number planning to start a program	5	12	54	4	1	3	8	5	36	6	134 (100%)
Awareness education	4	12	49	3	1	3	7	3	29	4	115 (85.8%)
Case finding/ Screening	3	9	43	3	1	3	4	5	25	4	100 (74.6%)
Referral	2	10	40	2	1	2	7	5	26	4	99 (73.9%)
Follow-up	4	12	43	3	1	3	8	5	29	6	114 (85.1%)
Patient education	2	10	41	3	1	3	7	4	26	4	101 (75.4%)

As to resources required to start a program, TABLE 6 indicates that 79.8% of those planning to start a program would need literature and 54.5% would need planning assistance. Some of the general comments by nurses included: we want more involvement by governments for awareness; please send me information and literature to get started; nurses are in prime position; there is a great need and recommend it for all health units. It would seem that money and space are not the major deterrents. These facts point up the need for a central coordinating mechanism that will provide these types of resources.

One hundred and twenty-five organizations (48.3% of those without a program) which employ occupational health nurses do not plan to start a blood pressure program. TABLE 7 gives a breakdown as to reasons. 38.4% said there was adequate medical care already available and 25.6% said that management did not see it as a need. The reasons for the "no need" were not evident from the responses. Some of the general comments on the questionnaires indicated that there might be a problem in taking employees from their work to participate in a program.

The response to the questionnaire was gratifying. It shows what is already being done across Canada. It points out the potential for more involvement by an interested and available professional staff. It highlights the resources that are needed by nurses working in organizations. It provides a baseline for helping to bring high blood pressure under control among employees in Canada.

TABLE 6

RESOURCES REQUIRED/BY TYPE OF ORGANIZATION

	Farming Fishing Forestry	Mining Oil	Manufac-turing	Construction	Transportation Storage	Communication Utility	Wholesale Retail	Finance Real Estate Insurance	Government Education Human Resources	Accommodation Food Beverage	TOTAL
Number planning to start a program	5	12	54	4	1	3	8	5	36	6	134 (100%)
No resources required	0	0	2	0	0	0	0	1	4	1	8 (6.0%)
Space	0	3	1	0	0	0	2	3	6	0	15 (11.2%)
Money	0	2	8	1	0	0	1	1	7	0	20 (14.9%)
Literature	4	7	48	2	1	3	7	4	26	5	107 (79.8%)
Planning assistance	2	4	38	2	1	1	2	3	18	2	73 (54.5%)
Personnel	0	2	8	1	0	1	1	0	10	2	25 (18.7%)

TABLE 7

NO PLANS FOR A PROGRAM/REASONS/BY TYPE OF ORGANIZATION

	Farming Fishing Forestry	Mining Oil	Manufac-turing	Construction	Transportation Storage	Communication Utility	Wholesale Retail	Finance Real Estate Insurance	Government Education Human Resources	Accommodation Food Beverage	TOTAL
Number not planning to start a program	0	10	35	4	2	7	4	5	54	4	125 (100%)
Adequate care available	0	2	16	1	0	1	1	3	21	3	48 (38.4%)
No need (Management)	0	3	13	1	1	1	2	1	9	1	32 (25.6%)
No need (Employees)	0	1	2	2	1	0	0	1	6	0	13 (10.4%)
Started but not beneficial	0	0	0	0	0	0	0	0	3	0	3 (2.4%)

LETTER TO PARTICIPANTS AT HIGH BLOOD PRESSURE PREVENTION AND CONTROL MEETING - AUGUST, 1982

The Federal/Provincial Working Group on High Blood Pressure is sponsoring a day-long session to discuss some issues related to the development of strategies for prevention and control. This will be held at:

The Medical Research Council Board Room
Jeanne Mance Building - 20th Floor
Tunney's Pasture - Ottawa

on: Wednesday - August 4th at 9 A.M.

Mr. Graham Ward, Coordinator, National High Blood Pressure Education Program of the U.S.A. Department of Health and Human Services, will speak on the American program and their organized approach through social marketing. A general discussion will follow.

You or your representative are cordially invited to participate in this session. The Committee is also most anxious to obtain information regarding current programs in Canada and hear your views. Would you kindly come prepared to comment on and discuss the following:

(a) programs currently sponsored by your Association or Institution

(b) your ideas for a national strategy of hypertension control

(c) the need, if any, for a national coordinating committee, its representation and terms of reference

(d) other relevant issues

You may want to present a written brief. This would be most welcome.

Thank you for considering this request. If you would like further clarification, please feel free to contact Dr. Harold Colburn at (613) 995-7141 or myself at (902) 892-1652. Your confirmation of attendance would also be appreciated.

Sincerely yours,

EBM:BB

Ella B. MacLeod, M.S., Chairman
Federal/Provincial Working Group
on High Blood Pressure

cc Members of Committee

Dr. H. Colburn
Dr. G.E. Sinclair
Dr. D. MacLean

PARTICIPANTS AT HIGH BLOOD PRESSURE PREVENTION AND CONTROL MEETING - AUGUST, 1982

Mr. Allan Bierbrier
Associate Executive Director
Canadian Public Health Association
1335 Carling Avenue
Suite 210
OTTAWA, Ontario
K1Z 8N8

Dr. Nicholas Birkett
Assistant Professor
Department of Clinical Epidemiology & Biostatistics
McMaster University
1200 Main Street West
HAMILTON, Ontario
L8S 4J9

Dr. Jacques de Champlain
Président
The Canadian Hypertension Society
Department de Physiologie
Faculté de médecine
Université de Montréal
C.P. 6208, Succ. A
MONTRÉAL, Québec
H3C 3T8

Dr. Claude Delisle
Senior Medical Consultant
Community Health Services
Health Sevices Directorate
Health Services and Promotion Branch
Health and Welfare Canada
Tunney's Pasture
OTTAWA, Ontario
K1A 1B4
(representing L'Association des médecins de langue français du Canada)

Dr. George Fodor
Associate Dean
Division of Community Medicine
Memorial University of Newfoundland
ST. JOHN'S, Newfoundland
A1B 3V6
(also representing the Canadian Cardiovascular Society)

Miss Olivette Gareau
Director
Community Health Services
Health Services Directorate
Health Services and Promotion Branch
Health and Welfare Canada
Room 610
Jeanne Mance Building
Tunney's Pasture
OTTAWA, Ontario
K1A 1B4

Dr. Helen Johansen
Health Studies Officer
Non-Communicable Disease Division
Bureau of Epidemiology
Laboratory Centre for Disease Control
Health Protection Branch
Health and Welfare Canada
L.C.D.C. Building
Tunney's Pasture
OTTAWA, Ontario
K1A 0L2

Mr. Dennis Kealey
Director General
Health Services Directorate
Health Services and
Promotion Branch
Health and Welfare Canada
Room 600
Jeanne Mance Building
Tunney's Pasture
OTTAWA, Ontario
K1A 1B4

Dr. Otto Kuchel
Vice-President
The Canadian Hypertension Society
Institut de recherche clinique
110 ouest, avenue des Pins
MONTRÉAL, Québec
H2W 1R7

Dr. Richard Lauzon
Director of Public Education
Canadian Heart Foundation
1 Nicholas Street
Suite 1200
OTTAWA, Ontario
K1N 7B7

Dr. Alexander G. Logan
Acting Chairman
Ontario Task Force
on Hypertension
Suite 435
Mount Sinai Hospital
600 University Avenue
TORONTO, Ontario
M5G 1X5

Dr. Eric Nicholls
Chief
Cardiovascular Disease
Non-Communicable Disease Division
Bureau of Epidemiology
Laboratory Centre for
Disease Control
Health Protection Branch
Health and Welfare Canada
L.C.D.C. Building
Tunney's Pasture
OTTAWA, Ontario
K1A 0L2

Mr. Brian Noel
Director
Finance and Administration
Kidney Foundation of Canada
National Office
1650 de Maisonneuve Blvd. West
Suite 400
MONTREAL, Quebec
H3H 2P3

Mrs. Shelley Paris
Director
Medical and Patient Service
Programs
Kidney Foundation of Canada
National Office
1650 de Maisonneuve Blvd. West
Suite 400
MONTREAL, Quebec
H3H 2P3

Dr. Donald I. Rice
Executive Director
College of Family Physicians
of Canada
4000 Leslie Street
WILLOWDALE, Ontario
M2K 2R9

Mr. John J. Vanderlee
Director of Professional
Services
Canadian Nurses' Association
50 The Driveway
OTTAWA, Ontario
K2P 1E2

Mr. Graham Ward
Chief
Health Education Branch
National Heart, Lung & Blood
Institute and Coordinator,
National High Blood
Pressure Education Program
Room 4A18
Building 31
BETHESDA, Maryland, U.S.A.
20205

MEMBERS OF THE WORKING GROUP:

Miss Ella MacLeod
(Chairman)
Director
Division of Nursing
Department of Health &
Social Services
P.O. Box 2000
CHARLOTTETOWN, P.E.I.
C1A 7N8

Dr. Harold Colburn
Director
Health Assessment
Health Services and Promotion
Branch
Health and Welfare Canada
Room 606
Jeanne Mance Building
Tunney's Pasture
OTTAWA, Ontario
K1A 1B4

Dr. David MacLean
Director
Cobequid Health Unit
P.O. Box 40
TRURO, Nova Scotia
B2N 5B6

Dr. Gerald Sinclair
Professor of Medicine
University of Saskatchewan
and Head
Department of Medicine
Plains Health Centre
4500 Wascana Parkway
REGINA, Saskatchewan
S4S 5W9