

SOME ECONOMIC ASPECTS OF
HOSPITAL EXPENDITURES IN CANADA

by
T. Sean Closs

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CURRICULUM STUDIORUM

Thomas Sean Closs was born on January 13, 1940, in Ottawa, Ontario. He received the Bachelor of Commerce degree in Economics from St. Patrick's College, Ottawa, Ontario, in 1960. The title of his dissertation was Are Strikes Necessary in Our Modern Industrial Society?.

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INTRODUCTION

Although the first hospital in Canada dates back to the middle of the seventeenth century, the emergence of the modern hospital as a major health agency is a development of the past hundred years. In earlier times, hospitals were established essentially as custodial care institutions for the sick, poor and other special groups, supplying merely food, shelter and limited medical care. During the latter part of the nineteenth century, however, as medicine and surgery began to advance, the role of hospitals changed radically from serving mainly indigent groups to providing skilled medical and surgical services and nursing care to all elements of the population. Since then, the functions and services of hospitals have continued to expand, reflecting particularly the dramatic and constantly accelerating advances in medical knowledge and skills of the twentieth century. As a result, hospitals today play a vital and central role in the provision of community health services across the country. Ranging from the small rural hospital to the large medical and teaching centre, the modern hospital has developed into the basic institution providing technical facilities for the promotion of health, the diagnosis and treatment of disease, and the rehabilitation of the disabled. The growing scope and complexity of

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hospital services have made hospitals one of the major service industries of the nation.

The same advances in medical science and technology which have increased the quantity and quality of hospital services have also added greatly to the costs of hospital care. The development and use of new diagnostic and therapeutic procedures required more elaborate, complex and expensive equipment as well as trained personnel which only hospitals could provide. In addition, the lack of home care facilities, a change in the attitude of the public toward the hospital, and the fact that most modern diagnosis and treatment can be carried out only in the hospital have led to greater use of hospitals and higher costs of hospital services. The postwar period in particular has witnessed a rapid rise in the capital expenditures and operating costs of Canadian hospitals, with much of the increase resulting from expansion and improvement in hospital services and facilities. Increased hospital expenditures have added much to the overall health bill of the nation and have had important implications for financing in both the private and public sectors of the economy.

An increasing degree of interest and concern has been focused in recent years on the problem of rising hospital expenditures in Canada. This interest and concern

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have been shared by all levels of government, hospital administrators and hospital boards, physicians, hospital associations, voluntary prepayment agencies, individual consumers of hospital services, and the general public. The question of hospital costs has received considerable attention from the federal-provincial Advisory Committee on Hospital Insurance and Diagnostic Services, and in January 1964 a special meeting of this Committee was held to deal exclusively with the matter of present and future costs of hospital services across Canada. The Hospital Services Study Unit and the Research and Statistics Directorate of the Department of National Health and Welfare, the Dominion Bureau of Statistics, the Department of Veterans Affairs, the provincial hospital authorities, and a number of non-governmental agencies such as the Canadian Hospital Association and the Canadian Council on Hospital Accreditation are also particularly concerned with various aspects of hospital costs.

A large number of studies and reports dealing with the question of hospital costs have been prepared during the postwar period in the United States and England under both private and public auspices. In Canada, the subject has been treated in several publications of the Department of National Health and Welfare, in articles appearing from time to time in professional journals, and in the report

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and studies of the Royal Commission on Health Services. Statistics on hospital expenditures are published annually by the Dominion Bureau of Statistics, the Department of National Health and Welfare, the Department of Veterans Affairs, and the provincial hospital insurance plans. To date, however, very few if any studies in this country have been devoted entirely to the economic aspects of hospital expenditures. It is felt, therefore, that there is need for more comprehensive economic analysis of hospital expenditures in Canada, particularly from a macro-economic point of view.

The purpose of this thesis is to examine and analyze the major economic aspects of hospital expenditures in Canada during the postwar period. Hospital expenditures comprise both capital expenditures on hospital facilities and the operating costs of providing hospital services. The time period of the analysis is 1945-1963, a period during which many important developments took place in the field of hospital care, of which perhaps the most significant has been the implementation of a federal-provincial hospital insurance program. This time period is also sufficiently long to permit analysis of long-term trends in hospital expenditures.

This study has been organized into four chapters. In Chapter I a background is provided for the analysis of

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the economic aspects of hospital capital and operating expenditures in Canada. In Chapter II the principal economic aspects of capital expenditures on hospital facilities are examined. In Chapter III the factors affecting variations and increases in hospital operating costs are analyzed. In Chapter IV some additional aspects of hospital operating expenditures are discussed. Finally, a summary of the analysis is made, and certain conclusions following from this analysis are set out.

CHAPTER I

BACKGROUND ON HOSPITAL EXPENDITURES IN CANADA

At the outset of this chapter the terms and concepts relating to hospital expenditures are defined. The sources of the statistical data used in the study are indicated, and some observations concerning these data are made. The methodology employed in the analysis is then explained. Since the question often arises of how well the basic concepts of economics can be applied to hospital care, an attempt is made to describe the principal economic characteristics of the market for hospital care from the point of view of the nature and motivation of the market, demand, supply and price determination. Consideration is given to the question: What are Canada's hospital resources (human and physical), and how are they distributed among the different classes of hospitals and the provinces? Finally, trends in expenditures on hospital facilities and services in Canada over the past decade are examined.

A. Definition of Terms and Concepts

Hospital expenditures, for the purposes of this study, include the monetary outlays made by Canadian hospitals in the provision of facilities and services. The analysis, therefore, will deal with the operating

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cost of providing hospital care and treatment directly to individuals, along with the capital cost of providing the facilities required to support this activity. The concept of hospital expenditures used in this study refers to the amounts actually paid out by hospitals as buyers of goods and services, rather than the amounts received by hospitals as sellers of goods and services.

In examining hospital expenditures it is necessary to distinguish between capital and operating expenditures. The concept of hospital capital expenditures includes the purchase of land and land improvements, the costs incurred in the construction of new buildings and the extension or modification of existing structures, and the cost of machinery and equipment. The concept of hospital operating costs includes outlays for salaries and wages, medical and surgical supplies, drugs, administration, research and education, interest and depreciation, maintenance and repair of buildings and equipment, and other expenses incurred in the operation and maintenance of the physical plant. The two types of expenditure together include the costs of all the factors of production used in the hospital system.

A hospital may be defined as an institution which is operated for the medical, surgical, and/or obstetrical care of in-patients. Specifically excluded from this

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definition are nursing homes, infirmaries, convalescent homes, and other institutions providing custodial and/or domiciliary care.

Hospitals in Canada may be grouped into three broad classes: (1) general and allied special hospitals, (2) mental hospitals, and (3) tuberculosis sanatoria. "Allied special" hospitals comprise, mainly, communicable disease, orthopaedic, maternity, chronic, convalescent, geriatric and rehabilitation hospitals; the latter four types of hospitals provide special care to patients with long-term conditions, while the first three types, together with "general" hospitals, provide treatment to patients with acute or short-term conditions. "Mental" hospitals include all-purpose mental hospitals, psychiatric hospitals, training schools and hospitals for mental defectives, and special hospitals for alcoholics, emotionally disturbed children, aged and senile persons, and epileptics.

Hospitals in each of the classes mentioned above are classified into three categories: (1) public, (2) private, and (3) federal. "Public" hospitals are non-profit institutions under voluntary (lay or religious), municipal or provincial ownership which generally accept all patients regardless of ability to pay. "Private" hospitals are institutions under industrial, lay or religious ownership which usually restrict their admissions

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to patients paying for the care provided at rates determined by the management. "Federal" hospitals are those which are owned and operated by the Federal Government for the benefit of persons whose hospital care is a federal responsibility, e.g., war veterans, Indians and Eskimos, members of the Armed Forces and the Royal Canadian Mounted Police.

In this study, hospital expenditures comprise, generally speaking, the capital and operating expenditures of public, private and federal general and allied special hospitals, mental hospitals and tuberculosis sanatoria. The capital expenditures of all federal hospitals and the operating expenditures of hospitals administered by the Department of National Defence, however, have not been included in the statistical data for reasons to be explained in the next section.

B. Sources of Statistical Data

Statistical data for this thesis have been derived and adapted from three main sources: (1) publications of the Dominion Bureau of Statistics and of the Departments of National Health and Welfare, Trade and Commerce, and Finance, (2) the final report of the Royal Commission on Health Services, and (3) unpublished material supplied by the Research and Statistics Directorate, Health Insurance

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Administration, Health Facilities Design Division and Health Grants Administration of the Department of National Health and Welfare, and by the Dominion Bureau of Statistics. The data from these sources were supplemented with statistics obtained from several other governmental and private sources, including the Ontario Department of Health and the Canadian Hospital Association.

The year 1945 was selected as the base year for the historical series of statistical data where the availability of comparable data permitted. In some instances, however, a later year had to be used as the base year because data were not available for earlier years or, if available, lacked the necessary comparability. For example, 1953 was the earliest year for which comparable data on the distribution of hospital operating expenditures by class of hospital and by source of funds could be obtained. The year 1963 was established as the cutoff date for the inclusion of statistical data in this study since it represented, at the time of writing, the most recent year for which data were readily available.

All of the statistics used in the analysis are subject to some margin of error that becomes greater the further back in time they go. This limitation is mainly due to the incomplete reporting of information by hospitals in earlier years, particularly before the implementation of

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the federal-provincial hospital insurance program. In addition, changes in the definitions of items reported by hospitals and in the classification of institutions have affected the comparability of the data from year to year. For example, in its 1962 report on tuberculosis institutions, the Dominion Bureau of Statistics reclassified a number of tuberculosis units to sanatoria, which greatly distorted the magnitude of the operating expenditures of tuberculosis sanatoria in that year. Another limitation of the statistical sources material is that data on mental hospitals and tuberculosis sanatoria are not available in as great detail as those on general and allied special hospitals.

Several observations can be made in connection with statistical data on the capital expenditures of hospitals. First, on the basis of existing data published by the Department of Trade and Commerce in its annual report on Private and Public Investment in Canada, it is not possible to distribute capital expenditures on hospitals by province or by class, type and size of hospital. Second, it is not possible to segregate capital expenditures involving the construction of new hospital buildings from capital expenditures involving the modification of existing hospital buildings. Third, federal hospitals are excluded from the capital expenditure data in this study because these hospitals are included with "Government Departments" rather

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than with "Hospitals" in the annual report mentioned above. There is, therefore, need for the development of more detailed statistics on hospital capital expenditures in Canada.

Information on the depreciation of hospital capital assets is incomplete at the present time. For this reason it is not possible to deduct depreciation allowances from gross investment in hospital facilities in order to determine the amount of net investment in such facilities. This adjustment should actually be made when adding together capital and operating expenditures since hospitals generally account for depreciation as an operating expense. In addition, there is some degree of duplication of expenditures on hospital equipment as this item is included in capital expenditures on machinery and equipment as well as in the operating expenditures of hospitals. The result of both these limitations is an overstatement of total hospital expenditures (capital and operating) and a slight distortion of the ratio of capital to operating expenditures.

Concerning data on the operating expenditures of hospitals, a certain amount of estimation was necessary in order to arrive at an aggregate expenditure figure for all hospitals in Canada since public hospitals only are required to report financial information to the Dominion Bureau of Statistics. In the case of private general and

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allied special hospitals, provincial payments to such hospitals under the federal-provincial hospital insurance program have been assumed to represent the operating cost incurred. Hospitals administered by the Department of National Defence have not been included because their operating expenditures are not identifiable in the Public Accounts of Canada.

Despite some minor loss of accuracy and the minor gaps and inconsistencies arising from the limitations of the statistical data used in this study, it is believed that the trends of hospital capital expenditures and operating costs are clearly evident and that no unwarranted statements have been made or unsupportable conclusions drawn on the basis of the data shown.

C. Methodology

The problem of rising hospital expenditures in Canada is examined from both a macro-economic and a micro-economic point of view, using standard economic concepts and analytic methods. The principal economic aspects of each type of hospital expenditure - capital and operating - are analyzed separately. The analysis is illustrated and supplemented by the use of appropriate tables and other statistical data.

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In exploring the economic aspects of hospital expenditures in Canada, several basic approaches have been used. The postwar trends in the growth of hospital capital and operating expenditures are examined. These expenditures are then related to the Gross National Expenditure and to certain other economic aggregates, including social capital formation and total investment spending in the case of hospital capital expenditures, and personal health care expenditures and total consumption spending in the case of hospital operating expenditures. Consideration is given to variations in the level of hospital capital and operating costs as well as some of the factors underlying these variations. The various factors affecting the rapid increase of hospital capital expenditures and operating costs in the postwar period are analyzed in some detail. Finally, the implications of hospital capital and operating expenditures for financing from both private and public sources are examined.

Hospital operating expenditures in Canada are also compared with similar expenditures in a number of other countries. No data were readily available, however, for making an international comparison of hospital capital expenditures.

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D. Some Characteristics of the Market
for Hospital Care

At the outset, perhaps, it would be useful to examine the major economic characteristics of the market for hospital care that differentiate it from the markets for other economic goods and services. Specifically, the important forces determining the demand, supply and pricing of hospital services will be analyzed and basic assumptions concerning the behaviour of the market will be made. Most of the generalizations presented refer to in-patient services at general, allied special, mental and tuberculosis hospitals, whether voluntary (non-profit), private or governmental; where private institutions differ from non-profit ones, the distinguishing characteristics are noted.

The principal economic features of the market for hospital services may be discussed under the following headings:

1. Type of Market - In analyzing the market for any commodity, it is first necessary to make certain basic assumptions concerning the type of market and the behaviour of the participants in it. A useful method is the comparison of the market under study with a perfectly competitive model.

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The first condition of perfect competition is the existence of a large number of buyers and sellers, none of whom is important enough to influence significantly the price of the good or service in question. In regard to the number of "firms" or "sellers" or hospitals operating in the market, it is safe to say that in some geographical areas a single hospital comprises the entire market, in others there are a few hospitals, and almost nowhere is there the large number of hospitals assumed for perfect competition. Furthermore, in most markets the few hospitals which do exist avoid competition among themselves on the basis of price, advertising or the nature of the service.

One general aspect of hospital services which distinguishes them from many others is the difficulty of directly measuring their volume, quality and scope due to the intangible nature of the hospital "product". This problem of measurement makes it difficult for an economist to analyze a hospital care market and also suggests the existence of service differentiation among hospitals in a given area.¹ While the quantity, quality and scope of service provided varies with each hospital, the absence of

¹ Robert L. Robertson, "The Market for Hospital Care", Hospital Administration, Vol. 7, No. 1, Winter 1962, p.43.

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a homogeneous service is also attributable to the fact that the skills and abilities of health personnel differ, as well as the needs of individual patients.²

Another condition of a perfectly competitive market, complete knowledge on the part of the participants, is lacking in the hospital care market, especially when the buyers are considered. The nature of the service and its intangible character account for the consumer's lack of full knowledge about services and their prices, and impede the use of consumer preferences as a guide to the optimal allocation of resources.³ In addition, neither the patient nor the hospital knows in advance how long the hospital stay will be or how many services will be required.

A hospital care market, therefore, differs substantially from a perfectly competitive one. Because a typical market for hospital services is characterized by the existence of few hospitals, an element of service differentiation and incomplete knowledge of participants, it falls into the category of "imperfect competition".

2. Motivation of Market - With respect to sellers or producers in a given market, the economist generally

² Selma J. Mushkin, "Toward a Definition of Health Economics", Public Health Reports, Vol. 73, No. 9, September 1958, p.787.

³ Ibid., p.787.

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assumes that each will attempt to maximize his total profit. The profit motive, however, is not usually present in the behaviour of administrators of voluntary and governmental hospitals. They try instead to "break even" approximately and obtain revenue sufficient to meet anticipated expenditures. While the degree to which profit-making motivates the operators of private hospitals is not generally known, the aim of such administrators is not likely to involve maximization of profits.⁴

Departure from the profit motive in the hospital services industry is well demonstrated by the marked predominance of public over private hospitals.⁵ Hospital care throughout the centuries has been provided primarily by non-profit institutions under religious or community auspices. The absence of profit-making in public hospitals can be explained by the fact that these institutions provide an essential or vital service to the entire community.

With regard to buyers or consumers in a particular market, the economist's general assumption that a buyer will attempt to maximize his satisfaction from various goods and services does apply in some degree to the purchase

⁴ Robertson, op.cit., p.44.

⁵ About 5 per cent of beds in Canadian general and allied special facilities were in private hospitals in 1963, against 86 per cent in public and the remainder in federal hospitals.

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of hospital care. However, the demand for such care has certain peculiarities which tend to modify the usual pattern of consumer behaviour.

3. Demand - There are certain unique characteristics of hospital care which affect the demand for it. One of these peculiarities, which already has been mentioned, is the consumer's lack of full information on the quantity and quality of services he requires. Another aspect which influences the behaviour of buyers is the fact that hospital care is generally not wanted for its own sake; it is a necessity usually associated with pain and discomfort, and is sought only when it becomes a preferable alternative to the consequences of illness. In addition, although rates of illness may be predicted for a large population group, the incidence of sickness and injury for an individual is unpredictable, with the result that his demand for hospital services is not steady but irregular and unpredictable.

The consumer lacks free choice among different hospitals when he selects one for service and the relationship that he has with the hospital is almost completely impersonal. Patients ordinarily go to the particular institution where their physician has staff privileges. Moreover, hospital care is characterized by a low degree of substitutability; most hospital needs are highly

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specific and alternative services cannot provide adequate satisfaction of these needs. All of these characteristics tend to affect the demand for hospital services in such a way that the economic principle of consumer preferences freely expressed in the market can be only partially applied to hospital care.⁶

It is interesting to examine the price-elasticity of demand for hospital services, that is, the degree of responsiveness of quantity of hospital care demanded to price changes. A consideration of the economic factors affecting hospital care suggests that the demand for it is highly inelastic within a wide range of prices both for the industry as a whole and for a single hospital. In other words, the quantity of care which buyers are willing and able to purchase varies little, if at all, with price changes. The quantity of hospital care demanded is determined usually by non-price factors, more likely by the recommendations of the physician.

Several factors explain the relative price inelasticity of demand for hospital care.⁷ For one thing, hospital service is so vital and important that price tends to be a much less serious consideration to the buyer than

⁶ Robertson, op.cit., p.45.

⁷ Ibid., p.46.

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it is for most other goods or services. Secondly, in some cases hospital care is provided by the public either on the basis of need, e.g., indigents and public assistance recipients, or as a matter of statutory responsibility, e.g., members of the Armed Forces, workmen's compensation cases. A third factor is that most of the decisions determining the type and quantity of services rendered are made by the attending physician rather than the patient. Finally, the availability of hospital insurance tends to make the demand for hospital services more inelastic since it reduces the expense to the patient.

4. Supply - The factors influencing the supply of hospital care can be divided between economic and non-economic considerations to the sellers who decide how much to provide and sell at any given price prevailing in the market. Hospital costs are of two types - fixed or capital costs, which reflect changes in the capacity or size of the hospital, and variable or operating costs, which depend upon the actual quantity of service provided. The total cost of providing various amounts of care within the capacity limitations of the hospital is the sum of the fixed costs and the variable costs.

For a given size of hospital, usually measured in terms of number of beds, the operating costs will vary with volume of care and will change according to the proportion

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of full capacity being utilized. As the quantity of service increases up to some point, the average total cost tends to fall due to the decrease in average fixed costs which initially outweighs the rise in average variable costs. Above some volume of service, however, the upward trend of the increasing variable costs will prevail and the total cost will tend to rise.⁸

In the short run, capital or fixed costs have little influence on the volume of hospital care supplied because there is not enough time to change the size of the physical plant, and operating or variable costs are more important in determining supply. In the long run, when there is time to vary the size of a hospital, capital costs will have more effect upon the quantity of service provided. Robertson makes the point that substantial long-run variations in total costs could result in changes in society's attitude toward the provision of hospital care, which in turn might lead to changes in the size of a hospital and, thus, in supply.⁹

There are other determinants of the supply of hospital care which are humanitarian and social in nature

⁸ The relationship of average total cost to the quantity of service supplied by a hospital is analyzed in greater depth by Robertson, op.cit., pp. 47-9.

⁹ Ibid., p.49.

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rather than economic.¹⁰ Due to the vital nature of hospital care, the public has a large interest in the operation of hospitals and wishes to have facilities available for care at all times even if they are not always in use. The volume of available hospital services is influenced also by the need for facilities for purposes of teaching and research.

It may be worthwhile to look at the price-elasticity of supply in order to discover how the quantity supplied varies with changes in price. In the short run, regardless of price, a hospital administrator will supply as large a quantity of service within the physical capacity limitations of his institution as is demanded. In the long run, the capacity of a hospital and hence the quantity of service offered may change in response to a change in the demand for service; in the case of a private hospital, a change in price may also have some effect upon the size of the plant and the volume of care provided. Thus, for an individual hospital as well as the total number of hospitals in a particular market, the supply of hospital service is highly inelastic or unresponsive to price changes in a short-run period, with demand determining the quantity

¹⁰ Ibid., pp. 51-2.

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of service actually sold.¹¹

5. Price Determination - In an imperfectly competitive market the administrator of a voluntary or governmental hospital is in a position to exercise a substantial degree of control over price. He generally does not attempt to maximize profits, however, but attempts to "break even", or balance total cost with total revenue for the expected patient load. This means that the price set must be at least equal to the average total cost for the quantity of service which patients will purchase at that price. The relationship between the demand for services and the costs of providing them at his hospital must be taken into account by the administrator in determining this rate. Although the process of price determination by the manager of a private hospital is not definitely known, it is not likely to involve profit-maximizing, as indicated previously.

The purpose of this section has been to list and discuss the main economic characteristics of the hospital care market which distinguish it from the usual commodity or service markets. The list is by no means exhaustive, and the characteristics listed are not individually unique to this market. Hospital care undoubtedly shares many of

¹¹ Reuben E. Slesinger and Harold E. Smalley, "The Economics of Patient Care", Hospital Administration, Vol. 3, No. 4, Fall 1958, p. 30.

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these distinctive features with the markets for other goods and services, including other categories of health services. What is different about the market for hospital services is the fact that it possesses all of the characteristics examined. In other words, it would be difficult to find another market with all or most of these features.

E. Canada's Hospital Resources
and Their Distribution

An analysis of hospital expenditures should perhaps be preceded by a look at the resources which support such expenditures. Canada's hospital resources have been growing in quantity and improving in quality to keep pace with medical advances and with the expanding demand for hospital care. These resources can be divided into two broad categories: facility resources, the stock of hospital bed facilities available for use by the population at large, and manpower resources, the supply of personnel providing hospital services. Each category will be examined separately from the point of view of the total number of hospital beds and hospital personnel existing in Canada and their distribution by class of hospital and by province at the end of the year 1963.

1. Facility Resources - Because of the nation's large public and private investment in facilities for the provision of hospital care and their importance to the

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distribution of adequate care, it is essential to have some idea of the number and types of hospital bed facilities presently available. These facilities are particularly important since they influence the quality and quantity of care that can be provided; also, the types of facilities available for care greatly affect hospital costs. Table 1 shows the estimated number of bed facilities set up in each class of hospital in Canada and how they are distributed among the various provinces and territories.

At the end of 1963, there were 206,700 beds set up for use in all classes of hospitals in Canada, enough to accommodate 1.1 per cent of the Canadian population. Of this total, approximately 129,200 or 62.5 per cent were in general and allied special hospitals, while mental hospitals comprised about 69,300 or 33.5 per cent, and tuberculosis sanatoria about 8,200 or 4 per cent. Within the general and allied special class, public hospitals accounted for the vast majority of beds, almost 111,600 or 86 per cent, with the remainder being distributed between the private and federal categories.

2. Manpower Resources - Hospital care is essentially a personal service provided by people. The availability and selection of such people has always been a key factor in hospital services, determining their scope, volume, quality and costs. Table 2 indicates the number

TABLE 1
Estimated Beds Set Up^a in Canadian Hospitals,
by Class of Hospital and by Province, 1963.

Province	General and Allied Special Hospitals				Mental Hospitals	Tuber- culosis Sanatoria	All Hospitals
	Public	Private	Federal	Total			
Newfoundland	2,358	-	45	2,403	826	494	3,723
Prince Edward Island	629	-	-	629	364	85	1,078
Nova Scotia	4,026	-	443	4,469	3,069	486	8,024
New Brunswick	3,578	-	430	4,008	1,987	517	6,512
Quebec	28,658	2,938	2,242	33,838	20,719	2,135	56,692
Ontario	38,761	2,484	3,720	44,965	21,862	2,264	69,091
Manitoba	5,893	117	941	6,951	3,736	488	11,175
Saskatchewan	7,581	30	167	7,778	4,476	319	12,573
Alberta	10,084	945	1,005	12,034	4,919	1,132	18,085
British Columbia	9,380	112	1,972	11,464	7,335	306	19,105
Yukon Territory	161	-	- ^b	161	-	-	161
Northwest Territories	478	-	- ^b	478	-	-	478
CANADA	111,587	6,626	10,965	129,178	69,293	8,226	206,697

^a Excludes bassinets.

^b Included in the public category as institutions serving the community.

Sources: Unpublished data supplied by Research and Statistics Directorate, Department of National Health and Welfare; Dominion Bureau of Statistics, Mental Health Statistics 1963, Vol. III, Table 11, pp. 31-3 and Tuberculosis Statistics 1963, Vol. II, Table 8, pp. 28-9.

TABLE 2
Personnel^a Employed in Canadian Hospitals,
by Class of Hospital and by Province, 1963.

Province	General and Allied Special Hospitals				Mental Hospitals	Tuber- culosis Sanatoria	All Hospitals
	Public	Private	Federal	Total			
Newfoundland	3,784	-	42	3,826	683	546	5,055
Prince Edward Island	1,007	-	-	1,007	290	90	1,387
Nova Scotia	8,001	-	559	8,560	1,569	600	10,729
New Brunswick	7,227	-	544	7,771	833	523	9,127
Quebec	60,035	2,609	2,545	65,189	7,837	2,133	75,159
Ontario	77,901	2,453	4,615	84,969	14,169	1,944	101,082
Manitoba	11,439	150	1,160	12,749	1,605	382	14,736
Saskatchewan	11,521	34	185	11,740	1,917	325	13,982
Alberta	15,569	47	1,068	16,684	2,360	1,017	20,061
British Columbia	15,327	83	2,237	17,647	3,413	359	21,419
Yukon Territory	180	-	- ^b	180	-	-	180
Northwest Territories	386	-	- ^b	386	-	-	386
CANADA	212,377	5,376	12,955	230,708	34,676	7,919	273,303

^a Includes full-time and part-time personnel.

^b Included in the public category as institutions serving the community.

Sources: Unpublished data supplied by Research and Statistics Directorate, Department of National Health and Welfare; Dominion Bureau of Statistics, Mental Health Statistics 1963, Vol. III, Table 16, p. 37 and Tuberculosis Statistics 1963, Vol. II, Table 9, p. 30.

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of full and part-time hospital personnel employed in Canada by class of hospital and the distribution of such personnel by province.

At the end of the year 1963, all classes of Canadian hospitals employed approximately 273,300 persons, including 248,100 full-time personnel and about 25,200 part-time personnel. Of the overall total, about 230,700 (or 84 per cent) were employed by general and allied special hospitals, 34,700 (13 per cent) worked in mental hospitals, and 7,900 (3 per cent) were on the staff of tuberculosis sanatoria. Of the 230,700 staff in general and allied special hospitals, public hospitals employed by far most of these personnel, around 212,400 or 92 per cent, with the remainder working in private and federal hospitals. Expressed as a percentage of Canada's total civilian labour force, full-time and part-time hospital personnel represented 4.1 per cent in 1963; about one of every 25 of the nation's workers was employed by a hospital.

F. Recent Trends in Hospital
Expenditures in Canada

Hospital expenditures have increased greatly in Canada in recent years, with considerable further growth anticipated for the coming years. Population growth, increased prices, advances in medical science, increased hospital usage, and increased quality and quantity of

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hospital services have been some of the main factors contributing to the rise of hospital costs. These and other factors will be discussed in detail in the chapters on hospital capital expenditures and hospital operating costs.

In 1963, as shown in Table 3, the combined capital and operating expenditures of all hospitals in Canada reached an estimated \$1,344.8 million, which represents an increase of 158 per cent from a comparable figure of \$522.3 million in 1953. Total hospital expenditures rose uninterruptedly during this ten-year period, the average annual percentage increase being 9.9 per cent. The annual rate of increase between 1953 and 1963 varied from a minimum of 5.2 per cent, between 1955 and 1956, to a maximum of 12.8 per cent, between 1960 and 1961.

Estimated capital investment in hospital facilities over the ten years from 1953 to 1963 totalled almost 1.7 billion dollars. Annual capital expenditures on hospital construction, machinery and equipment went up from \$118.3 million in 1953 to \$188.5 million in 1963, an increase of \$70.2 million or 59 per cent. This growth has not been continuous, however, as Table 3 clearly indicates. Annual total expenditures rose from \$118 million in 1953 to \$146 million in 1955, then fell to \$129 million in 1956, rising to \$161.5 million in 1958. Subsequently,

TABLE 3

Estimated Total Capital and Operating Expenditures
of All Hospitals in Canada,
1953 - 1963.
(Current Dollars)

Year	Capital Expenditures ^a	Operating Expenditures ^b	Total Expenditures
	\$m.	\$m.	\$m.
1953	118.3	404.0	522.3
1954	121.6	446.8	568.4
1955	146.2	480.0	626.2
1956	128.7	529.8	658.5
1957	130.8	586.7	717.5
1958	161.5	640.1	801.6
1959	151.9	734.1	886.0
1960	155.9	828.3	984.2
1961	177.8	932.7	1,110.5
1962	198.2	1,040.3	1,238.5
1963	188.5	1,156.3	1,344.8

^a Includes gross expenditures on new construction and on new machinery and equipment. Federal hospitals of all types are excluded.

^b Includes gross expenditures on operation, maintenance and repair.

Sources: Department of Trade and Commerce, Private and Public Investment in Canada, Annual Outlook Reports: Department of National Health and Welfare, Research and Statistics Division, Expenditures on Personal Health Care in Canada 1953-1961; Department of Finance, Public Accounts of Canada, 1962-63 and 1963-64, Vol. II; Dominion Bureau of Statistics, Mental Health Statistics 1963, Vol. III and Tuberculosis Statistics 1963, Vol. II; and unpublished data supplied by Health Insurance Administration and Research and Statistics Directorate, Department of National Health and Welfare.

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expenditures declined again to \$152 million in 1959, only to increase again to a peak of \$198 million in 1962, finally falling to \$188.5 million in 1963.

As can be seen in Table 3, Canadian hospitals of all classes spent an estimated \$1,156.3 million on their current operations in the year 1963, which was \$752.3 million, or 186 per cent, more than the \$404 million they spent in 1953. Non-federal general and allied special hospitals constitute the largest expenditure class, spending a total of \$899.7 million in 1963; mental hospitals expended \$162.5 million, tuberculosis sanatoria \$30.7 million, and federal hospitals of all types \$63.4 million. Total operating expenditures of all hospitals rose continuously throughout the period 1953 to 1963 at an average annual rate of 11.1 per cent.

During the ten-year period referred to above, the proportion of operating to total hospital expenditures steadily increased, from 77 per cent in 1953 to 86 per cent in 1963, while the proportion of capital to total costs correspondingly declined from 23 to 14 per cent. The ratio of capital to operating expenditures declined from 29 per cent in 1953 to 16 per cent in 1963. The obvious conclusion is that rising operating costs have been primarily responsible for the substantial increase in total hospital expenditures in recent years.

CHAPTER II

CAPITAL INVESTMENT IN HOSPITAL FACILITIES

In dealing with the subject of capital investment in hospital facilities, it may be helpful to examine first the postwar trends in the growth of expenditures on new construction and new machinery and equipment in the hospital sector, and then to analyze these expenditures in relation to all social capital, and to total capital expenditures and Gross National Expenditure. Variations in the capital cost of providing different types and sizes of hospital facilities are briefly considered. Both qualitative and quantitative factors contributing to the postwar increase in capital expenditures on Canadian hospitals are listed and discussed in order to explain the forces of demand and supply which have largely determined the present level of this spending. The impact of hospital capital investment on the supply and utilization of hospital facilities in Canada is then shown by examining the increase in the stock of beds and in certain indices of utilization, particularly in relation to population. Capital expenditures on hospitals are dealt with in terms of their effect on the costs of operating such facilities and as a proportion of these costs. Finally, consideration is given to the various public (local, provincial and federal) and private sources of funds for

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financing capital expenditures on hospitals and associated facilities in Canada.

Capital investment expenditures on hospitals are those outlays which are made to acquire durable physical facilities for use (together with labour) in producing and selling hospital services. Three types of capital outlay can be distinguished, viz., expenditures on capital projects such as the installation of new heating and laundry equipment which are designed to achieve savings in the cost of operation; expenditures for the improvement, extension and modification of existing plant; and expenditures for the provision of new plant. The available statistics divide capital expenditures on hospitals into construction investment, including expenditures on new buildings and modification of existing buildings as well as land improvements, and machinery and equipment investment. Expenditures for the purchase of land or used buildings are also capital costs from the hospital's point of view, but are excluded from the concept of investment defined above and thus from the statistical data on hospital capital expenditures since these outlays involve only the transfer of property and not the production of a new capital asset.

The data used in this study include hospital capital expenditures in both the private and the public sectors of the economy. Since information on the depreciation of

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hospital capital assets is limited at present, it is not possible to deal with net investment in hospital facilities, i.e., the net addition to the total stock of hospital capital assets during a given period of time. The analysis, therefore, will focus on gross investment in hospital facilities, with no adjustment being made for the amounts of capital consumed or used up in the process of production through wear and tear, depreciation, and obsolescence. This chapter is concerned, then, with the rate of gross private and public investment in durable physical assets that has taken place in the hospital sector of the Canadian economy.

A community can increase its current consumption by using less resources to build up its stock of capital goods, but this could be at the expense of a lower level of future consumption. An increase in future consumption can be achieved by currently allocating more resources to the production of capital goods. Thus, expansion of hospital services will usually be preceded by some growth of investment in hospital buildings or equipment which, with limited resources, will probably mean a lower level of current consumption.

While additions to buildings, machinery and durable equipment are considered as capital, investment in human resources is not regarded as such. Improved hospital

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services in future years may be achieved not only by the use of limited resources in the construction of new buildings and the purchase of new machinery or equipment, but also by the use of some of these resources to train personnel. The concept of capital could very well be broadened to include as investment all current expenditures on hospital and other health services which improved the productivity of the labour used.¹

A large accumulation of capital investment in physical plant, much of which has been provided by the public, is one of the essential economic features of a present-day hospital. A characteristic feature, in turn, of most capital invested in hospitals is the intensity with which it is used. A hospital plant is used day and night with a large number of skilled personnel to operate it, unlike a factory or school building which is only used for a certain number of hours each day. The intensity of use of hospital capital affects the rate at which this capital is consumed or used up in the process of production through wear and tear.

¹ Brian Abel-Smith, Paying for Health Services: A Study of the Costs and Sources of Finance in Six Countries, Public Health Papers No. 17, Geneva, World Health Organization, 1963, p. 14.

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A. Hospital Capital Investment,
1945-1963

Hospitals represent a major investment in land, buildings and equipment and form an important segment of Canada's social capital. The capital assets of Canadian hospitals represent significant community resources and a major part of this country's investment in health. Although information relating to the value of hospital capital is limited, some rough estimates have been made on the basis of data reported by public general and allied special hospitals to the Dominion Bureau of Statistics and other available information. The Royal Commission on Health Services has estimated that the depreciated value of hospital capital in 1960 amounted to at least \$1,500 million, while the replacement value was probably in the neighbourhood of \$2,500 million.² In 1963, 881 public general and allied special hospitals in Canada reported total capital assets valued at about \$1,559 million.³ If all classes of hospitals were included, total valuation would be well in excess of two billion dollars. These estimates, however, understate the replacement value of

² Canada, Royal Commission on Health Services, Report, Vol. I, Ottawa, Queen's Printer, 1964, p. 471.

³ Unpublished data supplied by Dominion Bureau of Statistics.

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hospital capital assets in Canada, which probably amounts to about three billion dollars at the present time.

Gross new investment to build up this stock of hospital capital in the postwar period has also been very substantial, as can be seen from Table 4. Between 1945 and 1963, estimated capital expenditures on all hospitals in Canada totalled over two billion dollars, about half of which was expended in the last six years. Expenditures on new construction during the entire period amounted to almost \$1.8 billion, accounting for 84 per cent of the overall total, while outlays for new machinery and equipment were about \$340 million, representing 16 per cent of all such investment. The striking significance of these postwar capital outlays on hospital facilities in Canada is well illustrated by the fact that more than 90 per cent of all capital invested in hospital facilities since 1926 has been invested since 1945.

1. Rising Capital Expenditures - This section will examine the growth of the stock of hospitals over the past generation, along with their associated diagnostic, research, teaching and residential facilities. Table 4 indicates that in the eighteen years between the end of World War II and 1963, the Canadian public as taxpayers, charitable donors and paying consumers of hospital care increased their spending on hospitals and associated

TABLE 4

Gross New Investment in Hospitals,
Canada, 1945-1963.

(Current Dollars)

Year	Construc- tion	Machinery and Equipment	Total Capital Expendi- tures	Percent- age of Social Capital ^a	Percent- age of Gross Fixed Capital Formation ^b	Percent- age of Gross National Expendi- ture
	\$m.	\$m.	\$m.	%	%	%
1945	18.9	3.4	22.3	8.7	1.7	0.19
1946	23.8	4.5	28.3	9.7	1.7	0.24
1947	27.0	6.1	33.1	8.7	1.4	0.25
1948	44.0	11.6	55.6	10.4	1.8	0.37
1949	61.3	10.1	71.4	12.0	2.0	0.44
1950	62.3	10.7	73.0	10.8	1.9	0.40
1951	65.5	13.5	79.0	9.1	1.7	0.37
1952	81.4	11.9	93.3	7.9	1.7	0.39
1953	103.1	15.2	118.3	10.3	2.0	0.47
1954	106.4	15.2	121.6	10.5	2.1	0.49
1955	130.0	16.2	146.2	11.6	2.3	0.54
1956	110.0	18.7	128.7	8.7	1.6	0.42
1957	111.7	19.1	130.8	8.0	1.5	0.41
1958	136.1	25.4	161.5	9.4	1.9	0.49
1959	128.1	23.8	151.9	8.1	1.8	0.44
1960	125.2	30.7	155.9	8.1	1.9	0.43
1961	146.6	31.2	177.8	9.2	2.2	0.47
1962	165.0	33.2	198.2	9.2	2.3	0.49
1963	148.8	39.7	188.5	8.5	2.0	0.44

^a Includes institutional services, government departments and waterworks.

^b Includes total private and public investment expenditures.

Sources: Department of Trade and Commerce, Private and Public Investment in Canada, 1926-1951, 1946-1957, and annual outlook reports; Dominion Bureau of Statistics, National Accounts, Income and Expenditure, 1926-1956, 1947-1961, and annual publications.

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facilities by 745 per cent. Thus, annual capital expenditures in 1963, amounting to \$188.5 million, were almost nine times the 1945 level of \$22.3 million.

Statistical data on expenditures during this period show that annual total outlays for hospital capital rose steadily from \$22.3 million in 1945 to \$146.2 million in 1955. Following two declines in 1956 and 1959, expenditures reached a peak of \$198.2 million in the year 1962, only to fall again to \$188.5 million in 1963. The increase in hospital capital costs has varied considerably from one year to another throughout the postwar period, interrupted by three declines which followed by about one to two years the downward turning points of the business cycle in Canada. Subject to a time lag, therefore, postwar fluctuations in the growth of hospital capital investment have tended to parallel cyclical fluctuations in the economy. This is due in large part to the fact that philanthropy, provincial government grants and, possibly, other sources of funds for financing hospital capital expenditures are fairly sensitive to general economic conditions.

Table 4 shows also the postwar growth in the two main components of hospital capital investment - new construction and new machinery and equipment. Annual capital expenditures for new hospital construction rose from \$18.9 million in 1945 to \$148.8 million in 1963, an increase of 687 per cent. Over the same period, annual outlays for new machinery and equipment increased by 1,068 per cent from \$3.4 million to \$39.7 million.

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Throughout the period, for every four to eight dollars spent on hospital construction, one dollar was spent on hospital machinery and equipment but the percentage increase in the latter component was considerably greater. This fact may be partly explained by the following figures: according to the Dominion Bureau of Statistics, in the six years from 1954 to 1960 (the only years for which data are available), the units of laboratory work performed in public general hospitals increased by 240 per cent and the number of X-rays read increased by 120 per cent, while the average daily number of patients in these hospitals rose by only 40 per cent approximately.⁴ The importance of machinery and equipment in hospitals has increased greatly in recent years.

2. Hospital Capital and Social Capital - In Table 4, total capital expenditures on all hospitals are shown as a proportion of social capital investment in order to indicate the importance of hospital capital spending in the Canadian pattern of total expenditure on social capital. The term "social capital" is taken here to include schools and universities, churches, hospitals, roads, highways and streets, airports, sewage and water systems, and other

⁴ Richard L. Edsall, "Report on the Nation's Hospital Plant", Canadian Business, Vol. 37, No. 6, June 1964, p. 51.

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buildings and installations belonging to public institutions and departments at all levels of government.

On the average, hospitals accounted for almost one-tenth of the total new investment in social capital during the period 1945-63. This proportion has varied somewhat from year to year, rising from 8.7 in 1945 to a peak of 12.0 in 1949; it then fell to 7.9 in 1952, rose again to 11.6 in 1955, and by 1963 had fallen back to 8.5. Over the whole period under review, spending on hospital capital and spending on all social capital increased by about 750 per cent in each case.

3. Capital Expenditures on Hospitals and Total Capital Expenditures - Capital expenditures on hospital facilities are then shown as percentages of total gross fixed capital formation in order to give some rough indication of how much of the nation's capital formation has been devoted to hospital services. The term "gross fixed capital formation" includes both government and business capital expenditures as defined in the National Accounts, or total private and public investment expenditures in the economy.

Over the years 1945-63 inclusive, capital investment in Canadian hospitals as a proportion of aggregate capital formation in the nation averaged almost two per cent. In general, annual percentage figures throughout the

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period have not deviated from this average to any great extent, with the highest rates being sustained in the years 1953-55 and 1961-63.

It is interesting to note that the postwar declines in gross new investment by all hospitals have followed by about one to two years the downward turning points of total Canadian capital expenditures. Among the reasons for this time lag, financial considerations are important because hospitals often face difficulties in obtaining the necessary funds to undertake expansion or improvement of facilities; these difficulties in turn mainly arise from the heavy dependence of hospitals on voluntary contributions and government grants.⁵

4. Hospital Capital Expenditures and Gross National Expenditure - Finally, the relative importance of hospital capital expenditures in the national economy is shown by relating these outlays to the Gross National Expenditure (GNE). As a percentage of GNE, capital investment in hospital facilities rose from 0.19 in 1945 to a peak of 0.54 in 1955, and then fell to 0.44 per cent in 1963. Thus, while the absolute amounts spent on hospital construction and on hospital machinery and equipment have

⁵ Canada, Department of Trade and Commerce, Private and Public Investment in Canada 1926-1951, Ottawa, the Department, 1951, pp. 95-6.

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steadily risen throughout the postwar period, the proportion of the nation's total resources devoted to hospital capital has, on the average, tended to increase during the first half of this period and to decline in the second half.

B. Variations in Hospital Capital Costs

Having examined total capital expenditures on all classes of hospitals in Canada, it may be useful to consider briefly the question of variations in the capital cost of providing different types and sizes of hospital facilities. For comparative purposes, the cost of constructing and equipping hospitals of various types and sizes and at various times is usually expressed in terms of costs per patient-bed. The cost of providing hospital beds varies widely among different hospitals. Usually, however, large general hospitals requiring many auxiliary special facilities, especially for education and research, are the most expensive type of hospital to build and operate. Chronic and mental hospitals or small community hospitals usually cost less per patient-bed.

When looking at hospital capital costs in relation to patient-beds it must be remembered that a hospital bed is more than just the provision of space for a patient. In its final report the Royal Commission on Health Services stated that " ... a hospital bed is a surrogate for a whole

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complex of facilities ranging from space in a public ward to a residence for interns or nurses; from an out-patient department to an operating room; from a pathology laboratory to a university medical research department".⁶ In these circumstances, the average cost of providing a hospital bed will vary substantially with the type of hospital, depending on the facilities associated with the bed. Chronic, convalescent, general, specialty and teaching hospitals all have requirements for facilities which differ in quantity and scope. Thus, for example, in a hospital for patients with long-term conditions, the average cost per bed will be considerably lower than in a university teaching hospital with a complete range of research and educational facilities.

The size of hospital affects considerably the level of costs per patient-bed. The larger the hospital, the greater the volume and scope of ancillary services provided and, therefore, the greater the requirements for special facilities and equipment. Costs per hospital bed are also influenced by location, that is, whether the hospital is built in a high-cost or a low-cost land location. Other factors which have an effect on the cost per bed of the hospital include care in planning construction (so as to allow space for possible future expansion) and the quality

⁶ Royal Commission on Health Services,
op. cit., p. 848.

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of the finishing materials used in construction.⁷

The relationship between the size of the hospital and the capital cost per bed requires further explanation. As a hospital becomes larger up to a certain size, the service departments of the hospital do not necessarily increase in direct proportion to the number of beds. Thus, economies of scale resulting from a greater volume of services and a less than proportionate increase in the size of the service departments will tend to keep the cost per bed down. When a hospital grows beyond a certain size, however, various factors come in to play that remove the advantage of size and increase the scope of services required and hence the cost per bed. The larger hospital is usually called upon to provide special facilities for the many procedures and techniques developed by medical science. The effect of this process is to increase the demand on service departments and the requirements for space for special equipment and procedures.

In 1963, total capital costs of providing hospital facilities in Canada were estimated to range from \$9,000 to \$11,800 per bed for a convalescent or chronic hospital, from \$13,000 to \$15,000 per bed for a small general hospital

⁷ P.M. Keenleyside, "One Hospital Bed - \$20,000?", Canada's Health and Welfare, Vol. 16, No. 3, March 1961, p. 4.

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of approximately 50 beds, from \$14,000 to \$19,215 per bed for a general hospital with 200 - 450 beds, and from \$22,000 to \$30,750 per bed for a teaching hospital or large general hospital.⁸ Price increases, the changing nature of facilities being constructed and other factors will have since inflated these figures to some extent. It should also be pointed out that the addition to an existing hospital of bed accommodation only will cost less per bed than the addition of special facilities such as X-ray units, operating rooms and delivery rooms.

As hospitals have added more and more specialized facilities and procedures to the basic services, dollars per bed has become an inaccurate measure of a hospital's investment. Today, hospital capital costs are often expressed in terms of dollars per square foot of floor space since the service departments of hospitals often require an area considerably greater than that required for beds. In 1963 costs per square foot were estimated to be in the neighbourhood of \$16 to \$21 for convalescent or chronic hospitals, \$17 to \$23 for small and medium-sized general hospitals, and \$18 to \$25 for teaching or large

⁸ Unpublished information supplied by Health Facilities Design Division, Department of National Health and Welfare.

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general hospitals.⁹

Comparable data for earlier years on average hospital construction costs per bed and per square foot are not readily available at the present time. Although cost figures can be obtained for individual hospital construction and renovation projects, these costs will have to be averaged out in order that trends in hospital capital costs can be analyzed. The Department of National Health and Welfare is now in the process of developing a hospital construction cost register which will contain detailed information on the average cost of constructing and renovating various types and sizes of hospitals in different areas of the country.

C. Factors Contributing to Increase in
Hospital Capital Expenditures

What are the underlying factors that have brought about the substantial increase in capital spending on hospitals and their associated facilities during the post-war period? In order to answer this question it is necessary first to examine the relative significance of those factors which directly determine the level of such

⁹ Unpublished information supplied by Health Facilities Design Division, Department of National Health and Welfare.

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spending. Then it is necessary to look at some of the other forces of demand and supply that have led to the large postwar increase in spending on hospital capital.

1. Quantitative Factors - In the following analysis the growth of Canadian spending on hospital capital is attributed to three major factors: changes in population, changes in the price of hospital facilities, and changes in per capita real spending on such facilities reflecting their expansion and improvement. Since it is difficult to measure the contribution of each of these factors, the estimates given should be regarded only as approximations.¹⁰ Table 5 contains estimates of postwar expenditures on hospital capital on a per capita basis which eliminates the effect of population change and on a constant (1957) dollar basis which eliminates the effect of price change.

The impact of total population increase on hospital capital expenditures can be seen when current dollar expenditures are adjusted for population growth by calculation on a per capita basis. Over the period 1945-1963, per capita expenditures on hospital capital in current dollars rose five-fold from \$1.85 to \$9.98. Thus, the 745 per cent

¹⁰ For a discussion of some of the problems and difficulties involved in the measurement of these factors, see Royal Commission on Health Services, op.cit., pp. 447-50.

TABLE 5

Total and Per Capita Expenditures
on Hospital Capital in Current and
Constant (1957) Dollars, Canada,
1945 - 1963.

Year	Total Expenditures		Per Capita Expenditures	
	Current Dollars	Constant (1957) Dollars ^a	Current Dollars	Constant (1957) Dollars ^a
	\$m.	\$m.	\$	\$
1945	22.3	44.7	1.85	3.70
1946	28.3	56.5	2.30	4.60
1947	33.1	56.7	2.64	4.52
1948	55.6	85.4	4.34	6.66
1949	71.4	103.4	5.31	7.69
1950	73.0	100.8	5.32	7.35
1951	79.0	97.1	5.63	6.93
1952	93.3	106.1	6.45	7.34
1953	118.3	131.9	7.97	8.89
1954	121.6	133.0	7.95	8.70
1955	146.2	158.1	9.31	10.07
1956	128.7	132.7	8.00	8.25
1957	130.8	130.8	7.87	7.87
1958	161.5	158.0	9.46	9.25
1959	151.9	144.4	8.69	8.26
1960	155.9	145.2	8.73	8.13
1961	177.8	164.0	9.75	8.98
1962	198.2	178.4	10.67	9.61
1963	188.5	165.2	9.98	8.74

^a Obtained by using the implicit price index for Business Gross Fixed Capital Formation.

Sources: Table 4; Royal Commission on Health Services, Report, Vol. I, Ottawa, Queen's Printer, 1964, Table 11-5, p. 433; Dominion Bureau of Statistics, National Accounts, Income and Expenditure, 1962 and 1963.

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increase in current dollar expenditures becomes 439 per cent when these expenditures are related to population.

It is also necessary to look at capital expenditures on hospitals in terms of constant dollar costs which indicate the actual physical volume of construction, machinery and equipment that the dollars are able to buy regardless of price increases. The impact of price changes on hospital capital costs has been estimated by assuming that the average prices paid for capital goods and services by hospitals increased to the same extent as the average prices of all capital goods purchased by the business sector of the economy (i.e., business gross fixed capital formation). The expenditures on hospital facilities for each year of the period were then revalued in terms of 1957 prices in order to obtain constant dollar estimates. Constant (1957) dollar expenditures on hospitals rose from \$44.7 million to \$165.2 million between 1945 and 1963, an increase of 270 per cent as compared with a 745 per cent rise in current dollar terms.

It now remains to examine hospital capital expenditures in terms of spending in constant (1957) dollars per capita, a measure which approximates the volume of hospital capital actually used by each person in the country. When these two yardsticks are applied the change in constant dollar investment in hospitals per member of

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the total population from \$3.70 in 1945 to \$8.74 in 1963 represents an increase of 136 per cent. This percentage rise in turn represents the net effect of changes in the volume of capital investment in hospital facilities while holding constant the value of the dollar and the size of the population. The propensity of the average Canadian to use increasing amounts of hospital capital means that the physical volume of gross investment in hospitals has been keeping pace fairly well with the rapidly increasing population in the postwar period.

The average rate of growth of capital expenditures on hospitals has been 13.9 per cent a year over the postwar period. Of this, 2.6 percentage points - almost one-fifth of total growth - can be attributed to population increase; increased prices accounted for 5 percentage points or almost 36 per cent of total growth; and 5.8 percentage points was attributable to increased hospital capital per person (over two-fifths of total growth).¹¹ While rising prices and a growing population have together been responsible for more than half of the increase in spending on hospital capital since the war, real per capita investment would have grown by almost 6 per cent a year even without any change in these two factors.

¹¹ Ibid., pp. 471-2.

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2. Qualitative Factors - The preceding section examined the major factors that have influenced directly the growth or level of capital spending on hospital facilities. However, there are a number of qualitative factors on both the supply and the demand side which have contributed substantially to the postwar increase in hospital capital expenditures. The upward trend of these expenditures reflects not only the decreased purchasing power of the construction dollar and a larger population, but also a higher rate of expansion and improvement of facilities.

On the supply side, the federal-provincial Hospital Construction Grants program, implemented in 1948 and expanded in 1958, has greatly stimulated the construction of new hospital and related health facilities as well as the extension and improvement of existing facilities. All provinces also provide capital assistance in varying degrees over and above the basic level of support under the grant program. In addition, prosperous economic conditions have made it possible for hospitals to obtain large subscriptions or donations from private individuals and corporations.

The changing nature of facilities being constructed, especially in connection with acute treatment hospitals, has been a factor contributing to the increase in hospital

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capital costs. The emphasis has changed from construction of new small hospital bed facilities in rural areas to expansion of large existing institutions in urban areas, with attention directed to development of highly specialized facilities as well as patient beds.¹² In addition, the rising standard of living of the Canadian public has forced the hospital to provide increasingly more luxurious facilities in recent years, e.g., private rooms, air conditioning, and other non-medical comforts.

On the demand side, the factors contributing to the postwar growth of capital expenditures on hospitals are numerous. One such factor has been the backlog created by the deferment of civilian construction during the war. Another has been the construction of hospitals to take care of the needs of returned veterans, which involved large outlays on the part of the federal government. Higher per capita income and living standards, as well as the development of voluntary and then governmental hospital insurance schemes, have been major causes of the increase in the utilization of hospitals per unit of population, which in turn has created a strong demand for additional hospital facilities.

¹² Canada, Department of National Health and Welfare, Research and Statistics Division, Hospital Care in Canada: Recent Trends and Developments, Health Care Series Memorandum No. 12, Ottawa, the Department, 1960, pp. 64-5.

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The postwar period has been characterized by great advances in medical science and technology which have required more complex capital equipment and more specialized facilities and services. The modern Canadian hospital has been required to supply highly specialized equipment for a wide range of services, including laboratory and radiological procedures, new medical and surgical techniques, and rehabilitation programs. All of these developments have called for larger capital outlays for hospital facilities in order to keep pace with technical and scientific advances in the diagnosis and treatment of disease or injury.

The growth of the supply of hospital facilities has taken place partly in response to the need to increase the productivity of physicians.¹³ The relatively long period of time required to train a physician, particularly in a specialty, has made it necessary to economize with regard to these scarce and expensive skills. This has been partly brought about by the increasing use of capital equipment in hospitals, which in turn has meant the concentration of care and treatment in hospital.

Other factors contributing to the substantial increase in capital expenditures on hospitals during the

¹³ Royal Commission on Health Services, op.cit., p. 465.

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postwar period include the growing concentration of population in urban areas, the greater scope and higher quality of service in large hospitals and, of course, the replacement of outmoded or obsolescent facilities.

D. Impact of Hospital Capital Investment
on the Supply and Utilization of
Hospital Facilities

It may be useful to consider briefly the impact that capital investment in hospital facilities has had on the supply and utilization of these facilities in Canada over the postwar period. A discussion of the impact on the supply of hospital facilities involves a look at the growth of the stock of hospital beds, especially in relation to population, and of special service facilities. The effect of such investment on the utilization of hospitals and their associated facilities will be examined in terms of the postwar increase in the volume of hospital care (measured in days of care per thousand population) and in the frequency with which people go to hospital (measured by admissions to hospital per thousand population).

1. Impact on Supply of Facilities

a) Bed Facilities - Significant advances have been made since the war in overcoming the shortages in hospital accommodation. The increased consumption of hospital services has been facilitated by a rapid expansion in the

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supply of hospital beds. New construction and the renovation of older hospitals have made available increasing numbers of hospital beds. Table 6 shows the growth in the number of beds and cribs set up in general and allied special, mental and tuberculosis hospital facilities over the fourteen-year period 1948-1962.

The overall supply of hospital beds in Canada increased by 42 per cent between 1948 and 1962. Practically all of this net gain in beds set up, however, was matched by population growth as the overall bed-population ratio moved up from 10.8 in 1948 to 11.5 beds per thousand population in 1953, dropped back to 11.1 in 1958, and by 1962 was back at the 1948 level of 10.8. Nevertheless, new construction has increased the total supply of beds in absolute terms and has also helped considerably to reduce overcrowding in hospitals and to replace obsolescent facilities. The rapid pace of modernization of Canada's hospital plant is indicated by the proportion of the 1962 bed capacity constructed since 1948, i.e., slightly more than 50 per cent in public general and allied special hospitals, about 50 per cent of the remaining tuberculosis sanatoria beds, and 25 per cent of mental hospital beds.¹⁴

¹⁴ Estimates based on bed construction data supplied by Health Grants Administration, Department of National Health and Welfare.

TABLE 6

Estimated Beds Set Up, Total and Per
Thousand Population, by Class of Hospital,
Canada, 1948, 1953, 1958, 1959 and 1962.

Year	General and Allied Special Hospitals	Mental Hospitals	Tubercu- losis Sanatoria	All Hospitals
<u>Total Number</u>				
1948	77,047	51,700	12,994	141,741
1953	92,861	60,887	16,783	170,531
1958	109,504	67,190	13,760	190,454
1959	107,918	66,724	12,770	187,412
1962	122,496	69,042	9,815	201,353
<u>Number Per Thousand Population</u>				
1948	5.9	3.9	1.0	10.8
1953	6.3	4.1	1.1	11.5
1958	6.4	3.9	0.8	11.1
1959	6.2	3.8	0.7	10.7
1962	6.6	3.7	0.5	10.8

Source: Department of National Health and Welfare,
Research and Statistics Division, Hospital Care in Canada:
Trends and Development 1948-1962, Health Care Series Memorandum
No. 19, Ottawa, the Department, 1964, Table A15, p. 94 and
Table A16, p. 95.

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The supply of beds in general and allied special hospitals rose from about 77,000 beds in 1948 to about 122,500 beds set up at the end of 1962, an increase of 59 per cent, or from 5.9 to 6.6 beds per thousand population, a gain of 12 per cent. Within this class of hospitals, public demand for more and better hospital facilities has focused primarily on acute treatment hospitals, the most expensive type of hospital facility. Non-federal acute treatment beds went up in number from 60,100 in 1948 to 96,200 in 1962, a rise of about 60 per cent, and the bed-population ratio moved up only from 4.6 to 5.2 beds per thousand population despite the emphasis on construction of this type of facility. Chronic-convalescent beds, on the other hand, increased at a faster rate of 197 per cent, from 5,800 beds or 0.4 per thousand population in 1948 to 17,300 beds or 0.9 per thousand population by the end of 1962, due to new construction, the reclassification of older acute treatment and tuberculosis facilities, and the upgrading of nursing home beds.

Mental hospital beds set up in 1962 totalled 69,000, an increase of 34 per cent from the 51,700 set up in 1948. When related to population, however, the number of available beds actually declined over the period from 3.9 to 3.7 beds per thousand population. This decrease in the bed-population ratio may reflect the growing availability and use of

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out-patient clinics, day care centers, and psychiatric units in general hospitals.

Because of recent achievements in the treatment and prevention of tuberculosis, the patient load in tuberculosis sanatoria has been declining during the last several years in contrast to the trend for other classes of hospitals, with the result that sanatoria facilities are now more than adequate for current requirements. Estimated beds set up in tuberculosis sanatoria numbered about 13,000 in 1948, reached a peak of 16,800 in 1953 and then gradually fell to 9,800 by 1962, a decline of 41 per cent. In relation to population, this decrease was reflected in a drop from 1.1 beds in 1953 to 0.5 beds per thousand population in 1962.

b) Special Service Facilities - Expansion of special service facilities in Canadian hospitals has paralleled the growth of hospital beds in the postwar period, thus increasing the scope and complexity of hospital service programs. These special facilities have been growing in quantity and improving in quality to keep pace with medical advances and with the expanding demand for more and better hospital care. Services developed over several decades are likely to be found in the majority of hospitals, while newer and more expensive facilities tend to be limited to larger institutions. The general trend,

however, is towards an increasing number of special facilities in each hospital.

The large number of special service facilities considered necessary for comprehensive hospital care varies according to the class of hospital.¹⁵ Basic among these facilities in general and allied special hospitals are clinical laboratories, radiology, physiotherapy, electrocardiography, dentistry and out-patient departments, as well as a host of other specialized facilities. In mental hospitals, special services such as psychotherapy, occupational therapy, social services and out-patient departments are significant. In tuberculosis sanatoria, laboratory and X-ray services, occupational therapy, surgery, and educational facilities are some of the more important services.

2. Effect on Utilization of Facilities - Hospital capital investment affects the utilization of hospital facilities through its impact on the supply of these facilities. The quantity of hospital facilities (physical plant) and the types of facilities available at any particular time may affect considerably the volume of hospital care provided.¹⁶ The construction of new bed capacity

¹⁵ Department of National Health and Welfare, op.cit., pp. 51-4.

¹⁶ Ibid., pp. 19-20.

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may partly reduce overcrowding and may also partly make possible an increased volume of hospital care. The availability of new bed capacity may stimulate increased demand for hospitalization by allowing unmet needs to be transformed into effective demand. One of the major consequences of the postwar growth in the stock of hospital beds in Canada has been a steady increase in the total volume of hospital care and in the total number of admissions to hospital. Table 7 indicates the increase in the number of admissions and days of care of adults and children in all public general and allied special hospitals (exclusive of private and federal hospitals) for every second year between 1948 and 1962.

In the year 1962, public general and allied special hospitals in Canada admitted almost 2.8 million adults and children, compared to about 1.4 million admissions in 1948. When related to a given unit of population, the number of admissions indicates the rate at which people go to hospital. Admissions to hospital per thousand population rose from 111 in 1948 to 149 in 1962, representing a gain of 34 per cent. The overall admission rate moved upward in every two-year interval over the period, reflecting the fact that public general and allied special hospitals in Canada have been used by an increasing proportion of the population at least every other year since 1948.

TABLE 7

Estimated Admissions and Days of Care,
Total and Per Thousand Population, in
Public General and Allied Special
Hospitals, Canada, 1948 - 1962.

Year	Admissions		Days of Care	
	Total Number	Number Per Thousand Population	Total Number	Number Per Thousand Population
1948	1,427,653	111	16,905,789	1,318
1950	1,588,247	119	18,848,072	1,411
1952	1,807,411	128	20,864,907	1,481
1954	2,010,432	132	23,428,151	1,533
1956	2,246,008	140	25,211,077	1,568
1958	2,422,417	142	26,947,969	1,578
1959	2,500,445	143	28,397,111	1,624
1960	2,588,999	145	29,598,225	1,656
1962	2,774,527	149	31,647,980	1,704

Source: Department of National Health and Welfare,
Research and Statistics Division, Hospital Care in Canada:
Trends and Development 1948 - 1962, Health Care Series Memorandum
No. 19, Ottawa, the Department, 1964, Tables A2-A5, pp. 81-4.

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The total number of patient-days of care spent in hospital provides a good measure of the volume of service furnished by hospitals to the public. Over 31.6 million days of in-patient care were supplied to adults and children by public general and allied special hospitals in 1962, compared to 16.9 million days of care in 1948. Although much of this growth reflects the rapid expansion of Canada's population, it also reflects the provision of an increasing volume of hospital care per person. From 1948 to 1962, total days of care per thousand population climbed steadily upward from 1,318 to 1,704, an increase of 29 per cent. The patient-day rate of public general and allied special hospitals in Canada also rose in every two-year interval during the period under review.

In Canada as a whole, then, the upward trend in the overall admission-population and patient day-population rates of public general and allied special hospitals since 1948 indicates that people today are using these hospitals more frequently than before, and that the volume of care provided by these hospitals is increasing at a faster rate than the growth of population. As more beds became available,¹⁷ more patients were accommodated and more days of

¹⁷ Beds set up in public general and allied special hospitals per thousand population increased from 4.8 in 1948 to 5.7 in 1962.

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care were provided because of a substantial increase in the hospital admission rate which more than offset a decline in the average length of hospital stay. In addition, the expansion of special service facilities in hospitals has made it possible for consumers to increase the amount of services they receive within each day of care. Therefore, it seems safe to conclude that the growth in the supply of hospital capital has had a definite impact on the utilization of hospital facilities in Canada.

E. Relationship Between Capital Expenditures
and Operating Costs

The importance of hospital capital expenditures in relation to operating costs lies in the fact that they usually involve major annual operating expenditures for thirty to fifty years following the original investment.¹⁸ Capital investment in hospital facilities also involves the problem of finding the manpower required for staffing these new facilities, particularly certain kinds of skilled personnel. Various aspects of the relationship between the two types of hospital expenditure will now be examined.

¹⁸ John H. Hayes, ed., Financing Hospital Care in the United States: Factors Affecting the Costs of Hospital Care, Vol. I of Report of Commission on Financing of Hospital Care, New York, Blakiston, 1954, p. 64.

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The nature and amount of capital investment in hospital facilities may strongly affect hospital operating costs.¹⁹ Such investment creates certain regular "fixed charges" (interest and depreciation) which do not vary in total amount with the volume of service provided in the hospital but add to the costs of this service. "Readiness-to-serve" costs (the minimum expenditures required to maintain and operate the hospital whether or not service is provided) are greatly affected by the nature and magnitude of investment in the hospital plant. The nature and magnitude of capital investment also have some effect on "service" costs (the costs of services provided directly to patients) which vary in relation to the number of patients served as well as the complexity, extent and quality of service given.

Another aspect of the relationship between hospital operating and capital expenditures involves those types of capital investment that are likely to yield net savings in hospital operating costs which will more than compensate for the resulting increase in interest and depreciation charges. Costs of providing services can often be reduced through such measures as more and better out-patient facilities, better hospital lay-out and design, and

¹⁹ Ibid., pp. 71-3.

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numerous cost-saving capital schemes designed to achieve economies of operation in ancillary service departments of hospitals. Studies have been carried out to estimate the percentage annual saving in costs of hospital operation which might accrue from a given amount of capital expenditures.²⁰

While current expenditures on hospital services cannot fall below a certain minimum each year if these services are to continue, capital expenditures can, on the other hand and within broad limits, be postponed for a limited period of time without greatly affecting the operation of hospital facilities. In the long run, however, capital needs must be met if hospital services are to be maintained at an adequate level and if the existing stock of capital is to be kept intact. It should be remembered that hospital buildings and the equipment they contain are the tools used by hospital personnel which enable them to carry out their various functions. As in other industries, the efficiency and effectiveness of hospital workers depend partly upon the volume and quality of the capital tools which support them in their activities and tasks.

²⁰ Brian Abel-Smith and Richard M. Titmuss, The Cost of the National Health Service in England and Wales, Cambridge, Cambridge University Press, 1956, pp. 133-6.

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The ratio of capital to operating expenditures in hospitals gives a rough indication of the adequacy of the capital support provided for hospital employees, although there is no particular ratio which could be considered as the standard one and a low ratio can reflect either restricted capital expenditures or high operating costs.²¹

The ratio of capital to operating expenditures for all classes of hospitals in Canada increased from 17 per cent in 1945 to 26 per cent in 1950 and to 30 per cent in 1955; the capital/current ratio then declined to 19 per cent in 1960 and, finally, to 16 per cent in 1963. In appraising this result, it must be kept in mind that expenditures for both capital and operating purposes throughout the period under review are not strictly comparable for various reasons; also that limited significance can be attached to data for one year only since capital expenditures can be postponed in the short run. Nevertheless, the order of difference in these ratio figures points to the declining importance of capital expenditures in the total picture of hospital expenditures in Canada.

²¹ Office of Health Economics, Hospital Costs in Perspective, London, O.H.E., 1963, p. 11.

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F. Sources of Funds for Financing
Capital Expenditures

Any analysis of the magnitude of capital expenditures on hospitals would be incomplete without giving some consideration to the sources of funds for financing these expenditures. Today, the major sources of funds for financing capital expenditures on all hospitals include philanthropy, other private sources, and government subsidies. It has been estimated that, from 1953 to 1961, privately financed expenditures on hospital construction in Canada, accounting for one-third of all such expenditures, rose from \$39.5 million to \$58.6 million, while publicly financed expenditures, representing two-thirds of total expenditures on hospital construction, increased slightly more rapidly from \$78.8 million to \$119.2 million over the same period.²²

In earlier years, voluntary hospitals were dependent primarily on the effort and benevolence of private groups and individuals for capital funds, municipal hospitals were dependent on local tax funds, while provincial and federal funds were allocated mainly to construction of certain special hospitals operated by these governments. In the postwar period, however, three

²² Royal Commission on Health Services,
op.cit., p. 479.

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factors seem to have changed this pattern of financing: rising costs of hospital construction, the effect of income taxes on philanthropic resources, and the transfer to the public sector of the financing of hospital operating costs. Due to these and other factors, the financing of hospital capital expenditures became increasingly a responsibility of government although the proportion of costs assumed by government has varied considerably from one province to another.²³

1. Philanthropy and Other Private Sources -

Funds for the construction or modification of voluntary non-profit hospitals still come to a considerable extent from individual and corporate donations, public subscription drives, and religious organizations sponsoring hospitals. Industrial and commercial firms contribute a significant share of donated capital funds.

One private source of capital financing other than philanthropy consists of funds accumulated by hospitals from operating, capital or endowment income and used for constructing a new building or modifying an existing one. Another private source of capital funds consists of bond issues, debentures, mortgages and commercial loans used by hospitals to meet part of the cost of their capital

²³ Ibid., p. 9.

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requirements.

2. Local Responsibility - Support from municipalities in the provision of voluntary hospital facilities has taken the form of direct lump-sum grants, special tax exemptions, and the guarantee of hospital bonds. In many instances, municipalities lacking sufficient voluntary facilities have constructed their own hospitals financed from local tax funds. Some provinces, particularly the Prairie Provinces, have authorized the formation of inter-municipal hospital taxing districts for the development of facilities in sparsely settled and rural areas.

In Nova Scotia and the Northwest Territories, the municipalities are responsible for the repayment of hospital capital debt. In Prince Edward Island and Manitoba, the local community is required to contribute a specified share towards the repayment of hospital capital debt.

3. Provincial Assistance - Provincial assistance in financing hospital capital costs began with the introduction of capital grants by Saskatchewan in 1944 and Ontario in 1947 in order to stimulate construction which would remedy serious deficiencies in hospital bed accommodation. Since 1948, all provinces have participated in the federal-provincial Hospital Construction Grants

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program, under which provincial governments at least match federal grant contributions. While some provinces have introduced additional grant assistance for various types of hospital facilities, other provinces have made provision for the repayment of hospital capital debt.

Six provinces - Newfoundland, Nova Scotia, Quebec, Ontario, Saskatchewan and British Columbia - and the Northwest Territories provide supplementary grant assistance focused on new construction and renovation, over and above the basic level of support under the federal-provincial Hospital Construction Grants program. Grant contributions are based on either a specified amount per hospital bed or a fixed percentage of approved costs, or both. Two provinces - Nova Scotia and Ontario - have established loan funds from which municipalities or hospitals may borrow for construction purposes.

Five provinces - Prince Edward Island, New Brunswick, Manitoba, Saskatchewan and Alberta - and the Yukon Territory have accepted varying degrees of financial responsibility for the repayment of principal and interest on hospital capital debt. Manitoba makes payments to hospitals for depreciation on buildings as part of its hospital insurance payment provisions, while British Columbia makes payments to hospitals for interest on capital debt through the hospital insurance mechanism.

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In considering the income sources from which hospitals may obtain funds either to finance construction costs or to repay capital debt, it should be noted that most provinces permit hospitals to retain either part or all of the revenue from differential charges for private and semi-private accommodation after the federal government has deducted 50 per cent of this revenue from hospital expenses for cost-sharing purposes under the federal-provincial hospital insurance program.

4. Federal Hospital Construction Grants - The federal Hospital Construction Grants, introduced in 1948 as part of the National Health Grants Program and expanded considerably in 1958, are designed to assist the provinces in the provision of adequate hospital and related health facilities. Under the terms of the Grants, the federal government may contribute up to \$2,000 for the construction of each approved hospital bed - whether active treatment, chronic, convalescent, mental or tuberculosis - and for each bed equivalent²⁴ in certain special facilities, as well as \$750 per bed for the construction of living quarters for nurses and interns. In addition, funds are made available to help meet the cost of approved major renovations or alterations to existing facilities. In all cases, the

²⁴ Based on a specified number of square feet of space.

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provinces must at least match the federal contribution which cannot exceed one-third of the actual total cost. In the fiscal year 1965-66, a total amount of \$28,073,332 was made available, including \$20,367,320 as the annual allocation for new construction to be distributed among the provinces on a population basis, plus \$7,706,012 revoted as funds for projects begun but not yet completed in previous fiscal years.

During the first seventeen years of the program, that is, between April 1, 1948 and March 31, 1965, about \$232.1 million were made available by the federal government for hospital construction grants. Amounts actually expended during this period totalled approximately \$216.3 million, or 93 per cent of the amount available. The distribution of the grants by province is shown in Table 8. Percentages spent by province varied from 13.1 per cent in the Yukon to 99.0 per cent in Alberta.

From the inception of the Hospital Construction Grants up to March 31, 1965, federal assistance for construction had been approved for 74,190 active treatment beds, 12,159 chronic or convalescent beds, 25,359 mental beds, 5,307 tuberculosis beds, 14,901 bassinets, 22,555 nurses' beds, 918 internes' beds and 22,096.2 bed equivalents.

TABLE 8

Federal Hospital Construction Grants,
Amounts Available and Amounts and
Percentages Expended, by Province,
1948/49 - 1964/65.

Province	Amount Available	Amount Expended	Percentage Expended
	\$	\$	%
Newfoundland ^a	5,795,324	4,307,396	74.3
Prince Edward Island	1,467,759	1,234,624	84.1
Nova Scotia	10,040,078	9,374,303	93.4
New Brunswick	8,138,148	7,206,203	88.6
Quebec	66,808,513	63,109,244	94.5
Ontario	77,848,962	74,976,102	96.3
Manitoba	12,323,856	11,467,529	93.1
Saskatchewan	12,885,321	11,537,828	89.5
Alberta	16,124,595	15,970,021	99.0
British Columbia	20,136,797	17,021,125	84.5
Northwest Territories ^b	300,842	95,076	31.6
Yukon Territory ^b	181,617	23,855	13.1
CANADA	232,051,812	216,323,306	93.2

^a 1949/50 - 1964/65.

^b 1952/53 - 1964/65.

Source: Data provided by Health Grants Administration,
Department of National Health and Welfare.

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The federal government provides through the Hospital Construction Grants approximately 15 per cent of the cost of hospital facilities and, through the hospital insurance program, about half the cost of equipment.²⁵

It also indirectly encourages philanthropic contributions to hospital capital funds to some extent by permitting deduction of such donations from income for tax purposes. In addition, the federal Excise Tax Act makes provision for exemption from sales tax of equipment and materials used in hospital construction projects.

Despite the continuing importance of philanthropic or voluntary contributions, governments have subsidized, to a considerable degree, the expansion of supply of hospital facilities in Canada. Over \$216 million have been spent by the federal government on hospital construction since 1948, an even greater amount by the provinces in the same period, and substantial amounts contributed by municipal governments and hospital taxing districts. The supply of beds in mental hospitals and tuberculosis sanatoria has been built almost entirely from public funds, while a sizeable proportion of the cost of building and equipping general and allied special hospitals has also been financed by the public sector of the economy.

²⁵ Royal Commission on Health Services,
op.cit., p. 56.

CHAPTER III

FACTORS AFFECTING VARIATIONS AND INCREASES
IN HOSPITAL OPERATING COSTS

The preceding chapter examined the capital investment in the nation's hospital services industry; the cost of operating and maintaining this industry will be analyzed in the present chapter. Vast amounts of money are spent by hospitals of all types on their current operations in providing or making potentially available hospital services to the public. These expenditures presently constitute the largest single item in total Canadian outlays for personal health care and represent a significant proportion of the community's total spending for all health purposes.

It is the purpose of this chapter to examine, first of all, some recent trends in the operating expenditures of all classes of hospitals in Canada. Brief consideration is therefore given to the growth of total operating expenditures for each class of hospital over the decade from 1953 to 1963 and to changes in the distribution of these expenditures among the different classes. Secondly, reference is made to the question of variations in the level of hospital operating costs among the different provinces and classes of hospitals - to what extent do these costs vary and why? In answering this question, variations in

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per diem and per capita operating costs from one province and class of hospital to another are analyzed in the year 1963; a review of some of the factors underlying these variations is also included in the discussion. Thirdly, a detailed examination in some depth is made of the principal factors affecting the rapid increase of hospital operating costs in Canada during the postwar period (1947-1963). These factors are classified into four groups and an attempt is made to measure the relative contribution of each group to the rise in the cost of hospital operation. Consideration is then given to some of the more important factors which have an influence on the rate of utilization and therefore the operating costs of hospitals, particularly general and allied special hospitals. The chapter concludes with an analysis of the various factors affecting the increase in the per diem operating costs of hospitals, with special emphasis on those factors associated with the payroll component of such costs and with advances in medical science and technology.

Hospital operating costs comprise expenditures on gross salaries and wages of medical, nursing, para-medical and all other auxiliary personnel employed by the hospital; medical and surgical supplies; food, drugs and household supplies; heat, light and power; the purchase of movable and non-movable furniture and equipment; the maintenance

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of land, buildings and equipment; administration; certain capital items including the rental of land and buildings, interest on capital debt, and depreciation on the value of land improvements, buildings and equipment; and other goods and services purchased in connection with the day-to-day operation and maintenance of the physical plant. This study is concerned with the gross operating expenditures of hospitals since the salary and wage component of these expenditures includes the value of perquisites (allowances for meals, lodging, and laundry services) supplied to hospital employees as either a portion of, or a supplement to, their remuneration.

In many hospitals, and particularly in teaching hospitals, expenditures on education and research are very closely tied in with the cost of providing services to patients. As a result it becomes almost impossible to determine how much of the cost of a given service is incurred for research, how much for teaching and how much for treatment purposes. For this reason, the costs of training and research are included as part of the operating expenditures of hospitals since these items cannot in practice be separated from the other costs of operation.

A large proportion of the total operating costs of hospitals are what may be called "readiness-to-serve" costs. These preparedness or stand-by costs include the

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minimum expenditures required to maintain and operate the hospital, whether or not service is provided. Hospitals serve the entire population at all times merely by their existence. The services of these institutions are maintained in readiness for use by any member of the community whenever the need arises. Thus, the readiness-to-serve costs of a hospital are a logical claim against the whole community rather than just the patients treated by the hospital.

For comparative purposes the cost of operation of hospitals can be measured in various ways.¹ Total operating cost may change as a result of changes in the nature or volume of services, cost of services, population, admission rate and length of stay. The usual measure of unit cost - cost per patient-day - may vary as a result of changes in services or their costs and in length of stay, but is not affected by changes in population or admission rate. Cost per patient-stay changes with variations in cost per day or in length of stay and reflects the average cost of treating an individual patient. Cost per capita varies with a change in any of the factors affecting total cost except population and is used for calculating federal

¹ Walter J. McNerney et al., Hospital and Medical Economics: A Study of Population, Services, Costs, Methods of Payment, and Controls, Vol. 2., Chicago, Hospital Research and Educational Trust, 1962, p. 757.

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payments to the provinces under the federal-provincial hospital insurance program. Other measures of hospital operating costs relate such costs to admissions, separations, bed occupancy, beds set up, rated bed capacity, and bed-days.

These various measures can be used to gauge the changes that have occurred in the operating costs of hospitals from one year to another or over a given period of years, and to analyze variations in these costs among provinces and different classes, types and sizes of hospitals. It should be pointed out, however, that in itself no single measurement of costs is conclusive; each such measure is based upon aggregates which are continually changing and must be viewed within the broader context of all the factors affecting the operating expenditures of hospitals. Also, none of these measures takes into account the increase in the prices of goods and services purchased by hospitals. For the purposes of this study, however, total cost, cost per patient-day and cost per capita are perhaps the most appropriate measures of hospital operating costs.

A. Trends in Hospital Operating
Expenditures, 1953-1963

Recent years have witnessed a rapid rise in the operating expenditures of Canadian hospitals. While some of this has been caused by inflation and population growth,

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much of the increase has been the direct result of a greater quantity and variety of hospital services as well as improvement in the quality of such services. These factors will be treated at some length further on in this chapter.

Table 9 shows the growth of gross operating expenditures of all hospitals in Canada over the decade 1953-1963, as well as the distribution of these expenditures among the different classes of hospitals. In 1953, the annual operating expenditures of all Canadian hospitals amounted to \$404 million; by 1963, this figure had risen to an estimated \$1,156.3 million, representing a ten-year increase of 186 per cent. The annual rate of increase during this period varied from a minimum of 7.4 per cent, between 1954 and 1955, to a maximum of 14.7 per cent, between 1958 and 1959. The average percentage increase from year to year over the decade was 11.1 per cent.

As in the case of total operating expenditures of all hospitals, the operating costs of each class of hospital in Canada, with the exception of tuberculosis sanatoria, rose uninterruptedly throughout the period 1953-1963. In 1953, 70 per cent of the cost of operating and maintaining all hospitals was devoted to non-federal general and allied special hospitals, the largest expenditure group, while mental hospitals absorbed 14 per cent of the total cost, tuberculosis sanatoria 7 per cent, and

Table 9
Estimated Total Gross Operating Expenditures,
by Class of Hospital, Canada, 1953-1963.
(Current Dollars)

Year	General and Allied Special Hospitals ^a	Mental Hospitals ^a	Tubercu- losis Sanatoria ^a	Federal Hospitals ^b	All Hospitals
	\$m.	\$m.	\$m.	\$m.	\$m.
1953	280.4	57.8	29.4	36.4	404.0
1954	314.0	64.5	30.4	37.9	446.8
1955	342.4	68.9	29.9	38.8	480.0
1956	380.8	77.6	30.6	40.8	529.8
1957	422.9	87.5	31.0	45.3	586.7
1958	462.3	99.0	30.4	48.4	640.1
1959	542.6	111.6	29.6	50.3	734.1
1960	625.2	120.2	29.0	53.9	828.3
1961	714.8	132.8	28.3	56.8	932.7
1962	802.4	144.3	33.1 ^c	60.5	1,040.3
1963	899.7	162.5	30.7 ^c	63.4	1,156.3

^a Includes public and private hospitals, but excludes federal hospitals.

^b Data for fiscal years adjusted to calendar-year basis. Includes hospitals of all types operated by the Departments of Veterans Affairs and National Health and Welfare, but excludes Department of National Defence hospitals.

^c Magnitude of expenditures is distorted by reclassification of certain tuberculosis units to sanatoria.

Sources: Department of National Health and Welfare, Research and Statistics Division, Expenditures on Personal Health Care in Canada 1953-1961; Department of Finance, Public Accounts of Canada, 1962-63 and 1963-64, Vol. II; Dominion Bureau of Statistics, Mental Health Statistics 1963, Vol. III and Tuberculosis Statistics 1963, Vol. II; and unpublished 1963 data supplied by Health Insurance Administration and Research and Statistics Directorate, Department of National Health and Welfare.

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federal hospitals 9 per cent. Ten years later, in 1963, general and allied special hospitals accounted for a greater proportion of total operating costs, 78 per cent; the share of the total cost absorbed by mental hospitals remained the same, while the proportions represented by tuberculosis sanatoria and federal hospitals declined to 3 per cent and 5 per cent respectively.

From 1953 to 1963, the operating expenses of non-federal general and allied special hospitals rose from \$280.4 million to \$899.7 million, an increase of 221 per cent. During the period 1953-1958 these expenditures grew at an average rate of about 10.5 per cent each year. In 1959, the first full calendar year following the implementation of the federal-provincial hospital insurance program, there occurred a sharp percentage increase (17.4 per cent) in operating expenditures for this class of hospital. Subsequent years, however, were characterized by a moderation of the rate of increase in expenditures, with an increase of 12.1 per cent between 1962 and 1963.

Mental hospitals of all types spent an estimated \$162.5 million on their current operations in 1963, representing a rise of 181 per cent from the 1953 figure of \$57.8 million. A recent development that should be kept in mind when examining these data has been the establishment of psychiatric units within general hospitals. The

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operating expenditures of these units are included with those of their parent hospitals and therefore are not available at present. If the costs of psychiatric units had been determined and added to the mental hospital figures, the rate of increase of the latter would undoubtedly have been accelerated.²

Unlike the other classes of Canadian hospitals, the operating cost of tuberculosis sanatoria has remained fairly constant over the 1953-1963 period. A moderate upward trend experienced between 1953 and 1957 was followed by a gradual reduction to an estimated level of \$28.3 million in 1961. After rising to \$33.1 million in 1962, these expenditures declined to \$30.7 million in 1963, a gain of only 4.4 per cent over 1953. It would appear, therefore, that the decline in the incidence of tuberculosis and in the patient load of sanatoria during recent years has generally offset any increase in operating costs resulting from inflation, population growth and other factors.

In the year 1963, the operating expenditures of federal hospitals, that is, those owned and operated by

² Canada, Department of National Health and Welfare, Research and Statistics Division, Expenditures on Personal Health Care in Canada 1953-1961, Health Care Series Memorandum No. 16, Ottawa, the Department, 1963, p. 24.

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the Departments of National Health and Welfare and Veterans Affairs, reached an estimated \$63.4 million which is 74 per cent more than the amount expended ten years earlier, \$36.4 million. These figures relate to federal hospitals of all types - acute treatment, chronic, convalescent, mental and tuberculosis. No financial information could be obtained for hospitals of the Department of National Defence since the operating costs of almost all of these hospitals cannot be segregated from the total costs of operating the military bases on which they are located.

B. Variations in Operating Costs of Hospital Care

One of the most striking characteristics of hospitals is the wide variation in their operating expenditures especially when these expenditures are related to the volume of care provided and to the population. This is demonstrated in tabular form in the present section where the gross operating expenditures of all non-federal public hospitals in Canada are expressed in terms of costs per patient-day of care and costs per capita, and are distributed by province for each class of hospital. The magnitude of variations in hospital operating costs during a one-year period (1963) will be analyzed, with consideration being given to some of the factors behind these variations.

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Although the analysis has been limited to one year, it should be remembered that there is also considerable variation among provinces and from one class of hospital to another in the percentage increase of per diem and per capita operating costs from year to year or over a given number of years.

1. Per Diem Costs - The average cost of hospital operation per patient-day of care (per diem costs)³ varies widely by class of hospital, size and type of hospital, scope of service program, location of hospital, proportion of payroll expense and a number of other factors. Each of these factors must be considered not only by itself but also in relation to the others. In other words, per diem costs are affected by so many interdependent factors that caution must be exercised in drawing general conclusions concerning the variability in hospital operating costs.

³ Average cost per patient-day is the usual measure of unit cost (cost per unit of care provided) and is obtained by dividing total operating expenditures by the number of patient-days during the year for adults and children. One limitation of this cost ratio is that total operating expenses include the cost of both in-patient and out-patient services while patient-days relate to in-patient care only. Moreover, the allocation of operating expenditures to patient-days of adults and children means a slightly higher patient-day cost than if newborn days were included in the calculations, but in so doing, average per diem costs will be comparable from one class of hospital to another.

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Table 10 shows that, in 1963, Canada's average cost per patient-day was \$27.60 in public general and allied special hospitals, \$6.69 in mental hospitals and \$15.64 in Tuberculosis sanatoria. Indicative of the greater cost of acute treatment or short-term care is the fact that average per diem costs in general and allied special hospitals are more than four times as high as comparable costs in mental hospitals. The higher costs per patient-day in the general and allied special class are associated with a proportionately greater intensity or volume of service per day, while the lower per diem costs in mental hospitals reflect the provision of a much more limited number of services per day over a considerably longer period of time. Therefore, it cannot be said that mental hospitals operate more efficiently simply because their cost per day is lower.

Within each class of hospital, operating expenditures per patient-day will vary according to the type of institution. Generally speaking, per diem costs are substantially lower in extended treatment than in acute treatment hospitals mainly because of the longer duration of patient stay, slower turnover of beds and relatively less active medical care in the former type of hospital. Thus, the average cost per patient-day of care in 1963 varied from \$13.83 in chronic, convalescent and

Table 10

Estimated Gross Operating Expenditures Per
Patient-day,^a by Class of Hospital^b and
by Province, 1963.

Province	Public General and Allied Special Hospitals	Mental Hospitals	Tubercu- losis Sanatoria
	\$	\$	\$
Newfoundland	22.57	9.32	18.19
Prince Edward Island	20.31	5.45	14.58
Nova Scotia	27.41	5.77	19.68
New Brunswick	27.45	5.73	17.35
Quebec	27.63	4.78	12.87 ^c
Ontario	28.00	8.53	17.06
Manitoba	24.25	5.67	10.86
Saskatchewan	22.36	7.04	15.48
Alberta	23.17	6.97	19.55
British Columbia	26.27	7.54	20.83
Yukon Territory	45.32	-	-
Northwest Territories	25.51	-	-
CANADA	27.60	6.69	15.64

^a Patient-days during year for adults and children.

^b Excludes all private and federal hospitals.

^c Based on expenditure data reported by eight public sanatoria which accounted for about 55 per cent of all tuberculosis beds in the province.

Sources: Dominion Bureau of Statistics, Hospital Statistics 1963, Preliminary Annual Report, Mental Health Statistics 1963, Vol. III and Tuberculosis Statistics 1963, Vol. II.

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rehabilitation hospitals to \$29.44 in general hospitals in the public category.⁴ During the same year, the cost per patient-day ranged between \$5.97 in hospitals for mental defectives and \$13.98 in psychiatric hospitals.⁵

Cost per patient-day varies to an appreciable extent with the average size of hospital (number of beds), the cost rising generally as the hospital becomes larger due to the wider scope of service offered. In all public general hospitals in Canada, the 1963 per diem cost declined from \$24.62 in the 1-9 bed group to \$20.33 in the 10-24 bed group, then rose steadily to \$36.34 in the 1,000 bed plus group.⁶ Thus, the average per diem expense in the group of largest hospitals was almost four-fifths greater than in the group of second-smallest hospitals. Although the average expense per patient-day tends to be higher in larger hospitals, some small hospitals have relatively high costs and some large hospitals have relatively low costs; also, per diem expense varies within all bed-size groups

⁴ Canada, Dominion Bureau of Statistics, Hospital Statistics 1963, Preliminary Annual Report, Ottawa, Queen's Printer, 1964, p. 21.

⁵ Canada, Dominion Bureau of Statistics, Mental Health Statistics 1963, Vol. III, Ottawa, Queen's Printer, 1965, p. 50.

⁶ Canada, Dominion Bureau of Statistics, Hospital Statistics 1963, Preliminary Annual Report, Ottawa, Queen's Printer, 1964, p.21.

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of hospitals.

As hospitals become larger up to a certain point, per diem (unit) costs tend to fall as a result of economies associated with the greater scale of operations, e.g., division of labour and specialization as well as technical, marketing, managerial and financial economies. Beyond this point, however, an increase in size will tend to raise unit costs since the wider scope and better quality of services usually provided by larger hospitals tend to offset any economies of scale.

One of the most important factors affecting the level of costs per patient-day among hospitals is the scope of the hospital service program as measured by the number of special services offered, e.g., laboratory and radiology services, electrocardiography, physio and occupational therapy, out-patient services.⁷ As a general rule, the hospitals with the most comprehensive service programs have the highest per diem costs, while hospitals providing a limited scope of service have relatively low unit costs. The complexity and quality of special services provided as well as the frequency and intensity of use of these services undoubtedly affect per diem expense.

⁷ John H. Hayes, ed., Financing Hospital Care in the United States: Factors Affecting the Costs of Hospital Care, Vol. I of Report of Commission on Financing of Hospital Care, New York, Blakiston, 1954, pp. 110-13.

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Hospital payroll is another major factor in the explanation of per diem cost variations among hospitals.⁸ The payroll component usually constitutes a larger proportion of total operating expenses in hospitals with relatively high costs per patient-day than in hospitals with relatively low per diem costs. This higher proportion of payroll expense can be associated with a higher ratio of employees to patients, higher rates of pay for similar jobs, and a greater proportion of highly paid skilled workers in the professional and technical categories.

Other internal factors which affect the level of operating expenditures per patient-day among different hospitals include the average length of patient stay, the occupancy rate, the cost of medical research conducted in hospitals, medical and paramedical (including nursing) education programs conducted in the hospital setting, and accreditation or approval by voluntary and governmental agencies with regard to services offered and educational programs conducted by hospitals. Variations in per diem costs of hospital operation may also arise from differences in the age of hospital buildings and quality of equipment as well as from differences in managerial policies and efficiency.

⁸ Ibid., pp. 116-8; McNerney, op.cit., pp. 776-80.

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Variations among provinces in the average cost per patient-day of operating hospitals are considerable, as indicated in Table 10. Excluding the Yukon and Northwest Territories, the per diem cost in public general and allied special hospitals for 1963 ranged from \$20.31 in Prince Edward Island to \$28.00 in Ontario. It is interesting to note that salaries and wages consumed 55.4 per cent of total operating costs in Prince Edward Island and 67.5 per cent of the total expense in Ontario. It may also be observed that provinces with substantial areas of thinly distributed rural population and many small hospitals to serve them, such as Newfoundland, Prince Edward Island, Manitoba, Saskatchewan and Alberta, had below-average expenditures per patient-day in their public general and allied special hospitals.

In the same year, tuberculosis sanatoria in British Columbia showed the highest per diem cost (\$20.83), while those in Manitoba were lowest (\$10.86); for mental hospitals, the variation in average cost per patient-day extended from \$4.78 in Quebec to \$9.32 in Newfoundland (based on one hospital operating). For both these classes of hospitals, the provinces with comparatively high per diem costs in most cases spent proportionately more on salaries and wages than those with relatively low costs per patient-day.

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Provincial variations in per diem expense result from the influence of provincial variations in such factors as wage and price levels, climatic conditions, standards of hospital care, average size of hospital and scope of service.⁹ Variations from province to province in average cost per patient-day also reflect differences in per capita disposable income, degree of utilization of personnel and facilities, demographic and morbidity characteristics, and degree of urbanization. Within each province, the per diem cost of hospital operation varies widely by location of hospital, depending upon a number of geographic characteristics or factors external to the hospital, e.g., local economic conditions (cost of labour and supplies, standard of living), urban or rural location, size and population of city, and other local considerations related to climate, demography and morbidity.

2. Per Capita Costs - The per capita cost of hospital operation, which represents the average when total operating expense for a given year is distributed for each individual in the population, varies substantially by class of hospital and from one province to another. As shown in Table 11, the national average per capita cost in 1963 was estimated to be \$46.54 in public general and allied special

⁹ Hayes, op.cit., pp. 105-7.

Table 11

Estimated Gross Operating Expenditures
Per Capita,^a by Class of Hospital^b
and by Province, 1963

Province	Public General and Allied Special Hospitals	Mental Hospitals	Tubercu- losis Sanatoria	All Public Hospitals
	\$	\$	\$	\$
Newfoundland	29.63	6.05	4.03	39.70
Prince Edward Island	33.36	6.25	3.22	42.82
Nova Scotia	40.23	7.59	2.91	50.73
New Brunswick	46.96	6.49	3.80	57.25
Quebec	45.29	6.62	1.52 ^c	53.43
Ontario	50.36	9.79	1.26	61.41
Manitoba	45.12	7.52	1.82	54.46
Saskatchewan	50.96	12.03	1.42	64.42
Alberta	45.71	8.52	1.79	56.01
British Columbia	43.65	9.90	1.08	54.63
Yukon Territory	11.67	-	-	11.67
Northwest Territories	47.33	-	-	47.33
CANADA	46.54	8.45	1.62	56.61

^a Based on revised intercensal population estimates as at June 1, 1963, prepared by Dominion Bureau of Statistics.

^b Excludes all private and federal hospitals.

^c Based on expenditure data reported by eight public sanatoria which accounted for about 55 per cent of all tuberculosis beds in the province.

Sources: Dominion Bureau of Statistics, Hospital Statistics 1963, Preliminary Annual Report, Mental Health Statistics 1963, Vol. III and Tuberculosis Statistics 1963, Vol. II.

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hospitals, \$8.45 in mental hospitals and \$1.62 in tuberculosis sanatoria. The per capita cost in all non-federal public hospitals averaged \$56.61. These variations obviously reflect differences in the quantity of physical and human resources allocated to each of the various classes of public hospitals in Canada and the relative magnitude of the operating expenditures of each class of hospital.

Table 11 also indicates that the province of Saskatchewan had the highest per capita expenditure during 1963 for general and allied special hospitals (\$50.96) as well as for mental hospitals (\$12.03), while Newfoundland experienced the lowest per capita cost for both classes of hospitals (\$29.63 and \$6.05 respectively) if the Northwest and Yukon Territories are excluded from the analysis. Ontario kept above the national average per capita level of expenditure for both classes of hospitals, but Prince Edward Island, Nova Scotia, Quebec and Manitoba were all below the national average of \$46.54 (general and allied special hospitals) and \$8.45 (mental hospitals). Alberta and British Columbia had above-average expenditures per capita in their mental hospitals and below-average rates in their general and allied special hospitals; the converse was the case with New Brunswick.

Provincial comparisons concerning tuberculosis sanatoria are somewhat invalidated by the absence of

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comparable cost data on federal sanatoria and tuberculosis units in general hospitals. Generally speaking, however, the Atlantic Provinces, with a comparatively high incidence of tuberculosis, had the highest per capita levels of expenditure in this field.

Variations among provinces in the average per capita operating expenditures of hospitals are influenced by differences in the supply and utilization of hospital facilities, services and personnel as well as by wage and price differentials. Other factors affecting provincial variations in per capita cost include per capita disposable income, climate, patterns of morbidity, birth and death rates, and the age-sex and rural-urban distribution of the population.

C. Factors Affecting the Rise in
Hospital Operating Costs

As Table 12 indicates, the total operating expenditures of all classes of hospitals in Canada rose from \$186.7 million in 1947 to \$1,156.3 million in 1963, representing a sixteen-year increase of 519 per cent. This rise in total operating costs may be viewed as the composite result of a number of factors which can perhaps be classified into four groups: (1) inflation, (2) total population growth, (3) changing utilization of hospitals per unit of

Table 12
Selected Indices of Estimated Total Gross Operating
Expenditures of All Hospitals, Canada, 1947-1963.

Year	Estimated Gross Operating Expenditures			
	Current Dollars	Constant (1957) Dollars ^a	Constant (1957) Dollars Per Capita	Constant (1957) Dollars Per Patient ^b Per day of Care
	\$m.	\$m.	\$	\$
1947	186.7	367.4	29.27	8.17
1948	215.0	384.0	29.94	8.35
1949	247.1	403.5	30.01	8.42
1950	283.3	431.2	31.45	8.70
1951	326.4	447.4	31.94	8.70
1952	356.5	471.3	32.59	8.75
1953	404.0	487.0	32.80	8.73
1954	446.8	517.0	33.82	8.92
1955	480.0	531.0	33.83	9.02
1956	529.8	560.7	34.87	9.23
1957	586.7	586.7	35.32	9.53
1958	640.1	617.6	36.16	9.90
1959	734.1	688.6	39.39	10.93
1960	828.3	759.9	42.52	11.71
1961	932.7	840.3	46.07	12.75
1962	1,040.3	920.6	49.57	13.77
1963	1,156.3	1,005.5	53.21	14.76

^a Based on implicit price index of expenditures on hospital services as constructed by the Royal Commission on Health Services in Vol. I of its report (Table 11-11, pp. 448-9).

^b Patient-days during year for adults, children and newborns.

Sources: Table 9; Royal Commission on Health Services, Report, Vol. I, Ottawa, Queen's Printer, 1964, Table 11-1, pp. 426-7, Table 11-12, p. 451 and Table 11-13, p. 452; and supplementary data.

population, and (4) increased quality and quantity of hospital service per patient-day.¹⁰ While the first two factors are external forces clearly beyond the control of hospital management, the third factor is at least partially subject to control by physicians and hospital administrators, and the fourth factor relates specifically to internal changes in the quality, utilization and organization of hospital services. The relative influence of each factor on the rapid growth of hospital operating costs will be examined, with further consideration being given to some of the economic, social and scientific forces behind these factors. Better understanding of the various factors underlying changes in the operating costs of hospitals is important not only for projecting such costs in the future, but also for gauging changes in rates of payment to hospitals by provincial hospital insurance authorities. It should be pointed out that if changes in trends from year to year or from one sub-period to another rather than changes over the period 1947-1963 as a whole were to be analyzed, some of the conclusions drawn in this section might prove to be invalid and thus might require modification.

1. Quantitative Analysis of Factors - The relative contribution of each of the above-mentioned factors to the rise of hospital operating costs in Canada during the postwar

¹⁰ Canada, Department of National Health and Welfare, Research and Statistics Division, Hospital Care in Canada: Recent Trends and Developments, Health Care Series Memorandum No. 12, Ottawa, the Department, 1960, p. 56.

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period can be measured by recalculating the 1963 estimated expenditures as if the purchasing power of the dollar, the total population and the rate of hospital utilization by that population had remained constant throughout the period of comparison. Table 12 contains estimates of total operating expenditures for all classes of hospitals combined between the years 1947 and 1963 on a constant (1957) dollar basis which eliminates the effect of price change, as well as on a per capita and per diem basis which eliminates the effect of changes in population and utilization rates respectively. It should be kept in mind that these estimates are only approximations of the various factors involved when drawing any conclusions from the data presented.

Like all other sectors of the national economy, hospitals have been forced each year to spend larger amounts of money to obtain the same quantity of goods and services because of increases in prices. The impact of the inflationary component on the cost of hospital operation has been estimated by using the implicit price index of expenditures on hospital services constructed by the Royal Commission on Health Services in its recent report.¹¹ On the basis of this index, one dollar in 1957 was equivalent to 51 cents in 1947 and to \$1.15 in 1963. When both the 1947 and 1963 estimated total operating expenditures are expressed in terms of constant (1957)

¹¹ Canada, Royal Commission on Health Services, Report, Vol. I, Ottawa, Queen's Printer, 1964, pp. 448-9.

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prices, the increase in the expenditures of all classes of hospitals becomes 174 per cent, which is substantially less than the 519 per cent rise without any adjustment for inflation. Thus, approximately two-thirds of the increase in total operating expenditures of hospitals since 1947 may be attributed to price inflation. It is interesting to note that, while the price level of goods and services purchased by hospitals has risen at an annual average rate of about 6.5 per cent in the postwar period, the contribution of price increase to the growth rate of spending on hospital operation has diminished in each five-year period since 1945, declining from around 11 per cent a year in the quinquennium 1945-49 to 2.6 per cent in the period 1957-61.¹²

Part of the increase in hospital operating expenditures from 1947 to 1963 stems from the steady growth in the total population of Canada during this period from 12.6 million to 18.9 million, or 50 per cent. A larger national population obviously requires more hospital services and hence more hospital facilities and personnel. When constant-dollar expenditures are adjusted for population growth by calculation on a per capita basis, the increase between 1947 and 1963 in inflation-adjusted expenditures becomes

¹² Ibid., pp. 460-2.

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82 per cent, as compared with the 174 per cent increase in expenditures corrected only for inflation. On this basis it may be estimated that population growth was responsible for 92 per cent or almost one-fifth of the aggregate increase in expenditures on the operation of all hospitals.

The effect of changing utilization rates (patient-days of care per thousand population) may be examined by assuming that the ratio of days of care to population has remained unchanged from 1947 to 1963. On the basis of this assumption, the theoretical cost increase for all classes of hospitals, expressed in terms of constant (1957) dollars per patient-day of care, would be 81 per cent as compared with the 82 per cent rise of constant-dollar expenditures per capita. Therefore, it would seem that changes in the rate of hospital utilization per unit of population since 1947 have made an almost negligible contribution (one per cent) to the overall increase of 519 per cent in total operating expenditures for all classes of hospitals combined. It should be noted in this connection that mental hospitals and tuberculosis sanatoria actually experienced reduced utilization rates between 1947 and 1963, while general and allied special hospitals had an upward trend in their patient-day rate during this

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period.¹³

There remains for consideration the component of the total increase in operating expenditures that may be attributed to factors which are intrinsic to hospital operation. If the value of the dollar, the size of the population, and the ratio of patient-days to population had remained fixed at the 1947 levels, the increase in expenditures of all classes of hospitals would have been from \$187 million in 1947 to \$338 million in 1963, a rise of \$151 million instead of \$969 million. The hypothetical rise of \$151 million, or 81 per cent, may be taken to represent the net impact on hospital operating costs of changes in the quality, scope, volume and complexity of services provided per patient-day. These internal factors account for about one-sixth of the increase in the total gross operating expenditures of hospitals.

2. Factors Influencing Utilization Rates - It may be worthwhile to examine some of the factors which have been acting on hospital operating costs through their influence on the rate of utilization of hospitals.

¹³ From 1947 to 1963, patient-days of care per thousand population in general and allied special hospitals increased by 19 per cent, while the patient-day rates of mental hospitals and tuberculosis sanatoria declined by 9 per cent and 64 per cent respectively. For all classes of hospitals combined, the patient day-population ratio rose by only 0.6 per cent during the period of study.

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A number of these factors are beyond the control of the individual hospital, while others are subject to some degree of influence by the medical and administrative staffs of hospitals. It should be noted at the outset that the rate of hospital utilization as reflected in the number of patient-days of care per thousand population is a function of two factors - the rate at which people go to hospital (admissions per thousand population) and the length of time that patients stay (average length of stay).

As mentioned above, although the total volume of hospital care in Canada, expressed as in-patient days of care of adults, children and newborns per thousand population, increased by less than one per cent between 1947 and 1963, this broad overall trend conceals a number of diverse trends in different classes of hospitals. The rate of utilization of general and allied special hospitals has risen steadily each year since 1947, resulting in an increase from 1,811 to 2,159 days of care per thousand population, or 19 per cent, over the sixteen-year period. The development of voluntary and then governmental hospital insurance schemes has undoubtedly been a factor affecting this trend. Since there has been a decline in the average length of stay since 1947, it is apparent that the increased volume of hospital care per thousand population during the past sixteen years is primarily the result of

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a substantial increase in the admission rate for Canada as a whole.

The volume of mental hospital care per thousand population has declined somewhat since the year 1947, although overall admission rates have increased considerably. The explanation of these trends rests both in changing methods of treatment, e.g., use of drug therapy, and in changing types of facilities, particularly the development of psychiatric units in general hospitals as well as out-patient facilities and community clinics. Tuberculosis sanatoria days of care per thousand population have declined sharply since 1953 as a result of dramatic progress in the treatment and control of the disease. Factors such as improved methods of treatment, notably in chemotherapy and antibiotic drugs, and more effective case-finding have reduced not only the tuberculosis death rate but also in many instances the length of stay in hospital.

Some of the leading factors influencing utilization rates for general and allied special hospital care will be discussed briefly. In broad terms consideration will be given to the influence of changing population characteristics, the availability of hospital and alternative facilities, changes in financial arrangements for meeting the costs of care, medical advances and a number of other

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factors operating to increase or decrease hospital utilization rates.

a) Hospital Births and Deaths. Births in hospital may be considered as a major factor in the postwar increase of hospital utilization rates in Canada. The increased number of births taking place in hospital has resulted both from the continued high birth rate in the postwar years and from an increasing preference for hospital confinement for childbirth rather than home confinement. Back in 1947, Canada had already achieved a high percentage of births in hospital - 71 per cent; since that time, the national percentage has steadily risen each year, reaching a level of 98.3 per cent in the year 1963.¹⁴

Another important factor in changing rates of hospital usage is the proportion of total deaths that take place in hospital, which serves as an indication of the significance of hospital care in the treatment of serious or terminal illness. The percentage of deaths occurring in hospital increased from 46.1 per cent in the year 1947 to nearly 65 per cent in 1963.¹⁵

b) Age and Sex Incidence. Associated with the increased percentage of total births occurring in hospital

¹⁴ Canada, Dominion Bureau of Statistics, Vital Statistics 1963, Ottawa, Queen's Printer, 1965, Table B4, p. 72. ¹⁵ Ibid., Table D3, p. 97.

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has been the increased use of hospitals by women in the child-bearing age groups. "Deliveries and complications of pregnancy, child-birth and the puerperium" are the leading causes of admission to hospital, comprising about one out of every five hospital admissions, excluding newborn admissions. In 1963, the days of care rate of 1,930 per thousand population for females in the child-bearing age groups from 15 to 44 was about 145 per cent or two and a half times higher than the corresponding rate of 789 for males in the same age groups.¹⁶

Changing age characteristics of the population have had a definite impact on rates of hospital utilization. Although the shift in the proportion of the total population represented by the very young, the middle-aged and the elderly has amounted to only a few percentage points, there has been a significant increase in these three age groups in terms of absolute numbers over the postwar years. This absolute increase has undoubtedly affected overall utilization rates for hospital care since these particular age groups are comparatively heavy users of hospital services.

With an increase in life expectancy, the number of persons in Canada aged 65 and over rose by 523,800 or

¹⁶ Unpublished data supplied by Research and Statistics Directorate, Department of National Health and Welfare.

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57 per cent in the period from 1947 to 1963. As a result, there has been a substantial increase in the incidence and prevalence of chronic and long-term conditions characteristic of older persons such as heart disease and cancer which require a relatively large volume of hospital care. Much greater proportionate use is made of hospitals by those in the older age groups than by the rest of the population because of both the higher admission rate and the longer length of stay of older people. Thus, it is not surprising to find that the volume of care rate for the 65 plus age group in 1963 was almost six times higher than that of the population under age 65 - 7,727 compared to 1,337 days per thousand population.¹⁷

The very young and the middle-aged, who also have relatively high rates of hospital usage, have increased considerably in number since the end of the war. The 0-4 age group requires almost three times as many patient-days of hospital care per thousand population as the 5-14 age group, while persons aged 45 to 64 use over twice as many days per thousand as those under 45.

It seems reasonable to conclude, therefore, that the rise of overall utilization rates for Canada partly

¹⁷ Unpublished data supplied by Research and Statistics Directorate, Department of National Health and Welfare.

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reflects the increasing use of hospitals by women of child-bearing age and patients over 65 and, to a lesser extent, by the very young and middle-aged.

c) Hospital Insurance. The development of voluntary (non-profit and commercial) and governmental hospital insurance plans on a prepayment basis has been one of the most important forces contributing to the upward trend in hospital utilization rates during the postwar period. By removing the economic barrier to hospitalization particularly for the low income groups, the growth of prepayment coverage has helped to generate an increased effective demand for hospital care per unit of population. However, the total impact of hospital insurance as a factor in raising national rates of utilization has been distributed over the years partly because of the varying dates of establishment in the different provinces.

Most of the individual provinces experienced a degree of upward movement in their volume of care rates during the years preceding the introduction of complete governmental hospital insurance programs. In all but two provinces, the initial years of hospital insurance were characterized by a sharp upswing in days of care per thousand population. Statistical data show the upward acceleration in the year-to-year rate of change in this index of utilization after the establishment of universal

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hospital insurance.¹⁸ This upward trend has been followed by a reduction or stabilization of the utilization rate in a number of provinces.

d) Supply of Beds. The supply of hospital beds available for use by the population has a decisive influence on the rate of hospital utilization. If the ten provinces are ranked according to their supply of beds per thousand population and their days of care per thousand, it will be seen that the same ranking holds in both cases. From this relationship between beds and days can be drawn support for the statement that if the beds are available they will usually be filled.¹⁹ Thus, the increase in the supply of beds during the postwar period has led to a higher level of hospital utilization in Canada. While beds and cribs set up for use in general and allied special hospitals per thousand population increased by 13 per cent between 1947 and 1963, days of care per thousand population for adults and children in this class of hospitals rose by 22 per cent over the same period.

¹⁸ Canada, Department of National Health and Welfare, Research and Statistics Division, Expenditures on Personal Health Care in Canada 1953-1961, Health Care Series Memorandum No. 16, Ottawa, the Department, 1963, p.13.

¹⁹ John E. Osborne, "Characteristics of Hospital Utilization in Canada," Paper presented at the American Public Health Association Meetings, Kansas City, November 14, 1963, p. 1.

e) Availability of Alternative Facilities and Services. The quantity and types of alternative facilities and services available to the population undoubtedly have some effect on the utilization rate of hospitals. The development and increasing use of effective public health programs and organized home care programs as well as nursing homes, homes for the aged, custodial and domiciliary care institutions, and other long-term care facilities have in all likelihood relieved the pressure for hospital accommodation to some extent. In addition, the increase in the number of hospital out-patient departments and in the scope of diagnostic and treatment services provided by these facilities in recent years has almost certainly reduced the number of in-patient admissions to hospital.

f) Medical Advances. It is important to consider also the impact of advances in medical science and technology on hospital utilization. The development of antibiotic drugs, early ambulation, progressive patient care, rehabilitation medicine, and other scientific and technical advances in the diagnosis and treatment of disease have either removed the need for hospitalization or shortened the duration of hospital stay. On the other hand, the application of new techniques and procedures in medical care have had an opposite effect in some cases, e.g., cardiac surgery, treatment of cancer, rehabilitation, and

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psychiatric care. Medical progress has multiplied the number of hospital services necessary for skilled diagnosis and treatment, and has actually stimulated public demand for more of these services. Therefore, the same medical advances which have reduced the period of treatment for some conditions have increased the period of hospital care required for many other conditions.

g) Other Factors. Other factors which influence the rate of hospital utilization include the types of conditions treated in hospital which reflect among other things their incidence and prevalence in the community, rural and urban residence, level of income and standard of living, changing attitudes toward hospitalization on the part of patients and physicians, the changing role of the hospital, level of education and health consciousness of the population, deterrent or co-insurance charges to patients, the types of hospital beds available, the efficiency of bed utilization, the availability of medical care insurance, the supply of physicians in relation to population, the increasing number of medical specialists, methods of medical remuneration and patterns of medical practice.²⁰

²⁰ For a more extensive discussion of the various factors affecting hospital utilization rates, see Milton I. Roemer and Max Shain, Hospital Utilization under Insurance, Hospital Monograph Series No. 6, Chicago, American Hospital Association, 1959.

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On the basis of existing data it is extremely difficult to determine the precise effect of most of these factors on hospital utilization. It is hoped, however, that the various factors mentioned here may suggest certain areas in which useful research might be conducted with a view to analyzing more deeply some of these determinants and to identifying and measuring other potential influences.

3. Factors Affecting Costs Per Patient-day.- As can be seen from Table 12, the average cost per patient-day of operating all classes of hospitals in Canada, expressed in terms of constant (1957) dollars, rose almost continuously from \$8.17 in 1947 to \$14.76 in 1963, an increase of 81 per cent over the entire period or 3.8 per cent each year.²¹ This sixteen-year growth in the per diem cost of hospital operation represents the net effect of a variety of factors involving the utilization and organization of hospital services, equipment and personnel. Although such factors are internal to hospital operation, many of the forces underlying these factors are external in nature and are largely beyond the control of the individual hospital. It should also be kept in mind that these factors are both

²¹ The increase from 1947 to 1963 in constant (1957) dollar expenditures per patient-day of care amounted to 78 per cent for public general and allied special hospitals, 105 per cent for mental hospitals and 65 per cent for tuberculosis sanatoria.

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qualitative and quantitative in their effect on hospital service provided per patient-day.

Further analysis indicates that the most important factors exerting an upward pressure on hospital operating costs per patient-day of care have been changes involving the payroll component of such expenditures, and scientific and technical advances in medicine involving the application of specialized services for diagnosis, treatment and rehabilitation. The remainder of this chapter examines these and other internal factors which have affected the increase in the national average per diem cost of operating hospitals in Canada during the postwar period.

a) Personnel and Wages. Data are available which clearly illustrate the particular importance of the payroll component in hospital operating expenditures. Among public general and allied special hospitals, payroll expenditures in constant (1957) dollars per patient-day of care (gross salaries and wages) rose from \$5.76 in 1947 to \$13.68 in 1963, an increase of 138 per cent; non-payroll expenditures per patient-day, after adjustment for inflation, increased only 24 per cent (from \$6.27 to \$7.77) over the same period. Among mental hospitals, constant-dollar expenditures on payroll for each day of care rose 155 per cent from 1947 to 1963, compared with an increase of 44 per cent in all other expenditures. During these

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sixteen years the real increase in per diem payroll and non-payroll costs for tuberculosis sanatoria amounted to 130 per cent and 8 per cent respectively.²² Thus, the increase in payroll expense per patient-day has accounted for an extremely large share of the increase in the per diem operating costs of hospitals.

As a result of these trends, payroll expenditures have increased not only in absolute terms but also as a percentage of total hospital operating expenditures. In public general and allied special hospitals, gross salaries and wages accounted for 47.9 per cent of total expenditures in 1947; by 1963 this proportion had risen to 63.8 per cent. The salary and wage component constituted 56.9 per cent of the operating expenditures of mental hospitals in the year 1947, compared with 66.9 per cent in 1963. Similarly, in the operating costs of tuberculosis sanatoria the share of salaries and wages grew from 47.1 per cent in 1947 to 65.3 per cent in 1963.²³ Although salaries and wages represented the largest single item in the hospital budget back in 1947 just as they do today, an increasingly larger portion of the hospital dollar has been spent on payroll, and

²² Data derived and adapted from Dominion Bureau of Statistics annual publications on hospital, mental health and tuberculosis statistics and unpublished information.

²³ Ibid.

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this has contributed to the postwar increase of hospital per diem costs in Canada.

A number of factors have affected the rise in payroll expenditures both in absolute terms and on a relative basis, i.e., as a proportion of total expenditures on hospital operation. Among the most significant were: conversion to full cash remuneration, increase in salary and wage levels, lag in productivity gains, growth of staff-patient ratios, improvement in working conditions, decline in the proportion of unpaid personnel and increase in the proportion of skilled personnel. Since the relative effects of these different factors on the increase in payroll expense cannot be determined precisely, the following analysis will attempt to describe rather than measure their influence on changes in the payroll component of hospital operating expenditures.

(1) Conversion to Full Cash Remuneration.

Hospitals traditionally provided - in addition to cash salaries - food, lodging and laundry service for many employees in lieu of full payment in cash. Within the past two decades, however, there has occurred a steady decline in the provision of such perquisites or employee maintenance and a marked shift toward payment of full cash salaries.²⁴

²⁴ Hayes, op.cit., pp. 40-1.

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Conversion to full cash remuneration has the effect of increasing payroll and decreasing non-payroll expenditures, thereby increasing the payroll component even when there is no change in salary and wage rates. This increase has been offset to some extent by the fact that hospitals are now purchasing, in the form of supplies and outside contractual services, much of the labour they were employing fifteen or twenty years ago.²⁵

(2) Increase in Salary and Wage Levels. Increased salary and wage rates of hospital personnel have been a major factor in the postwar rise of hospital labour costs per patient-day in Canada. Available data on average hourly earnings of hospital employees indicate a rise from 69 cents per hour in 1953 to \$1.07 per hour in 1959 in public general and allied special hospitals, a 55 per cent increase.²⁶ By way of comparison, average hourly earnings increased from \$1.36 to \$1.72, or 27 per cent, in manufacturing and from 78 cents to \$1.00, or 28 per cent, in the service industry (hotels, restaurants, laundries and

²⁵ Ray E. Brown, "The Impact of Wages on Hospital Costs", Hospitals, Vol. 37, No. 13, July 1, 1963, p. 25.

²⁶ Canada, Department of National Health and Welfare, Research and Statistics Division, Expenditures on Personal Health Care in Canada 1953-1961, Health Care Series Memorandum No. 16, Ottawa, the Department, 1963, p. 10.

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dry-cleaning establishments) during the same period.²⁷

In these six years alone, therefore, hospital pay rates increased twice as rapidly as those in manufacturing and service.

In order to attract and keep the necessary staff, growing emphasis had to be placed on economic incentives rather than the non-economic motivations traditionally associated with those who enter hospital service. Since they must compete with business, government and other employers in the general labour market to obtain personnel, hospitals have found it necessary to raise wages and salaries to a point where the latter more closely approximate those of comparable occupations in other industries than in the past. Thus, hospital salary levels have tended to rise more rapidly than average industrial wages and salaries, thereby reducing a long-standing lag.

An important consideration in this regard is the heavy reliance of hospitals on female personnel; it is generally estimated that women make up approximately 80 per cent of the average hospital's labour force. Prior to World War II there was little competition from industry for female workers and limited employment opportunities

²⁷ Data derived from annual editions of the Canada Year Book.

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permitted relatively low wages. With increasing employment of women in industry since that time, however, competition has forced hospitals to revise their pay scales upward.

The impact of wage increases on hospital operating costs is much greater than the effect of equal pay increases on the operating costs of many other industries.²⁸ With payroll accounting for about 65 per cent of hospital costs, a 5 per cent increase in hospital wage rates would raise total costs by almost 3.3 per cent. In an industry, however, where wages might constitute 40 per cent of all operating expenses, the same percentage increase in this industry's wage rates would raise its costs by only 2 per cent. Thus, the relatively high ratio of payroll to total costs in the hospital service industry magnifies the impact of wage increases on the cost of hospital operation.

(3) Lag in Productivity Gains. Associated with rising salary and wage levels is another factor contributing to the increase of hospital operating costs - the lag in productivity gains of hospitals behind those of other industries. This explanation reflects the view of a number of economists and hospital administrators who have dealt

²⁸ Brown, op.cit., p. 29, L.F. Detwiller, "Changing Concepts in Medical and Hospital Care", Canadian Hospital, Vol. 37, No. 5, May 1960, p. 49.

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with hospital costs.²⁹ Despite the difficulty of defining and measuring the productivity of hospitals, qualitative consideration can perhaps be given to the above-mentioned factor.

In most industries, increases in wages and salaries are not fully translated into higher costs of production and higher prices but are absorbed in part by increased productivity. This increase in the productivity of labour has been brought about largely through the introduction of mechanization and automation, and has resulted in a continuing rise in wage and salary levels.

Hospitals are essentially a personal service industry; each patient in the hospital requires individualized care which implies the use of judgment and personal attention. Because of the labour-intensive nature of hospital service, opportunities for achieving productivity gains through the substitution of labour-saving machinery and devices for manpower have always been limited, particularly in the professional and technical service fields where an increasingly larger share of hospital activity has been centered. When new methods of diagnosis

²⁹ Brown, loc.cit.; Detwiller, loc.cit.; Hayes, op.cit., p. 201; Herbert E. Klarman, Hospital Care in New York City: The Roles of Voluntary and Municipal Hospitals, New York, Columbia University Press, 1963, p. 469.

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and treatment are introduced, new types of equipment are very often required which usually necessitate the employment of additional hospital personnel.

With hospitals lagging in productivity gains behind other industries but more or less competitive with them for employees, they (hospitals) have been compelled to raise wages and salaries without comparable benefits from increased productivity, thus increasing operating costs. This factor, of course, has been compounded by the high proportion of payroll to total hospital costs.

(4) Growth of Staff-Patient Ratios. The growth in the ratio of hospital employees to the patient population has also been an important factor affecting the increase of payroll costs per patient-day in Canadian hospitals. In 1947, it required 129 full and part-time persons to provide the necessary service and care each day for every 100 adult and child patients in public general and allied special hospitals; by 1963 this ratio had risen to 232.9 employees, an increase of 81 per cent. Mental hospitals recorded a growth of 137 per cent in the overall staff-patient ratio during the same period, from 22.1 to 52.4 employees per 100 patients per day. The corresponding ratio for tuberculosis sanatoria moved up from 62 to 135.6, or

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119 per cent, between 1947 and 1963.³⁰

The upward trend in the ratio of hospital personnel to the average daily number of patients over the past sixteen years has been caused partly by a shorter hospital work week and other improvements in working conditions which have reduced the number of hours worked per employee. Since hospitals by their very nature must be ready to serve any patient at any time on a 24-hour day and a seven-day week basis, any reduction in working hours requires a proportionate increase in staff to perform a given quantity of work. Another factor contributing to the postwar increase of the number of employees per patient-day of care in hospitals has been the widespread application of new procedures and techniques resulting from advances in medical science. In the case of mental hospitals, the growth of the overall staff-patient ratio has also reflected an accelerated trend toward more active treatment and relatively less custodial care.

The increase of the hospital labour force in relation to the patient load has been accompanied by an increase in the average number of paid hours of work per patient-day. Available data show that this ratio grew

³⁰ Data derived and adapted from Dominion Bureau of Statistics annual publications on hospital, mental health and tuberculosis statistics and unpublished information.

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41 per cent from a national average of 8.8 hours per adult and child patient-day by all staff of public general and allied special hospitals in 1952 to 12.4 hours per day in 1963.³¹ The upward movement of the number of paid hours worked per patient-day has resulted largely from the rise in the quantity of professional, technical and supportive services rendered per patient-day of care and from the decrease in the number of hours worked by each hospital employee.

(5) Improvement in Working Conditions. Various improvements in the working conditions of hospital employees have contributed to the rise in per diem hospital payroll costs. First, there has been a gradual reduction in the length of the hospital work week. Although accurate figures are not available, it may be estimated that the average work week of hospital personnel declined from about 48 hours at the end of World War II to about 40 hours currently.³² Secondly, there has been a gradual elimination of the split shift particularly in the case of nurses, which is equivalent to a decline in the work week. The split shift had enabled hospitals in the past to staff for

³¹ Data derived and adapted from Dominion Bureau of Statistics annual publications on hospital statistics.

³² Hayes, op.cit., p. 41; Brown, op.cit., pp. 25-6.

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two peak loads with one complement of employees. Thirdly, in recent years hospitals have expanded fringe benefits for their personnel, e.g., increased vacations and sick leave with pay, pension plans, health care plans. All of these improvements in working conditions have been necessary in order to permit hospitals to compete more successfully with other sources of employment in the recruitment of personnel.

(6) Decline in the Proportion of Unpaid Personnel.

Hospitals are paying salaries to a larger proportion of physicians providing medical care.³³ Almost all interns and residents are now paid stipends, an unusual practice twenty years ago. In addition, the full-time practice of medicine in hospitals has grown during recent years.

The proportion of unpaid personnel working in hospitals has declined also as a result of the decrease in the proportion of service provided by student nurses. Although the total number of student nurses has increased somewhat in the postwar period, the ratio of such students to the total hospital work force has decreased substantially; in 1947, student nurses made up 21.7 per cent of total personnel in public general and allied special hospitals,

³³ Hayes, op.cit., pp. 43-4.

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but by 1963 the percentage had dropped to 11.1.³⁴ Moreover, because of new standards in nursing education, greater emphasis is being placed on curriculum in nursing schools as opposed to direct service, which has meant a decline in the amount of service provided or contributed by each student nurse.

(7) Increase in the Proportion of Skilled Personnel.

During the postwar period, the total number of skilled hospital employees in professional and technical categories has increased more rapidly than the total hospital labour force. These categories include such groups as full and part-time medical staff, graduate nurses and nursing assistants, hospital administrators, psychologists, laboratory and radiological technicians, physical and occupational therapists, pharmacists, dietitians, medical record librarians and social workers. An increase in the proportion of such employees who command relatively high salaries has the effect of increasing the average rate of pay per worker, even in the absence of any change in salary scales.³⁵ The increasing proportion of higher-paid skilled employees in the total work force of hospitals is

³⁴ Canada, Dominion Bureau of Statistics, Annual Report of Hospitals 1947, Ottawa, the Bureau, 1950, Table 10, p. 11 and Table 12, p. 13; and unpublished data.

³⁵ Hayes, op.cit., pp. 44-5.

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very closely related to the general rise in the quantity of professional and technical services provided in relation to the care of each patient, which in turn is the result of the application of new and more complex procedures and techniques as well as the expansion of special service facilities and departments.

(8) Registration, Licensure and Unionization.

The problem of hospital labour costs is further complicated because of legal registration and licensure of most of the technical and professional groups of personnel in the hospital.³⁶ National and provincial associations licensing or registering these groups have in recent years established higher levels of qualification and educational requirements, and have lengthened the period of training necessary. These practices have raised the salary scales of technical and professional personnel, thereby pushing up hospital payroll costs per patient-day.

b) Scientific and Technical Advances in Medicine.

To those factors associated with the payroll component can be added another group contributing to the rapid increase of hospital per diem costs in Canada, those arising from the technical and scientific progress in medicine. The

³⁶ Ray E. Brown, "The Nature of Hospital Costs", Hospitals, Vol. 30, No. 7, April 1, 1956, p. 40.

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influence of this element is extremely important as recent years have witnessed accelerating growth in the quantity and quality of specialized hospital services per patient-day. Advances in medical knowledge, science and technology have served to intensify almost every supply factor involved in the provision of hospital care, from the training required of personnel to the complexity and amount of equipment used. An examination of this factor in more depth should help to provide some notion of the implications of these medical advances for the per diem cost of hospital operation.

The postwar period has been characterized by a virtual explosion in medical knowledge, with dramatic advances taking place in the scientific and technical aspects of medical care. Medical research has developed at an ever increasing pace new and more effective procedures and techniques for the diagnosis, treatment and rehabilitation of the sick or injured. Both the medical profession and the Canadian public have demanded that these procedures and techniques be implemented into practice and made immediately available for use in the care of individual patients. Because of their complexity and high cost and the need to avoid duplication of expensive equipment and services in physicians' offices, hospitals have accepted the responsibility of providing such procedures. Most of

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these innovations have added to, rather than reduced, the unit cost of hospital care.

Dr. Henry Pratt has cited a number of developments within the past two decades which have had a significant impact on the per diem costs of hospitals.³⁷ These medical advances include: increasing reliance on laboratory and X-ray procedures in diagnosis and therapy; more extensive use of high-voltage radiation therapy, e.g., the cobalt treatment of cancer; surgical advances such as those made in heart and lung surgery and in the replacement of organs; greater use of new and expensive drugs, especially in the treatment of infection; development and use of new techniques or equipment such as radioisotopes, artificial kidney machines, and high-pressure hyperbaric chambers. Hospitals have also expanded their facilities and services for the rehabilitation of the chronically ill, established home care programs, and placed increasing emphasis on the integration of psychiatric services with general hospital care and on the development of intensive care units. Thus, improved and more complex diagnostic and therapeutic procedures have been developed not only for short-term acute care, but also for long-term continued treatment.

³⁷ Henry N. Pratt, "The Community's Escalating Health Bill: Causes and Controls", Hospitals, Vol. 38, No. 13, July 1, 1964, p. 30.

Hospital facilities and services have been expanding in quantity and improving in quality in order to keep pace with these advances in medical science and technology. The multiplication of special facilities and the growing scope and complexity of hospital services have contributed to a significant increase in the quantity and quality of professional, technical and supportive services provided per patient-day. In addition, there has been a sizeable increase both in the number of hospitals and in the proportion of all hospitals offering these specialized services. The application and extension of such services have been stimulated by voluntary and governmental hospital insurance plans in the case of general and allied special hospitals, and by federal health grants in the case of mental hospitals and tuberculosis sanatoria. It is important to remember that, although the development of various special facilities and services has forced hospital per diem costs upward, at the same time it has increased the quality and quantity of care provided to hospital patients.

Statistical data are available which lend some measure of magnitude to the growth of special facilities and services in Canadian hospitals.³⁸ Among all reporting

³⁸ Data derived and adapted from Dominion Bureau of Statistics annual publications on hospital and mental health statistics and unpublished information.

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public general and allied special hospitals in Canada as a whole, 54.5 per cent of the institutions had established clinical laboratories in 1947, and 78.9 per cent reported radiology; by 1963, laboratory services were available in 86.5 per cent of the reporting hospitals, and radiology in 86.6 per cent. The other most frequently available special services have also shown considerable expansion in recent years. For example, during the decade 1953-1963, the proportion of public general and allied special hospitals offering anaesthesia services increased 9 per cent; electrocardiography, 70 per cent; and blood banks, 115 per cent. In the same ten-year period, special services such as occupational therapy, social services, and out-patient departments became available in a considerably higher percentage of mental hospitals.

The increase in the quantity and quality of hospital facilities and services operates to raise operating costs per patient-day by placing greater demands on personnel, equipment and other supply factors such as medical and surgical supplies, drugs, and food. As pointed out previously, the development and widespread extension of new diagnostic and therapeutic procedures have increased the number of hospital personnel per average daily number of patients. In addition, the greater variety and complexity of hospital services as

well as improved standards of services have called for higher levels and wider ranges of skill on the part of hospital personnel; the result has been an increase in the proportion of higher-salaried technical and professional employees in the hospital labour force. Also important is the fact that the provision of new services and procedures in hospitals, more often than not, has required new and more complex equipment, new space to house it, and new types of technicians to operate it. The availability of the vast range of facilities, equipment and personnel in the modern hospital enables the physician to utilize the latest scientific techniques in providing care to his patients, to diagnose and treat more varied and more complex conditions, and to serve more patients in a given amount of time.

The impact on hospital per diem costs of the factors discussed in the preceding paragraphs can be examined, perhaps, in terms of recent changes that have taken place both in the absolute and the relative amounts expended by hospitals for various types of services. During the ten-year period from 1953 to 1963 the total operating costs per patient-day of public general and allied special hospitals in Canada rose from \$13.54 to \$21.44 in constant (1957) dollar terms, an increase of 58 per cent. These costs can be broken down into three

principal categories which are analyzed separately as follows: (1) The first category, nursing service expenses, refers to the cost of providing direct nursing care to hospital in-patients. After adjustment for inflation, the per diem cost of nursing care climbed from \$2.46 in 1953 to \$4.56 in 1963, or 85 per cent. As a percentage of the hospital dollar, the increase has been from 18.1 per cent to 21.3 per cent. (2) The second category, expenses for professional (non-nursing), technical and supplemental services, includes the costs of such services as operating and delivery rooms, emergency unit, central supply room, pharmacy, laboratory, radiology, physiotherapy, organized out-patient department, social services, medical records and library, nursing education, and medical education. Constant-dollar expenditures for this category of services have increased quite rapidly in the same period, from \$2.07 to \$5.79 per patient-day, or 180 per cent. As a result there has been a fairly substantial shift in the proportion of the hospital dollar spent for professional, technical and supplemental services: 27 per cent in 1963 as compared with 15.3 per cent ten years earlier. (3) The third category, general or "hotel-type" service expenses, includes the costs of administration, dietary, laundry and linen services, housekeeping, operation and maintenance

of physical plant, and ancillary operations. The real patient-day cost of these services rose from \$5.39 in 1953 to \$8.03 in 1963, representing an increase of less than 50 per cent. Over the decade the portion of the hospital's overall budget absorbed by general services declined slightly, from 39.8 per cent to 37.4 per cent.³⁹

c) Reduction in Average Length of Stay. The higher per diem cost of hospital operation since the war has partly resulted from a reduction in the average length of time that patients stay in hospital. Within public general hospitals, which comprise the bulk of all public hospitals, the average length of patient stay for Canada as a whole (total patient-days during the year divided by the number of adults and children separated from hospital during the year) declined from a level of about 10.9 days in 1947 to 10.2 days in 1963, a decrease of 6.4 per cent.⁴⁰ Although statistical evidence is not readily available, postwar trends and developments appear to indicate that the length of stay in mental hospitals and tuberculosis

³⁹ Canada, Dominion Bureau of Statistics, Hospital Statistics 1953, Vol. II, Ottawa, Queen's Printer, 1955, Table 43, p. 88 and Table 47, pp. 92-5; and unpublished information.

⁴⁰ Canada, Dominion Bureau of Statistics, Annual Report of Hospitals 1947, the Bureau, 1950, Table 25, p. 34 and Table 28, p. 40; ----- Hospital Statistics 1963, Preliminary Annual Report, Ottawa, Queen's Printer, 1964, Table 13, p. 13.

sanatoria has also been declining in recent years.⁴¹

Advances in medical knowledge and science have brought about the development of new and more effective methods of diagnosis and treatment, which in turn have served to shorten the average length of stay in hospital for many illnesses or conditions. Although most of this decline is probably associated with improved medical judgment and patient care, which permit more rapid discharge, it is very likely also due in part to an increase in the proportion of patients admitted for short-stay diagnostic studies or treatment.

With a reduction in the average length of stay, hospital per diem costs have tended to rise since the professional and technical services provided to each patient have been concentrated or spread over a shorter period of time. As a result, the quality and contents of the hospital patient-day have changed over time; a day of care in the hospital today includes more and better services and more intensive treatment than was the case one or two decades ago. It is obvious that the more active a given day in hospital, the greater will be the cost of

⁴¹ For a discussion of these trends, see Canada, Department of National Health and Welfare, Research and Statistics Division, Hospital Care in Canada: Trends and Development 1948-1962, Health Care Series Memorandum No. 19, Ottawa, the Department, 1964, Chapter II.

providing that day of care to the patient. Therefore, it is important to keep in mind that, when examining the increase in the cost of hospital care per patient-day during the postwar period, the "basket" of services supplied in the hospital day of 1947 is quite different from that provided in the hospital day of 1963.

d) Rapid Growth of Aged Population. The rapid growth of the middle-aged and aged population has affected hospital operating costs in relation to complexity as well as volume of services. The older age groups not only have higher rates of hospital utilization than the rest of the population, but also have conditions which, when treated in hospital, tend to utilize more complex and more expensive diagnostic and therapeutic procedures.⁴² For example, cardio-vascular disease requires for its treatment a wide range of technical equipment, laboratory procedures, close nursing care and, in some cases, surgery; similarly, the fight against cancer calls for extensive surgery, laboratory examinations and a long series of radiation therapy treatments. Thus, the increasing number of older people in hospitals has tended to drive up the per diem cost of hospital care.

⁴² Henry N. Pratt, "Factors That Will Shape Future Hospital Costs", Hospitals, Vol. 33, No. 20, October 16, 1959, p. 54.

e) Changing Role of the Hospital. The role of the hospital in the health care of Canadians has undergone unprecedented changes in the postwar era. Ranging from the small rural hospital to the large medical and teaching institution, the modern hospital has become the centre of the community's health activities where both curative and preventive medical services are provided. It has participated actively in the development of more comprehensive health care programs such as hospital-centered home care programs, especially for the convalescent patient, rehabilitation facilities, and ambulatory services. With the provision of these and other services and with the implementation of public and private hospital insurance plans, the hospital undoubtedly provides a greater proportion of the total health care received by the patient than previously.⁴³ These trends have further inflated hospital per diem costs but, at the same time, have probably reduced the community's total health bill.

f) Educational and Training Programs. Another factor contributing to the increase in hospital operating costs per patient-day has been the rising cost of educational and training programs conducted in hospitals.

⁴³ American Medical Association, Changing Patterns of Hospital Care, Vol. IV of the Report of the Commission on the Cost of Medical Care, Chicago, the Association, 1964, p. 16.

The cost of maintaining programs for the hospital's two major educational groups, student nurses and physicians in training, has increased with the decline in the relative amount of direct service contributed by student nurses and with the payment of stipends to interns and residents. The requirements of medical education have also led to the employment of paid, full-time chiefs of clinical service in an increasing number of hospitals.⁴⁴

The large general or teaching hospitals have had to engage directly in the provision of basic training for other professional and technical personnel such as nursing assistants, orderlies, laboratory and radiological technicians, dietitians, medical social workers, physiotherapists and medical record librarians. These training programs have imposed an increasing financial burden on the hospital since the cost of training usually exceeds the additional service given to patients. In addition, the various licensing bodies have, in many instances, raised standards or qualifications by increasing the length and therefore the cost of training required.

g) Need for Capital Funds. As concepts of hospital care change and medical science advances,

⁴⁴ Klarman, op.cit., pp. 469-70.

hospital plant and equipment become obsolete more rapidly.⁴⁵ In order to obtain the capital needed to replace and improve these facilities, many hospitals have turned to the use of operating funds to recover depreciation on old plant and equipment. This practice has undoubtedly had the effect of increasing the per diem operating expenses of these hospitals.

h) Rise in Standard of Living. The rise in the Canadian standard of living, particularly during the postwar period, has raised the public's expectations of its hospitals both as to quality of care and the amenities of life. There has been an increasing demand for higher standards of hospital service on the part of patients and doctors. The community's rising standard of living has also created a demand for a more attractive and more convenient sort of hospital service. In meeting these demands, however, hospitals have pushed up their unit costs of operation and maintenance.

i) Other Factors. Other factors which have affected the rising per diem cost of hospital operation in Canada include changes in the rate of occupancy, increased outlays on medical research, rising pharmaceutical costs due to expansion in the number and kinds

⁴⁵ Pratt, op.cit., pp. 54-5.

of drugs, improvements in the efficiency and performance of hospital administration and management, regional and community hospital planning and co-ordination in order to prevent or eliminate duplication of expensive services and facilities, and financial control exercised by provincial hospital insurance authorities. Some of these factors have exerted a downward pressure on hospital operating expenditures per patient-day, or at least have helped to keep cost increases to a minimum. Further research is needed, however, in order to determine the extent to which the factors listed above have influenced hospital per diem costs. Also, the cost factors examined in this chapter undoubtedly reflect still other forces which can be identified and measured only through more intensive investigation and analysis.

CHAPTER IV

SOME OTHER ASPECTS OF HOSPITAL
OPERATING EXPENDITURES

In this chapter three important aspects of hospital operating expenditures will be examined. The first concerns the postwar trends in the relationship between hospital operating expenditures on the one hand, and expenditures on all personal health care services, total consumption expenditure and Gross National Expenditure on the other. Consideration is also given to the treatment of expenditures on hospital care in the Canadian National Accounts. Secondly, expenditures on hospital services in Canada are compared with similar expenditures in a number of other selected countries in recent years, using several relative measures. Some of the statistical, conceptual and other limitations of such an international comparison are discussed as well. Thirdly, the financial, economic and social implications of hospital operating costs are examined in the context of the various arrangements that have evolved over the years for financing hospital services and the gradual shift in the hospital cost burden from the private to the public sector of the economy.

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A. Hospital Operating Expenditures,
1945-1963.

Statistical data show that all classes of hospitals in Canada spent almost nine times as much on their current operations in 1963 as they did in 1945. Over these eighteen years, the annual gross operating expenditures of all hospitals rose steadily from \$129.5 million to \$1,156.3 million, an increase of \$1,026.8 million or 793 per cent. From 1962 to 1963 alone, the increase was \$116 million, almost as much as the total operating expenditures of hospitals in 1945. In the postwar period, expenditures for the operation of Canadian hospitals grew at a trend rate of about 13 per cent a year.¹ Although there were fluctuations around this average annual percentage increase in spending, the growth of hospital operating expenditures was continuous over the 1945-1963 period.

While the absolute amount spent on the operation and maintenance of all hospitals in Canada has increased greatly since the war, has this amount risen more rapidly or more slowly than the amount spent on all personal health care services or the amount spent on consumption goods and services by individuals and government or on all final

¹ Canada, Royal Commission on Health Services, Report, Vol. I, Ottawa, Queen's Printer, 1964, p. 441.

goods and services? In answering this question, hospital operating expenditures will be examined not only as a component of total expenditures on personal health care, but also in relation to total consumption expenditure in the economy and Gross National Expenditure. Table 13 shows these relationships for the years 1945 to 1963 in Canada. In addition, several arguments are presented in favour of a major revision of the present treatment of expenditures on hospital care in the Canadian National Accounts.

1. Hospital Operating Expenditures and Other Personal Health Care Expenditures - When considering trends in the relationship between hospital operating expenditures and expenditures on personal health care, it is important to define the concept of "expenditures on personal health care". This concept will be taken here to include the amounts spent by all classes of hospitals on their current operations, together with the payments received by physicians, dentists, pharmacists for prescription services and other health personnel,² in the provision of health care and treatment directly to individuals. This is the group of items measured as expenditures made in Canada on personal health care services in a recent study by the Department

² This miscellaneous category includes private duty nurses, chiropractors, osteopaths, and optometrists, but specifically excludes all employees of hospitals.

TABLE 13

Estimated Total Gross Operating Expenditures
of All Hospitals as Percentage of Selected
Aggregates, Canada, 1945-1963.

Year	Total Expenditures ^a	Percentage of Personal Health Care Expenditures ^b	Percentage of Total Consumption Expenditure ^c	Percentage of Gross National Expenditure
	\$m.	%	%	%
1945	129.5	45.70	-	1.09
1946	150.7	45.88	-	1.27
1947	186.7	49.21	-	1.42
1948	215.0	50.61	-	1.42
1949	247.1	51.57	1.97	1.51
1950	283.3	52.26	2.06	1.57
1951	326.4	53.09	2.05	1.54
1952	356.5	53.23	1.98	1.49
1953	404.0	54.97	2.12	1.61
1954	446.8	55.58	2.27	1.80
1955	480.0	55.20	2.27	1.77
1956	529.8	53.61	2.31	1.73
1957	586.7	53.45	2.40	1.84
1958	640.1	52.94	2.46	1.95
1959	734.1	53.88	2.66	2.10
1960	828.3	54.98	2.88	2.28
1961	932.7	56.13	3.09	2.49
1962	1,040.3	56.68	3.28	2.58
1963	1,156.3	57.28	3.45	2.69

^a Includes gross operating expenditures of general and allied special, mental, tuberculosis and federal hospitals.

^b Includes expenditures on the operation of all classes of hospitals, the services of physicians and dentists, prescribed drugs, and the services of other health personnel such as private duty nurses, chiropractors, osteopaths and optometrists.

^c Includes personal expenditure on consumer goods and services and government current expenditure on goods and services as classified by the National Accounts. No data available prior to 1949 on government current expenditure.

Sources: Table 9; Royal Commission on Health Services, Report, Vol. I, Ottawa, Queen's Printer, 1964, Table 11-1, pp. 426-7; Department of National Health and Welfare, Research and Statistics Division, Expenditures on Personal Health Care in Canada 1953-1961; Dominion Bureau of Statistics, National Accounts, Income and Expenditure, 1926-1956, 1961, 1962, and 1963; and unpublished data.

of National Health and Welfare.³ As this study points out, no attempt has been made to include capital expenditures on health facilities, expenditures on public health services, or the administrative costs of public and private health insurance plans. Neither do the estimates include expenditures on non-prescribed drugs and a large part of the cost of research and education.

During the postwar period in Canada, generally speaking, operating expenditures on hospital services have grown more rapidly than total expenditures on personal health care (793 per cent as compared with 612 per cent). There have been several years in this period, however, when the reverse has been the case. Hospital operating expenditures as a percentage of total personal health care expenditures rose steadily from about 46 per cent in 1945 to more than 55 per cent in 1954, declined to 53 per cent in 1958, and increased again to over 57 per cent by 1963. The increase from 46 to 57 per cent between 1945 and 1963 represents in itself a growth of 24 per cent in the proportion of expenditures on personal health care services absorbed by hospital operating expenditures.

³ Canada, Department of National Health and Welfare, Research and Statistics Division, Expenditures on Personal Health Care in Canada 1953-1961, Health Care Series Memorandum No. 16, Ottawa, the Department, 1963.

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While the operating expenditures of all hospitals have increased at a faster rate than total expenditures on personal health care services, the former have also risen more rapidly than any other individual category of personal health care spending. As already mentioned, the average annual rate of growth of hospital operating expenditures between 1945 and 1963 was approximately 13 per cent. During the same period, expenditures on physicians' services increased at a rate of less than 11 per cent, expenditures on prescribed drugs and on other personal health services grew at a rate of about 10 per cent, while expenditures on dentists' services grew at a trend rate of around 9 per cent a year.⁴

The fact that the postwar rate of growth of expenditures on the individual components of personal health care services has differed significantly is reflected in the changing pattern or distribution of expenditures on personal health care. The percentage distribution of these expenditures in Canada by type of service is shown in Table 14 for the years 1945, 1953 and 1963.

Hospital operating expenditures have been by far the largest single item over the entire period 1945-1963, accounting for over half the total cost of personal health

⁴ Royal Commission on Health Services, loc.cit.

TABLE 14

Expenditures on Personal Health Care,
Amount and Percentage Distribution,
Canada, 1945, 1953 and 1963.

Type of Service	1945		1953		1963	
	Amount	Percent- age of Total	Amount	Percent- age of Total	Amount	Percent- age of Total
	\$m.	%	\$m.	%	\$m.	%
Hospital Services	129.5	45.7	404.0	55.0	1,156.3	57.3
Physicians' Services	76.2	26.9	176.6	24.0	456.4	22.6
Dentists' Services	29.5	10.4	60.5	8.2	134.8	6.7
Prescribed Drugs	23.2	8.2	48.8	6.7	136.2	6.7
Other Services	25.0	8.8	45.0	6.1	135.0	6.7
TOTAL	283.4	100.0	734.9	100.0	2,018.7	100.0

Sources: Table 13; Royal Commission on Health Services, Report, Vol. I, Ottawa, Queen's Printer, 1964, Table 11-1, pp. 426-7; Department of National Health and Welfare, Research and Statistics Division, Expenditures on Personal Health Care in Canada 1953-1961; and unpublished data.

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care in 1963, and have experienced the largest relative change - from 46 per cent of personal health care expenditures in 1945 to 57 per cent in 1963. In the same period the share of the personal health care dollar going to physicians' services declined from 27 per cent to 23 per cent and the share absorbed by dentists' services, from 10 per cent to 7 per cent. Between 1945 and 1953 the proportion of total spending on personal health care represented by prescribed drugs and other services contracted, but from 1953 down to 1963 the percentage of the personal health care dollar allocated to prescribed drugs remained constant, while the proportion going to other services expanded slightly. Thus it is evident that a dollar spent for personal health care services in 1963 was not divided among the suppliers of these services in quite the same way as was a 1945 dollar.

The steadily increasing proportion of personal health care expenditures allocated to the operation of hospitals and the declining proportion going to physicians' services reflect the increasing use of hospitals in modern medical practice.⁵ The practice of medicine is being concentrated more and more in the hospital because of the

⁵ L.F. Detwiller, "Changing Concepts in Medical and Hospital Care," Canadian Hospital, Vol. 37, No. 5, May, 1960, p. 49.

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specialization which has developed in the medical field, requiring new and more elaborate equipment as well as additional personnel. The growing percentage devoted to hospital operating costs reflects also the implementation of the federal-provincial hospital insurance program in the country.

2. Hospital Operating Expenditures and Total Consumption Expenditure - Hospital operating expenditures may be compared with what may be called "total consumption expenditure" in order to show in a general way how much of the current expenditure of the personal and government sectors on goods and services has been devoted to the operation of Canadian hospitals. The term "total consumption expenditure" is used here to represent the sum of "Personal expenditure on consumer goods and services" and "Government (current) expenditure on goods and services" as set out in the National Accounts. As these accounts are now constructed, the operating costs of all privately owned and municipal hospitals are included in the personal sector as a component of "Personal expenditure on consumer goods and services", while the operating expenses of all provincial and federal hospitals are included in the government sector as an item of "Government expenditure on goods and services".

As a proportion of all the consumption goods and services that individuals, households and governments buy

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each year, the operating expenditures of all hospitals in Canada rose from 1.97 per cent in 1949 to 3.45 per cent in 1963, with a slight reduction between 1950 and 1952. Over the whole period 1949-1963, the percentage of total consumption expenditure allocated to hospitals for their current operations averaged about two and one-half per cent; the 1963 ratio represented a relative increase of 75 per cent over the 1949 ratio. It is evident, then, that during these fourteen years, hospital operating expenditures have grown somewhat more rapidly than aggregate consumption spending in the personal and government sectors of the economy.

3. Hospital Operating Expenditures and Gross National Expenditure - Perhaps the most useful method by which to place the operating expenditures of hospitals in perspective is to relate them to the Gross National Expenditure (GNE) and thereby show the importance of these expenditures in the economy as a whole.

As a proportion of the total expenditure made to purchase all the final goods and services produced each year by the nation (GNE), expenditures for the operation of hospitals varied from 1.09 per cent in 1945 to 2.69 per cent in 1963, a relative increase of 147 per cent. In other words, one dollar in every 37 dollars spent on the nation's output in 1963 went toward the operation and maintenance of the hospital plant, as compared with one dollar in 91 for

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the year 1945. Between 1945 and 1963, however, hospital operating expenditures as a percentage of GNE fluctuated around an average ratio of 1.80, with two moderate declines in the first half of the nineteen fifties.

During the postwar period in Canada, the tendency has been for hospital operating expenditures to rise more rapidly than GNE, with the former increasing at a trend rate of 13 per cent and the latter at a rate of 7.4 per cent a year.⁶ As a result, the nation has been allocating an increasing proportion of its total resources almost every year to the operation of its hospitals.

4. Treatment of Expenditures on Hospital Care in the National Accounts - At this point it might be worthwhile to give some consideration to the sector analysis of expenditures on hospital care in the Canadian National Accounts. Under the present method of treatment in the Gross National Expenditure account, the operating expenditures of all privately owned non-commercial hospitals and municipal hospitals, as well as the fees paid to federal and provincial hospitals and to commercial hospitals, are included in the personal sector under the general heading "Personal expenditure on consumer goods and services"; the operating expenses of all federal and provincial government

⁶ Royal Commission on Health Services, op.cit., p. 459.

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hospitals are included in the government sector as a component of "Government expenditure on goods and services" (current expenditure). Payments by provincial governments to hospitals under public hospital insurance plans are classified as transfer payments under the heading "Grants to private non-commercial institutions". In view of the operation of public hospital insurance programs in all provinces and territories and with hospital operating costs being financed almost completely by the public sector of the economy, a major revision of the present treatment of hospital care expenditures in the National Accounts would seem to be warranted at this time.

In all provinces except Ontario, residents are compulsorily covered under public hospital insurance; in Ontario, about 99 per cent of the population is covered. The provincial governments have accepted the responsibility of meeting the operating costs of approved hospitals, and make periodic payments to them based on approved budgets. The hospitals agree not to charge insured patients for basic care, although charges for extra benefits such as luxury accommodation can be made. Uninsured patients, of course, must pay the daily hospital rates. Payments designed to cover most of the operating costs of hospitals can hardly be regarded as "grants", especially when legitimate deficits are made up by the public agency. If the transaction

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involving payment for final services is to be recorded in the Gross National Expenditure account, and the paying agent in this transaction rather than the ownership of hospitals is to determine the basis for designating the sector, expenditures under public hospital insurance plans, it is felt, should be treated as "Government expenditure on goods and services". Payments to hospitals rather than expenditures by hospitals would then be used as the basis for sectorizing expenditures on hospital care.

Under the present system of accounting, hospitals are treated as consuming entities in the personal sector and in the government sector. Such an approach, however, does not recognize hospitals as producers or sellers of services and government as the purchaser of these services. The consuming entity concept does not appear to be applicable to hospitals since these institutions are directly indemnified for providing insured services.

It is the contention of the writer, therefore, that all payments to hospitals under the provisions of provincial hospital insurance legislation in respect of individual patient care should be regarded as purchases of hospital services by the government sector and classified as "Government expenditure on goods and services". All payments made to hospitals by individuals, including charges for preferred accommodation and other uninsured services,

charges to uninsured patients and authorized daily charges, should be included in the personal sector as "Personal expenditure on consumer goods and services". It is important that residual consumer expenditures on hospital services be segregated or netted out in order to show shifts in sector purchasing from persons to governments, particularly after the implementation of public hospital insurance plans in the various provinces.

It should also be pointed out that the classification of provincial hospital insurance payments as government expenditure is in conformity with international practices. Regarding the allocation of expenditure between the current accounts of households and government, the United Nations System of National Accounts has adopted the general principle "that the purchase should be entered as an expenditure of the sector which actually makes the purchase..... If the (government) subsidy is paid directly to the doctors and hospitals only the amount actually paid by households is included in private consumption expenditure".⁷ The government sector would then be regarded as the purchasing sector and the amount of the subsidy would be entered in government consumption expenditure. This principle could serve as the

⁷ Statistical Office of the United Nations, Department of Economic and Social Affairs, A System of National Accounts and Supporting Tables, Studies in Methods, Series F, No. 2, Rev. 2, New York, United Nations, 1964, p. 25.

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basis for the proposed revision of the treatment of expenditures on hospital services in Canada's National Accounts.

B. International Comparisons

In the previous section hospital operating expenditures in Canada were related to total expenditures on personal health care, total consumption expenditure and Gross National Expenditure in order to illustrate the relative importance which Canadians have placed on the provision of hospital services. This comparison can perhaps be rounded out by examining similar ratios of expenditures on hospitals services in a number of other countries to see whether the Canadian experience has been significantly different from that of other nations. International comparison of such data will also be of some interest in determining whether there is any general level of spending on hospital services which is common to a number of different countries. It should be pointed out, however, that any comparison made at the international level is subject to serious limitations resulting largely from the difficulties involved in obtaining fully comparable data. Some of these limitations are discussed below, including those pertaining specifically to the data shown.

1. Limitations of International Comparisons - The limitations attaching to international comparisons such as

the one presented in this chapter can perhaps be divided into two groups: (1) statistical and conceptual limitations; and (2) other limitations. The first group includes those limitations arising from differences among countries in the definition of terms and concepts, in the classification and grouping of statistical data, and in the availability and quality of data. Also relevant here are certain limitations associated with the collection and reporting of statistics at the national and international level and with the presentation of the data for comparative purposes. The second group of limitations mentioned refers to certain factors which should be kept in mind when interpreting the data, including differences from one country to another in social, economic and political structures and policies, in demographic characteristics and health status of the population, and in systems of organizing and financing hospital services.

a) Statistical and Conceptual Limitations. There are many statistical and conceptual factors which can seriously impair the international comparability of the relevant data. One of the most difficult problems in this regard is concerned with the definition of the various

terms and concepts to be used in the study.⁸ The information published in one country usually cannot be reliably compared with that published in another since the scope of hospital services varies from country to country and concepts of hospital expenditure are not standardized. Thus, there is a need for the development and use of a set of uniform definitions and classifications which would lend the greatest possible measure of comparability to statistics collected from different countries.

Many of the terms and concepts used in the field of health can and do vary substantially in meaning from one country to another. In attempting an international comparison of expenditures on hospital services, therefore, it is necessary to define the nature and scope of hospital services as well as the concept of expenditures and their components. A clear definition must be drawn up as to what types of institutions are to be included in the term "hospital"; border-line institutions such as nursing homes, geriatric homes, convalescent homes, domiciliary care institutions, and medical clinics can sometimes be classified

⁸ For a detailed discussion of the problems involved in the definition of economic and medical concepts for purposes of international comparison, see Brian Abel-Smith, Paying for Health Services: A Study of the Costs and Sources of Finance in Six Countries, Public Health Papers No. 17, Geneva, World Health Organization, 1963.

as hospitals. The services provided by hospitals must be designated as including or excluding items such as physicians' services, education and research, out-patient services, and hospital-operated home care programs. It is also essential that the concept of expenditures be given precise definition since this term could mean the cost of constructing and operating hospitals, the amount of benefit payments under health insurance programs, or the amounts spent by consumers on hospital care. The concept of personal health care requires similar treatment in the interests of comparability. The components of Gross National Expenditure and other related economic aggregates may vary among countries, thus making it more difficult to obtain comparable data on these aggregates from each country. A lack of uniformity in the definition of basic terms and concepts is undoubtedly the main factor contributing to differences from country to country in the classification and grouping of statistical data.

Certain limitations result from the unavailability of information. In addition to the problem of obtaining comparable data for earlier years, data on the operating cost of hospitals are not readily available in some countries and even where they are available, these data are not reported by certain types of hospitals. Estimates of cost must usually be made where gaps exist in the actual

cost data available, and methods of estimation or calculation may vary considerably among countries. Both estimated and actual figures are often subject to adjustments which prove extensive. Another problem which must be recognized and dealt with is that of double counting. Thus, the quality or degree of accuracy of national statistics will differ from one country to another.

Additional limitations may arise from the collection and reporting of statistics both at the national and the international level. The practices of national data sources are not standard among various countries; for example, some countries report data on a fiscal-year basis rather than on a calendar-year basis. The collection of complete statistics at the national level necessarily requires time, with the result that final figures for many countries are not available before one to two years after the end of the year covered. This time lag between the publication of the data and the period to which they apply is increased by the length of time involved in the collection and reporting of the data on an international basis. In the absence of an official international data source the investigator must collect his own statistics, and it is here that the problem of a language barrier may arise in the analysis and interpretation of the data.

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After sufficiently comparable data on expenditures for hospital services have been obtained from a number of countries, there remains the question of how to present these data for purposes of international comparison.⁹

Absolute figures expressed in different national currency units are obviously of little value. These would have to be converted to a common currency unit which, in itself, can be a difficult task since it requires the selection of appropriate exchange rates. Even when converted, however, little meaning can be attached to a comparison based upon absolute numbers alone when these data refer to countries with different social, economic, political and demographic characteristics. Relative measures or indices are much more significant and useful as yardsticks for international comparisons than absolute figures. Therefore, the need to make comparisons in terms of a common monetary unit is obviated by relating expenditures on hospital services for each country to Gross National Expenditure or some other suitable aggregate.

b) Other Limitations. There are a number of factors in addition to those mentioned above which should

⁹ Irving J. Goffman, Some Fiscal Aspects of Public Welfare in Canada, Queen's University Papers in Taxation and Public Finance No. 1, Toronto, Canadian Tax Foundation, 1965, pp. 58-9.

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be kept in mind when interpreting the data used for international comparison and drawing conclusions on the basis of these data. The first consideration in this regard is the fact that comparisons are being made among countries which may or may not be homogeneous from a social, economic and political point of view. There are considerable differences from one country to another in the stage or degree of economic development, economic policies and organization, income and wealth, standard of living, and price level and structure. Differences in the political and social attitudes, policies and structures of countries also make for differences in the relative importance placed on hospital care. Further differences are to be found in the demographic characteristics of countries, e.g., the sex and age composition of the population.

In making an international comparison of expenditures on hospital services, another factor which must be taken into account is the health status of the population. These expenditures vary with the incidence and prevalence of disease and injury within a particular country. Thus, for example, a country which has been hit by a widespread epidemic of poliomyelitis or has experienced a relatively high incidence of heart disease or cancer will probably devote a greater proportion of its total resources to hospital care - other things being equal - than another

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country in which the health situation has been more favourable.

Consideration must also be given to the possible effects of differences among countries in systems of hospital care and hospital insurance on the international comparability of expenditures on hospital services. The organization and provision of hospital services, availability of hospital resources, patterns of hospital practice, and trends in hospital utilization vary according to country. In addition, there is wide variation from country to country in the methods of financing hospital services, particularly in the extent to which such services are financed by the private or the public sectors of the economy; also relevant here are the growth and development of voluntary and governmental hospital insurance schemes, the range of benefits provided, and the extent of population coverage.

There is another serious limitation inherent in international comparisons such as the one presented in this chapter. The relationship between expenditures on hospital services and Gross National Expenditure or some other yardstick gives no indication of the need for hospital care within a particular country or of the quality and effectiveness of the care provided. Thus, it cannot be concluded on the basis of the expenditure data alone that a country

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with a low level of spending (both in absolute and relative terms) is necessarily deficient in its provision of hospital services. Even if expenditures are low, the quality of care may be high. Or, conversely, the level of spending may be high, but the quality of care poor.

Finally, where international comparisons are made for any single year, these must be interpreted with caution.¹⁰ For example, if a public hospital insurance program were to be introduced in a period when the national income was at a level lower than usual, a country might appear to be spending a larger proportion of its Gross National Expenditure on hospital services. Over the long run, however, this may not necessarily be the case.

2. Analysis of Data - Bearing these limitations in mind, we can now proceed to examine some comparisons of expenditures on hospital services at the international level. Estimates of such expenditures in recent years for a number of selected countries have already been calculated in a study prepared by the Health Economics Section of the Research and Statistics Division of the Department of National Health and Welfare.¹¹ Certain data from this study

¹⁰ Royal Commission on Health Services, op.cit., p. 484.

¹¹ K.C. Charron, Health Services, Health Insurance, and Their Inter-relationship: A Study of Selected Countries, Ottawa, Department of National Health and Welfare, 1963, Chapter XX.

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are reproduced in Table 15, showing for seven selected countries the percentage increase of absolute and per capita expenditures on hospital services between 1953 and 1961, as well as the proportion of Gross National Expenditure and total personal health care expenditure spent on hospital services in these two years.

The seven countries for which comparable statistical data were available include Canada, the United States, New Zealand, the United Kingdom, France, Norway and The Netherlands.¹² Although these nations are all among the developed countries of the world, the organization, provision and financing of their hospital services vary all the way from the public service system in the United Kingdom to the essentially private enterprise system in the United States. The years 1953 and 1961 are the two terminal years of the study mentioned above, with the figures for 1961 representing the most recent data readily available at the present time. It should be remembered, however, that numerous changes and developments have taken place since these statistics were compiled.

¹² It was also intended to include Australia and Denmark in the comparisons, but the expenditure data for hospital services included expenditures on physicians' services performed in hospitals.

TABLE 15

Selected Ratios of Estimated Expenditures
on Hospital Services,^a
Seven Selected Countries,
1953 and 1961.

Country	Percentage Increase from 1953 to 1961		Expenditures as a Percent- age of Total Expenditures on Personal Health Care ^b		Expenditures as a Percent- age of Gross National Expenditure at Market Prices	
	Absolute Expendi- tures	Per Capita Expendi- tures.	1953	1961	1953	1961
	%	%	%	%	%	%
Canada	131.3	88.3	58.6	60.3	1.61	2.50
United States	128.7	98.0	40.8	45.1	1.08	1.74
New Zealand	82.9	54.2	58.6	58.6	1.96	2.23
United Kingdom	84.2	76.5	60.5	61.0	1.68	1.98
France	210.2	188.6	- ^c	- ^c	1.14	1.78
Norway	105.3	91.1	46.8	51.3	1.28	1.62
Netherlands	150.8	126.2	37.6	38.3	0.71	0.98

^a Includes expenditures on the services of all classes of hospitals. Excludes expenditures on physicians' services performed in hospitals as well as expenditures on public health and for capital purposes.

^b Includes expenditures on hospital services, physicians' services, prescribed drugs and dentists' services.

^c Information on expenditures for dentists' services not available.

Sources: K.C. Charron, Health Services, Health Insurance, and Their Inter-relationship: A Study of Selected Countries, Ottawa, Department of National Health and Welfare, 1963, Table B, p. 191 and Table D, p. 193; and unpublished data.

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For every country under review except Canada and the United States, most expenditure data on hospital services were obtained through special correspondence with the respective governments. These data were then supplemented with figures drawn from national and international publications. In some cases a considerable amount of estimation was necessary.

The definitions and methodology used by the Health Economics Section in its memorandum on personal health care expenditures in Canada¹³ were applied in the collection and presentation of the data for the other countries. Expenditures on hospital services represented by the statistics shown include the operating cost of public and private general, allied special, mental and tuberculosis hospitals. The concept of personal health care has been narrowed to include hospital services, physicians' services, prescribed drugs and dentists' services since expenditure data on other health care services such as private-duty nursing services, chiropractic services and non-prescribed drugs were generally excluded from available statistics. Expenditures on public health programs and for such capital

¹³ Canada, Department of National Health and Welfare, Research and Statistics Division, Expenditures on Personal Health Care in Canada 1953-1961, Health Care Series Memorandum No. 16, Ottawa, the Department, 1963.

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purposes as hospital construction have been excluded, as have the costs of administering all health insurance programs. Finally, no attempt has been made to draw conclusions about the quality of services or to evaluate the different systems of organizing, providing and financing hospital services.

a) Percentage Increase of Expenditures on Hospital Services. All seven countries in which expenditures on hospital services, excluding physicians' services in hospitals, could be compared spent more to operate their hospitals in 1961 than in 1953. The per capita as well as the absolute amounts spent on hospital services in each country increased during this eight-year period.

In five of the seven countries under review, absolute expenditures on hospital services more than doubled during the period 1953-1961. In France, where the cost more than tripled, the increase was largest, followed by The Netherlands with a rise of 151 per cent. New Zealand and the United Kingdom experienced the lowest increases, 83 and 84 per cent respectively. Absolute expenditures in Canada rose by 131 per cent in the same period, compared with 129 per cent in the United States and 105 per cent in Norway.

The percentage increases were of a somewhat different order, however, when expressed in per capita terms. Per capita expenditures on hospital services rose

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most sharply in France, moving upward by 189 per cent. This was a substantially faster rate of increase than the 126 per cent rise experienced by The Netherlands. The slowest rates of increase again were in New Zealand, 54 per cent, and the United Kingdom, 77 per cent. In the other three countries the increase ranged from 88 per cent in Canada to 98 per cent in the United States.

b) Expenditures on Hospital Services and Total Expenditures on Personal Health Care. As expenditures on hospital services are an important component - in fact, the largest single component - of expenditures on all personal health care services, it was found useful to express these expenditures as a percentage of total personal health care expenditures. The percentage of total expenditures on personal health care devoted to hospital services could only be shown for six countries since data on expenditures for dentists' services were not available for France.

Expenditures on hospital services as a proportion of expenditures on personal health care ranged in 1953 from 37.6 per cent in The Netherlands to 60.5 per cent in the United Kingdom. Canada and New Zealand spent 58.6 per cent, while the percentages for the United States and Norway were 40.8 and 46.8 per cent respectively. Eight years later, the hospital services component had risen, relatively speaking, in all of the countries under consideration except

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New Zealand where it remained unchanged. The percentages in 1961 ranged from 61 per cent in the United Kingdom to 38.3 per cent in The Netherlands. Hospital services accounted for 60.3 per cent of the personal health care bill in Canada, 45.1 per cent in the United States, and 51.3 per cent in Norway. It is interesting to note that the six countries ranked exactly the same in both years with regard to the proportion of personal health care expenditures absorbed by hospitals.

These figures reflect to some extent the varying relative importance of the public and the private sector among the countries in the financing of hospital care. It can be seen, for example, that in those countries where public or governmental hospital insurance programs and public funds from other sources meet most or all of the operating costs of hospitals (Canada, New Zealand and the United Kingdom), expenditures on hospital services account for well over half of all expenditures on personal health care. For those countries in which a considerably smaller proportion of hospital operating costs are financed from the public sector (the United States, Norway and The Netherlands), the hospital services component occupies a less important place in the total personal health care picture.¹⁴

¹⁴ Charron, op.cit., Chapters VI and XVII.

c) Expenditures on Hospital Services and Gross National Expenditure. In order to obtain some indication of the impact of expenditures on hospital services upon the national economy of each of the various countries under review, these expenditures have been related to the Gross National Expenditure at market prices for 1953 and 1961. To ensure international comparability when assessing expenditures on hospital services as a percentage of the Gross National Expenditure, G.N.E. figures for the selected countries were derived from data published on a uniform basis by the United Nations.¹⁵

The percentage of the Gross National Expenditure that was spent on hospital services in 1953 ranged from 1.96 per cent for New Zealand to 0.71 per cent for The Netherlands. Canadian expenditures amounted to 1.61 per cent of GNE, slightly below the 1.68 per cent expended by the United Kingdom. Percentages in the other three countries were clustered between 1.08 and 1.28 per cent. By 1961 all seven countries were spending a larger proportion of GNE on hospital services, with the range of percentages extending from 2.50 per cent for Canada to 0.98 per cent for The Netherlands. The New Zealand and United

¹⁵ Statistical Office of the United Nations, Department of Economic and Social Affairs, Yearbook of National Accounts Statistics, 1960 and 1961, New York, United Nations, 1961 and 1962.

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Kingdom percentages at 2.23 and 1.98 respectively were somewhat lower than the Canadian ratio. The United States and France each devoted about 1.76 per cent of GNE to these services, while Norway's expenditures had risen to 1.62 per cent. The arithmetical average of the seven selected countries was 1.35 per cent in 1953 and 1.83 per cent in 1961.

Interesting changes occurred between 1953 and 1961 in the ranking of the nations with regard to the percentage of Gross National Expenditure allocated to hospital services. In 1953 the order of spending was New Zealand, the United Kingdom, Canada, Norway, France, the United States and The Netherlands. By 1961, however, Canada had moved from third into first place, while Norway fell from fourth to sixth place. The rapid increase in Canada of expenditures on hospital services in relation to GNE during this period, which put its percentage above those of both New Zealand and the United Kingdom, reflects mainly the implementation of a nationwide system of hospital insurance in the same period.

d) Conclusion. International comparative analysis of data for seven selected countries indicates that the percentage increase of expenditures on hospital services in Canada from 1953 to 1961 was the third highest in absolute terms but the third lowest on a per capita basis.

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When these expenditures are expressed as a percentage of total expenditures on personal health care, Canada occupied second place in both 1953 and 1961. In terms of the proportion of Gross National Expenditure devoted to hospital services, Canada ranked third in 1953 and first in 1961.

C. Implications of Hospital Operating
Costs for Financing

Fundamental to any discussion of the economic aspects of hospital operating expenditures is the problem of financing these costs. Of all the changes affecting hospital services during the past decade in Canada, the most far-reaching and extensive changes have occurred in the realm of arrangements for financing the cost of hospital care. This section, therefore, will attempt to analyze the implications of hospital operating costs for financing in Canada. The first step will be to examine the various methods or arrangements which have evolved during the post-war period for the financing of hospital services, particularly the development and implementation of governmental hospital insurance schemes. The next step will be to look at the distribution of hospital operating expenditures by source of funds and the proportion of total costs of hospital care financed privately and publicly.

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1. Arrangements for Financing - Methods of financing hospital care have changed significantly during the postwar period in Canada. In earlier years the bulk of hospital revenues to meet operating costs were derived from direct payments by patients and their families at the time of hospitalized illness, while assistance for the care of indigents came from municipalities and philanthropic sources. As hospital care became increasingly expensive, new methods of financing had to be developed in order to ease the financial burden on individual patients and the municipalities. Both governments and voluntary groups sought to develop and expand measures for the collective financing of hospital services on a prepayment basis. Voluntary non-profit and commercial organizations established prepayment plans based on regular contributions by participants. Government agencies began to enlarge their direct payments on behalf of various indigent groups, to provide regular maintenance grants to hospitals, and to subsidize hospital care for specific diseases. Some provincial governments introduced their own public prepaid hospital care programs covering all or a portion of the population. Today, with the enactment of the federal Hospital Insurance and Diagnostic Services Act and the implementation of governmental hospital insurance schemes in all provinces and territories of Canada, tax funds have

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become the chief source of income for all classes of hospitals.

a) Voluntary Hospital Insurance. Ever since the turn of the century, expanded medical services and higher medical standards have been leading to more frequent use of hospitals and higher costs of hospital care. As their income requirements increased, hospitals had to find methods of financing that would assure them of payment for services provided to the community. At the same time, people were finding it increasingly difficult or burdensome to pay for hospital care at the time of illness and were seeking an orderly method of budgeting for these services. With the intensification of these problems in the 1940's and 1950's, voluntary non-profit and commercial organizations instituted and expanded prepayment plans providing for payment from pooled funds set up through regular contributions by participants as a method of distributing the cost over large groups of persons.

The development of voluntary hospital insurance plans in Canada is a fairly recent phenomenon, being about twenty-five years old. During World War II the Blue Cross movement was launched when the hospital associations established non-profit plans in a number of provinces. Soon after, the commercial insurance companies began selling individual and group hospital insurance. Hospital care

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benefits have also been provided by a number of consumer-sponsored co-operative plans.¹⁶ The principle of pre-payment protection for the individual was thus pioneered to a large extent by voluntary prepayment agencies.

The non-profit plans provided mainly "service" benefits, which entitled members to a maximum number of days of hospital care annually without charge to the patient, as well as a range of special services for which the patient was required to pay the charges above certain dollar limits. "Indemnification" contracts offered by commercial insurance companies reimbursed the individual patient rather than the hospital, providing cash payments towards the hospital costs incurred by the beneficiary, who was responsible for any difference between these stipulated amounts and the actual hospital charges. By the end of the year 1956, approximately 7.2 million persons, or 45 per cent of Canada's population, had been enrolled by voluntary hospital care insurance plans; in the six provinces without public hospital insurance schemes, the combined enrollment was 54 per cent of their population. The non-profit plans, mainly five Blue Cross plans operating in eight provinces, had a total enrollment of 4.1 million persons, while about sixty commercial insurance companies,

¹⁶ Royal Commission on Health Services, op.cit., pp. 389-90.

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comprising mostly life insurance and casualty insurance companies, had enrolled 3.7 million persons.¹⁷

Since the introduction of the federal-provincial hospital insurance program in Canada, legislation has been passed in all provinces which prohibits the sale of insurance for hospital care at the standard or public ward level by voluntary agencies. Persons insured under public hospital insurance programs are responsible for that part of the charge for preferred accommodation which exceeds the standard rate set for the individual hospital. Voluntary insurance, therefore, is still available in all provinces to cover the costs of semi-private or private hospital accommodation as a supplement to the standard or public ward coverage of governmental programs.

b) Government Maintenance Grants and Payments for Special Groups. Governmental financial assistance towards hospital operating costs dates from the last century in Canada when local governments were responsible for indigent care under the Elizabethan Poor Law tradition. As operating expenditures began to rise steadily, however, philanthropic sources and local tax funds gradually lagged behind the

¹⁷ Canada, Department of National Health and Welfare, Research and Statistics Division, Hospital Care in Canada: Recent Trends and Developments, Health Care Series Memorandum No. 12, Ottawa, the Department, 1960, p. 77. An estimated 600,000 persons had duplicate insurance coverage.

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growing cost of treating indigent patients in hospital. Provincial governments became involved in hospital financing initially on behalf of indigents resident in municipally unorganized territory, and in the case of prolonged illnesses such as mental illness and tuberculosis where relatively few persons could pay full costs of care over a long period of time. In time, various provincial governments began to subsidize hospital care for other specific diseases, to assist in paying the cost of care directly for various indigent groups, and to provide maintenance grants to hospitals on a regular basis.

The gradual assumption of responsibility for most of the cost of care in mental hospitals by provincial governments has been the major change in the financing of this class of hospitals since the end of World War II. Previously, patients who could afford to pay for their maintenance were charged for their care and treatment. This system of maintenance payments, however, has been discontinued in five provinces: Newfoundland and Saskatchewan provide complete free treatment; Manitoba covers minimum maintenance costs for all patients; in Nova Scotia the provincial hospital gives free care to patients requiring active treatment; and in Ontario mental hospital care is included in the provincial hospital insurance plan. In the other five provinces - Prince Edward

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Island, New Brunswick, Quebec, Alberta and British Columbia - a nominal charge according to ability to contribute may be made for care.

Provincial governments have also become the major source of income for the operation and maintenance of tuberculosis sanatoria. At one time, patients were expected to pay in accordance with their ability, but as treatment facilities and programs developed, it became apparent that financial problems were preventing many patients from remaining in sanatoria long enough to obtain maximum benefit. Since tuberculosis was a communicable disease and a major public health problem, provincial governments inevitably became concerned with the removal of financial deterrents to care. Provincial action in this area has taken the form of free care and treatment in sanatoria in seven provinces - Newfoundland, Prince Edward Island, Nova Scotia, New Brunswick, Manitoba, Saskatchewan and Alberta. Ontario has included care in tuberculosis sanatoria as part of the provincial hospital insurance scheme. In the remaining provinces of Quebec and British Columbia, provincial governments have also assumed most of the cost, but patients may be required to contribute a nominal amount according to ability to pay.

Unlike the situation for mental hospitals and tuberculosis sanatoria where most provincial governments

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had assumed responsibility for the cost of indigent care by the year 1957, statutory municipal responsibility for the financing of general hospital care of local indigent residents persisted in most provinces until the implementation of provincial hospital insurance plans. In fact, municipalities in the three premium-paying provinces - Ontario, Manitoba and Saskatchewan - continue to be responsible in most cases for the cost of hospital care provided to particular indigent groups, while the provincial government absorbs the cost of care of provincial public assistance recipients. In the other seven provinces, indigents and public assistance recipients, like all other residents, are entitled automatically to hospital insurance coverage. Generally speaking, the degree of municipal contribution to the financing of indigent care has been sharply reduced or eliminated as a result of public hospital insurance.

Provincial assistance to general and allied special hospitals had been increasing considerably for a number of years.¹⁸ Prior to the establishment of province-wide hospital insurance, almost all provinces provided statutory per diem maintenance grants which embodied the principle of government responsibility for ensuring continued operation

¹⁸ Ibid., pp. 81-4.

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of hospitals. Maintenance grants on behalf of all patients in recognized hospitals were paid by six provinces - British Columbia, Alberta, Saskatchewan and the three Maritime Provinces. Grants on behalf of public ward patients only were made by Ontario and Manitoba. Per diem maintenance grants on behalf of all indigent patients or all public assistance recipients were paid by Newfoundland, Manitoba and British Columbia. Payment of a specified share of the cost of indigent hospital care was also made by several provinces. These methods were used by the different provinces both separately and in combination.

c) Public Hospital Insurance. The voluntary and governmental financing arrangements described above helped to lift some of the financial burden from the individual patient and to stabilize hospital revenues, but, despite tremendous growth, failed to protect substantial elements of the population and to meet hospital requirements during a period of rapidly rising costs. Some provincial governments went further and introduced their own public hospital care prepayment plans for general care covering all or part of the population. It was in this setting that federal legislation was passed in 1957 authorizing grants-in-aid to the provinces to assist them in operating publicly-financed programs of hospital insurance and diagnostic services. These developments ultimately led

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to the establishment of a nation-wide hospital insurance program in Canada combining the principle of government responsibility for ensuring continued operation of hospitals with the principle of prepayment protection for the individual.

Tax-supported hospital insurance schemes began in Canada as a device to supply hospital services in certain sparsely populated rural areas. As far back as 1916 in Saskatchewan and 1919 in Alberta, provincial legislation authorized the formation of inter-municipal hospital districts for the construction and operation of local hospitals; some municipalities commenced immediately to prepay hospital care for resident ratepayers and their dependents through funds derived from property taxes. In Newfoundland the Cottage Hospital Plan was commenced for outlying areas in 1934 as a combined program of hospital construction and prepaid medical and hospital care, financed from annual subscribers' fees and provincial general revenues.

Saskatchewan became the first province to adopt a universal coverage hospital care prepayment plan under legislation enacted in 1946 and implemented on January 1, 1947, with financing through compulsory personal premiums and provincial general revenues. Two years later, British Columbia introduced a universal coverage prepayment program

financed from premiums collected primarily through a payroll deduction system; in 1954 premiums were discontinued and provision made for financing from general revenues. Alberta introduced grants-in-aid of municipal prepayment plans for public ward care in 1950 and, three years later, extended the grants to include "extra" or special services.

The overall situation in Canada in the mid-1950's, therefore, was that public hospital insurance programs were limited to four provinces, two with universal coverage plans and two with programs of wide coverage. The joint federal-provincial hospital insurance program was implemented on July 1, 1958, with participation by Newfoundland, Manitoba, Saskatchewan, Alberta and British Columbia. Further development of provincial hospital insurance schemes followed in the next few years until, by the beginning of 1961, public hospital insurance plans were established in all provinces and territories.¹⁹ The federal-provincial hospital insurance arrangements thus represent the culmination of a long series of efforts to find a solution to the increasingly complex problems involved in financing hospital care.

¹⁹ Ibid., p. 87. Provincial hospital insurance programs were inaugurated by Ontario and Nova Scotia on January 1, 1959; New Brunswick on July 1, 1959; Prince Edward Island on October 1, 1959; the Northwest Territories on April 1, 1960; the Yukon Territory on July 1, 1960; and the province of Quebec on January 1, 1961.

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The federal Hospital Insurance and Diagnostic Services Act of 1957 authorizes a federal-provincial arrangement to share the basic operating costs of providing prepaid care in approved acute treatment, chronic and convalescent hospitals. Although the basic content of provincial programs is defined in the federal Act and Regulations for grant purposes, each province remains free to decide the form of its own program, including methods of financing the provincial share of costs, certain details of eligibility for benefits and population coverage, scope of out-patient benefits, participating hospitals, methods of payment to hospitals, and the pattern of provincial administration. The arrangements that have been developed in many of these areas vary considerably from one province to another. The Canadian hospital insurance program, therefore, may be described as a series of individual provincial and territorial programs supported by contributions from the federal government.

Under the cost-sharing formula set out in the federal Act, the annual federal contribution to each province is the aggregate of 25 per cent of the per capita cost of in-patient services in Canada plus 25 per cent of the per capita cost of in-patient services in the province, multiplied by the average for the year of the number of insured persons in the province. An additional federal

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contribution is made in the same proportion towards the cost of any out-patient services provided. On a national basis and with all provinces and territories participating, the federal contribution represents about 50 per cent of the sharable cost of insured in-patient and out-patient services. On a provincial basis, however, the effect of the formula, which is based on a weighted average of national and provincial per capita operating costs of hospital services, is to vary the per capita amount payable and the proportion of sharable costs met by the federal government in each province because of differences from one province to another in the per capita cost of care. The federal government thus provides greater per capita assistance to high-cost provinces than to low-cost provinces, but pays more than 50 per cent of sharable costs to provinces where costs are lower than the national average and less than 50 per cent where provincial costs exceed this average. The inclusion of the national per capita cost component in the financial formula may provide to some extent a built-in incentive for economy of operation, particularly in the high-cost provinces.

Federal legislation provides for the inclusion of general and allied special hospitals and other special facilities rendering insured services (whether public, private or federal), but specifically excludes mental

hospitals, tuberculosis sanatoria and custodial care institutions from the federal-provincial program. The costs of psychiatric and tuberculosis care provided in approved general hospitals, however, are shared by the federal government under the program. Generally speaking, all public general hospitals have been approved for inclusion in the hospital insurance system, but variations among provinces exist with regard to certain classes of special hospitals, chronic hospitals, private hospitals and nursing homes.²⁰

Federal financial assistance to provincially administered hospital insurance schemes is directed principally towards sharing normal hospital operating and maintenance costs related to standard ward care. The most important exclusion from costs eligible for federal sharing relates to the capital cost of land and the capital cost and depreciation of buildings, as well as payments on capital debt. Expenditures for equipment, however, are considered to be a sharable item.

Methods of financing the provincial share of the cost of prepaid hospital care are diverse, with general revenues, provincial sales taxes, property taxes, personal premiums and co-insurance charges being used either

²⁰ Ibid., pp. 92-3.

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separately or in combination in the different provinces. Four provinces - Newfoundland, Prince Edward Island, New Brunswick and Quebec - and the Yukon Territory finance their hospital insurance schemes entirely from general revenues. In Nova Scotia, British Columbia and the Northwest Territories, the programs are financed partly from the proceeds of a retail sales tax. In Alberta, hospital insurance costs are met mainly from provincial general revenues, augmented by municipal revenues from a property tax. British Columbia, Alberta and the Northwest Territories supplement their sources of revenue by the levy of co-insurance charges directly on patients at the time of receiving insured services. Three provinces - Ontario, Manitoba and Saskatchewan - use contributory personal premiums with a multi-rate structure for single persons and families to help finance their plans. The federal share of the cost is financed through general revenues under the existing federal tax structure. Thus, the burden of the costs of hospital care is distributed in a wide variety of ways throughout Canada. Moreover, the federal contribution is redistributive geographically from high-cost to low-cost provinces since the latter receive a greater percentage subsidy from the federal government

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under the hospital insurance program.²¹

One of the major objectives of the joint federal-provincial hospital insurance program is to provide insured benefits that include basic in-patient and out-patient hospital services. The basic range of in-patient services stipulated in the federal Act which each province is required to provide includes: standard or public ward accommodation and meals; necessary nursing service; laboratory, radiological and other diagnostic procedures, together with the necessary interpretations; drugs and biologicals; use of operating room, case room and anaesthetic facilities; surgical supplies; use of radiotherapy and physiotherapy facilities where available; services rendered by hospital personnel; and other specified ancillary hospital services. The same benefits for out-patients, although not mandatory for provincial plans, are authorized for assistance under federal legislation and have been adopted in widely varying degree by all provinces and territories. Among the out-patient services offered are emergency care following an accident, diagnostic procedures and interpretations, radiotherapy and physiotherapy facilities, drugs, minor surgical and medical procedures, and certain psychiatric services.

²¹ Goffman, op.cit., p. 70.

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Another major objective of the federal-provincial program is to make prepaid protection against the costs of hospital care available to all residents under uniform terms and conditions. Over 99 per cent of the total eligible population of Canada is now covered under the program.²² Although the federal requirement is universal availability of benefits, specific conditions of eligibility for benefits and coverage do vary from one province to another.

The federal-provincial hospital insurance program, which became nation-wide in 1961, has radically altered the traditional methods of financing hospital care in Canada. It is a program designed to meet most of the operating costs of general and allied special hospitals, to improve and expand community hospital services within each province, and to make prepaid hospital care available to the whole population. For many hospitals the program has provided a guarantee of stable income based on continuing financial support. To the individual citizen it has meant prepayment of the bulk of the cost of hospitalized illness. The implementation of the Canadian hospital insurance program represented a major advance in the

²² Certain categories of residents entitled to hospital services under other specified federal or provincial programs and persons lacking residence qualifications are excluded from coverage under the federal-provincial hospital insurance program.

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development of public health insurance in this country and changed dramatically the role and scope of federal participation in the health field.

d) Other Sources of Funds for Financing. All classes of hospitals have been assisted by federal funds under the National Health Grants Program since its inception in 1948. In addition to the Mental Health and Tuberculosis Control Grants which support projects for the development and expansion of special services in these areas, other health grants may be used for hospital research projects and for the training and employment of hospital personnel, as well as for medical rehabilitation programs operated by hospitals. Provincial funds also assist hospitals in providing training programs for a wide variety of hospital personnel. Hospitals receive grants from universities, foundations, voluntary agencies, business corporations, and governments for conducting special research projects. Many local governments provide financial assistance to hospitals in maintaining services and in covering operating deficits.

Other sources of operating income include charitable donations from individuals and private agencies, income from investment of endowment and trust funds, and contributed services of personnel not receiving full remuneration. In addition, income from rentals,

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recoveries from salaries and wages for staff perquisites, and income from ancillary operations may be used to meet current operating and maintenance expenditures or operating deficits. Since tax funds are now the principal source of income for all classes of hospitals, these various miscellaneous revenue sources are of relatively minor significance in the financing of hospital operating costs.

2. Private and Public Expenditures on Hospital Services - As indicated in the preceding sections, the revenues to meet the operating costs of Canadian hospitals have come from numerous sources: direct payments by patients, payments by voluntary prepayment plans, government maintenance grants, government payments for special groups, payments by public hospital insurance plans, and miscellaneous other sources. Moreover, the relative importance of these income sources has varied considerably for different classes of hospitals and from one province to another.

The question now arises: how is the burden of the costs of hospital care distributed between the private and public sectors of the economy, and to what extent has the responsibility for financing these costs shifted from one sector to the other in recent years? To answer this question it is necessary to estimate the relative contributions from various private and public sources to the

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financing of hospital operations. This has been done in Table 16, which shows the percentage distribution of operating expenditures of all non-federal general and allied special, mental, and tuberculosis hospitals in Canada by source of funds for the years 1953 to 1963.

The distribution of funds in the private sector indicates that payments made directly by patients of their own hospital bills provided 34 per cent of the money required by general and allied special hospitals for operating purposes in 1953, but accounted for only 9 per cent in 1963. Payments by voluntary hospital insurance plans on behalf of their members, comprising insurance offered by both non-profit agencies and commercial insurance companies, rose slowly from 22 per cent of total expenditures in 1953 to a peak of almost 28 per cent in 1957, but fell to less than 4 per cent in 1963. The share of total operating funds provided by other private sources varied between 5 and 10 per cent over the ten-year period. Thus, while self-paying patients and voluntary prepayment plans once contributed the major portion of general and allied special hospital income, payments from these two sources are now of minor importance for hospital financing and are mostly made to cover items such as differential charges for preferred hospital accommodation and

TABLE 16
Estimated Total Gross Operating Expenditures of General and Allied Special,
Mental and Tuberculosis Hospitals,^a Percentage Distribution^b
by Source of Funds, Canada, 1953-1963.

Source of Funds	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963
General and Allied Special Hospitals											
Private Sector:											
Self-paying Patients	34.1	29.3	24.7	27.9	26.6	22.0	10.3	12.4	9.2	8.9	9.0
Voluntary Insurance Plans	22.4	24.1	25.1	26.4	27.7	27.1	10.9	8.4	4.2	3.8	3.7
Other ^c	7.3	7.7	8.8	8.5	9.0	9.7	7.8	9.1	5.4	6.0	5.3
Sub-total	63.8	61.1	58.6	62.8	63.3	58.8	29.0	29.9	18.8	18.7	18.0
Public Sector:											
Governments ^d	33.8	36.5	38.9	34.5	34.1	38.7	68.8	68.5	79.7	79.8	80.5
Workmen's Compensation Boards	2.5	2.5	2.5	2.7	2.5	2.5	2.2	1.6	1.5	1.5	1.4
Sub-total	36.3	39.0	41.4	37.2	36.6	41.2	71.0	70.1	81.2	81.3	81.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Mental Hospitals											
Private Sector	19.5	16.7	15.2	13.8	13.4	11.4	9.5	8.3	6.4	7.1	6.8
Public Sector	80.5	83.3	84.8	86.2	86.6	88.6	90.5	91.7	93.6	92.9	93.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Tuberculosis Sanatoria											
Private Sector	9.7	8.3	6.2	7.0	7.6	7.6	6.9	7.5	9.5	9.6	8.6
Public Sector	90.3	91.7	93.8	93.0	92.4	92.4	93.1	92.5	90.5	90.4	91.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

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^a Includes public and private hospitals, but excludes federal hospitals.

^b Items may not add to totals because of rounding.

^c Includes donations, investment income, contributed services, cash discounts, recoveries and sales, income from rentals and ancillary operations, miscellaneous income, and deficits.

^d Includes payments by public hospital insurance plans, government payments for special groups, and government grants.

Sources: Department of National Health and Welfare, Research and Statistics Division, Expenditures on Personal Health Care in Canada 1953-1961; Dominion Bureau of Statistics, Mental Health Statistics, Vol. III, 1962 and 1963, and Tuberculosis Statistics, Vol. II, 1962 and 1963; and unpublished data supplied by Research and Statistics Directorate, Department of National Health and Welfare.

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co-insurance charges levied on patients.²³

Within the public sector, federal, provincial and local governments provided about 34 per cent of the operating funds of general and allied special hospitals in 1953 through public hospital insurance plans, payments for special groups and maintenance grants. This proportion then levelled off at around 37 per cent for the next five years, but jumped up to nearly 69 per cent in 1959 following the implementation of the federal-provincial hospital insurance program. The government share continued to rise until, by 1963, all levels of government were contributing more than 80 per cent of the total funds required to finance the cost of hospital operation and maintenance. Payments by Workmen's Compensation Boards varied from one to three per cent of hospital operating funds between 1953 and 1963. It is of interest to note that, since 1959, public hospital insurance has accounted for the bulk of government payments to general and allied special hospitals because of its gradual extension to cover most of the special population groups and hospital services previously included under other

²³ The classification of sources of funds used in Table 16 is somewhat arbitrary since premiums paid by individuals and families under public hospital insurance plans are considered as public funds. If these premiums were to be included as part of the private sector, then the proportion of expenditures on hospital services financed from private sources would be somewhat greater than actually shown.

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financial arrangements.

Considering each sector as a whole, the proportion of total expenditures on general and allied special hospital services financed by the private sector of the economy declined from 64 per cent in 1953 to 18 per cent in 1963, while the proportion financed by the public sector increased from 36 per cent in 1953 to 82 per cent in 1963. These figures clearly illustrate the dramatic shift in the responsibility for financing the cost of hospital care from the private to the public sector that was brought about by the enactment of the federal Hospital Insurance and Diagnostic Services Act in 1957 and the introduction of governmental hospital insurance programs in all provinces and territories. In a period of less than five years, hospital care has shifted almost completely from the status of a "private service" to a "public service".

Reference to Table 16 also gives some indication of the trend in the financing of the cost of care in mental hospitals and tuberculosis sanatoria over the past decade. The public sector of the economy has been the major source of funds for the operation of mental hospitals in Canada. The proportion from this source rose fairly steadily from 80.5 per cent in 1953 to 93 per cent in 1963, with an offsetting reduction in the private sector from 19.5 to 7 per cent. The relative shares of the public and private

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sectors of the economy in supplying operating funds for tuberculosis sanatoria have changed very little in recent years. The public sector's contribution ranged from 90 to 94 per cent during the ten-year period under study, while the private sector's share varied correspondingly from 6 to 10 per cent.

Therefore it can be concluded that the operating cost of hospital care in Canada is no longer borne privately to any significant extent. More than 80 per cent of the total operating expenditures of general and allied special hospitals and more than 90 per cent of the operating costs of mental hospitals and tuberculosis sanatoria are currently being financed by the public sector of the economy. In other words, all classes of hospitals are now dependent upon public funds as their main source of operating revenue.

Perhaps it should be pointed out that the shift in spending on hospital services from the private to the public sector represents primarily a change in the institutional arrangement or mechanism for financing hospital operating costs. Such a change means the substitution of public payment for private payment involving outlays that would have been made in any event; in this sense, no additional expenditure that would result in a greater use of the nation's resources is involved. To the extent,

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however, that public financing has stimulated the demand for hospital services, thus leading to a higher total level of spending than would otherwise have been the case, there has resulted an increase in the quantity of total resources devoted to the production of these services.

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In Chapter I, the basic terms and concepts, sources of statistical data, and methodology used in the study are dealt with. The major economic features of the market for hospital care are described. A survey is made of hospital facility and manpower resources in Canada and their distribution by class of hospital and by province. Recent trends in the total capital and operating expenditures of Canadian hospitals are examined.

A hospital care market differs greatly from a perfectly competitive one. Inasmuch as a typical market for hospital services is characterized by the existence of few hospitals, an element of service differentiation, and incomplete knowledge on the part of the participants (buyers and sellers), it falls into the category of "imperfect competition". With regard to the behaviour of the participants in a hospital care market, the economist's general assumption that a seller or producer will attempt to maximize his total profit does not usually apply in the case of a voluntary or governmental hospital, although an unknown degree of profit-making motivates the owner of a typical private hospital. The economic premise that a buyer or consumer will try to maximize his satisfaction from various goods and services does apply, but with

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reservations, to the purchase of hospital care.

The demand for hospital care has certain peculiarities which tend to modify the usual pattern of consumer behaviour. These characteristics include the consumer's lack of complete information on the services he requires, the unpleasantness associated with hospitalization, the unpredictable incidence of individual illness, the lack of free choice among different hospitals by many buyers, and the low degree of substitutability of hospital care. The demand for the services of the industry as a whole or of a single hospital is highly inelastic (with respect to price) within a wide range of prices. The factors which explain the relative price inelasticity of demand for hospital care include the vital nature of the service, the public provision of hospital care in some cases, the determination of the nature and quantity of services by the physician, and the availability of hospital insurance.

The factors influencing the supply of hospital care are both economic and non-economic in nature. With respect to economic considerations, in the short run, operating or variable costs are more important in determining supply, while in the long run, capital or fixed costs will have more effect upon the quantity of service supplied. Non-economic factors affecting the volume of available hospital care include the large interest of

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society in hospitals due to the vital nature of the service, and the need for facilities for medical education and research. For an individual hospital and for the total number of hospitals in a market, the supply of hospital service is highly inelastic or unresponsive to price changes in the short run, with demand determining the quantity of service actually sold. In the long run, the size of a hospital and thus the quantity of service offered may change in response to a change in the demand for service (and in price in the case of a private hospital).

In setting a rate, the administrator of a voluntary or governmental hospital usually attempts to "break even", or balance total cost with total revenue, taking into account the relationship between the demand for services and the costs of providing them at the hospital. Although the process of price determination by the manager of a private hospital is not definitely known, it is not likely to involve profit maximization. Further empirical research is needed to clarify the nature of the economic motivation and the pricing process of the administrator of a private hospital.

The aggregate supply of hospital facility and manpower resources existing at any given time will greatly affect the scope, quantity, quality and costs of hospital services provided. At the end of the year 1963, there were

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206,700 beds set up for use in all classes of hospitals in Canada. Of this total, 62.5 per cent were in general and allied special hospitals, 33.5 per cent in mental hospitals, and 4 per cent in tuberculosis sanatoria. At the end of 1963, all classes of Canadian hospitals employed about 273,300 full-time and part-time personnel, representing 4.1 per cent of the nation's total civilian labour force. Of the overall total, 84 per cent were employed by general and allied special hospitals, 13 per cent by mental hospitals, and 3 per cent by tuberculosis sanatoria.

Hospital expenditures in Canada have increased substantially in recent years. Between 1953 and 1963, the annual total capital and operating expenditures of all Canadian hospitals rose by 158 per cent, the average annual rate of increase being 9.9 per cent. During the same ten-year period, estimated capital investment in hospital facilities amounted to almost \$1.7 billion, while annual capital expenditures on hospital construction, machinery and equipment went up by 59 per cent. The annual operating expenditures of all classes of hospitals in Canada increased by 186 per cent from 1953 to 1963, with an average yearly rate of growth of 11.1 per cent. Rising operating costs have been primarily responsible for the sharp increase in total hospital expenditures in recent years, as indicated by the increasing proportion of

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operating to total costs during the period under review.

In Chapter II, the postwar growth of capital expenditures on hospital facilities in Canada is examined both in absolute terms and in relation to larger economic aggregates. An analysis is made of the factors contributing to variations in the level of hospital capital costs and to the postwar increase in these expenditures. The effect of hospital capital investment on the supply and utilization of hospital facilities in Canada and on the costs of operating such facilities is dealt with. Consideration is given to the various public and private sources of funds for financing hospital capital expenditures.

Hospitals represent a major investment in land, buildings and equipment. The depreciated value of hospital capital assets in Canada is roughly estimated to be in excess of \$2 billion, while the replacement value of these assets is probably in the neighbourhood of \$3 billion. Gross new investment to build up this stock of hospital capital in the postwar period has been quite substantial, totalling over \$2 billion and representing more than 90 per cent of all capital invested in hospital facilities since 1926.

Annual capital expenditures on hospital facilities in Canada increased by 745 per cent over the eighteen-year period from 1945 to 1963. An analysis of statistical data

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reveals that this growth has been uneven, with several declines occurring in the period, and that postwar fluctuations in the growth of hospital capital expenditures have tended to parallel cyclical fluctuations in the economy. The two main components of hospital capital investment - new construction, and new machinery and equipment - rose by 687 and 1,068 per cent respectively during the period under review. The greater increase in the latter component reflects the growing use of specialized equipment in hospitals. Hospital capital investment forms an important segment of Canada's social capital, accounting on the average for almost one-tenth of total new investment in social capital during the period 1945-1963. Capital expenditures on hospital facilities, expressed as a percentage of total gross fixed capital formation (government and business capital expenditures), averaged almost two per cent over the same period, with the postwar declines in hospital capital investment following by about one to two years the downward turning points of aggregate capital expenditures. The proportion of Gross National Expenditure devoted to capital investment in hospital facilities grew from 0.19 in 1945 to 0.54 in 1955, and then declined to 0.44 per cent in 1963.

The cost per patient-bed of constructing and equipping hospitals varies substantially according to the

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type and size of hospital and the location of the hospital. The average cost of providing a hospital bed depends to a great extent on the quantity and scope of facilities associated with the bed. As a hospital becomes larger up to a certain size, economies of scale tend to keep the cost per bed down; beyond this size, however, the wider scope of special facilities usually required will tend to offset these economies and raise the cost per bed. In 1963, the total capital costs of providing hospital facilities in Canada were estimated to range from a minimum of \$9,000 per bed, or \$16 per square foot, for a chronic or convalescent hospital to a maximum of \$30,750 per bed, or \$25 per square foot, for a teaching or large general hospital.

Quantitative analysis indicates that the major factors directly influencing the substantial increase of capital expenditures on hospital facilities in Canada during the postwar period are inflation, total population growth, and increased per capita real spending. When current dollar expenditures on hospital capital are adjusted for population growth, the 745 per cent increase in total expenditures between 1945 and 1963 becomes 439 per cent on a per capita basis. If the effect of price increases on hospital capital costs is eliminated, the 745 per cent rise of total expenditures in current dollar

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terms becomes 270 per cent in terms of constant (1957) dollars. When both these yardsticks are applied, the increase in the volume of real per capita investment in hospital facilities amounts to 136 per cent over the period under review, reflecting a higher rate of expansion and improvement of facilities. Therefore, the growth in the physical volume of per capita spending on hospital capital has more than kept pace with the rapid increase in prices and population during the postwar period.

There are also a number of qualitative factors on both the supply and the demand side which have contributed substantially to the postwar increase in capital expenditures on Canadian hospitals mainly through their effect on the rate of expansion and improvement of such facilities. On the supply side, these forces include the federal-provincial Hospital Construction Grants program and additional capital assistance provided by all the provinces, large individual and corporate donations, and the changing nature of facilities being constructed especially in connection with acute treatment facilities. On the demand side, the more important factors include the wartime deferment of civilian construction, the need for war veterans' hospital facilities, increased utilization of hospitals per unit of population, advances in medical science and technology, and the need to increase the

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productivity of physicians.

The growth of capital investment in hospital facilities has had a definite impact on the supply and utilization of these facilities in Canada during the post-war period. Although the 42 per cent increase in the supply of beds in all classes of hospitals between 1948 and 1962 was matched by population growth, new construction and the renovation of older hospitals has helped considerably to overcome the shortages in hospital accommodation, to reduce overcrowding in hospitals, and to replace obsolescent facilities. The rapid pace of modernization of Canada's hospital plant is reflected in the large proportion of the present bed capacity constructed since 1948. The stock of beds in general and allied special hospitals grew from 5.9 to 6.6 beds per thousand population between 1948 and 1962. Within this class of hospitals, the number of acute treatment beds went up from 4.6 to 5.2 per thousand population during the same period, while the corresponding ratio for chronic-convalescent beds increased from 0.4 to 0.9 per thousand population. The postwar growth of hospital beds has been accompanied by an increase in the quantity and quality of special service facilities in hospitals, with the number and type of facilities varying according to the class of hospital.

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One of the major consequences of the postwar growth in the supply of hospital bed facilities in Canada has been a steady increase in the frequency with which people go to hospital and in the total volume of hospital care. Between 1948 and 1962 the number of admissions to public general and allied special hospitals per thousand population rose from 111 to 149, while the number of patient-days of care per thousand population in these hospitals increased from 1,318 to 1,704. The overall admission-population and patient day-population rates of public general and allied special hospitals also moved upward in every two-year interval over the period under review, reflecting the fact that these hospitals are being used by an increasing proportion of the population and are providing an increasing volume of care per unit of population. In addition, the expansion of special service facilities in hospitals has made possible the provision of an increased amount of services within each day of care.

The relationship between hospital capital expenditures and operating costs is an important one. Capital investment in hospital facilities creates certain regular "fixed charges"; the nature and magnitude of such investment also affect considerably the "readiness-to-serve" costs and the "service" costs of hospitals. Hospital operating costs can often be reduced through capital projects designed to

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achieve economies of operation in the various service departments of hospitals. While hospital capital expenditures can be postponed in the short run without greatly affecting the operation of hospital facilities, capital needs must be met in the long run if adequate hospital services are to be maintained and if the existing capital stock is to be kept intact. The ratio of capital to operating expenditures for all classes of hospitals in Canada increased from 17 per cent in 1945 to 30 per cent in 1955 and then declined to 16 per cent in 1963, thus reflecting the decreasing importance of capital expenditures in the total picture of hospital expenditures in recent years.

The major sources of funds for financing capital expenditures on hospital facilities in Canada include philanthropy, other private sources, and government grants. Due to such factors as rising costs of hospital construction and the transfer to the public sector of the financing of hospital operating costs, the financing of hospital capital expenditures has become increasingly a responsibility of government in the postwar period, although the proportion of costs assumed by government has varied considerably from one province to another. Municipal responsibility for financing hospital capital costs has taken the form of support in the provision of voluntary hospitals, the

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construction of municipal hospitals, and the repayment of hospital capital debt. All provinces have participated in the federal-provincial Hospital Construction Grants program since its inception in 1948; in addition, some provinces have introduced supplementary grant assistance for hospital construction and renovation, while other provinces have made provision for the repayment of hospital capital debt. Under the terms of the Hospital Construction Grants, the federal government may finance up to one-third of the total cost of construction or renovation of hospital and related health facilities, with the provinces being required to match the federal contribution. Thus, despite the continuing importance of philanthropic or voluntary contributions, public funds have financed a sizeable proportion of the cost of constructing general and allied special hospitals and almost all of the cost of providing mental and tuberculosis hospital facilities.

In Chapter III, brief consideration is given to some recent trends in the total operating expenditures of each class of hospital in Canada. Variations in the level of per diem and per capita operating costs from one province and class of hospital to another and some of the factors underlying these variations are examined. A detailed analysis is made of the principal factors affecting the rapid increase of hospital operating costs in Canada

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during the postwar period, particularly those factors which have influenced the rate of utilization and the per diem operating costs of hospitals.

Recent years have witnessed a rapid rise in the operating expenditures of Canadian hospitals. The annual gross operating expenditures of all hospitals grew by 186 per cent over the decade 1953-1963, the average rate of increase being 11.1 per cent a year; moreover, the operating costs of each class of hospital (except tuberculosis sanatoria) rose uninterruptedly throughout this ten-year period. Non-federal general and allied special hospitals accounted for a greater proportion of the total operating costs of all hospitals in 1963 than in 1953, the share of the total cost absorbed by mental hospitals remained the same, and the proportions devoted to tuberculosis sanatoria and federal hospitals declined. The operating expenses of non-federal general and allied special hospitals rose by 221 per cent between 1953 and 1963, with a sharp acceleration in the rate of increase following the implementation of the federal-provincial hospital insurance program. Mental hospitals increased their spending on current operations by 181 per cent in the same period, while the operating cost of tuberculosis sanatoria remained fairly constant. In 1963 federal hospitals of all types spent 74 per cent more on operation and maintenance than ten years earlier.

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Hospital operating costs per patient-day of care vary substantially by class of hospital and from one province to another. In 1963, the per diem cost of hospital operation in Canada ranged from \$27.60 in general and allied special hospitals to \$6.69 in mental hospitals, reflecting the provision of a proportionately greater volume of services per patient-day in the former class of hospitals. Within each class, operating expenditures per patient-day will vary according to the type of hospital, with the cost being substantially lower in extended treatment than in acute treatment hospitals. Per diem costs also vary considerably with the average size of hospital; as a hospital increases in size beyond a certain point, unit (per diem) costs tend to rise since the wider scope of services usually provided by larger hospitals tend to offset any economies associated with the greater scale of operations. The scope of the hospital service program is a very important factor affecting hospital costs per patient-day, the cost rising generally as the number, quantity and quality of special services provided increase. The proportion of payroll expense to total operating expenses is another major factor contributing to per diem cost variations among hospitals, with higher per diem costs being associated usually with a larger proportion of payroll expense. Provincial variations in the average cost of hospital

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operation per patient-day are affected by provincial variations in these and other factors such as standards of hospital care, degree of utilization of personnel and facilities, demographic and morbidity characteristics, wage and price levels, per capita disposable income, climatic conditions, and degree of urbanization. Within each province, per diem expense will vary according to the location of the hospital.

There is also wide variation in the per capita operating costs of hospitals among the different classes of hospitals and the provinces. The national average per capita cost in 1963 varied from \$46.54 in general and allied special hospitals to \$1.62 in tuberculosis sanatoria, a reflection of the difference in the quantity of resources allocated to each class of hospital. The province of Saskatchewan had the highest per capita expenditure during 1963 for general and allied special hospitals and mental hospitals, while Newfoundland experienced the lowest per capita cost for both these classes of hospitals. The Atlantic Provinces had the highest per capita levels of expenditure for tuberculosis sanatoria. Provincial variations in the average per capita cost of hospital operation are influenced by factors related to wages and prices, income, climate, demography, morbidity, and the supply and utilization of hospital resources.

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Over the sixteen-year period from 1947 to 1963, the total annual operating expenditures of all classes of hospitals in Canada rose by 519 per cent. This increase in hospital operating costs is the composite result of four groups of factors: inflation, total population growth, changing utilization of hospitals per unit of population, and increased quantity and quality of hospital services per patient-day. Many of the economic, social and scientific forces underlying these factors are external in nature and are largely beyond the control of the individual hospital, while others are subject to some degree of influence on the part of hospital management.

If the value of the dollar had remained unchanged from 1947 to 1963, the increase in the total operating expenditures of all classes of hospitals, expressed in terms of constant (1957) dollars, would have been only 174 per cent as compared with the 519 per cent rise in current dollar terms. If, in addition, population had remained the same, the increase in hospital operating expenditures - expressed in terms of constant-dollar expenditures per capita - would have been 82 per cent. The contribution of inflation, population growth, and changing utilization rates to the increase in total operating expenditures of all hospitals for this period may be excluded by expressing the increase in terms of constant-dollar expenditures per

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patient-day of care, which rose only 81 per cent. The hypothetical increase of 81 per cent between 1947 and 1963 in the gross operating expenditures of all classes of hospitals represents the net effect of a variety of quantitative and qualitative factors which are internal to hospital operation, involving changes in the quality, scope, volume and complexity of hospital services provided per patient-day. Quantitative analysis thus indicates that, of the aggregate increase of 519 per cent in hospital operating costs during the postwar period, approximately two-thirds may be attributed to inflation, almost one-fifth to population growth, and about one-sixth to an increase in the quantity and quality of hospital services provided per patient-day.

Changes in the rate of hospital utilization per unit of population, expressed as patient-days of care per thousand population, have made an almost negligible contribution to the postwar growth of hospital operating expenditures for all classes of hospitals combined, with the rate increasing by less than one per cent between 1947 and 1963. The rate of utilization of general and allied special hospitals, however, increased by 19 per cent during this period, primarily as a result of a substantial rise in the admission rate. The total volume of care per thousand

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population in mental hospitals and tuberculosis sanatoria declined by 9 per cent and 64 per cent respectively between 1947 and 1963, a reflection of improved methods of treatment and changing types of facilities.

A number of factors have influenced the utilization rates of general and allied special hospitals in Canada during the postwar period and thus affected the increase in the operating costs of these hospitals. The increased percentage of total births and deaths occurring in hospital has been a major factor in the postwar increase of hospital utilization rates. The rise in these rates partly reflects the increasing use of hospitals by women of child-bearing age and patients over 65 and, to a lesser extent, by the very young and middle-aged. The absolute increase in these four population groups is significant since they have comparatively high patient-day rates. The increased number of older persons has had a particularly strong impact on rates of hospital utilization because of the higher admission rate and longer length of stay associated with chronic and long-term conditions.

The development of voluntary and governmental hospital insurance plans has also contributed substantially to the upward trend in hospital utilization rates. Statistical data show that most provinces experienced a sharp upswing in their volume of care rates during the

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initial years following the establishment of universal public hospital insurance programs. In addition, the postwar increase in the supply of hospital beds per thousand population has led to a higher rate of hospital utilization. On the other hand, the development and increasing use of alternative facilities and services have relieved the pressure for hospital accommodation to some extent. Advances in medical science and technology have affected considerably the utilization rates of hospitals, shortening the duration of hospital stay for some conditions and increasing the period of hospital care required for many other conditions. While there are other factors which influence hospital utilization rates, further research is needed in order to analyze these factors more deeply and to determine their precise effect on hospital usage.

The most important factors contributing to the increase of 81 per cent between 1947 and 1963 in the average cost per patient-day of operating all classes of hospitals in Canada were changes involving the payroll component of this cost, and scientific and technical advances in medicine. The increase in payroll expense both in absolute terms and as a percentage of total hospital operating costs has accounted for an extremely large share of the postwar increase in the per diem cost of hospital operation. Among public general and allied special hospitals, constant-dollar

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payroll expenditures per patient-day of care rose 138 per cent from 1947 to 1963, compared with an increase of 24 per cent in all other expenditures. For these hospitals, gross salaries and wages absorbed 48 per cent of total operating expenditures in 1947 compared with 64 per cent in 1963, indicating the increasing importance of the payroll component in the hospital budget.

Further analysis indicates that a number of factors have affected the absolute and relative increase in hospital payroll expenditures during the postwar period in Canada. The steady decline within the past two decades in the provision of staff perquisites and the conversion to full cash remuneration of employees by hospitals have increased payroll and decreased non-payroll expenditures. Increased salary and wage rates of hospital personnel have been a major factor in the postwar rise of hospital labour costs per patient-day. Competition from other employers for personnel, particularly female workers, who make up an extremely large proportion of the hospital labour force, has forced hospitals to raise their pay rates to a level comparable to those of similar occupations elsewhere. Hospital wages and salaries have thus tended to rise more rapidly than average industrial wages and salaries, thereby reducing a long-standing lag. In addition, the impact of wage increases on hospital operating costs is much greater than the

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effect of equal pay increases on the operating costs of many other industries due to the relatively high ratio of payroll to total operating costs in the hospital service industry. Associated with rising salary and wage levels is another factor contributing to the increase of hospital operating costs - the lag in productivity gains of hospitals behind those of other industries. Because of the labour-intensive nature of hospital service, opportunities for achieving productivity gains through the introduction of mechanization and automation have always been limited, especially in the professional and technical service departments. As a result, hospitals have been compelled to raise wages and salaries without receiving comparable benefits from increased productivity, thus pushing up operating costs.

The growth in the ratio of hospital employees to the patient population has been an important factor affecting the postwar increase of per diem payroll costs in Canadian hospitals. The upward trend in the overall staff-patient ratio has resulted largely from the reduction in the number of hours worked by each hospital employee and from the rise in the quantity of professional, technical and supportive services rendered per patient-day of care. Various improvements in the working conditions of hospital employees, such as the gradual reduction in the length of

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the hospital work week, the gradual elimination of the split shift, and the expansion of fringe benefits have contributed to the rise in hospital payroll expenditures per patient-day. The decline in the proportion of unpaid personnel working in hospitals due to the remuneration by hospitals of a larger proportion of physicians and the decrease in the amount of service contributed by student nurses have also affected the postwar growth of per diem hospital payroll costs. In addition, the increase in the proportion of higher-paid skilled hospital employees in professional and technical categories has raised the average rate of pay per worker and the payroll component of hospital expenditures. Finally, the registration and licensure of technical and professional hospital personnel and the growing unionization of hospital workers have contributed to the increase in wages and salaries and in hospital labour costs per patient-day.

Another group of factors contributing to the rapid increase of hospital operating costs per patient-day in Canada during the postwar period includes those arising from scientific and technical advances in medicine and involving tremendous growth in the quantity and quality of specialized hospital services per patient-day. Hospitals have been called upon to provide the new and more effective procedures and techniques developed by medical research for

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diagnosis, treatment and rehabilitation, most of which have added to rather than reduced the unit cost of hospital care. These procedures and techniques range all the way from the use of artificial kidney machines to the establishment of home care programs and have been developed not only for short-term acute care but also for long-term continued treatment. Hospital facilities and services have been expanding in quantity and improving in quality in order to keep pace with these advances in medical knowledge, science and technology. Although the growth of special facilities and services has forced hospital per diem costs upward, it has also increased the volume, scope and complexity of services provided to hospital patients. Statistical data show that the proportion of Canadian hospitals offering special services such as laboratory and radiological services, anaesthesia services, electrocardiography, blood banks, and out-patient services has risen considerably in the postwar era.

The increase in the quantity and quality of special hospital facilities and services operates to raise costs per patient-day by placing greater demands on personnel, equipment and other supply factors involved in the provision of hospital care. The impact of advances in medical science and technology on the per diem cost of hospital operation is reflected in recent changes in the absolute and relative

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amounts expended by hospitals for various types of services. Between 1953 and 1963, the cost per patient-day of providing nursing care in public general and allied special hospitals in Canada increased by 85 per cent in constant (1957) dollar terms, the per diem cost of professional (non-nursing), technical and supplemental services rose by 180 per cent, and the patient-day cost of general or "hotel-type" services went up by less than 50 per cent. In the same ten-year period, the proportion of the hospital dollar allocated to nursing care rose slightly, the percentage spent for professional, technical and supplemental services increased substantially, while the share absorbed by general services declined slightly.

The higher per diem cost of hospital operation since the war has partly resulted from a reduction in the average length of time that patients stay in hospital, which in turn has been brought about mostly by the development of new and more effective methods of diagnosis and treatment. With a reduction in the average length of stay, the professional and technical services provided to each patient have been concentrated over a shorter period of time, thus increasing the quality and contents of the hospital day. The rapid growth of the aged population has tended to drive up the cost of hospital care per patient-day since older people have conditions which, when treated

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in hospital, usually require more complex and more expensive diagnostic and therapeutic procedures. The increasingly greater role played by the modern hospital in the provision of community health care services and programs has further inflated hospital per diem costs. Another factor contributing to the increase in hospital operating costs per patient-day has been the rising cost of educational and training programs conducted in hospitals for student nurses, interns and residents, and other professional and technical personnel. The practice of many hospitals in using operating funds to obtain the capital needed to replace or improve old plant and equipment has increased the per diem operating expenses of these hospitals. Moreover, in meeting the demand for higher standards of hospital care and for a more attractive type of hospital service created by the rise in the standard of living, hospitals have pushed up their unit costs of operation.

Other factors have affected the rise in hospital operating expenditures per patient-day in Canada during the postwar period, exerting either an upward or a downward pressure on per diem costs. More intensive investigation and analysis is needed, however, in order to determine the extent to which these factors have influenced the per diem cost of hospital operation and maintenance.

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In Chapter IV, hospital operating expenditures are examined in relation to several larger aggregates, particularly within the context of the National Accounts. Expenditures on hospital services in Canada are then compared with similar expenditures in other selected countries, taking into account some of the limitations of such a comparison. Finally, consideration is given to the implications of hospital operating costs for financing in both the private and the public sectors of the economy.

Statistical data show that the annual gross operating expenditures of all classes of hospitals in Canada increased by 793 per cent between 1945 and 1963, growing continuously over the postwar period at a trend rate of about 13 per cent a year. During the same period, operating expenditures on hospital services have grown more rapidly than total expenditures on personal health care. As a proportion of the latter, hospital operating expenditures rose steadily from 46 per cent in 1945 to 57 per cent in 1963. The operating expenditures of all hospitals have also increased at a faster rate than any other individual category of personal health care spending since the end of the war and have been by far the largest single component over this entire period, accounting for over half the total cost of personal health care in 1963. Between 1945 and 1963 the proportion of total spending on personal health care

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allocated to physicians' and dentists' services declined, while the share absorbed by prescribed drugs and other services contracted during the first half of the period under study. The steadily increasing proportion of personal health care expenditures devoted to the operation of hospitals reflects the increasing role of hospitals in modern medical practice and the implementation of the federal-provincial hospital insurance program.

During the postwar period, the operating expenditures of all classes of hospitals in Canada have risen more rapidly than total consumption expenditure and Gross National Expenditure. As a percentage of aggregate consumption spending on goods and services in the personal and government sectors of the economy, hospital operating expenditures grew from 1.97 per cent in 1949 to 3.45 per cent in 1963, averaging about 2.5 per cent over the whole period. As a proportion of the total expenditure made to purchase the nation's output of final goods and services (GNE), hospital operating expenditures rose from 1.09 per cent in 1945 to 2.69 per cent in 1963 and fluctuated around an average of 1.80 per cent during this period. Further analysis reveals that the nation has been allocating an increasing proportion of its total resources almost every year to the operation and maintenance of its hospital plant.

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In view of the operation of public hospital insurance programs in all provinces and territories and with hospital operating costs being financed almost completely by the public sector of the economy, a major revision of the present treatment of expenditures on hospital care in the Canadian National Accounts would seem to be warranted at this time. It is argued that all payments by provincial governments to hospitals under the provisions of public hospital insurance legislation should be regarded as purchases of hospital services by the government sector and treated as government current expenditure, and that all payments made to hospitals by individuals should be included in the personal sector as a component of personal consumer expenditure. Payments to hospitals for final services rather than expenditures by hospitals according to ownership would then be used as the basis for sectorizing hospital care expenditures in the Gross National Expenditure account. Moreover, the classification of provincial hospital insurance payments as government expenditure is in conformity with international practices.

International comparisons such as the one presented in this chapter are subject to a number of statistical, conceptual and other limitations resulting largely from the difficulties involved in obtaining fully comparable data. Among the many statistical and conceptual factors which can

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seriously impair the international comparability of the relevant data, one of the most important is the definition of the various terms and concepts to be used. Many of the terms and concepts employed in the field of health and in the field of economics can and do vary substantially in meaning from one country to another. Since the lack of uniformity in the definition of basic terms and concepts contributes greatly to differences among countries in the classification and grouping of statistical data, there is need for the development and use of a set of standard definitions and classifications. Certain limitations are forced by the unavailability of information; a considerable degree of estimation is often required to fill in the gaps in the actual data available, with the result that the quality of national statistics will differ from country to country. Additional limitations may arise from the collection and reporting of statistics both at the national and the international level, e.g., the time lag between the publication of the data and the period to which they apply. In presenting the data for purposes of international comparison, relative measures or indices are much more significant and useful than absolute figures because of different social, economic, political and demographic characteristics in each country.

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There are also a number of other factors which should be kept in mind when interpreting the data used for international comparison. Differences in the social, economic and political structures and policies of countries and in their demographic characteristics make for differences in the relative importance placed on hospital care. Expenditures on hospital services will vary with the health status of the population, i.e., the incidence and prevalence of disease and injury within a particular country. In addition, there is wide variation from country to country in systems of organizing, providing and financing hospital services. Another limitation is that the relationship between expenditures on hospital services and Gross National Expenditure or some other yardstick gives no indication of the need for hospital care or of the quality and effectiveness of the care provided in a country. Finally, international comparisons which are made for any single year must be interpreted with caution.

International comparative analysis of data for seven selected countries (Canada, the United States, New Zealand, the United Kingdom, France, Norway and The Netherlands) indicates that the per capita as well as the absolute amounts spent on hospital services in each country increased between 1953 and 1961. The increase in both absolute and per capita expenditures was largest in France

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and smallest in New Zealand. The percentage increase of expenditures on hospital services in Canada during this eight-year period was the third highest in absolute terms at 131 per cent but the third lowest on a per capita basis at 88 per cent. As a proportion of total expenditures on personal health care, expenditures on hospital services rose in all of the countries under review except New Zealand over the period 1953-1961. With regard to the relative magnitude of this proportion, Canada occupied second place in both 1953 (58.6 per cent) and 1961 (60.3 per cent). These figures reflect to some extent the importance of the public sector in the financing of hospital care in Canada where governmental hospital insurance programs and public funds from other sources meet most of the operating costs of hospitals. Available data also show that all seven countries were spending a larger proportion of Gross National Expenditure on hospital services at the end of the period under study than at the beginning. In relation to the percentage of GNE allocated to hospital services by the various other countries, Canada ranked third in 1953 with 1.61 per cent and first in 1961 with 2.50 per cent, reflecting mainly the implementation of a nationwide system of public hospital insurance in this period.

Arrangements for financing the cost of hospital care have changed significantly during the postwar period in

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Canada. In earlier years hospital revenues to meet operating costs were derived from direct payments by patients and their families and from municipalities and philanthropic sources. As hospital care became increasingly expensive, the income requirements of hospitals increased and people found it increasingly difficult to pay for hospital care at the time of illness, while local tax funds and philanthropic sources gradually lagged behind the growing cost of treating indigent patients in hospital. Both governments and voluntary groups sought to develop and expand measures for the collective financing of hospital services on a prepayment basis.

During the 1940's and 1950's, voluntary non-profit and commercial organizations instituted and expanded prepayment plans providing for payment from pooled funds set up through regular contributions by participants. The principle of prepayment protection for the individual was thus pioneered to a large extent by voluntary prepayment agencies. The non-profit plans provided mainly "service" benefits, while "indemnification" contracts were offered by commercial insurance companies. By the end of the year 1956, approximately 7.2 million persons, or 45 per cent of Canada's population, had been enrolled by voluntary hospital insurance plans.

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In response to the steady rise in hospital operating expenditures, provincial governments began to assist in paying the cost of care directly for various indigent groups, to subsidize hospital care for specific diseases, and to provide maintenance grants to hospitals on a regular basis. All provincial governments have assumed responsibility for most of the cost of care in mental hospitals and tuberculosis sanatoria, with patients in some provinces being required to contribute a nominal amount according to ability to pay. This change in financing was brought about by the fact that, with the development of treatment facilities and programs, relatively few persons could pay full costs of care over a long period of time. Statutory municipal responsibility for the financing of care provided to local indigent residents in general and allied special hospitals continued in most provinces until the implementation of public hospital insurance plans. Prior to the establishment of such plans, almost all provinces provided assistance to general and allied special hospitals in the form of statutory per diem maintenance grants which embodied the principle of government responsibility for ensuring continued operation of hospitals.

These voluntary and governmental financing arrangements helped to lift some of the financial burden from the

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individual patient and to stabilize hospital revenues, but failed to protect substantial elements of the population and to meet hospital requirements during a period of rapidly rising costs. Some provincial governments went further and introduced their own public hospital care prepayment plans for general care covering all or part of the population. Newfoundland established the Cottage Hospital Plan in 1934 as a combined program of hospital construction and prepaid medical and hospital care for outlying areas, Saskatchewan and British Columbia adopted universal coverage hospital care prepayment programs in 1947 and 1949 respectively, while Alberta introduced grants-in-aid of municipal prepayment plans for public ward care in 1950. In the mid-1950's, therefore, public hospital insurance programs were limited to four provinces, two with universal coverage plans and two with programs of wide coverage.

It was in this setting that the federal Hospital Insurance and Diagnostic Services Act was passed in 1957 and the joint federal-provincial hospital insurance program was implemented on July 1, 1958, with participation by five provinces. By 1961 this program had become nation-wide, with public hospital insurance schemes having been established in all provinces and territories. Since many of the administrative arrangements at the provincial level vary considerably from one province to another, the Canadian

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hospital insurance program may be described as a series of individual provincial and territorial programs supported by contributions from the federal government.

Under the cost-sharing formula set out in the federal Act, the federal contribution represents about 50 per cent of the sharable cost of insured in-patient and out-patient hospital services on a national basis. Because of differences from province to province in the per capita cost of hospital care, however, the federal government provides greater per capita assistance to high-cost provinces than to low-cost provinces, but pays more than 50 per cent of sharable costs to provinces where costs are lower than the national average and less than 50 per cent where provincial costs exceed this average. Federal financial assistance to provincially administered hospital insurance programs is directed towards sharing the normal operating costs of providing basic care in approved general and allied special hospitals and other special facilities.

Methods of financing the provincial share of the cost of prepaid hospital care are diverse, with general revenues, provincial sales taxes, property taxes, personal premiums and co-insurance charges being used either separately or in combination in the different provinces. Thus, the burden of the costs of hospital care is distributed in a wide variety of ways throughout Canada;

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moreover, the federal contribution, which is financed through general revenues, is redistributive geographically from high-cost to low-cost provinces since the latter receive a greater percentage subsidy from the federal government under the hospital insurance program. The basic range of in-patient hospital services stipulated in the federal Act which each province is required to provide includes standard or public ward accommodation, laboratory and radiological diagnostic procedures, necessary nursing service, and other specified services and facilities. The same benefits for out-patients, although optional for provincial plans, have been adopted in widely varying degree by all provinces and territories. Federal legislation requires these benefits to be made uniformly available to all residents, but specific conditions of eligibility for benefits and coverage do vary from one province to another.

The federal-provincial hospital insurance program has radically altered the traditional methods of financing hospital care in Canada. With the enactment of federal legislation and the implementation of governmental hospital insurance plans in all provinces and territories, tax funds have become the chief source of income for all classes of hospitals. The establishment of the Canadian hospital insurance program represented a major advance in the development of public health insurance and changed dramatically

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the role and scope of federal participation in the health field.

All classes of hospitals are assisted by federal funds under the National Health Grants Program as well as by provincial and local funds and grants from private sources. Other sources of operating income include charitable donations, investment and rental income, contributed services of personnel, and staff perquisites, but these revenue sources are of relatively minor significance since hospitals now derive most of their income from tax funds.

An analysis of the distribution of hospital operating expenditures in Canada by source of funds during the period 1953-1963 indicates that, while direct payments by patients and payments by voluntary prepayment plans once contributed the major portion of the operating income of general and allied special hospitals, these two sources are now of minor importance for hospital financing. Payments by all levels of government, the bulk of which has been accounted for by public hospital insurance plans since 1959, provide more than four-fifths of the total operating funds of this class of hospitals. The proportion of total expenditures on general and allied special hospital services financed by the private sector of the economy declined from 64 per cent in 1953 to 18 per cent in 1963, while the proportion financed by the public sector

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correspondingly increased from 36 per cent in 1953 to 82 per cent in 1963, thus illustrating the dramatic shift in the responsibility for financing the cost of hospital care from the private to the public sector that was brought about by the implementation of the federal-provincial hospital insurance program. The public sector of the economy has also been the major source of funds for the operation of mental hospitals and tuberculosis sanatoria. Therefore, it may be concluded that the operating cost of hospital care in Canada is no longer borne privately to any significant extent.

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APPENDIX

ABSTRACT OF

Some Economic Aspects of Hospital Expenditures
in Canada¹

This thesis analyzed some economic aspects of hospital capital and operating expenditures in Canada during the postwar period.

An examination of the principal economic characteristics of the market for hospital care showed that this market differs considerably from the markets for other goods and services from the point of view of the nature and motivation of the market and the forces determining the demand, supply and pricing of hospital care. The aggregate supply of hospital facility and manpower resources existing at any given time will greatly affect the scope, quantity, quality and costs of hospital services provided. Rising operating costs have been primarily responsible for the substantial increase of total hospital expenditures in Canada in recent years, as indicated by the increasing proportion of operating to total costs.

¹ T. Sean Closs, master's thesis presented to the Faculty of Social Sciences of the University of Ottawa, Ottawa, Ontario, May 1967, xii-244 p.

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Hospitals represent a major investment in land, buildings and equipment. The postwar growth of capital expenditures on hospital facilities in Canada has been uneven, with fluctuations in this growth tending to parallel cyclical fluctuations in the economy. Hospital capital investment has remained fairly stable as a proportion of social capital investment and of aggregate capital expenditures during the postwar period, but gradually declined as a percentage of Gross National Expenditure in the second half of this period. The cost per patient-bed of constructing and equipping hospitals varies substantially according to the type and size of hospital and the location of the hospital. The major quantitative factors contributing to the postwar increase of capital expenditures on Canadian hospitals were inflation, total population growth, and increased per capita real spending, with the last factor being influenced by a number of qualitative factors on both the supply and the demand side. The growth of capital investment in hospital facilities has had a definite impact on the supply and utilization of these facilities in Canada during the postwar period. Hospital capital investment creates certain regular "fixed charges" and also affects considerably the "readiness-to-serve" and "service" costs of hospitals. Despite the continuing importance of philanthropy and other private sources, the financing of

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capital expenditures on hospital facilities in Canada has become increasingly a responsibility of government in the postwar era.

Recent years have witnessed a steady rise in the operating expenditures of almost all classes of hospitals in Canada. Hospital operating costs per patient-day vary substantially by class of hospital and by province, depending on the type and average size of hospital, the scope of the hospital service program, the proportion of payroll expense to total operating expenses, the location of the hospital, and other factors. There is also wide variation in the per capita operating costs of hospitals among the different classes of hospitals and the provinces. The increase in hospital operating costs in Canada during the postwar period is the composite result of four groups of factors: inflation, total population growth, changing utilization of hospitals per unit of population, and increased quantity and quality of hospital services per patient-day. A number of factors in turn have influenced the utilization rates of general and allied special hospitals, including the increased percentage of total births and deaths occurring in hospital, age and sex incidence, the development of voluntary and governmental hospital insurance plans, the increased supply of hospital beds per thousand population, the development and

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increasing use of alternative facilities and services, and advances in medical science and technology.

The most important factors contributing to the postwar increase in the average cost per patient-day of operating all classes of hospitals in Canada were changes involving the payroll component of this cost, and scientific and technical advances in medicine. Factors affecting the absolute and relative increase in hospital payroll expenditures include the conversion to full cash remuneration of employees by hospitals, increased salary and wage rates of hospital personnel, the lag in productivity gains of hospitals behind those of other industries, the growth in the ratio of hospital employees to the patient population, various improvements in the working conditions of hospital employees, the decline in the proportion of unpaid personnel working in hospitals, and the increase in the proportion of higher-paid skilled hospital employees. Advances in medical knowledge, science and technology have brought about tremendous growth in the quantity and quality of special hospital facilities and services; this growth in turn has increased the volume, scope and complexity of hospital services provided per patient-day, but has also placed greater demands on personnel, equipment and other supply factors involved in the provision of hospital care.

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The operating expenditures of all classes of hospitals in Canada have grown continuously over the post-war period, increasing at a faster rate than total expenditures on personal health care or any other individual category of personal health care spending. Hospital operating expenditures have also risen more rapidly than total consumption expenditure and Gross National Expenditure. In view of the operation of public hospital insurance programs in all provinces and territories and with hospital operating costs being financed almost completely by the public sector of the economy, a major revision of the present treatment of expenditures on hospital care in the Canadian National Accounts would seem to be warranted at this time. International comparisons are subject to a number of statistical, conceptual and other limitations resulting largely from the difficulties involved in obtaining fully comparable data. International comparative analysis of data for seven selected countries indicated that the percentage increase of expenditures on hospital services in Canada from 1953 to 1961 was the third highest in absolute terms but the third lowest on a per capita basis. When these expenditures are expressed as a percentage of total expenditures on personal health care, Canada occupied second place in both 1953 and 1961; in terms of the proportion of Gross National Expenditure devoted to

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hospital services, Canada ranked third in 1953 and first in 1961.

Arrangements for financing the cost of hospital care have changed significantly during the postwar period in Canada. Voluntary non-profit and commercial organizations established prepayment plans based on regular contributions by participants. Government agencies began to enlarge their direct payments on behalf of various indigent groups, to provide regular maintenance grants to hospitals, and to subsidize hospital care for specific diseases. Some provincial governments introduced their own public prepaid hospital care programs covering all or a portion of the population. Today, with the enactment of the federal Hospital Insurance and Diagnostic Services Act and the implementation of governmental hospital insurance plans in all provinces and territories, tax funds have become the chief source of income for all classes of hospitals. An analysis of the distribution of hospital operating expenditures in Canada by source of funds in recent years showed the dramatic shift in the responsibility for financing the cost of hospital care from the private to the public sector that was brought about by the implementation of the federal-provincial hospital insurance program.