

Table of Contents

	Page
PREFACE	5
INTRODUCTION	8
1. THE TRADITIONAL VIEW OF THE HEALTH FIELD.	11
2. THE LIMITATIONS OF THE TRADITIONAL VIEW	13
3. MAJOR PROBLEM AREAS IN THE HEALTH FIELD.	19
HEALTH STATUS OF THE POPULATION.	19
PROBLEMS IN THE ORGANIZATION AND DELIVERY OF HEALTH CARE	26
4. THE HEALTH FIELD CONCEPT	31
5. ISSUES ARISING FROM THE USE OF THE HEALTH FIELD CONCEPT	35
6. POPULATIONS AT RISK.	38
7. CONSTITUTIONAL POWERS AND THE PRESENT FEDERAL ROLE.	43
8. RESEARCH AND THE HEALTH FIELD CONCEPT	55
9. SCIENCE VERSUS HEALTH PROMOTION	57
10. CARE VERSUS CURE.	59
11. MENTAL HEALTH	61
12. THE HEALTH FIELD CONCEPT AND STRATEGIES FOR THE FUTURE	63
CONCLUSION	
REFERENCES	
ANNEX A	

**A NEW
PERSPECTIVE
ON THE
HEALTH OF
CANADIANS**

a working document

Ottawa, April 1974

Preface

Good health is the bedrock on which social progress is built. A nation of healthy people can do those things that make life worthwhile, and as the level of health increases so does the potential for happiness.

The Governments of the Provinces and of Canada have long recognized that good physical and mental health are necessary for the quality of life to which everyone aspires. Accordingly they have developed a health care system* which, though short of perfection, is the equal of any in the world. Included in the system has been a program of pre-paid health services which substantially removes financial barriers to medical and hospital care. Coupled with health insurance have been programs for building hospitals and for training more physicians and other health professionals.

The health care system, however, is only one of many ways of maintaining and improving health. Of equal or greater importance in increasing the number of illness-free days in the lives of Canadians have been the raising of the general standard of living, important sanitary measures for protecting public health, and advances in medical science.

At the same time as improvements have been made in health care, in the general standard of living, in public health protection and in medical science, ominous counter-forces have been at work to undo progress in raising the health status of Canadians. These counter-forces constitute the dark side of economic progress. They include environmental pollution, city living, habits of indolence, the abuse of alcohol, tobacco and drugs, and eating patterns which put the pleasing of the senses above the needs of the human body.

For these environmental and behavioural threats to health, the organized health care system can do little more than serve as a catchment net for the victims. Physicians, surgeons, nurses and hospitals together spend much of their

*Throughout this paper the term "health care system" is limited to the system by which personal health care is provided. The term "health field" is much broader and includes all matters affecting health.

time in treating ills caused by adverse environmental factors and behavioural risks.

It is evident now that further improvements in the environment, reductions in self-imposed risks, and a greater knowledge of human biology are necessary if more Canadians are to live a full, happy, long and illness-free life.

While it is easy to convince a person in pain to see a physician, it is not easy to get someone not in pain to moderate insidious habits in the interests of future well-being. Nor is it easy to make environmental changes which cause social inconvenience when the benefits of those changes fall unevenly on the population and are only apparent over the long term. The view that Canadians have the right "to choose their own poison" is one that is strongly held.

It is therefore necessary for Canadians themselves to be concerned with the gravity of environmental and behavioural risks before any real progress can be made. There are encouraging signs that this concern is growing; public interest in preserving a healthy environment, in better nutrition and in increasing physical recreation has never been higher.

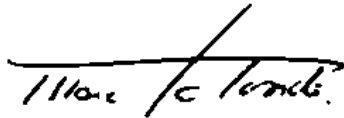
The Government of Canada now intends to give to human biology, the environment and lifestyle as much attention as it has to the financing of the health care organization so that all four avenues to improved health are pursued with equal vigour. Its goal will continue to be not only to add years to our life but life to our years, so that all can enjoy the opportunities offered by increased economic and social justice.

In preparing this Working Paper, the Government of Canada has been fully aware that its concern for the well-being of Canadians is shared by provincial and municipal governments. It is also aware that the provision of personal health services to the general public is clearly a matter of provincial jurisdiction. At the same time there are national health problems which know no provincial boundaries and which arise from causes imbedded in the social fabric of the nation as a whole. These problems cannot be solved solely by providing health services but rather must be attacked by offering the Canadian people protection, information and services through which they will themselves become partners with health professionals in the preservation and enhancement of their vitality.

As in the recent Working Paper on Social Security in Canada, we have examined all aspects of a major subject without regard to jurisdiction. Only through such an examination can the problems and their causes be understood, and legitimate federal responses ascertained. As a result of our examination we have developed a conceptual framework of the health field which was outlined in a speech I gave at the Pan American Health Organization

conference in Ottawa on September 10, 1973. The concept has been endorsed by the provincial Ministers of Health, who met in Ottawa on February 13 and 14, 1974. This federal-provincial unanimity of approach offers great opportunities for raising the level of health of Canadians.

The purpose of this Working Paper, as its title suggests, is to unfold a new perspective on the health of Canadians and to thereby stimulate interest and discussion on future health programs for Canada. The Paper is not intended to be exhaustive nor does it constitute a definite commitment to any of the proposed courses of action within a specific time frame; many will no doubt quarrel with the amount of emphasis on different aspects and not everyone will agree with all the ideas expressed. I would not want it any other way because it is only through honest disagreement and warm debate that the broader issues of health can be clarified and further progress achieved.

A handwritten signature in black ink, appearing to read "Marc Lalonde". The signature is written in a cursive style with a horizontal line crossing through the middle of the name.

Marc Lalonde

Minister of National Health and Welfare

Introduction

William Paley, in *Natural Theology* wrote:

“Nightly rest and daily bread, the ordinary use of our limbs, and senses, and understandings, are gifts which admit of no comparison with any other.”¹

It is these gifts which health and welfare policies seek to ensure for as many Canadians as possible.

Complete well-being for all may be beyond our grasp, given the human condition, but much more can be done to increase freedom from disease and disability, as well as to promote a state of well-being sufficient to perform at adequate levels of physical, mental and social activity, taking age into account.

Most Canadians by far prefer good health to illness, and a long life to a short one but, while individuals are prepared to sacrifice a certain amount of immediate pleasure in order to stay healthy, they are not prepared to forego all self-indulgence nor to tolerate all inconvenience in the interest of preventing illness.

The behaviour of many people also reflects their individual belief that statistical probability, when it is bad, applies only to others. This belief is the comfort of soldiers at war, criminals and racing drivers, none of whom could sustain their activities did they not look on the sunny side of risk and probability. It is also the solace of those whose living habits increase the likelihood of sickness, accidents and early death.

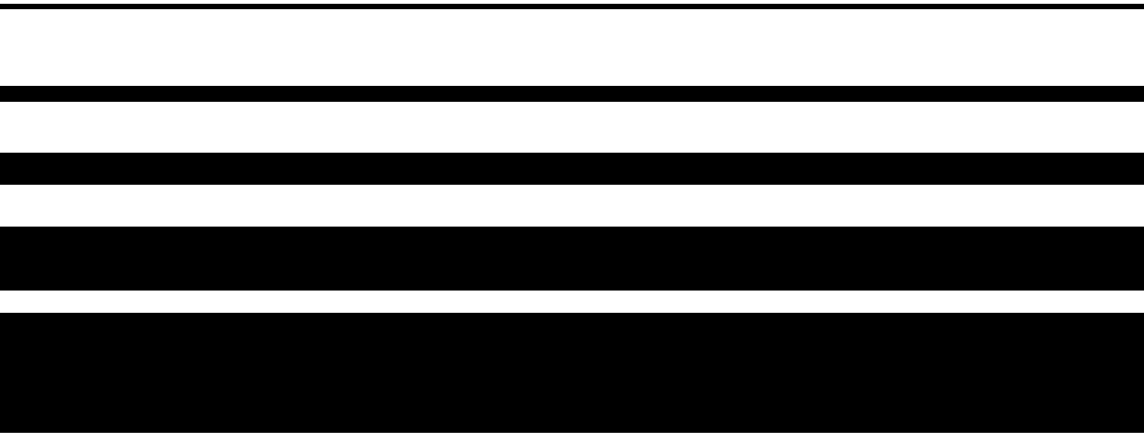
Yet, when sickness strikes, the patient expects rapid, quality care; all available resources must be marshalled on his or her behalf with little regard for cost.

The foregoing attitudes, beliefs and expectations are basic to an understanding of how the health field has developed in Canada. They explain why Canadians are prepared to spend such a large part of their national income on personal health care services, while tolerating environmental and lifestyle hazards which contribute heavily to the frequency of sickness and death.

One of the purposes of this Working Paper, nevertheless, is to show the links between different kinds of mortality and illness on the one hand and their underlying causes on the other. Only when these links are known will it be possible to make judgments on whether certain risks are worth taking or certain sacrifices are worth making.

These judgments must be made by individuals in respect of their own living habits, by society in respect of the values it holds, and by governments in respect of both the funds they allocate to the preservation of health and the restrictions they impose on the population for whose well-being they are responsible.

Ultimately, it is to help in making those judgments that this Working Paper has been written.



Chapter 1. The Traditional View of the Health Field

The traditional or generally-accepted view of the health field is that the art or science of medicine has been the fount from which all improvements in health have flowed, and popular belief equates the level of health with the quality of medicine. Public health and individual care, provided by the public health physician, the medical practitioner, the nurse and the acute treatment hospital, have been widely-regarded as responsible for improvements in health status. Individual health care, in particular, has had a dominant position, and expenditures have generally been directed at improving its quality and accessibility.

The success of the Canadian personal health care system, particularly in the treatment of disease, is unquestioned, and the demand by the Canadian people for more and better personal health care continues unabated. Preventive medicine, as exemplified by immunization, has practically eliminated such scourges as smallpox, diphtheria and poliomyelitis, and advanced surgical procedures save thousands more lives annually than they did thirty years ago. Graduates of Canadian medical colleges and of post-graduate specialty training are the equal of any in the world and Canadian hospitals have a general high level of service and equipment that matches that of any other country. In both numbers and skills the members of the Canadian nursing profession generally provide the finest of nursing care. Taken as a whole, then, the amount, quality and method of financing health care in Canada, while still improvable, is one to be envied.

In most minds the health field and the personal medical care system are synonymous. This has been due in large part to the powerful image projected by medicine of its role in the control of infective and parasitic diseases, the advances in surgery, the lowered infant mortality rate and the development of new drugs. This image is reinforced by drug advertising, by television series with the physician as hero, and by the faith bordering on awe by which many Canadians relate to their physicians.

The consequence of the traditional view is that most direct expenditures on health are physician-centered, including medical care, hospital care, laboratory tests and prescription drugs. When one adds dental care and the services of such other professions as optometrists and chiropractors, one finds that close to seven billion dollars a year are spent on a personal health care system which is mainly oriented to treating existing illness.

Chapter 2. The Limitations of the Traditional View

There are two approaches which can be taken to assess the influence of various factors on the general level of illness. One is by analysing the past and determining the extent to which various influences have contributed, over the years, to changes in the nature and incidence of sickness and death. A second approach is to take present statistics on illness and death and to ascertain their underlying causes.

The historical approach is most clearly expressed by Dr. Thomas McKeown, Professor of Social Medicine at the University of Birmingham Medical School.² Dr. McKeown traces the level of health in England and Wales back to the eighteenth century, and evaluates the effect of the several influences on the health level. His conclusions are:

“that, in order of importance the major contributions to improvement in health in England and Wales were from limitation of family size (a behavioural change), increase in food supplies and a healthier physical environment (environmental influences), and specific preventive and therapeutic measures”³

and

“Past improvement has been due mainly to modification of behaviour and changes in the environment and it is to these same influences that we must look particularly for further advance”.⁴

These conclusions, drawn from an analysis of the history of the level of health of the population, are not surprising when one recalls the progress in income security, in education and in protection from public health hazards during the past century.

The second approach is to examine the nature and underlying causes of present mortality and hospital morbidity in Canada.

Mortality

Looking first at mortality it was found that overall statistics on causes of death are dominated by deaths over age seventy. Since more than 50% of deaths in 1971 occurred beyond age seventy, the causes of death in old age have an overwhelming impact on total figures and thus obscure the relative significance of the deaths that come before their time. It is the early deaths that reflect adversely on the health status of Canadians, as far as mortality is concerned, and they can be properly assessed only if they are separated from overall mortality statistics.

All of the following figures reflect Canada's experience in 1971 when there were 157,300 deaths recorded from all causes, of which 75,200 came before age seventy. These early deaths are the ones which were analysed.

Of the 75,200 early deaths, 7,600 or roughly 10% occurred before age five. Of these, 1,500 were due to congenital anomalies, and 3,300 more were due to other conditions which caused death shortly after birth.

Given that the present high level of obstetrical and neo-natal service can be maintained, it is generally conceded that early pre-natal care, along with the early identification of high-risk pregnancies, is the principal means by which the infant mortality rate can be further lowered. It is also true that economically-deprived segments of the population, including its native peoples, contribute disproportionately to the infant mortality rate in Canada. It is also true that the importance of early pre-natal care is recognized more by the relatively affluent levels of society than by the under-privileged. Finally, it is true that universal pre-paid health care has practically eliminated any financial barrier between a pregnant woman and the pre-natal care she should receive. All these conditions lead to the conclusion that economic circumstances, health education, attitudes and facility of physical access to health care, as well as improved pre-natal care, are the principal factors to be considered in lowering the rate of infant mortality. In brief, environment and self-imposed risks, including attitudes, are the main influences by which infant mortality rates can be further improved.

From age five to age thirty-five, the principal cause of death is motor vehicle accidents, the second most important cause is other accidents and the third is suicide. These three, taken together, account for 6,200 of the 9,700 deaths for the group aged five to thirty-five. Since all these causes of death are mainly due to human factors, including carelessness, impaired driving, despair and self-imposed risks, it is evident that changes in these factors are needed if the rates of death are to be lowered.

At age thirty-five, coronary-artery disease first appears as a significant (over 5%) cause of death. By age forty it becomes the principal cause and holds this position in increasing ascendancy through all subsequent age groups.

For the age group thirty-five to seventy, diseases of the cardio-vascular system accounted for 25,700 deaths out of a total of 58,000. While the causes of circulatory diseases are various, there is little doubt that obesity, smoking, stress, lack of exercise and high-fat diets, in combination, make a dominant contribution. All of these are due to environmental conditions and self-imposed risks.

At age fifty, the second most important cause of death in men is cancer of the larynx, trachea, bronchus or lung. These accounted for 3,600 deaths, male and female, between forty and seventy. Bronchitis, emphysema and asthma, in this age group, accounted for another 1,400 deaths. For these 5,000 deaths, cigarette smoking is a major contributing factor. Once more the root cause is found in a self-imposed risk.

In order to ascertain and measure the principal causes of early death, calculations have been made of the years of potential life lost by each cause, measured against a life expectancy of seventy and eliminating causes of infant mortality. Years lost due to early death for the five main causes, by this definition, were as follows for 1971:

Cause	Total Years Lost
Motor Vehicle Accidents	213,000
Ischaemic Heart Disease	193,000
All Other Accidents	179,000
Respiratory Diseases and Lung Cancer	140,000
Suicide	69,000

It will be noted that self-imposed risks and the environment are the principal or important underlying factors in each of the five major causes of death between age one and age seventy, and one can only conclude that, unless the environment is changed and the self-imposed risks are reduced, the death rates will not be significantly improved.

Hospital Morbidity

Mortality rates are not the only indicators of health, so a similar analysis was made of hospital morbidity, i.e. those illnesses which required hospitalization.

For analytical purposes, morbidity can be classified under three headings:

1. hospital morbidity, defined as sickness requiring hospitalization

2. non-hospital morbidity for which treatment was given but outside the hospital
3. untreated morbidity, sickness which was self-treated or self-limiting, or undetected morbidity.

The only available morbidity statistics in Canada, i.e. those who required hospitalization, were examined. For this analysis, hospitalization due to uncomplicated deliveries of babies was set aside on the premise that this is not sickness so much as a normal part of life.

Diseases of the cardio-vascular system were by far the principal cause of hospitalization as measured by the number of hospital days, accounting for 7,600,000 hospital days out of a total of 38,600,000 in 1970, in acute general hospitals. Fractures, head injuries, burns and all other causes arising from accidents and violence accounted for 3,100,000 hospital days. For these causes of hospitalization, individual behaviour and carelessness are the principal or important underlying factors. Mental illness accounted for 2,200,000 hospital days in acute general hospitals but it also accounted for 21,200,000 patient days in psychiatric institutions in 1970.

Self-imposed Risks

The effect of self-imposed risks on these and other kinds of sickness, as well as on mortality figures, is reflected in the following grisly litany of the more destructive lifestyle habits and their consequences:

1. Drugs

- (a) *alcohol addiction*: leading to cirrhosis of the liver, encephalopathy and malnutrition,
- (b) *social excess of alcohol*: leading to motor vehicle accidents and obesity,
- (c) *cigarette smoking*: causing chronic bronchitis, emphysema and cancer of the lung, and aggravating coronary-artery disease,
- (d) *abuse of pharmaceuticals*: leading to drug dependence and drug reactions,
- (e) *addiction to psychotropic drugs*: leading to suicide, homicide, malnutrition and accidents,
- (f) *social use of psychotropic drugs*: leading to social withdrawal and acute anxiety attacks.

2. Diet and Exercise

- (a) *over-eating*: leading to obesity and its consequences,
- (b) *high-fat intake*: possibly contributing to atherosclerosis and coronary-artery disease,
- (c) *high carbohydrate intake*: contributing to dental caries,
- (d) *fad diets*: leading to malnutrition,
- (e) *lack of exercise*: aggravating coronary-artery disease, leading to obesity and causing lack of physical fitness,
- (f) *malnutrition*: leading to numerous health problems,
- (g) *lack of recreation and lack of relief from work and other pressures*: associated with stress diseases such as hypertension, coronary-artery disease and peptic ulcers.

3. Others

- (a) *careless driving and failure to wear seat-belts*: leading to accidents and resultant deaths and injuries,
- (b) *promiscuity and carelessness*: leading to syphilis and gonorrhoea.

Environmental Risks

Turning to the physical and social environment, about which the individual can do little or nothing, it is generally assumed that all known public health measures have been put into effect across our land, and that we are protected through governmental action against public health hazards. On closer examination it will be found that the application of known public health measures is both imperfect and uneven. The contamination of drinking water, as illustrated by the analyses carried out by Pollution Probe in Western Quebec and Eastern Ontario, is far more widespread than one would have thought in this day and age. Sewage from a substantial proportion of Canada's population is still poured out raw into Canada's rivers and lakes. Many large centres still do not fluoridate drinking water, in spite of the low cost and the preponderance of scientific opinion in favour of fluoridation. So contaminated are some Canadian lakes and streams that many public beaches have had to be closed down because of their threat to health.

The total effect of air pollution on the health of Canadians has not been ascertained with any precision but links have been established between air pollution and sickness. Direct cause-and-effect relationships are now being proved and measured.

Urbanization, and all its effects on physical and mental health, has not been assessed in any comprehensive way. Crowding, high-rise living, and the dearth of intensive-use recreational areas in cities are all contributors to sickness in Canada.

Working conditions, including the deadening effect of repetitive production line tasks on the human spirit, take their toll in terms of physical and mental illness. Workmen's Compensation Benefits alone cost 400 million dollars yearly.

One of the most important but least understood environmental problems is the effect of rapid social change on the mental and physical health of Canadians. Some of the social change is due to technological innovation, such as the introduction of television, but significant disorientation and alienation arise as well from the crumbling of previous social values and their replacement by others whose long-term effect is still unknown. When a society increasingly pursues private pleasure by sacrificing its obligations to the common good, it invites stresses whose effect on health can be disastrous.

Finally, on the subject of the environment, the number of economically-deprived Canadians is still high, resulting in a lack of adequate housing and insufficient or inadequate clothing.

All the foregoing environmental conditions create risks which are a far greater threat to health than any present inadequacy of the health care system.

Conclusion

When the full impact of environmental and lifestyle has been assessed, and the foregoing is necessarily but a partial statement of their effect, there can be no doubt that the traditional view of equating the level of health in Canada with the availability of physicians and hospitals is inadequate. Marvellous though health care services are in Canada in comparison with many other countries, there is little doubt that future improvements in the level of health of Canadians lie mainly in improving the environment, moderating self-imposed risks and adding to our knowledge of human biology.

Chapter 3. Major Problem Areas in the Health Field

The major problem areas in the health field fall generally into two separate categories: 1) the health status of the population and 2) the problems involved in the actual organization and delivery of health care.

Health Status of the Population

Three main indicators of the health status of the population are (a) life expectancy and mortality rates, (b) causes of death and (c) morbidity.

(a) Life expectancy and Mortality Rates

Life expectancy at birth has increased significantly between 1941 and 1971, from 63.0 years to 69.4, for males and from 66.3 to 76.5 for females. The main reason is the significant drop in infant mortality, from 61 deaths per 1,000 births in 1941 to 17.5 deaths per 1,000 births in 1971.

Once a male has survived beyond childhood, however, there has been very little improvement in the number of remaining years he can expect to live. A twenty-year old male in 1941 could expect to live to 69.6 years of age, while in 1971 this had only increased to 71.8. For twenty-year old females the improvement has been more significant, from 71.8 in 1941 to 78.3 in 1971.

These figures reflect a widening gap between male and female life expectancy, whose gravity is underlined when one looks at specific statistics.

In 1971 twice as many men as women died between the ages of fifteen and seventy. The actual figures are 43,450 male deaths and 22,150 female deaths in this age group. In simple terms, death overtook two men for every woman in these prime years of life.

In 1931, women, on the average, could expect to live two years longer than men. In 1971 this difference had grown to seven years.

Turning to comparisons with other countries, there are only three nations in the world, Sweden, Norway and The Netherlands, which have a greater life expectancy for females than Canada, and the difference between Canada and the best nation is only one year. For male life expectancy, there are six countries, Sweden, Norway, The Netherlands, Denmark, Switzerland and Greece, which outperform Canada and the gap between Canada and the best nation is two and a half years.

Another analysis was made of years lost due to early death between the ages of one and seventy, using relativity at age seventy. By this definition the following comparison was obtained:

Cause	Years Lost Male	Years Lost Female
Motor Vehicle Accidents	154,000	59,000
Ischaemic Heart Disease	157,000	36,000
All Other Accidents	136,000	43,000
Respiratory Disease and Lung Cancer	90,000	50,000
Suicide	51,000	18,000
	TOTAL	588,000
		206,000

For these five main causes of early death, as defined, males lost almost three years of potential life for every year lost by females.

Turning next to the actual number of deaths by cause and sex, one finds that between the ages of thirty-five and seventy there were 18,400 men who died of diseases of the cardio-vascular system compared to only 7,300 women. For each sex at all ages, major differences in numbers of deaths were also found in the following selected categories for 1971.*

* More complete mortality statistics are shown in the ensuing table.

Cause	Deaths Male	Deaths Female
1. SPECIFIC ACCIDENTS		
(a) Automobile Accidents	4,100	1,600
(b) Other Transport Accidents	500	70
(c) Industrial Accidents	700	55
(d) Accidental Drownings	600	150
2. LUNG CANCER	4,600	800
3. BRONCHITIS, EMPHYSEMA AND ASTHMA	2,800	700
4. SUICIDE	1,900	700
5. CIRRHOSIS OF THE LIVER	1,300	650

From the foregoing analysis, there is no doubt that Canada has a male mortality problem of great significance.

As already noted, life expectancy is much influenced by changes in the infant mortality rate and most of the improvement in Canadian life expectancy can be attributed to a reduction in the infant mortality rate from 102.0 deaths per 1,000 live births in 1921 to 17.5 in 1971. While Canada's performance has been outstanding, it still falls well below that of Sweden with a rate of 11.0 per 1,000 live births. What offers hope for improvement is the difference in infant mortality rates between certain socio-geographic segments of the Canadian population. By attacking the problem among high-risk populations, improvements can still be made. At the same time one must keep the importance of infant deaths in perspective. Of 157,300 deaths in 1971, only 6,400 occurred before age one and of these many are due to congenital anomalies about which little can be done after a baby is born.

(b) Causes of death

The graphic at Annex A provides a vivid picture of the major causes of death for each sex and age group in 1971. It highlights the fact that the importance of each cause of death varies according to sex and age group. Noticeable immediately is the tremendous importance of motor vehicle accidents and all other accidents, which account for large percentages of death in young males between the ages of five and forty and in females between five

and thirty. Suicide is an important cause of death in males and females as young as fifteen years. Coronary-artery disease becomes and remains the major cause of death in males from age forty on, and in females from age fifty on. Cancer strikes at most ages, but at a much earlier age among women. Deaths due to respiratory diseases and lung cancer are important in men over fifty years. Cirrhosis of the liver appears as a major cause of death in males between the ages of forty and fifty.

An overall view of the major causes of death at all ages, with predominant ages for each, is as follows:

Major Causes of Mortality (1971)	No. of Deaths	% of All Deaths	Predominant Ages
Ischaemic heart disease	48,975	31.1%	40 and over
Cerebrovascular disease	16,067	10.2%	Age 65 and over
Respiratory diseases and lung cancer	15,677	10.0%	Under 1 year and 55 and over
Motor Vehicle and all other accidents	12,031	7.6%	All ages
Cancer of the gastro-intestinal tract	7,947	5.1%	50 and over
Cancer of the breast, uterus and ovary	4,816	3.1%	40 and over
Diseases specific to the newborn	3,299	2.1%	Under 1 week
Suicide	2,559	1.6%	15 to 65
Congenital anomalies	1,967	1.3%	Under 1 year
TOTAL	113,338	72.1%	
ALL DEATHS	157,272	100.0%	

It will be noted that the major causes of death are now chronic illnesses and accidents, with relatively few due to infectious diseases. This is a drastic change from the situation around the turn of the century when the major causes of death were primarily, or related to, infectious diseases such as influenza,

pneumonia, tuberculosis, gastro-enteritis, chronic nephritis and diphtheria. These diseases have largely been brought under control, and the only ones which remain major problems of mortality are influenza and pneumonia, and certain diseases of early infancy. Whereas the major problems of the past were acute illnesses, which have a fairly abrupt onset and a finite duration, the major problems now are chronic illnesses, which have a gradual onset and an indefinite duration (see Chapter 10), and accidents.

(c) Morbidity

With regard to the incidence and causes of illness, the available information is more limited and less reliable than it is on mortality. In order to have key indicators of health, it would be necessary to have a measure of ill-health in the population, including the whole range of disabilities from the severe conditions that often require hospitalization and medical treatment to the minor ailments and mild chronic conditions. However, the only Canadian data that are current relate to illness treated in hospitals, and to certain contagious diseases which must be reported by physicians to public health authorities.

Looking at acute treatment hospital morbidity, measured by *the number of hospital days*, one finds that diseases of the cardio-vascular system, injuries due to accidents, respiratory diseases and mental illness, in that order, are the four principal causes of hospitalization, accounting for some 45% of all hospital days.

By another measure, *the number of hospital admissions*, diseases of the respiratory system come first, followed by child-birth, diseases of the digestive system, diseases of the genito-urinary system, diseases of the cardio-vascular system and accidents.

The difference between the two rankings is due to the fact that one measures the number of hospital days while the other measures the number of admissions. Since hospital stays, on the average, are longest for cardio-vascular disease and accidents, these are more prominent in the ranking by hospital days.

Hospital morbidity, like mortality, is of limited use in assessing the general level of health of the population because it reflects only the severe cases, i.e. those requiring hospitalization. Furthermore, if one makes year-to-year comparisons, it is necessary to take into account factors other than the rate of sickness, such as the effect of prepayment of hospital and medical care and of more sophisticated diagnostic techniques. These factors are difficult to measure at present.

What is really needed is a measure of the prevalence of ill-health in the population, counting not only mortality and hospital morbidity, but illness treated by health professionals outside hospital, illnesses which are self-treated

or self-limiting, undetected morbidity, and a count of the chronically disabled. Only when this comprehensive view is obtained will it be possible to ascertain the level of health and to identify year-to-year changes. Conceptual and technical problems need to be resolved before this comprehensive view is obtained, and substantial funds would have to be made available for surveys of the population and for the establishment of useful data series.

To operate most effectively in regulating dangerous products there is a need for accurate, comprehensive knowledge of the causes of accidents and for the identification of the products, if any, involved. This points to the need for a broadly-based, well-designed statistical system for reporting accidents.

One of the ironies of obtaining and analysing health data is that it is so difficult to act upon the conclusions reached. Taking coronary-artery disease as an example, one finds that it is the major killer and the major cause of hospital days. Contributing factors are well known and include genetic inheritance, the relative absence of estrogenic hormones in men, smoking, obesity, high-fat diets, high serum cholesterol, lack of exercise and stress as well as such morbid conditions as atherosclerosis, diabetes and high blood pressure. Yet, when one looks for programs aimed at reducing the prevalence of coronary-artery disease through an abatement of known contributing factors, one finds that they are weak or non-existent.

Deaths and injuries due to automobile accidents could probably be reduced by 50% if everyone wore seat-belts, and if stricter measures were taken to reduce the number of impaired drivers. In spite of this knowledge the rate of seat-belt wearing stays at about 10% and alcohol continues to be a factor in half the traffic accidents.

Cigarette smoking contributes heavily to respiratory disease and lung cancer. Educational campaigns have succeeded in reducing the number of smokers in the twenty years-and-over bracket from fifty-eight per hundred to fifty per hundred but the recruitment of new smokers among teenagers has increased alarmingly, especially among teen-age girls.

Some 40% of all alcoholic beverages in Canada are purchased by but 7% of the drinking population, the alcohol abusers. At December 31, 1969, there were sixty-seven children under the age of fifteen with a diagnosis of alcoholism in Canadian mental hospitals. One-quarter of all first male admissions to psychiatric hospitals are due to alcoholism, and the heavy contribution of alcohol abuse to motor vehicle accidents, poisonings, accidental fire deaths, cirrhosis of the liver and falls has been ascertained. Absenteeism due to alcohol abuse costs a million dollars a day to Canadian industry⁵. Yet the control and treatment of alcohol abuse in Canada is fragmented and weak.

The lack of physical fitness of the Canadian population has been measured and one criterion, the capacity to use oxygen efficiently, indicates that Canadians are not as fit as citizens of some European countries.

A study in 1972 showed that 76% of Canada's population over age thirteen spend less than one hour a week participating in a sport, and that 79% have less than one hour per week in other physical activity such as walking. This same survey shows that 84% of the population over age thirteen watches four or more hours a week of television. Some 36% watch in excess of fifteen hours a week. This pattern of living, dominated by sedentary living, explains why so few Canadians are fit.

Accurate statistics on the incidence of gonorrhea and syphilis are hard to come by but those that are reported indicate that venereal disease is again reaching epidemic proportions. Efforts to combat this health problem are at best of uneven effectiveness.

The common dental diseases of caries, periodontal disease and malocclusion are not dramatic but in terms of numbers of people affected they constitute one of the greatest public health problems in Canada. Almost 60% of Canadians appear to receive little or no dental care, and yet few dentists are in a position to accept more patients. A greater number of dental auxiliaries is needed, to relieve dentists of the more routine procedures.

It is estimated that about half the burden of illness is psychological in origin and this proportion is growing. An indication of the seriousness of the problem can be seen from the following facts: one-third of all hospital beds and hospital days are for mental care patients; three out of 1,000 Canadians are hospitalized in psychiatric institutions at any given time; between 5% and 10% of school children suffer from mental or learning disorders; there is a significant increase in alcoholism and drug addiction, homicide and suicide, crime, anxiety neuroses and depressive psychoses. And yet mental health, as opposed to physical health, has been a neglected area for years; unfortunately there is still a social stigma attached to mental illness.

When one looks at the foregoing major health problems of Canada and their underlying causes it is obvious that we are failing to act on the information we already have.

The health care system, for all its facilities and for all the numbers, training and dedication of its health professionals, still tends to regard the human body as a biological machine which can be kept in running order by removing or replacing defective parts, or by clearing its clogged lines. The medical solution to health problems, while an extremely important aspect of health, is only one

of many aspects revealed by an examination of the underlying causes of sickness and death.

If government is, at least in part, a mirror of the people's collective will, then the people collectively must accept the blame for any causes of sickness arising from the deterioration that has taken place in the environment.

In addition to the health care system and the people collectively, individual blame must be accepted by many for the deleterious effect on health of their respective lifestyles. Sedentary living, smoking, over-eating, driving while impaired by alcohol, drug abuse and failure to wear seat-belts are among the many contributors to physical or mental illness for which the individual must accept some responsibility and for which he should seek correction.

Finally, the medical research community, with its emphasis on human biology, must continue to evaluate the direction of its research in terms of the country's major health problems and of the gaps in knowledge that need to be closed if those problems are to be solved. Balancing the need to respect the independence of the researcher with the need to relate research to health problems is a question of continuing debate; it is true, however, that the research community could pursue with more vigour the application of new knowledge in the environment, lifestyle and health care sectors.

This section on Canada's health status dwells necessarily on the problems which still face the country and because of this tends to project a picture that is gloomier than is actually the case. By comparison both with its past history and with other countries, Canada has much to be proud of, and thankful for. This is no less true in the health field than it is in other areas of social progress.

Problems in the Organization and Delivery of Health Care

With the introduction of universal pre-paid medical and hospital care, Canadian provinces, with federal financial assistance, have substantially eliminated the spectre of catastrophic medical and hospital bills. Various measures are also in effect to help pay for other services, including special assistance to the needy.

There are three overall indicators of the level of health services: the ratio of various health professions to the total population, the ratio of treatment facilities to the population, and the extent of pre-paid coverage.

The following table shows how Canada compares with other countries in some of these respects. The actual years for which statistics are shown vary slightly according to the availability of the most recent figures.

Country	% Covered by Medical and Hospital Insurance	No. of Hosp. Beds per 10,000 Population	No. of Physicians per 10,000 Population	No. of Nurses per 10,000 Population
Australia	79% (Hosp.) 75% (Med.)	117.4	11.8	66.6
Canada	Almost 100%	102.3	15.7	57.3
Denmark	96.7%	89.4	14.5	53.4
Sweden	Almost 100%	145.8	12.4	43.7
United Kingdom	Almost 100%	111.4	12.5	35.1
United States	85% (Hosp.) 65% (Reg. Med.) 35% (Maj. Med.)	82.7	15.3	49.2

In hospital and medical insurance coverage Canada equals the best of the five countries chosen for comparison; it leads in respect of physicians, is in the middle rank in respect of hospital beds, and is second only to Australia in nurses. Since the countries chosen are among those with the best health care services in the world, there is no doubt that, by the four measures used in the table, Canada is among the world leaders.

Canada's national health expenditures, including personal health care,* in 1971, were as follows:

	As % of G.N.P.	As % of Personal Income	Per Capita Annual Expenditures
Canada	7.1	9.0	306.11

These figures reflect total health expenditures. For that part which comprised personal health care only, the per capita cost in Canada was \$271.72, or about \$1100 for a family of four. This is a substantial sum by any measure, even if most of the costs were met by insurance.

*Personal health care consists of services received by individuals and provided by hospitals, physicians, nurses, dentists, pharmacists, etc.

In spite of the great strides made in recent years, there are a number of difficult problems facing those with responsibilities for providing health care services:

1. The annual rate of cost escalation has been between 12% and 16%, which is far in excess of the economic growth of the country; if unchecked, health care costs will soon be beyond the capacity of society to finance them.
2. The past twenty years have seen an emphasis on the construction of hospitals and not enough on other needed health care facilities. As a result, Canada now finds itself with an excess of expensive acute care beds, coupled with a shortage of alternative treatment, convalescent and custodial care facilities and increasing pressure on hospital emergency services.
3. Medical services are not yet equally accessible to all segments of the population because health manpower tends to concentrate in cities and is not attracted to rural or isolated locations.
4. Dental services are not equally accessible to all segments of the population, mainly because of the cost to the patient of dental care, a shortage of dental professionals, as well as a maldistribution of available dental manpower.
5. Present organizational arrangements for providing health care services could be improved to more satisfactorily meet the needs of the population.
6. Over the years, a large proportion of Canada's needs for physicians has been met by the immigration of personnel from foreign countries. Over the decade 1961-1971, the average annual number of immigrant physicians was 914. During the same decade, an average of 919 students graduated each year from Canadian medical schools. This reflects a problem of dependency on other countries for physician supply.
7. Certain sectors of the population have special health problems, due to a number of factors such as mode of living and isolation; they require supplementary services which must be provided at higher than average cost.
8. There is a lack of a uniform and integrated system for maintaining health records of individuals; essential data are scattered in many locations: in physician's offices, hospital records, clinics, etc.
9. Health manpower planning is difficult because of interprovincial mobility, immigration and emigration.
10. Present cost-sharing arrangements between the federal and provincial governments tend to encourage the use of physicians and acute treatment hospitals, even for services which could be adequately provided through less costly means.

11. Improved ambulatory health centres, with round-the-clock, comprehensive out-patient care are needed in order that accessibility of care will not be dependent on the individual availability of physicians.

12. Regional health authorities with the power to plan and manage the health care requirements of a given geographical area are needed.

The foregoing problems in the provision of health care services are principally the concern of provincial governments, who are charged with ensuring that adequate health care is available at a cost that can be afforded.

Conflicting Goals in the Health Care System

Some of the problems of providing and financing health care within reasonable limits arise from attempts to meet conflicting goals.

On the one hand, it is a goal to make physician services equally accessible to everyone; on the other hand, it is also a goal to permit physicians to practise where they wish. The result is that physicians are maldistributed among provinces and between urban and rural areas. At the two extremes, British Columbia, in 1971, had one physician for every 603 citizens while Prince Edward Island had one physician for 1,143 citizens. Ontario had one to 616 in 1971 and calculated that by the end of 1973 it had one physician for less than 600 citizens, in spite of the fact that there is no evidence to suggest that the standard of health care is improved when the ratio of 1 to 600-650 is exceeded.

A second set of conflicting goals consists of trying to control costs while removing all incentives to patients, physicians and hospitals to do so. The existence of a generous supply of hospital beds and of increasing numbers of physicians makes it easy for patients to seek care even for minor conditions and for physicians to hospitalize more patients, particularly when there are no financial barriers. Thus the goal of ready access to health care services, both physical and financial, conflicts with the goal of controlling costs.

A third set of conflicting goals consists of providing a balanced supply of the various medical specialties while permitting physicians to select their fields of special training. The shortage of physicians specializing in rehabilitation medicine and in the care of the aged is evidence that mechanisms are needed to reconcile these two goals.

Fourth, health care administrators would like to see services provided by staff trained only to the level of skill needed for the task performed. However, the present licensing patterns for health professionals as well as the fee-for-service system, coupled with the principle that the physician or dentist alone

bears responsibility for his patient, encourages the practice of physicians and dentists carrying out tasks which could be done by others, as well or better, and often at a lower cost. In the Canadian North the role of the nurse has been expanded along these lines with great success. Similarly, the Government of Saskatchewan has successfully implemented a dental care system for school children in which a major part of the work is done by dental health professionals other than dentists, according to protocols established by dentists and under their overall supervision.

Finally, there is the paradox of everyone agreeing to the importance of research and prevention yet continuing to increase disproportionately the amount of money spent on treating existing illness. Public demand for treatment services assures these services of financial resources. No such public demand exists for research and preventive measures. As a consequence, resources allocated for research, teaching and prevention are generally insufficient.

It would appear that steps need to be taken to reconcile the foregoing, and other conflicting goals and principles, while retaining all that is necessary to properly reward health manpower, control costs and ensure accessibility to quality service.

Chapter 4. The Health Field Concept

A basic problem in analysing the health field has been the absence of an agreed conceptual framework for sub-dividing it into its principal elements. Without such a framework, it has been difficult to communicate properly or to break up the field into manageable segments which are amenable to analysis and evaluation. It was felt keenly that there was a need to organize the thousands of pieces into an orderly pattern that was both intellectually acceptable and sufficiently simple to permit a quick location, in the pattern, of almost any idea, problem or activity related to health: a sort of map of the health territory.

Such a Health Field Concept⁶ was developed during the preparation of this paper and it envisages that the health field can be broken up into four broad elements: HUMAN BIOLOGY, ENVIRONMENT, LIFESTYLE and HEALTH CARE ORGANIZATION. These four elements were identified through an examination of the causes and underlying factors of sickness and death in Canada, and from an assessment of the parts the elements play in affecting the level of health in Canada.

Human Biology

The HUMAN BIOLOGY element includes all those aspects of health, both physical and mental, which are developed within the human body as a consequence of the basic biology of man and the organic make-up of the individual. This element includes the genetic inheritance of the individual, the processes of maturation and aging, and the many complex internal systems in the body, such as skeletal, nervous, muscular, cardio-vascular, endocrine, digestive and so on. The human body being such a complicated organism, the health implications of human biology are numerous, varied and serious, and the things that can go wrong with it are legion. This element contributes to all kinds of ill health and mortality, including many chronic diseases (such as arthritis, diabetes, athero-sclerosis, cancer) and others (genetic disorders, congenital malformation, mental retardation). Health problems originating from human biology are causing untold miseries and costing billions of dollars in treatment services.

Environment

The ENVIRONMENT category includes all those matters related to health which are external to the human body and over which the individual has little or no control. Individuals cannot, by themselves, ensure that foods, drugs, cosmetics, devices, water supply, etc. are safe and uncontaminated; that the health hazards of air, water and noise pollution are controlled; that the spread of communicable diseases is prevented; that effective garbage and sewage disposal is carried out; and that the social environment, including the rapid changes in it, do not have harmful effects on health.

Lifestyle

The LIFESTYLE category, in the Health Field Concept, consists of the aggregation of decisions by individuals which affect their health and over which they more or less have control. The importance of the LIFESTYLE category has already been elaborated on in the section on *The Limitations of the Traditional View*. Personal decisions and habits that are bad, from a health point of view, create self-imposed risks. When those risks result in illness or death, the victim's lifestyle can be said to have contributed to, or caused, his own illness or death.

Health Care Organization

The fourth category in the Concept is HEALTH CARE ORGANIZATION, which consists of the quantity, quality, arrangement, nature and relationships of people and resources in the provision of health care. It includes medical practice, nursing, hospitals, nursing homes, medical drugs, public and community health care services, ambulances, dental treatment and other health services such as optometry, chiropractics and podiatry. This fourth element is what is generally defined as the health care system.

Until now most of society's efforts to improve health, and the bulk of direct health expenditures, have been focused on the HEALTH CARE ORGANIZATION. Yet, when we identify the present main causes of sickness and death in Canada, we find that they are rooted in the other three elements of the Concept: HUMAN BIOLOGY, ENVIRONMENT and LIFESTYLE. It is apparent, therefore, that vast sums are being spent treating diseases that could have been prevented in the first place. Greater attention to the first three conceptual elements is needed if we are to continue to reduce disability and early death.

Characteristics of the Health Field Concept

The HEALTH FIELD CONCEPT has many characteristics which make it a powerful tool for analysing health problems, determining the health needs of Canadians and choosing the means by which those needs can be met.

One of the evident consequences of the Health Field Concept has been to raise HUMAN BIOLOGY, ENVIRONMENT and LIFESTYLE to a level of categorical importance equal to that of HEALTH CARE ORGANIZATION. This, in itself, is a radical step in view of the clear pre-eminence that HEALTH CARE ORGANIZATION has had in past concepts of the health field.

A second attribute of the Concept is that it is comprehensive. Any health problem can be traced to one, or a combination of the four elements. This comprehensiveness is important because it ensures that all aspects of health will be given due consideration and that all who contribute to health, individually and collectively, patient, physician, scientist and government, are aware of their roles and their influence on the level of health.

A third feature is that the Concept permits a system of analysis by which any question can be examined under the four elements in order to assess their relative significance and interaction. For example, the underlying causes of death from traffic accidents can be found to be due mainly to risks taken by individuals, with lesser importance given to the design of cars and roads, and to the availability of emergency treatment; human biology has little or no significance in this area. In order of importance, therefore, LIFESTYLE, ENVIRONMENT and HEALTH CARE ORGANIZATION contribute to traffic deaths in the proportions of something like 75%, 20% and 5% respectively. This analysis permits program planners to focus their attention on the most important contributing factors. Similar assessments of the relative importance of contributing factors can be made for many other health problems.

A fourth feature of the Concept is that it permits a further sub-division of factors. Again for traffic deaths in the Lifestyle category, the risks taken by individuals can be classed under impaired driving, carelessness, failure to wear seat-belts and speeding. In many ways the Concept thus provides a road map which shows the most direct links between health problems, and their underlying causes, and the relative importance of various contributing factors.

Finally, the Health Field Concept provides a new perspective on health, a perspective which frees creative minds for the recognition and exploration of hitherto neglected fields. The importance on their own health of the behaviour and habits of individual Canadians is an example of the kind of conclusion that is obtainable by using the Health Field Concept as an analytical tool.

One of the main problems in improving the health of Canadians is that the essential power to do so is widely dispersed among individual citizens, governments, health professions and institutions. This fragmentation of responsibility has sometimes led to imbalanced approaches, with each participant in the health field pursuing solutions only within his area of interest. Under the Health Field Concept, the fragments are brought together into a unified whole which permits everyone to see the importance of all factors, including those which are the responsibility of others.

This unified view of the health field may well turn out to be one of the Concept's main contributions to progress in improving the level of health.

Chapter 5. Issues Arising from the Use of the Health Field Concept

The Concept was designed with two aims in view: to provide a greater understanding of what contributes to sickness and death, and to facilitate the identification of courses of action that might be taken to improve health.

The Concept is *not* an organizational framework for structuring programs and activities, and for establishing lines of command. The rigid allocation of problems and activities to one or another of the four elements of the Concept would be contrary to reality and would perpetuate the present fragmentary approach to solving health problems. For example, the problem of drug abuse needs attention by researchers in human biology, by behavioural scientists, by those who administer drug laws and by those who provide personal health care. Contributions are needed from all of these and it would be a misuse of the Health Field Concept to exploit it as a basis for capturing all aspects of a problem for one particular unit of organization or interest group.

A second practical problem is the perennial one of federal-provincial jurisdictional boundaries in the health field. Since the Concept was intended to cover the whole health field without regard to jurisdiction, and since there are very real limits on federal powers, the argument could be made that we were looking at matters which had no history of federal concern or authority. The only answer here, of course, is that the right questions must be posed about the health field before a determination can be made of legitimate federal responses.

A third issue, more theoretical, was whether or not it was possible to divide external influences on health between the environment, about which the individual can do little, and lifestyle, in which he can make choices. Particularly cogent were arguments that personal choices were dictated by environmental factors, such as the peer-group pressures to start smoking cigarettes during the teens. Further, it was argued that some bad personal habits were so ingrained as to constitute addictions which, by definition, no longer permitted a choice

by a simple act of will. Smoking, alcohol abuse and drug abuse were some of the lifestyle problems referred to in this vein.

The fact that there is some truth in both hypotheses, i.e. that environment affects lifestyle and that some personal habits are addictive, requires a philosophical and moral response rather than a purely intellectual one. This response is, that if we simply give up on individuals whose lifestyles create excessive risks to their health, we will be abandoning a number who could have changed, and will be perpetuating the very environment which influenced them adversely in the first place. In short the deterministic view must be put aside in favour of faith in the power of free will, hobbled as this power may be at times by environment and addiction.

One point on which no quarter can be given is that difficulties in categorizing the contributing factors to a given health problem are no excuse for putting the problem aside; the problem does not disappear because of difficulties in fitting it nicely into a conceptual framework.

Another issue is whether or not the Concept will be used to carry too much of an analytical workload by demanding that it serve both to identify requirements for health and to determine the mechanisms for meeting them. Although the Concept will help bring out the problems and their causes, and even point to the avenues by which they can be solved, it cannot determine the precise steps that are needed to implement programs. Decisions as to programs are affected by so many other considerations that they will require the analysis of many practical factors outside the Concept proper.

The ultimate philosophical issue raised by the Concept is whether, and to what extent, government can get into the business of modifying human behaviour, even if it does so to improve health. The marketing of social change is a new field which applies the marketing techniques of the business world to getting people to change their behaviour, i.e. eating habits, exercise habits, smoking habits, driving habits, etc. It is argued by some that proficiency in social marketing would inevitably lead government into all kinds of undesirable thought control and propaganda. The dangers of governmental proficiency in social marketing are recognized but so are the evident abuses resulting from all other kinds of marketing. If the siren song of coloured television, for example, is creating an indolent and passive use of leisure time, has the government not the duty to counteract its effects by marketing programs aimed at promoting physical recreation? As previously mentioned, in Canada some 76% of the population over age 13 devotes less than one hour a week to participation in sports while 84% of the same population spends four or more hours weekly watching television. This kind of imbalance extends to the amount of money being spent by the private sector on marketing products and services, some of

which if abused, contribute to sickness and death. One must inevitably conclude that society, through government, owes it to itself to develop protective marketing techniques to counteract those abuses.

Finally, some have questioned whether an increased emphasis on human biology, environment and lifestyle will not lead to a diminution of attention to the system of personal health care. This issue is raised particularly by those whose activities are centred on the health care organization. On this issue it can be said, first of all, that Canadians would not tolerate a reduction in personal health care and are in fact pushing very hard to make service more accessible and more comprehensive. In response to this demand, several Canadian Provinces have extended insured health care services beyond those whose cost is shared by the Federal Government. These extensions will no doubt continue.

More important, if the incidence of sickness can be reduced by prevention then the cost of present services will go down, or at least the rate of increase will diminish. This will make money available to extend health insurance to more and more services and to provide needed facilities, such as ambulatory care centres and extended care institutions. To a considerable extent, therefore, the increased availability of health care services to Canadians depends upon the success that can be achieved in preventing illness through measures taken in human biology, environment and lifestyle.

In this section some practical, theoretical and philosophical issues arising out of the Health Field Concept have been sketched out. No doubt other problems, including those of analytical methodology, will be encountered but as long as the ultimate goal is kept in mind, which is to increase the average number of disability-free days in the lives of Canadians, these difficulties can be overcome.

Chapter 6. Populations At Risk

An average is a useful indicator of a general condition but it usually contains such a wide range of values that it is of very limited use in the identification and solution of problems.

Life expectancy at birth in 1971 was 73 years but included in this average were deaths at age one week and deaths at age one hundred years. Similarly, wide ranges of values can be found in Canada's infant mortality rate of 17.5 deaths per 1,000 live births. Included are rates as low as 11 per 1,000 in a wealthy Canadian suburb and as high as 40 per 1,000 in the Canadian northlands.

The average consumption of absolute alcohol is 2.6 gallons a year per drinking adult (the drinking population represent some 80% of the total adult population, aged 15 or over). Converted into beverages, and distributed among these beverages according to national drinking patterns, this represents 33 dozens of beer, *plus* 14 bottles of table wine *plus* 13 26-oz. bottles of spirits.

It has been estimated that some 7% of the total drinking population purchase 40% of all alcohol sold; this amounts to an average of 15 gallons of absolute alcohol for each individual within this 7%. Again distributed according to national drinking patterns this is equal to 190 dozens of beer, *plus* 77 bottles of table wine, *plus* 76 bottles of spirits for each of these individuals per year.

On the other hand, 93% of the drinking population purchase 60% of all alcohol sold, which amounts to an average of 1.7 gallons a year only.

For every statistical average reflecting a condition in the health field, or in any social field for that matter, there are a number of "populations" which contribute very unevenly to the average. Average annual income is a glaring example of an economic indicator which, if taken at face value, would conceal the wide spread in numbers and incomes between the poor and the rich.

In order to improve the health conditions underlying a particular average, it is therefore necessary to sub-divide the contributing "population" so that attention can be focused on that part of the population which is making the

greatest adverse contribution to the average. This segment of the total population we call a “population at risk”.

When a population at risk is identified, it is necessary to spell out the characteristics of its profile, so that risk factors can be assessed. Males between 40 and 70 years of age, for example, are particularly susceptible to death from coronary-artery disease. Within this population the typical high-risk profile would be of an obese man who gets little or no exercise, ingests excessive amounts of animal fats, smokes cigarettes, drinks a lot of coffee and works in a high pressure job. Men such as these are “candidates for coronaries”.

“Risk” is a statistical term which is expressed in percentages or odds. Thus a man with the many high-risk characteristics outlined in the previous paragraph increases the odds that he will die from a heart attack before reaching age seventy. He will not *necessarily* die from a heart attack and in fact may live to be eighty years old, but his chances of doing so are small by comparison with someone who has a low-risk profile. Inevitably, when the subject of risk is raised, someone will cite a particular case as proof that the theory of risk is invalid; Winston Churchill is most often cited as a man with high-risk characteristics who outlived many of his low-risk contemporaries. At the opposite end of the spectrum, one can always find a skinny, non-smoking jogger who dropped dead at age forty-five. These illustrations reflect the logical fallacy of arguing from the particular to the general, and it is a matter of constant surprise that they are given so often.

In dealing with risk one does not profess to make predictions about individuals but about the likelihood of an event occurring in a population of given characteristics. At the expense of labouring a simple point, it is essential that the concept of risk be understood because the application of the Health Field Concept depends on it.

Populations at risk are obtained through an analytical process which matches up three kinds of information: causes of mortality and kinds of morbidity, underlying reasons for their occurrence, and susceptible segments of the population. The analytical process is not a particularly complicated one. In its simplest form, it can be illustrated by the occurrence of Downs’ Syndrome (mongoloidism) in new-born children. The *morbidity* is Downs’ Syndrome; the *underlying cause* is a defective chromosome; and the *population at risk* are the unborn children of pregnant women over age forty.

In a more complicated form, the process of identifying a population at risk would be as follows: *mortality* from coronary-artery disease; *predisposing morbid condition*: atherosclerosis; *contributing factors*: high serum lipids, hypertension and diabetes, obesity, high-fat diet, lack of exercise, stress,

relative absence of estrogens, cigarette smoking; *population at risk*: males over forty with foregoing conditions or habits.

Traditional medicine, as is proper, will tend to concern itself with treating the mortality-morbidity end of the spectrum while the course of action suggested by the Health Field Concept would be to focus on reducing the contributing factors in the population at risk, once that population had been identified.

Although the example used, coronary-artery disease, dwells particularly on causes which fall under the LIFESTYLE category, the technique is not limited to use for this category. There may be populations at risk due to biological factors such as high blood pressure, or aging, or due to environmental factors such as air pollution or urbanization, or due to deficiencies in the way health care is or is not made available, such as the availability of physicians in rural and remote areas. In every case, however, the target is the high-risk population as opposed to the episode of individual illness, and the aim is to reduce the risks in that population.

The multiplier effect of risk-reduction is its outstanding positive feature. For example, while an elegant heart transplant might prolong one life for two years, the risk-reduction that could be obtained from achieving even a 50% rate of wearing seat-belts would save seven hundred traffic deaths a year.

The identification of high-risk populations as targets for national risk-reduction programs depends on a number of factors including the gravity and incidence of various kinds of sickness and death, the availability of practical measures, and the costs.

Some high-risk populations are readily identifiable, such as the “candidates for coronaries” already described. Other obvious high-risk populations are drinking drivers, cigarette smokers, abusers of alcohol, very fat people, drivers who do not use seat-belts, and people who live in remote areas where medical and other social services are not readily accessible.

Some populations at risk, however, can only be identified by subtle analysis and insight. For example, when one measures the incidence of sickness and death among children aged 5 to 14, one finds that it is the lowest of any age group. Of the 157,300 deaths from all causes recorded in 1971, only 2,000 occurred in this age group. At first glance it would therefore appear that the 5 to 14 age group was a very low-risk population.

Penetrating to one more level of analysis, however, it will be found that these years are critical in the formation of habits and attitudes which are important to health, often for a lifetime. Decisions made by adolescents include whether or not to start smoking, to use drugs and alcohol, to follow a pattern

of sedentary living or of physical recreation, to eat wisely, or to drive carefully. In respect of these choices, the pre-adolescents are a “threshold” population which will shortly be taking decisions that will determine whether they will become high-risk or low-risk individuals in later life. To neglect the health education of the 5 to 14 age group on the grounds that sickness and death rates for it are low, would be a serious error.

Digging down to even one more level of analysis, one could identify, within a general population aged 5 to 14, certain individuals whose behaviour is not only negative as it affects themselves but who also exercise a strong influence on their susceptible acquaintances. The phenomenon of adolescents adopting the values and habits of rebellious peers, rather than the values of society in general or those of their parents, is not new but the scale on which it is now happening is truly alarming. In a recent paper on adolescent cigarette smoking in the United States,⁷ John S. Tamerin points out that the percentage of boys and girls aged 13 to 19 who smoked cigarettes regularly had grown from 14.7% to 18.5% for boys, and from 8.4% to 11.9% for girls, during the two years from 1968 to 1970, in spite of all the propaganda that has been made in schools and on television about the dangers of smoking. This trend is also evident in Canada where, between 1965 and 1972, the percentage of female smokers in the 15 to 19 age group grew from 22.2% to 33.0%.

In explaining the psycho-social determinants of teen-age smoking, Dr. Tamerin found that peer smoking practices were by far the best predictor of adolescent smoking. He also points out the prevalence, among teen-age smokers, of such attitudes as wanting to be older than they are, of rebelliousness against authority and social norms, of impulsivity and risk-taking, and of poor academic performance. He also found that these same underlying attitudes could be found among teen-age abusers of alcohol and drugs.

There is no doubt, therefore, that there is a readily identifiable sub-group within the age class 5 to 14 who are not only themselves at high-risk but who pull many others along with them. This sub-group may well be a target population of the first order, even though this would not be perceptible on the basis, alone, of the incidence of sickness and death.

In addition to populations at risk there are many people who are ill but whose health care needs, for one reason or another, are not being adequately met. For these persons, who have gone beyond risk to actual illness, a principal cause of neglect is that their conditions often do not lend themselves readily to cure, and they therefore do not satisfy the healing instincts on which the health care system thrives. The disabled, the chronically ill, the retarded, the mentally ill and the aged, to name only a few, exist in large numbers and will increase as medicine conquers causes of acute illness and early death. The care of these patients is a substantial and increasing proportion of the medical task.⁸

If the needs of these populations are to be met, the values of the health care system will have to be changed. “Care” will have to be raised to the same level of importance as “cure” before sufficient attention is paid to the needs of many populations with chronic or intractable illnesses. (see Chapter 10)

In this section, on populations at risk, it is proposed that programs are needed which will reduce risk factors among high-risk populations; it is also proposed that more attention is needed to providing care for populations whose afflictions do not lend themselves to ready cure. In both cases the target is a particular part of the overall population, rather than the individual episode of sickness.

Chapter 7. Constitutional Powers and the Present Federal Role

Any comprehensive review of health activities and policies must, of course, take into full account the division of powers under the Canadian Constitution. This section will outline the general constitutional framework within which federal interventions in health matters must be viewed, and the present nature of those interventions.

Governmental involvement in health care services in 1867, at Confederation, was minimal. For the most part, the individual was compelled to rely on his own resources and those of his family group, and hospitals were administered and financed by private charities and religious organizations.

Since the role of the State was so modest, the subject of health could not be expected to claim an important place in the discussions leading up to Confederation, nor in the British North America Act, because the Fathers of Confederation could not have foreseen the pervasive growth and range of health care needs of a large industrialized urban society, the advances of medical science, nor the public expenditures required to maintain high quality health care.

The only specific references to health matters in the distribution of legislative powers under the British North America Act are to allocate to the Federal Parliament jurisdiction over quarantine and the establishment and maintenance of marine hospitals, and to Provincial Legislatures jurisdiction over “the establishment, maintenance and management of hospitals, asylums, charities and eleemosynary (charitable) institutions in and for the Province, other than marine hospitals”. In the context of the circumstances existing in 1867, this latter reference probably was meant to cover most health care services. Furthermore, since the Provinces were assigned jurisdiction over “generally all matters of a merely local or private nature in the province”, it is probable that this power was deemed to cover health care, while Provincial power over “municipal institutions” provided a convenient means for dealing with such matters. The provision of health care services has, therefore, traditionally been acknowledged as primarily a provincial responsibility.

Nevertheless, there is a measure of federal responsibility in health matters which has been expressed over the years in many policies and programs of the Federal Government. These areas are:

1. Quarantine and the Establishment and Maintenance of Marine Hospitals.

This power is assigned to the Federal Parliament under Section 91(11) of the British North America Act. Medical, nursing and sanitation staff are provided at most ports and airports, in order to protect the population against entry into Canada of quarantinable diseases and reduce the incidence of health hazards by common carriers.

2. Indians, and Lands Reserved for Indians.

This power, assigned to the Federal Parliament under Section 91(24) of the British North America Act, has enabled the Federal Government to provide health services to Indians. However, federal legislation in this regard does not stand in the way of provincial laws relating to health services being applicable to Indians in common with other residents of a Province.

3. Yukon and Northwest Territories.

A constitutional amendment, the British North America Act 1871, stated that “the Parliament of Canada may from time to time make provision for the administration, peace, order, and good government of any territory not for the time being included in any Province”. This has enabled the Federal Government to provide health services for the population of the Yukon and Northwest Territories.

4. Criminal Law.

Section 91(27) of the British North America Act assigns to the Federal Parliament jurisdiction over “the Criminal Law, except the Constitution of Courts of Criminal Jurisdiction, but including the Procedure in Criminal Matters”. This power has been invoked by the Federal Government to support prohibitory enactments aimed at protecting public health, such as the Food and Drugs Act, the Narcotics Control Act, and the Proprietary or Patent Medicine Act.

5. Immigration.

Section 95 of the British North America Act gives concurrent powers over immigration to Parliament and the provincial Legislatures, with the proviso that federal legislation has predominance over the provincial. This, along with the quarantine power, has enabled the Federal Government to be involved in immigration health services.

6. International Matters.

There is no provision in the B.N.A. Act in respect of the distribution of powers in foreign affairs. These powers were originally retained by the British Government and were later turned over to the Government of Canada. While the Federal Government is empowered to act on behalf of Canada in the foreign affairs field, the Provinces are legitimately concerned with health matters because of their constitutional responsibilities. Cooperation between the federal and provincial governments is, therefore, essential in those areas of international health matters in which the Federal Government does not have specific regulatory jurisdiction.

7. Statistics.

Section 91(6) of the B.N.A. Act gives the Federal Parliament jurisdiction over statistics, and this enables the Federal Government to be involved in the collection, analysis and dissemination of health data and statistics.

8. Militia, Military and Naval Services, and Defence.

Section 91(7) of the B.N.A. Act identifies the above as a federal power, and this enables the Federal Government to provide health services to personnel of the Armed Forces and to veterans.

9. The Establishment, Maintenance and Management of Penitentiaries.

Section 91(28) of the B.N.A. Act identifies the above as a federal power and this enables the Federal Government to provide health services to federal penitentiary inmates.

10. Peace, Order and Good Government: Incidental and Residual Power.

The preamble of Section 91 of the B.N.A. Act identifies in a general manner the federal power “to make laws for the Peace, Order and Good Government of Canada, in relation to all matters not coming within the classes of Subjects by this Act assigned exclusively to the legislatures of the Provinces”. This power, together with powers incidental to subjects assigned exclusively to the Federal Parliament, has enabled the Federal Government to be involved in such things as the health of public servants, civil aviation medicine, radiation protection, and emergency health services.

11. Spending Power.

In addition to the powers of the Federal Parliament to legislate in certain areas, the Constitution, as it has been interpreted by the Courts, gives it

the power to spend from the Consolidated Revenue Fund on any object, providing the legislation authorizing the expenditures does not amount to a regulatory scheme falling within provincial powers. The “spending power” of the Federal Parliament under the Constitution has, therefore, enabled it to make payments to Provinces and persons in fields where it has little or no regulatory authority: for example, Hospital Insurance, Medicare, Health Resources Fund, Health Grants of various kinds, Fitness and Amateur Sports, etc. In addition, it has enabled the Federal Government to undertake research and to provide both information and consultative services.

The role of the Federal Government is necessarily circumscribed by its powers but the Health Side of the Department of National Health and Welfare now finds itself, thirty years after its creation, with numerous, varied and important activities which have been developed over time, in collaboration with the Provinces, to cope with evolving changes in the health needs of Canadians.

To illustrate the full range of health problems which face the Department of National Health and Welfare one needs only to enumerate the kinds of things which it has undertaken to do. These programs and activities will be described within the context of the Health Field Concept, that is, in terms of HUMAN BIOLOGY, ENVIRONMENT, LIFESTYLE, and HEALTH CARE ORGANIZATION.

Taking HUMAN BIOLOGY first, the Department proper finances research in two ways: by grants or contracts to outside researchers either in problems of public health or in problems directly related to departmental activities, or by the direct conduct of research in its own laboratories, such as the Food and Drug Laboratories.

The most extensive research funding in HUMAN BIOLOGY comes from the Medical Research Council which is not a part of the Department but reports directly to Parliament through the Minister of National Health and Welfare. Its main function, as set out in the Medical Research Council Act, is to “promote, assist and undertake basic, applied and clinical research in Canada in the health sciences, other than public health research”. Its more detailed objectives are: “to expand the scientific and technical base for health care, to improve the application of scientific principles to health care, to ensure an adequate research base for education in the health sciences, to support research contributing to new knowledge in the health sciences, and to support the training of research investigators in the health sciences.”⁹

To achieve the above objectives, the Council pays grants and scholarships in aid of operating and equipment requirements for research projects, supports

investigators and research trainees, provides incentives for the development of research in highly productive fields where major contributions may be expected and in fields or regions where research is not adequately developed, and supports symposia, international scientific activities and the exchange of scientists with other countries.

Under the ENVIRONMENT category of the Health Field Concept, the Department of National Health and Welfare administers the Food and Drugs Act, (excepting parts of Section 23 and Sub-section 25(4) thereof, which are administered by the Department of Consumer and Corporate Affairs), the Proprietary or Patent Medicine Act, part of the Narcotic Control Act, part of the Hazardous Products Act, and the Radiation Emitting Devices Act; and Regulations in force under these Acts.

These Acts and Regulations provide the Department with authority for the control of:

1. Food Quality and Hazards.

Including nutritional content, microbial hazards, and chemical hazards both added and natural.

2. Drug Quality and Hazards.

Including assessment of effectiveness and wise use of drugs; microbial and chemical hazards in the drug and cosmetic supplies; and control of the movement of narcotic and other drugs subject to abuse from the licit to the illicit market.

3. Environmental Quality and Hazards.

Including assessment of the health effects of environmental pollutants; assessment and control of health hazards and effectiveness of medical devices, radiation emitting devices and, with the Department of Consumer and Corporate Affairs, hazardous products; assessment of health effects of technological and sociological environments.

4. Health Surveillance.

Including through the Laboratory Centre for Disease Control the provision of national health and disease information; the provision of a national reference service for the identification of disease producing bacteria, viruses and parasites; and the assessment and improvement of laboratory diagnostic procedures.

Canadians must also be protected against aircraft accidents due to pilot failure, a health hazard about which they can do nothing themselves. The Department's role in Civil Aviation Medicine is to provide a total Aviation Medicine Service to the Ministry of Transport including:

1. The determination of health standards for licensing pilots, aircrew and air traffic controllers.
2. The medical assessment of individual applicants.
3. Assistance with flight safety and accident prevention programs.
4. Aviation medicine research and development.

Greatly increased international travel has augmented the danger of communicable diseases being "imported" into Canada. The Department's Quarantine Service provides protection through medical, nursing and sanitation staff at most ports and airports.

Still in the ENVIRONMENT category, the Department, in collaboration with the Department of Manpower and Immigration, protects the population against the entry into Canada of immigrants who may have serious health problems. Medical examinations or medical assessments are made of persons seeking entry into Canada as immigrants.

The Department is also involved in the monitoring and enforcing of various sanitary and public health codes for property under federal jurisdiction, common interprovincial carriers, ports and airports.

As part of its special responsibilities for providing health services in the Yukon and Northwest Territories, the Department is concerned with the hydraulics, chemistry and microbiology of providing good water, safe milk, safe food and safe sewage disposal, as well as with natural and industrial factors affecting health.

Societal hazards of increasing importance to health are under surveillance by the Department, including the effects of rapid social changes imposed on people by the physical, technological and economic phenomena that now exist and are emerging.

In the third category of the Health Field Concept, namely LIFESTYLE, the Department now carries out activities in the following areas:

- 1. Drug Abuse:** The Department promotes, develops and implements measures to deal with the problems of the non-medical use of drugs including the promotion and evaluation of research and studies, the analysis and dissemination of data, the provision of analytical services and the promotion of innovative services.

2. Alcohol Abuse: The Department undertakes activities related to alcohol abuse. These include determining the nature, extent and implications of the problem of alcohol abuse.

3. Tobacco Smoking: The health hazards of cigarette smoking have been well documented and publicized through education and advertising activities. Research and control activities are also carried out.

4. Fitness and Recreation: The Department administers the Fitness and Amateur Sports Act and provides funds for the National Sport and Recreation Center. Two directorates, Recreation Canada and Sport Canada, recommend grants and provide services in mass physical recreation and competitive sports respectively. Services are also provided to the National Advisory Council on Fitness and Amateur Sport.

5. Nutrition: The Department, through its Health Protection Branch, has recently carried out a national nutrition survey to assess the nutritional status and dietary intake of Canadians. Reliable data were collected, identifying nutritional deficiencies, their incidence and their relationship to age, sex, dietary habits, income and region.

6. Indian and Northern Health Services: The Department has undertaken some activities to encourage Indians and Northern residents to pursue lifestyles conducive to good health; health stations and centres have been engaged in teaching public health practices. Included are special programs for training native persons as health educators, for alcohol abuse and for fitness and recreation.

7. Personal Health: The Department has developed health standards and guides, promoted health education and provided information and consulting services in such fields of health as mental, dental, child and maternal, chronic illnesses, aging, rehabilitation and family planning.

8. Contagious Diseases: Of special importance has been the initiation of measures to control gonorrhoea and syphilis.

The fourth and final category of the Health Field Concept is HEALTH CARE ORGANIZATION, defined as all the people, facilities and systems involved in providing personal health care. In this category federal programs and activities are as follows:

1. Health Care Accessibility: Under the Hospital Insurance and Diagnostic Services Act and the Medical Care Act, the Federal Government makes contributions to Provinces amounting to some 50% of the

cost of providing hospital care, medical care and diagnostic services. As conditions for the receipt of this money, amounting to nearly 2,300 millions of dollars in 1973 [including transfers to Quebec under the *Established Programs (Interim Arrangements) Act*], the provinces agree to ensure portability and universality of coverage, and accessibility and comprehensiveness of service.

2. Health Manpower: The Department of National Health and Welfare acts as a focus for cooperative efforts to improve the quality, supply, productivity and distribution of health manpower. This includes the provision of technical and consultative services.

Financial assistance for training is provided by the Department under the Professional Training Grant program. There is also a federal Health Resources Fund of 500 million dollars to be spent by Provinces over a fifteen-year period in the acquisition, construction or renovation of health training and research facilities.

3. Health Services Improvement: The Department provides special services to Provinces to assist them in developing national priorities and standards for health care systems; it assists Provinces, institutions and individual researchers in conducting research studies directed at making the systems more efficient; and provides consulting services on regional planning, quality and quantity assessment of medical and hospital care use, nursing, dietetics, industrial engineering and facility design.

4. International Health Services: The Department coordinates Canadian participation in the World Health Organization (WHO), the Pan American Health Organization (PAHO), the United Nations Commission on Narcotic Drugs, and other international agencies in the health field.

5. Emergency Health Services: The Civil Emergency Measures Planning Order places upon the Minister of National Health and Welfare the specific responsibility for having adequate health services for a national emergency. Plans and services at the provincial and municipal levels are developed in collaboration with relevant authorities.

6. Indian Health Services: Section 91(24) of the British North America Act places legislative responsibility for Indians and lands reserved for the Indians with the Parliament of Canada. Although the Indian Treaties mention specific matters affecting the lives of Indians, only one mentions medical care. Treaty Number 6, covering Indians in part of West Central

Saskatchewan and East Central Alberta, provided “that a medical chest shall be kept at the house of each Indian Agent for the use and benefit of the Indians at the discretion of such Agent”.

Judicial decisions have concluded that the Treaty does not vest in the Indians covered by it a legal right to be served by free medical services.

Nonetheless, the Federal Government through the Appropriations and other Acts has provided various services affecting the general welfare of Indians, including hospital and medical care. The Provinces also have provided certain services to Indians as Canadian citizens and residents of the Provinces. The nature of these services and the responsibility for providing them is constantly under review.

7. Northern Health Services: Prior to 1954, health care in the Yukon and Northwest Territories was dependent on the interest of corporations, the enterprise of individuals, private institutions, physicians and missionaries. In 1954, the Federal Government assumed administrative functions akin to those of a provincial health department on behalf of the Territorial Governments. The Department of National Health and Welfare assists the Territorial Governments in the operation of hospital and medical insurance plans.

Services include: treatment by departmental staff, and facilities including hospitals, nursing stations, health centres and health stations; health care arrangements with private practitioners and health agencies; public health services and health education; advice to territorial authorities on health matters and advice to the Department of Indian Affairs and Northern Development on northern problems with health aspects.

8. Prosthetic Services: Since 1965, the Department has been administering the Prosthetics Services formerly administered by the Department of Veterans' Affairs. This was done in order to extend the service beyond veterans only. The Department provides a total limb, brace and orthopaedic shoe service to veterans, and also to the general population where arrangements have been made with a Province.

9. Public Service Health: The Department provides diagnostic counselling, preventive, occupational and advisory services on health matters to federal Public Service employees.

The foregoing activities in HEALTH CARE ORGANIZATION emanate from the Department of National Health and Welfare. The nature and costs of all activities are reflected by the following table of departmental expenditures:

DISTRIBUTION OF GROSS HEALTH EXPENDITURES, NATIONAL HEALTH AND WELFARE, FISCAL YEARS 1969-70 TO 1973-74

1. DISTRIBUTION – (\$ Millions)

Year	Human Biology*	Environment	Lifestyle	Health Care Organization**
1969-70	31.2	21.5	12.0	1,255.8
1970-71	34.4	24.2	12.7	1,552.1
1971-72	36.1	26.3	23.3	1,903.2
1972-73	38.1	34.9	28.9	2,095.5
1973-74	40.1	38.4	45.4	2,320.4

2. PERCENTAGE AND DOLLAR INCREASE 1969-70 TO 1973-74

	Percentage	\$ Millions
HUMAN BIOLOGY*	29%***	8.9
ENVIRONMENT	70%	16.9
LIFESTYLE	278%	33.4
HEALTH CARE ORGANIZATION	85%	1,064.6

*MEDICAL RESEARCH COUNCIL BUDGET ONLY:
EXCLUDES ASPECTS OF HUMAN BIOLOGY DEALT WITH THROUGH NATIONAL HEALTH GRANTS AND DEPARTMENTAL LABORATORIES.

**INCLUDES FISCAL REIMBURSEMENTS TO QUEBEC UNDER THE ESTABLISHED PROGRAM (INTERIM ARRANGEMENTS) ACT:

	(\$ MILLIONS)
1969-70	291.8
1970-71	310.1
1971-72	377.2
1972-73	398.6
1973-74	436.9

***IT SHOULD BE NOTED THAT THE BUDGET OF THE MEDICAL RESEARCH COUNCIL HAS MORE THAN QUADRUPLED SINCE 1966.

Among the many other Federal Departments whose activities have an effect on health, one of the most important is the Department of Veterans' Affairs which is responsible for providing or financing health care to qualified veterans, and, under contract, to the R.C.M.P. Pursuant to a Cabinet decision dated December 5, 1963, some of the D.V.A. hospitals have been turned over to provincial authorities. Such transfers are made in the joint interests of the veterans and the community, and are facilitated by medical care and hospital insurance plans. Health Services to veterans in 1972 cost the Department 76,999,000 dollars.

The Department of Labour administers *The Canada Labour Code* and, under Part 4, *The Safety of Employees*, issues regulations governing conditions of work for employees in the federal field of jurisdiction, both private and public sectors. Not only is direct control exercised for a working population of 750,000 but the regulations are models that increasingly are being adopted as standards by other jurisdictions. The medical fitness standards of commercial motor vehicle drivers, and hearing conservation standards, are two illustrative fields where federal initiatives are leading to a national upgrading of these requirements. Supplementing this regulatory and leadership role, the Department of Labour provides an educational and technical information service in the field of employment accident prevention generally.

The Department of Consumer and Corporate Affairs has the main responsibility for administering the Hazardous Products Act and Regulations. Accidents (exclusive of motor vehicle accidents) are the second most important cause of death between the ages 5 and 35, causing not only the loss of enjoyment of life but economic loss and heavy medical and hospital expenses. Many of these accidents occur in the home and a significant proportion involve household products, some of which could be regulated under the Hazardous Products Act and Regulations.

Under the Hazardous Products Act the sale, advertisement or importation of certain dangerous products is forbidden, while the importation, advertising and sale of others is permitted only under specified conditions including, among other things, adequate warning to the consumer of the hazards associated with the possession and use of such products. The Hazardous Products Regulations are being constantly extended to cover products found to be dangerous to health.

The Department of National Defence maintains health services and facilities for uniformed personnel, consistent with its need to maintain a state of preparedness for military emergencies, and the Penitentiaries Service provides or finances health care for inmates.

If one defines health in its broadest sense there is a multitude of other related federal activities, including the National Parks Services, the Department of the Environment, the Ministry of Transport, and the cultural activities of the Department of the Secretary of State.

Finally, at the most basic health level of all, the Federal Government has important activities in maintaining economic progress and in ensuring, through a redistribution of income, that most Canadians can provide for the essentials of life, which is a prerequisite to both the reduction of morbidity and mortality as well as to the enhancement of the quality of life.

This extended description of the federal role was necessary in order to illuminate the strengths and limitations of federal authority. But it must be noted, once more, that the main burden of providing personal health care to Canadians still falls on the provincial governments. They must not only administer the personal health care system, including the sharing of the financing of professional and institutional services, but must also carry heavy responsibilities in the education of health professionals and in a multitude of provincial programs where the impact on health is a major consideration. The school system, the environmental control system, the system for providing recreation and the rules governing safety and health in industry and on the highway are only some of the areas of major provincial concern. Escalating health care costs and defects in the accessibility of health care to those who need it are still major problems with which Provinces must grapple.

Chapter 8. Research and the Health Field Concept

Many issues in health research were brought out at a National Symposium on Health Research Priorities held at McGill University on May 25, 1973. With some three hundred participants and nineteen speakers, this Symposium provided a platform for the many, and sometimes conflicting, points of view of the health research community in Canada.

As might be expected most speakers favoured their respective fields, with basic researchers asking for increased support of basic research, clinical researchers asking for more funds for clinical research and so on. In spite of this, a certain pattern emerged with the following points:

1. Health research, in its broadest terms, including basic, clinical, socio-medical and organizational, is under-financed when account is taken of the fact that health care is a seven billion dollar industry in Canada.
2. Of the money that is spent on research, an insufficient proportion is allocated to clinical, socio-medical and organizational aspects of health and health care.
3. Many proven advances resulting from basic and clinical research are not being applied at the level of the practising physician.

The application of the Health Field Concept, by which answers to health problems will be sought in each of the four categories of HUMAN BIOLOGY, ENVIRONMENT, LIFESTYLE and HEALTH CARE ORGANIZATION, puts a heavy burden on research. This burden:

first, is the traditional one of adding to the store of knowledge of basic human biology;

second, much research is needed to determine and measure the effects of various environmental hazards to both mental and physical health;

third, research is needed to identify the links between the living habits, or lifestyle, of individuals, and the levels of both mental and physical health;

fourth, more clinical research is needed to convert knowledge of human biology into application at the point where personal health care is provided;

fifth, studies are required to improve the cost, accessibility and effectiveness of the health care system;

sixth, studies are needed to find out how Canadians can be influenced to take more individual responsibility for the health of their minds and bodies, and for reducing the risks which they impose on themselves by neglecting important lifestyle health factors.

If all the foregoing research requirements are to be pursued with vigour it will be necessary for researchers in all fields to develop a unity of purpose which has often been lacking because of the destructive competition for limited funds. Balanced progress in all fields can only be obtained when researchers pull together toward the common objective of raising the health status of Canadians.

Chapter 9. Science Versus Health Promotion

The spirit of enquiry and skepticism, and particularly the Scientific Method, so essential to research, are, however, a problem in health promotion. The reason for this is that science is full of “ifs”, “buts”, and “maybes” while messages designed to influence the public must be loud, clear and unequivocal. To quote I Corinthians, Chapter XIV, Verse 8:

“If the trumpet give an uncertain sound, who shall prepare himself to the battle?”

The scientific proof underlying cause-and-effect relationships between, on the one hand, environment and lifestyle and, on the other, sickness and death, is fraught with disagreement. Without looking too hard we can find scientists on both sides of the following questions:

- (a) does exercise lessen the likelihood, or abate the severity, of coronary artery disease?
- (b) is obesity an important contributory factor to sickness and death?
- (c) does marijuana have any serious long-term effects?
- (d) does the ingestion of high levels of fatty foods and cholesterol increase the likelihood of coronary-artery disease?
- (e) is frequent self-medication, particularly with over-the-counter drugs, bad?

Even such a simple question as whether one should severely limit his consumption of butter and eggs can be a subject of endless scientific debate.

Faced with conflicting scientific opinions of this kind, it would be easy for health educators and promoters to sit on their hands; it certainly makes it easy for those who abuse their health to find a ready “scientific” excuse.

But many of Canada’s health problems are sufficiently pressing that action has to be taken on them even if all the scientific evidence is not in. The Chinese

have an expression “Moi Sui” (pronounced MOO SUE) which means “to touch, to feel, to grope around”. It reflects a deliberate approach to innovative and creative action even when scientific certainty and predictability are in question.

The scientific community, then, needs to make special efforts to resolve some of the debates on health-related questions of the environment and lifestyle. Until it does, the principle of “Moi Sui” will be applied in promoting health according to the following hypotheses which now appear sufficiently valid to warrant taking positive action:

1. It is better to be slim than fat.
2. The excessive use of medication is to be avoided.
3. It is better not to smoke cigarettes.
4. Exercise and fitness are better than sedentary living and lack of fitness.
5. Alcohol is a danger to health, particularly when driving a car.
6. Mood-modifying drugs are a danger to health unless controlled by a physician.
7. Tranquillity is better than excess stress.
8. The less polluted the air is, the healthier it is.
9. The less polluted the water is, the healthier it is.

In due course the validity of the foregoing and similar hypotheses will likely be resolved in a scientific way, precise cause-and-effect relationships will be ascertained and measured, and the exact significance of each factor determined.

Meanwhile, major health problems lie before us and we must move ahead with programs on precepts such as the foregoing. The scientific “yes, but” is essential to research but for modifying the behaviour of the population it sometimes produces the “uncertain sound” that is all the excuse needed by many to cultivate and tolerate an environment and lifestyle that is hazardous to health.

Chapter 10. Care Versus Cure

Trained in a system which focuses its attention on curing illness, the medical practitioner deals effectively with the problems of infectious disease, with episodes of acute illness and with accidents that call for the high technology of the hospital.

During the past fifty years, infectious diseases, other than respiratory infections and venereal diseases, have largely been brought under control. Of the ten major causes of death in 1900, six were either infectious or related to infectious processes. In 1970, none of the ten major causes of death were infectious except influenza-pneumonia and certain diseases of early infancy. Today the list is headed by chronic diseases and accidents.

Chronic diseases also afflict large numbers of the living for long periods of their lives. As health has improved in early life so has the prevalence of the less tractable forms of disability in later life.

Many chronic diseases are a consequence of aging and as the number of survivors into old age increases so do the cases of chronic diseases. In respect of chronic illnesses, all who are over sixty years of age are members of a "population at risk" in respect of heart and circulatory disease, cancer, arthritis, rheumatism, diabetes and other chronic diseases connected to the aging process. As health programs succeed in extending the life of more Canadians, the number of aged will increase and their needs will augment accordingly. Unless training programs for health professionals specializing in the care of the aged are expanded, these urgent needs will not be met.

Other important populations, at all ages, with permanent or chronic illness include the severely retarded, those with emotional disorders and those disabled by accidents.

For a health care system whose essential motivation is based on curing the sick, the treatment of the chronically ill is not very satisfying because the treatment is long and in many cases success cannot be measured by cure so much as by controlling the disability created by a chronic condition.

The number of physicians specializing in the treatment of patients with chronic and disabling conditions of an indefinite duration is, therefore, small relative to the number who specialize in the diagnosis and treatment of acute illness. There are, for instance, only one hundred physicians in Canada who specialize in physical medicine and rehabilitation, a ratio of one for every 200,000 Canadians. Specialists in geriatrics are equally scarce.

Turning to treatment institutions one finds the same imbalance, with an emphasis on acute hospital beds and a scarcity of beds for patients requiring extended care for chronic illness.

Somehow, the value system of the HEALTH CARE ORGANIZATION will have to be revised so that the care of the chronically ill will be seen to be as rewarding as the cure of acute conditions. The need for this revision of the value system is already pressing and will become more so as the percentage of the aged in Canada's population increases.

In 1965 only 8% of Canada's population exceeded 65 years of age. By the year 2000 the proportion will have grown to 11%, based on today's survival rates. Even at a stabilized rate of growth they will number some 3.2 million people of a total estimated population of 29 million. Should measures to reduce environmental and lifestyle risks prove successful, the survival rate to age 65 will be even higher.

Raising "care" to the level of "cure" in the value system of the HEALTH CARE ORGANIZATION is of critical importance if resources are to be marshalled on behalf of the chronically ill, who constitute a large and growing part of our population.

In redirecting some concern toward the chronically ill, it may well prove fruitful for chronic care in clinics and institutions to be provided by nursing personnel trained to carry out procedures and provide counselling in areas now requiring the intervention of a physician. Where chronic care clinics of this kind have been established, such as at the Kaiser-Permanente Foundation, Oakland, California, it has been found that four nurses in collaboration with one physician can deliver as much care as four physicians, and at a much lower cost.

Chapter 11. Mental Health

The social stigma attached to mental illness is still so strong and generates such feelings of guilt that the subject is rarely discussed openly except in the abstract. Few want to admit to the parenthood of a child with an emotional disorder, or to the death of a spouse by suicide. The great sense of shame that surrounds a family with a member afflicted by mental illness is perpetuated constantly by newspaper stories of those who have been found innocent of a violent crime by reason of insanity. Mental illness has thereby often been associated with violence, sin, guilt and shame.

In the light of this social attitude it is not surprising that the nature, prevalence, and underlying causes of mental illness are not widely-known or understood. These are the facts.

In Canada:

1. 5% of school children have an emotional or learning disorder that should receive professional care.
2. In 1970, *general* hospitals provided 2,200,000 days of hospital care for neuroses and psychoses.
3. In 1970 *psychiatric* institutions provided 21,200,000 more days of institutional care.
4. On December 31, 1969, there were 66,500 patients registered in Canadian psychiatric institutions. Of these, 33,200 were psychotic, 24,100 mentally retarded, 4,800 alcoholic, 2,300 neurotic and 2,100 with non-specified disorders.

In addition to the foregoing it is estimated that mental disorders, such as anxiety, are a factor in 50% of the patients seen in general medical practice.¹⁰ At any moment 3 out of 1,000 Canadians are hospitalized in psychiatric facilities. Using a city of 400,000 as an example, there are some 1,200 residents hospitalized for mental illness at any given time, plus those being treated on an out-patient basis.

As a point of fact, statistics on mental illness are grossly inadequate because of the shame and fear attached to these disorders, which prevent people from seeking treatment and because of the legal, social and religious blame from which professionals try to protect their patients.

The shame may be explained in terms of the historical belief in demonic possession and banishment of the insane by society, the belief still prevalent in many circles that mental illness is hereditary and a consequence of such vicious behaviours as alcoholism and promiscuity, or the belief of other groups that it is a direct outcome of parental inadequacy in child-rearing.

The legal, social and religious implications of mental illness are exemplified in the rules of many schools and employers (including hospitals) that prevent admission or hiring of candidates with a history of mental illness, and in the criminal charges sometimes made against people who attempt suicide.

Moreover, the severity of mental illness as described in the statistics is biased by the frequent psychiatric practice of minimizing the diagnosis in the case of young people, because carrying a label of "psychosis" through one's whole life is a heavy burden indeed which in itself is a handicap to adequate rehabilitation.

Consequently, much needs to be done in terms of revising obsolete laws and practices strongly tinted by the historical myth of evil attached to mental illness. Much needs to be done in providing the mentally ill with adequate protection, care and readaptation opportunities and in informing the public and modifying attitudes towards mental illness. Much needs to be done also in preventing mental illness, identifying positive health factors and promoting them.

The pathological processes at work in our families, our school systems and in our society's value system indicate that programs of prevention directed at large population groups are desperately needed. These programs of prevention would have the advantage of reducing the risks of mental illness while permitting a sharing of responsibility which would abate some of the guilt which individuals find so intolerable.

Mental health problems lend themselves to analysis through the Health Field Concept. The impact of Human Biology, of the Environment, of Lifestyle and of the Health Care Organization, respectively, can be identified and estimated so that programs of prevention and therapy can be launched that will attack principal underlying causes. These programs, however, will not be given the priority they deserve until the element of shame is dispelled. Measures to lift the cloud that obscures the subject of mental illness are an urgent prerequisite to action.

Chapter 12. The Health Field Concept and Strategies for the Future

The ideas proposed in this paper provide a universal framework for examining health problems and for suggesting courses of action needed for their solution. Because they are comprehensive, they have a unifying effect on all the participants in decisions which affect health, bringing together into one common front:

1. the health professions,
2. the health institutions,
3. the scientific community,
4. the educational system,
5. municipal governments,
6. provincial governments,
7. the federal government,
8. the business sector and trade unions,
9. the voluntary associations, and
10. the Canadian people as individuals.

The Health Field Concept disregards questions of jurisdiction which may be important to governments but are not of primary concern to the people of Canada when their health is at stake. It identifies requirements for health without regard to the niceties of professional or sectoral boundaries, and it focuses attention on the broad and important factors underlying the health of the population.

In putting the Health Field Concept to work, that is, in using it for analysing federal health policy, it was found that HUMAN BIOLOGY, ENVIRONMENT and LIFESTYLE were national in character and that problems in these areas

tended to pervade Canada's population with little regard for provincial boundaries, always excepting purely local environmental matters. Protecting the food supply from contamination and drugs from being abused, as well as recognizing alcohol abuse, smoking, obesity, lack of physical fitness, chronic illness, mental illness, venereal disease and traffic deaths as national health problems, opens up corridors in which federal leadership can function with considerable jurisdictional freedom as long as it leads, reinforces and supplements, without duplication or conflict, the goals and services of the provinces, and respects the provincial ascendancy in health care services. In short, the first three elements of the Health Field Concept are open to federal initiatives in addition to those which are already under way. (see Chapter 7)

Turning to the expressed and latent needs and wants of the Canadian people, this paper responds strongly to the recent trends and attitudes of Canadian society. The preservation and enhancement of the environment are the goals of a very strongly felt need and constitute a powerful current of popular opinion. In the lifestyle area, nutrition and weight control, as well as mass physical recreation, are subjects of growing interest, indicating an increased desire by many Canadians to break out of an unhealthy pattern of living. These and similar national lifestyle concerns can be eased by measures growing out of the Health Field Concept, assuming such measures are wisely chosen and respond to Canadian needs.

For a more particular community, that of the research scientists, this paper not only gives due recognition to the need for research in basic human biology, but also points out the necessity of linking up the purposes and uses of health research to problems in the environment, in lifestyle and in the delivery of care.

For the health professions, who often despair of getting patients to act on their advice to reduce self-imposed risks, and of governments to attack the underlying causes of sickness and death, this paper offers them the opportunity to recruit powerful forces to their cause.

Voluntary associations, dedicated to increasing the awareness of Canadians of the factors influencing health and to the gravity of specific diseases, will more easily be able to identify and marshal the assistance of those who share their goals.

Neglected segments of the Canadian population, in terms of health, can look forward to getting more of the attention they deserve. The chronically ill, the aged, the mentally ill, the economically-deprived, the troubled parents, and others who either are at high risk or are receiving insufficient health care, can expect that programs for populations will increasingly recognize and respond to their needs.

The federal role suggested by this paper constitutes a promising new departure. In the past the Federal Government has limited its activities in the health field to its traditional responsibilities such as quarantine medicine and the protection of the food supply, to product safety, to ensuring accessibility to personal health care through substantial financial assistance to provincial health insurance plans, and to financing research. The basis for concentrating its interests in these areas has been the belief that the improvement of personal health care was the principal means of raising the level of health of the Canadians. In 1973, for example, the federal contribution to provincial health insurance plans was 2,300 millions of dollars, and financial barriers to medical and hospital care have largely been eliminated.

The evidence uncovered by the analysis of underlying causes of sickness and death now indicates that improvement in the environment and an abatement in the level of risks imposed upon themselves by individuals, taken together, constitute the most promising ways by which further advances can be made.

Accordingly, it is the intention of the Government of Canada, first, to maintain at a high level the services and support provided through its present activities in health protection, research and the financing of personal health care. To these will be added measures directed at specific national health problems, chosen in consultation with provinces, consumers, professions and associations according to their gravity and incidence, and aimed at removing or reducing the factors underlying sickness and death.

Some of these measures in time will no doubt be directed at environmental factors, others will be directed at lifestyle risks, still others will expand the horizons of health research, and yet others will encourage more personal care services to neglected parts of the Canadian population. In every case the measures will be based upon the expressed interest and concern of all those who contribute to the health of Canadians, including in particular the people themselves.

Since direct health care is already consuming some 7% of the wealth that Canadians produce annually, it is evident that the rate at which the Government of Canada can expand its activities in the field of health is severely limited by financial considerations. It is also true that measures directed at the prevention of illness will take some time before they are translated into savings in the costs of providing curative health services.

These two factors make it imperative that the measures developed in consultation with provinces, professions and associations be chosen with great care, and with due regard for the costs and benefits that can be anticipated. In choosing the measures, consideration will be given to a number of factors, among which will be:

1. the gravity of the health problem,
2. the priorities of those who share in decision-making,
3. the availability of effective solutions, results of which are measurable,
4. the costs involved, and
5. the multiplier effect of federal initiatives in marshalling and accelerating support from all those who make vital contributions to raising the level of health or who have a key role in controlling the cost of health services.

With the foregoing considerations in mind, and with the recognition that the good health of Canadians is an objective that shines brightly above the thicket of jurisdictions and special interest groups, the Government of Canada proposes to take steps that will start the nation on the road to levels of health even higher than those that Canada now enjoys.

In taking these steps, the Government of Canada, in cooperation with others, will pursue *two broad objectives*:

1. *To reduce mental and physical health hazards* for those parts of the Canadian population whose risks are high, and
2. *To improve the accessibility* of good mental and physical health care for those whose present access is unsatisfactory.

In pursuit of these two objectives, *five strategies* are proposed:

1. A *Health Promotion Strategy* aimed at informing, influencing and assisting both individuals and organizations so that they will accept more responsibility and be more active in matters affecting mental and physical health.
2. A *Regulatory Strategy* aimed at using federal regulatory powers to reduce hazards to mental and physical health, and at encouraging and assisting provinces to use their regulatory powers to the same end.
3. A *Research Strategy* designed to help discover and apply knowledge needed to solve mental and physical health problems.
4. A *Health Care Efficiency Strategy* the objective of which shall be to help the provinces reorganize the system for delivering mental and physical health care so that the three elements of cost, accessibility and effectiveness are balanced in the interests of Canadians.
5. A *Goal-Setting Strategy* the purpose of which will be to set, in cooperation with others, goals for raising the level of the mental and physical health of Canadians and improving the efficiency of the health care system.

In implementing these strategies much analysis and consultation within the framework of this paper is still needed. This will be undertaken in respect of the following possible courses of action.

For the *Health Promotion Strategy* some possible courses of action among others could be:

1. The development for the general public of educational programs on nutrition.
2. The enlistment of the help of the food and restaurant industries in making known the caloric value and nutritional content of the food they sell.
3. Educational campaigns to increase awareness of the gravity and underlying causes of traffic accidents, deaths and injuries.
4. Activities to promote a more widespread understanding of the gravity and underlying causes of coronary-artery disease.
5. Measures to lift the veil from mental illness, and to create a more realistic sense of urgency in respect of the gravity of this problem.
6. Information to increase awareness of the hazards of self-medication.
7. Further information campaigns to increase public awareness of health problems due to the abuse of alcohol, drugs, tobacco and to venereal disease.
8. Encouragement among employers of programs designed to ease the transition from employment to retirement.
9. Reinforcement of successful programs for making life more interesting for the aged.
10. Promotion and coordination of school and adult health education programs, particularly by health professionals and school teachers.
11. Direct awareness activities tailored to the responsibilities of specific sectors for the reduction of self-imposed and environmental health risks including business, trade unions, governments, voluntary associations and action groups, communities, professions, parents and teachers.
12. Continued and expanded marketing programs for promoting increased physical activity by Canadians.
13. Enlistment of the support of the educational system in increasing opportunities for mass physical recreation in primary and secondary schools, in community colleges and in universities.

14. Promotion of the development of simple intensive-use facilities for more physical recreation including fitness trails, nature trails, ski trails, facilities for court games, playing fields, bicycle paths and skating rinks.
15. Continued pressing for full community use of present outdoor and indoor recreation facilities, including gymnasias, pools, playing fields and arenas.
16. Continued and reinforced support for sports programs involving large numbers of Canadians.
17. Encouragement of private sports clubs to accept more social responsibility for extending the use of their facilities to less-privileged segments of the Canadian population.
18. Extension of present support for special programs of physical activity for native peoples, the handicapped, the aged and the economically-deprived.
19. Enlistment of the support of women's movements in getting more mass physical recreation programs for females, including school children, young adults, housewives and employees.
20. Enlistment of the support of employers of sedentary workers in the establishment of employee exercise programs.
21. Enlistment of the support of trade unions representing sedentary workers in obtaining employee exercise programs.
22. Increase in the awareness of health professionals of factors affecting physical fitness.
23. Completion of the development of a home fitness test to enable Canadians to evaluate their fitness level.

For the *Regulatory Strategy* some possible courses of action among others could be:

24. Regulations for improving the nutritional content of food.
25. Consultation with the Department of Justice in respect of the laws against driving while impaired by alcohol.
26. Increased control of advertising for products which are so frequently or deeply abused as to constitute serious hazards to health.
27. Increased control of health hazards due to air, water, food, noise and soil pollution to the extent that the power to legislate with regard to these may fall into federal jurisdiction.

28. Increased control of death hazards from communicable diseases, radiation, medical devices and cosmetics.

29. Increased control under the Hazardous Products Act over the advertisement, importation and sale of household products the possession or use of which is accompanied by some significant accident hazard or danger to health.

30. Assistance to the Provinces in promoting the acceptance by the public of regulations passed pursuant to provincial legislation making compulsory the wearing of seat-belts in motor vehicles.

31. Regulations governing child-resistant closures on drug products.

For the *Research Strategy* some courses of action among others to be explored include:

32. An ongoing dialogue between health planners and the research community on the priorities for mission-oriented health research while preserving for the research community the setting of priorities in basic research.

33. The implementation of a regular National Health Survey to determine the prevalence and nature of acute and chronic mental and physical illness, to permit an assessment of the health status and needs of Canadians and to measure changes in status and needs.

34. The institution of a special program for identifying health status indicators and high-risk segments of the Canadian population, for the evaluation of the nature and gravity of mental and physical health risks, and for the proposal of measures to abate the level of risk.

35. Measures to help integrate, improve and use, on a national basis, the data and statistics being recorded at various governmental and institutional levels.

36. The establishment of a well-designed comprehensive system for the reporting of accident statistics which would, among other things, identify accident-associated products.

37. The promotion of increased support for research on underlying causes of coronary-artery disease.

38. Support for more research on the causes and treatment of mental illness.

39. The support of projects designed to evaluate the results of present mass-screening programs and to test the effectiveness of future ones.

40. The establishment of a National Drug Abuse Institute covering all abusive drugs including psychotropic drugs, both licit and illicit, alcohol and cigarettes, and responsible for gathering statistics, supporting research, evaluating preventive and treatment measures and recommending policy.

41. The undertaking of a broad continuing study into the ways and means of effectively informing the Canadian people on changes in behaviour which will significantly reduce self-imposed risks.

42. The continuation and strengthening of present research into the effect of the physical environment on health.

43. The establishment of a program for assessing the effect of social and environmental change on health including the calculation of risk factors due to lifestyle.

44. The continuation of support for research on physical and mental fitness and for fitness testing.

45. Continued and increased support for research into better ways of providing health care.

46. Continued support for research consistent with the scale of the health care industry.

For the *Health Care Efficiency Strategy* it is important to note that the word “efficiency” in this context is not limited to the narrow economic meaning of low cost per unit of production, but includes, as well as cost, the other two important elements of accessibility of service and the effectiveness of results. For this strategy, some measures that could be considered among others are:

47. Pursuing a method of financing health care that will provide incentives for providing satisfactory care at the lowest cost, and will permit the extension of pre-paid care to additional essential services.

48. Strengthening industrial and emergency health services, including the training of personnel.

49. The identification, treatment and follow-up of Canadians with high blood pressure.

50. The support of programs aimed at reducing the risk of premature coronary-artery disease, including weight-control, exercise, stress-reduction and anti-smoking.

51. The identification, treatment and follow-up of Canadians suffering from a high serum cholesterol level (hypercholesterolemia).

52. Support for programs for increasing the number and skills of professions dealing with mental health and mental illness including particularly nurses, social workers, health educators and teachers.
53. The subsidy of programs for training counsellors on alcoholic problems and their treatment.
54. The promotion of employer programs for employees with alcohol problems.
55. The support of home visit and other programs for helping chronically ill and aged people to stay in their communities.
56. The development and support of programs of professional training in gerontology and geriatrics, including physicians, nurses and health support personnel.
57. A continued adherence to the principle that accessibility to ambulatory, institutional and home care must be based upon the perceived needs of the public.
58. Making continued federal support for the training of health professionals conditional upon effective measures to ensure that health manpower is better distributed geographically, among specialties and according to economic levels served.
59. The continued extension of the role of nurses and nurse practitioners in the care of the mentally ill, in the care of the chronically ill, in the provision of home care, in family counselling on preventive health measures, both mental and physical, and in the abatement of environmental hazards and self-imposed risks.
60. The organization and administration of an improved drug information system to physicians so that they will make a more effective and objective use of drugs.
61. The continued promotion of the establishment of community health facilities that are physically and professionally integrated.
62. The introduction of practical measures, including the use of expert committees, to diminish the time between the latest medical knowledge and the application of that knowledge in the practice of medicine.
63. The encouragement of the development of regional bodies with comprehensive authority over the delivery of health care in their respective regions.

64. The enlistment of the support of pharmacists in establishing, under physician direction, a follow-up system on the compliance of patients with drug therapy.

65. Work with genetics counsellors in improving the use and availability of genetic services to Canadians.

66. The continuation and extension of assistance to Provinces in their campaign against venereal disease.

67. The examination of the possibility of integrating authority over federal treatment services, including those for veterans, Indians, Eskimos, Northern Territories, and penitentiary inmates.

For the *Goal-Setting Strategy*, which applies to the four foregoing strategies, consultation will be intensified so that a rational array of specific goals can be established, providing a united and reinforced sense of direction for those who work in the health field. A goal has a time limit and is stated in quantitative terms. Possible courses of action include among others:

68. The development of specific reductions in the incidence of major mortality and morbidity.

69. The establishment of specific dates by which reductions in mortality and morbidity are to be achieved.

70. The development of specific improvements in the efficiency of the health care delivery system, including improvements in cost performance, accessibility of care, and the effectiveness of results.

71. The establishment of specific dates by which improvements are to be achieved.

72. The setting of standards of care in both mental and physical health care systems.

73. The extension of national standards of nutrition to include definite recommendations on safe levels of intake for hazardous substances occurring naturally in food.

74. A renewed commitment toward the health goals of the World Health Organization and the Pan American Health Organization.

Conclusion

The foregoing formulation of two broad objectives, five main strategies and seventy-four proposals constitutes a conceptual framework within which health issues can be analysed in their full perspective and health policy can be developed over the coming years. Since all of the propositions do not have equal weight, and since authority for their pursuit is widely dispersed among governments, professions and organizations, the Working Paper does not attempt to pre-judge jurisdictional and financial issues nor to set priorities for other levels of government. Limitations on the availability of funds will require that expanded initiatives be carefully paced in relation to the ability of the economy to absorb them without adding to existing levels of taxation. With the Health Field Concept and this Working Paper, however, there will be a much clearer picture of the options available. In the end – by individuals, by society and by governments – choices must be made.

References

1. Paley, William, *Natural Theology*, R. Faulder, London, 1802, republished by Gregg International Publishers, Farnborough, England, 1970 – p. 498.
2. McKeown, Thomas, *A Historical Appraisal of the Medical Task* from “Medical History and Medical Care”. Oxford University Press. 1971.
3. McKeown, Thomas, *The Major Influences on Man’s Health*, unpublished paper, August, 1973.
4. McKeown, Thomas, *An Interpretation of the Modern Rise in Population in Europe*, *Population Studies*, Vol. XXVII, No. 3, p. 345, November 1972.
5. Collins, R., *Drinking on the Job*, *Imperial Oil Review*, 1973, No. 2.
6. Laframboise, Hubert L., *Health Policy. Breaking It Down Into More Manageable Segments*. *Journal of the Canadian Medical Association*, February 3, 1973.
7. Tamerin, John S., *Recent Increase in Adolescent Cigarette Smoking*. *Archives of General Psychiatry*, Vol. 28, Jan. 1973, pp. 116-119.
8. Glazier, William H., *The Task of Medicine*, *Scientific American*, Vol. 228, No. 4, April 1973.
9. Main Estimates, Government of Canada, 1973-74.
10. Report of the Committee on the Healing Arts, Ontario, Vol. 3, 1970, p. 148.

Annex A. Panorama of Mortality in Canada

The enclosed chart gives a broad overview of the prevailing causes of death* for each sex and age group in Canada (1971). It demonstrates the importance of the contribution of our lifestyle to mortality up to middle age, for example motor vehicle accidents, cirrhosis of the liver, heart disease, etc. It also emphasizes the different mortality patterns and rates for males and females.

The causes included are responsible for at least 5%** of the deaths within each sex and age group, thus one cause may be important only relative to certain age and sex groups, such as leukemia among young children. The 13 first cause-groups used in this chart represent two thirds of the total deaths after the age of 5.

PITFALLS TO AVOID

As indicated in note 2 on the chart, the areas of the circles are proportionate only to the absolute number of deaths, therefore one is unable to determine if the *mortality rate* of one group is greater than another by simple comparison between two circles. The mortality rate, expressed in “per thousand”, for each age and sex group is obtained by dividing the number of deaths (d) by the corresponding population (p).

Shown hereunder are 3 examples of pitfalls resulting from ignorance of this fact:

- a) The number of deaths among males aged 30 to 34 (1,090) is less than that of the preceding age group, 25-29 (1,176) although the mortality rate among males aged from 30 to 34 ($\frac{1,090}{660.9} = 1.65$ per thousand) exceed that of the 25-29 group ($\frac{1,176}{800.7} = 1.47$ per thousand)

* Taken from “Vital statistics, 84-201, 1971” published by Statistics Canada, using the International Intermediate “A” List of 150 cause-groups.

** The arbitrary criterion of 5% has been selected so as to limit the causes to a manageable number. It must be noted that some causes of death listed are identical to those of the classification used (motor vehicle accidents: AE 138, Breast Cancer: A 54...) whereas others correspond to groupings representing a more comprehensive entity (other accidents: AE 139-146, respiratory diseases: A 89-96, gastro-intestinal cancer: A 46-49, and cancer of the uterus and ovary: A 55, 56, 58D).

b) In the same way, deaths among women over 80 are more numerous than those among men of the same age group (23,285 and 21,016), nevertheless the mortality rate in women is less than that of the men from the same age group ($\frac{23,285}{201.3} = 116$ per thousand, $\frac{21,016}{140.3} = 150$ per thousand)

c) The fact that suicide disappears from the chart after age 45 for females and age 50 for males is not due to a decrease in incidence but merely to a decrease in importance compared to other causes.

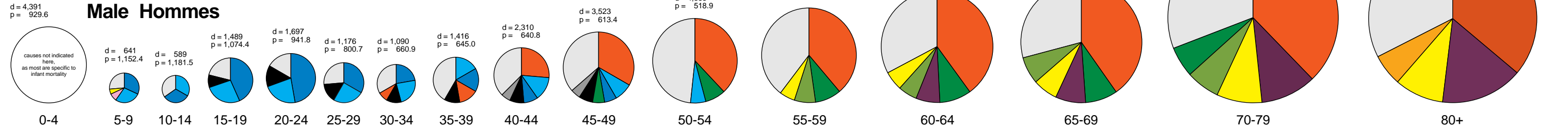
CANADA 1971

Major causes of death for each sex and age group

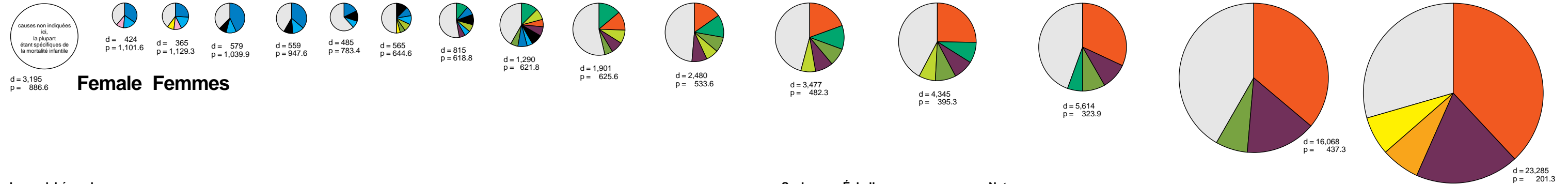
Causes principales de décès pour chaque tranche d'âge et de sexe



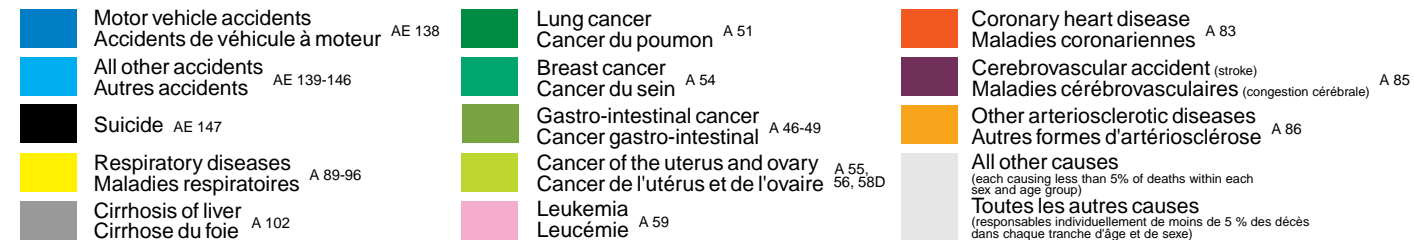
Male Hommes



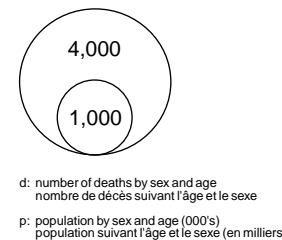
Female Femmes



Legend Légende



Scale Échelle



Notes

- In each circle major causes of death are arranged in decreasing order of magnitude.
Dans chaque cercle les causes principales de décès sont indiquées par ordre décroissant.
- The area of each circle is proportional to the number of deaths in each sex and age group. (The death rate can be calculated using the two figures under each circle.)
Les surfaces de chaque cercle sont proportionnelles aux nombre de décès de chaque tranche d'âge et de sexe. (Les taux de décès peuvent être calculés en utilisant les deux nombres figurant sous chaque cercle.)

Based on:
Vital Statistics,
1971, Catalogue 84-201,
Statistics Canada

Basé sur:
La Statistique de l'état civil,
1971, Catalogue 84-201,
Statistique Canada