DATA EVALUATION AND METHODS RESEARCH

Series 2
Number 80

The Status of Hospital Discharge Data in Six Countries

Availability, comparability, and quality of cross-national hospital discharge data. Descriptions of discharge reporting systems in six developed countries, with emphasis on coverage, types of data collected, procedures and definitions used in data collection and analysis and statistics routinely available. Discussion of health services system characteristics possibly affecting rates of hospital utilization.

DHEW Publication No. (PHS) 80-1354

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service
Office of Health Research, Statistics, and Technology
National Center for Health Statistics
Hyattsville, Md. March 1980

Library of Congress Cataloging in Publication Data

Kozak, Lola Jean.
The status of hospital discharge data in six countries.

(Vital and health statistics: Series 2, Data evaluation and methods research; no. 80) (DHEW publication; (PHS) 80-1354)
Bibliography: p.
Supt. of Docs. no.: HE20.6209: 2/80

1. Hospital utilization—Australia—Statistical services. 2. Hospital utilization—Canada—Statistical services. 3. Hospital utilization—England—Statistical services. 4. Hospital utilization—Finland—Statistical services. 5. Hospital utilization—France—Statistical services. 6. Hospital utilization—Sweden—Statistical services. I. Andersen, Ronald, joint author. II. Anderson, Odin Waldemar, 1914-joint author. III. Title. IV. Series: United States. National Center for Health Statistics. Vital and health statistics: Series 2, Data evaluation and methods research; no. 80. V. Series: United States. Dept. of Health, Education, and Welfare. DHEW publication; (PHS) 80-1354. [DNLM: 1. Patient discharge. 2. Hospitals—Utilization—Australia. 3. Hospitals—Utilization—Canada. 4. Hospitals—Utilization—Europe. W2 A N148b no. 80]
RA409.U45 no. 80 [RA971.6] 312'.07'23s
ISBN 0-8406-0186-7 80-607009

NATIONAL CENTER FOR HEALTH STATISTICS

OFFICE OF INTERNATIONAL STATISTICS

Vital and Health Statistics-Series 2-No. 80

DHEW Publication No. (PHS) 80-1354
Library of Congress Catalog Card Number 80-607009

ACKNOWLEDGMENTS

This report was financed by Purchase Orders PLD-07840-77 and PLD-08633-78 from the National Center for Health Statistics and by the Center for Health Administration Studies of the University of Chicago.

The report was made possible by numerous colleagues from several countries who provided us with the benefit of their considerable knowledge and experience, supplied us with published and unpublished materials, and gave us references to other reports and informants. These people are listed in appendix I. We are particularly indebted to our coordinators in each of the six countries, who bore the brunt of our continuing requests and critiqued drafts of the report: J. M. Martins and Marlene M. Lugg in Australia; W. A. Mennie, J. B. Davis, and A. Dobrodzicki in Canada; Donald Macmillan, Andrew F. Long, and J. M. Yates in England; A. S. Härö and Eero Linnakko in Finland; Arié Mizrahi and M. O. Gascon in France; and Björn Smedby in Sweden. To the extent that this report by people "on the outside looking in" faithfully reflects the situations in the six countries studied, we gratefully acknowledge our informants and coordinators. Of course, for any errors of fact or interpretation we must bear sole responsibility.

We also wish to thank Gretchen Fleming and Stan Merrill, who assisted with translation of materials, and our project officers, Robert M. Thorner and Jacob J. Feldman, whose support and suggestions far exceeded the usual project officer role.

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THE STATUS OF HOSPITAL DISCHARGE DATA IN SIX COUNTRIES

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INTRODUCTION

In recent years there has been a growing concern about problems in the organization and financing of health services in the United States. Debates over possible solutions to these problems have stimulated interest in the health services systems of other countries in the developed world. Examination of other health services systems might uncover new approaches to the difficulties experienced in this country. Further, many of the current proposals for change in the U. S. health services system have previously been implemented in other countries. Thus the extent to which the changes have actually produced the desired results can be investigated through the study of these countries.

The initial studies of health services systems in other countries were primarily descriptive. They outlined the major characteristics of the systems and pointed out broad similarities and differences between systems. These studies were an essential first step in cross-national research. They increased understanding of how health services systems function and pointed to the range of variation which currently exits in such systems. The information collected also led to the generation of many hypotheses about why differences exist in such aspects of health services systems as expenditure and utilization patterns, health levels, and patient satisfaction.

Now it has become important to move on to more stringent kinds of cross-national research.[1] The hypotheses which have been suggested need to be subjected to rigorous tests, and conceptual models of the structure and functioning of health services systems need to be developed. Some studies that begin to undertake these tasks include Kohn and White's study of health services utilization in seven countries[2] and Anderson's study of the health services systems in the United States, England, and Sweden.[3] Much more work of this type remains to be done.

One of the major difficulties in moving beyond the descriptive phase of research has been the problem of gathering sufficient comparable data on specific characteristics of different health services systems. To overcome the problem, some researchers have designed ad hoc data collection procedures and have collected for themselves the information they wanted from different countries. This approach can insure consistency and comparability of data, but it is quite complex, time consuming, and costly, and therefore the number of health services systems that can be compared is limited. Other researchers draw data from preexisting cross-national sources such as the summaries of health statistics prepared by the World Health Organization.[4-6] These sources present a different set of problems. Though they are relatively quick, simple, and inexpensive to use, and though they make possible studies of large numbers of health services systems, the data available in them are often not comparable enough to allow rigorous empiri-

cal tests of hypotheses concerning systems. In addition, because the summaries generally report only a limited set of aggregate measures on each country, it is impossible to inquire into many of the important relationships within systems.

Data regularly collected by health agencies within individual countries may help solve some of these problems. Such data are not as accessible as statistics in cross-national summaries are. However, it is generally much easier and less costly to use existing statistics than it is to develop and carry out special data collection procedures. Also, though there is a loss of flexibility in the use of preexisting statistics rather than of data from specially designed studies, a much wider range of data may be expected to be available from individual countries than that which can be incorporated in international summaries. Finally, while statistics collected by individual countries cannot be expected to achieve the comparability of statistics especially collected for comparative purposes, they should be somewhat easier to compare than are the statistics in cross-national summaries.

The summaries usually include the definitions used in compiling statistics, but this is often not enough information to acquaint the researcher with important differences in the types of entities included together in single categories. More detailed information on classification procedures is usually available from the agencies in the individual countries involved in data collection. Moreover, the wider range of data available from individual countries may allow comparable categories to be constructed by the researcher. Of course, the development of comparable categories is also essential to the policymaker and administrator who wish to monitor performance of different systems and consider programmatic implications based on observed differences. "Real" differences must be distinguished from "apparent" differences for such monitoring to be a useful exercise.

The potential that data regularly collected by individual countries have for cross-national comparisons has led to interest in greater knowledge about the status of such data. This study will address itself to one aspect of that interest. It will examine the availability, comparability, and quality of hospital discharge data in selected countries of the developed world.

Hospital statistics were chosen for study for several reasons. First, hospitals hold a central position in most health services systems. They deal with the most serious health disorders, and generally they absorb by far the largest portion of total health expenditures. Thus hospital utilization commands much interest in different countries. Health agencies collect a considerable amount of hospital utilization data, and frequently they are interested in comparing the patterns of use in their hospitals with those patterns in other countries.

In addition, it is likely that hospital discharge data are less problematic to compare than other types of health statistics are. All developed countries label basically the same type of institution as a hospital. Even though hospitals may be divided into different subgroups from one country to the next, the same general set of categories of hospitals exists cross-nationally. In contrast, when international comparisons of health personnel are attempted, researchers find categories that are widely used in some countries but insignificant in others, such as midwives; or they find categories, such as the *feldsher* in the Soviet Union, that lack any counterpart in many other health services systems. People making comparisons of health costs and expenditures must contend with radically differing health financing programs, different accounting methods, and exchange rates that are currently fluctuating and are problematic in the health care sector even in more stable periods. Thus if any data regularly collected in individual countries are useful for cross-national health sector comparisons, they should be hospital utilization data. Difficulties are found in comparing hospital statistics, but they can be expected to be even greater with other kinds of health statistics.

To assess the status of hospital discharge data, hospital statistical systems were examined in six developed countries: Australia, Canada, England and Wales, Finland, France, and Sweden. These countries were chosen for study for two major reasons. First, statistics concerning their health services systems have frequently been compared with U. S. health statistics. Second, the countries display a range of health services systems characteristics that can be expected to affect the ways health statistics are collected.

Sweden and Finland have drawn much

American interest because of their continuing success in reducing infant mortality rates. This success has sometimes been interpreted as an indication of a superior health services system. Hospitals in both countries are almost entirely publicly owned and operated, but they are the concern of local units of government rather than part of a single national health service. Canada and Australia are of interest to the United States because of the many similarities between their health services systems and the U. S. system. In both Canada and Australia the provision of health care is not a responsibility of the National Government but rests legally with the States or Provinces. Both countries have adopted national health insurance programs but continue to have important private segments within their health systems. The National Health Service in England and Wales, which provides almost all of the health services in the country, has probably been studied by U. S. health researchers more intensely and for a longer period of time than has any other health system. It continues to be a provocative contrast in health services organization to the U. S. system and to systems in many other developed countries. The French health services system is a more typical example of the health services systems in Western Europe and has therefore been gaining increased attention from comparative researchers in recent years. The French system contains a mixture of public and private services. Public hospitals are generally run by local communes, but a significant number of private hospitals also exist. A health insurance system was developed decades ago, and it was gradually expanded until it now covers almost all of the population.

This work is intended as an exploratory state-of-the-art study. Very modest funding support precluded travel to the countries included for data gathering purposes. We were thus limited to the use of published reports and unpublished materials that could be acquired from governmental agencies, private health organizations and research institutions, universities, and written and telephone communication with informed people in each country. Consequently, our selection of countries was also tempered by our previous knowledge of the systems, by our expectations that we could gain fairly ready access to sufficient information to prepare our report, and by our hope that we could prevail on colleagues within each country to provide us with the insights and direction we would need to accomplish our task.

After the countries to be studied had been chosen, inquiries were sent to people knowledgeable about hospital use statistics in each country. Each contact was asked a series of questions including what agency or agencies were responsible for the collection of hospital statistics, what procedures were followed in the collection and analysis of data, what institutions and patient groups were covered by the statistical system or systems and what ones were excluded, what items of information were collected on hospital inpatients, and how the information was coded and grouped. Questions were also asked concerning what guidelines were followed in the calculation of utilization statistics—whether there was any separation of short-term from long-term patients and how discharges and transfers were handled, for example; what kinds of information were regularly published or available on hospital use; and how health services systems characteristics affected hospital utilization statistics.

The primary focus of these questions was on any national statistical system in which data were collected by means of abstracts filled out on individual patients at the time of discharge. Such a system offers the most detailed information on hospital utilization. However, information was also requested on other sources of national hospital statistics, such as annual hospital reports or nationwide household surveys that included statistics on hospital utilization.

Each person originally contacted was also asked to recommend other individuals in the country who had knowledge of hospital statistics and who would be willing to assist with the study. Further inquiries were then sent to the individuals who were recommended. In addition, letters were sent to researchers in the United States and other countries not chosen for detailed study to obtain background information about the range of hospital statistical systems in operation and to request further recommendations on sources of information available on the six countries studied in detail.

Over 50 persons in 10 countries responded to the requests for information. Many not only

made comprehensive replies to the original set of questions but also answered a number of followup questions on points that were not clear to us. In addition, they commented on early drafts of the report. We were also fortunate that a number of our informants visited the Center for Health Administration Studies during the period this report was being prepared. We were thus able to discuss details face to face with R. B. Scotton of Australia, Donald Macmillan and Kenneth Lee of England, Hannu Vuori of Finland, Simone Sandier of France, and Björn Smedly and Monica Jonsson of Sweden. A list of all contributors is given in appendix I, and the information they supplied is noted throughout the report.

In addition to the information received through personal communications, material on the discharge reporting systems in the six countries was obtained from a review of published sources. For each country, publications that described or evaluated the hospital statistical systems were consulted, and samples of the regular reports that include hospital statistics were examined. The literature reviewed is listed in the references and appendixes. The project began in fall 1977. This report was completed in December 1978.

CHARACTERISTICS OF SIX COUNTRIES

Before examining hospital discharge data in each of the six countries, a few characteristics of the countries and their hospitals should be noted. First, in table A it can be seen that the countries differ widely in the size of their populations. Australia and Canada contain a fourth to a half as many people as France and England and Wales, which have relatively large populations; and Sweden and Finland have the smallest populations, with Finland 11 times smaller than France. The amount of area included in each country also varies greatly, with Canada, the largest, more than 65 times larger than England and Wales, the smallest. The number of persons per square kilometer is very low in Australia and Canada and quite high in England and Wales. The percent of the population living in urban areas is more similar from country to country, but it should be noted that Australia has the most highly urbanized population even though it has the lowest density, and that almost half of the population of Finland still lives in rural areas.

Selected vital statistics from each country are arrayed in table B. The statistics show that Australia and Canada have younger populations than do the European countries studied. Australia and Canada have the highest birth rates, and the percent of their populations under 5 years of age is higher than in all other countries except France. Finland and Sweden have the lowest infant mortality rates, and Sweden's population has achieved the longest life expectancies, with the difference particularly notable for males.

Table C presents information on the availability of beds in hospitals and related health institutions in each country. These statistics require further explanation. For Australia the

Table A. Spatial distribution of populations by country

Country	Population	Area in square kilometers	Persons per square kilometer	Percent of population in urban areas
Australia	13,546,000	7,686,848	1.8	86
Canada	22,479,000	9,976,139	2.3	76
England and Wales	49,185,000	151,126	325.5	78
Finland	4,731,000	337,009	14.0	51
France	52,975,000	547,026	96.8	70
Sweden	8,193,000	449,964	18.2	82

NOTE: Data are for most recent year available, 1971-76.

SOURCES: References 4, 5, 7-13.

Table B. Selected vital statistics by country

Country	Birth rate per 1,000 population	Percent of population under 5 years of age	Infant mortality rate per 1,000 live births	Average life expectancy in years		Percent of population 65 years and over	Death rate per 1,000 population
				Male	Female		
Australia	17.2	9.0	14.3	68.0	75.1	8.5	8.1
Canada	15.7	8.0	15.0	69.6	77.1	8.1	7.3
England and Wales	11.9	7.0	14.2	69.3	75.6	14.0	12.1
Finland	14.0	6.0	9.6	67.0	75.7	10.6	9.4
France	14.1	8.0	12.5	69.0	76.9	13.6	10.6
Sweden	12.7	7.0	8.6	72.2	78.1	15.0	10.8

NOTE: Data are for most recent year available, 1971-77.

SOURCES: References 5, 7-13.

Table C. Distribution of beds in hospitals and related institutions, by country

Country	Total	General and specialized hospitals	Psychiatric institutions	Nursing homes and related institutions
	Beds per 1,000 total population			
Australia	12.5	6.5	2.0	[1]4.0
Canada	15.5	7.2	2.1	[2]6.2
England and Wales	11.9	5.5	3.0	[3]3.4
Finland	22.1	11.2	4.2	[4]6.7
France	16.9	8.0	2.2	[5]6.7
Sweden	17.1	8.9	4.5	[6]3.7

[1]Nursing homes.
[2]Nursing homes, hostels, and homes for the aged.
[3]Private nursing homes and places in residential accommodations provided by or on behalf of local authorities.
[4]Beds for chronically ill in social welfare institutions.
[5]Hospices, retirement homes, and annex sections of public hospitals.
[6]Cottage hospitals, convalescent homes, and nonpsychiatric nursing homes.

NOTE: Data are for most recent year available, 1973-77.

SOURCES: References 6, 9, 10, 13-20.

general and specialized hospitals category consists of all hospitals approved by the Commonwealth Department of Health. Almost all of these approved hospitals provide short-term care. For Canada, the same category is composed of general hospitals, allied special hospitals, and tuberculosis institutions. Allied special hospitals are divided into two groups. The first contains rehabilitation, convalescence, extended care, and chronic care hospitals, and it accounts for 11 percent of all the country's hospital beds.[14] The second group is called "other hospitals" and it contains hospitals, such as orthopedic, cancer, and cardiology hospitals, that provide treatment for a limited range of diseases or injuries; or hospitals for a particular age or sex group, such as pediatric and maternity hospitals. These "other hospitals" account for approximately 4 percent of all Canada's hospital beds. Tuberculosis institutions contain fewer than 1 percent of Canada's hospital beds.

The statistics in table C for psychiatric, general, and specialized hospitals in England and Wales refer to National Health Service hospitals only, but private institutions are included in the category of nursing homes and related institutions. In Finland the general and specialized hospitals category includes beds in health centers, hospitals of institutions, and tuberculosis hospitals, as well as general hospitals. Health

centers have been opening in Finland since 1972, and beds in health centers have, to a large extent, replaced beds which previously existed in small rural hospitals. Presently health centers account for 2.3 beds per 1,000 population. Hospitals of institutions are units attached to institutions such as prisons, military garrisons, and homes for the aged. Close to 60 percent of the beds in hospitals of institutions are in units registered as hospitals, and they are similar to other general hospital beds.[9] Over 80 percent of the unregistered beds are attached to homes for the aged. Registered and unregistered hospitals of institutions account for 3.5 beds per 1,000 population. Tuberculosis institutions contain 0.5 bed per 1,000 population.

In France the statistics on general and specialized hospital beds include beds in short-stay, intermediate-stay, and tuberculosis hospitals or sections of hospitals. There are other long-stay units in many French hospitals in the annexes and hospice sections, but they are not considered part of the "hospital sector" since they provide care similar to that given in nursing homes in other countries.[10,21] Intermediate-stay sections contain beds for rehabilitation, convalescense, and other similar care. They account for 0.8 bed per 1,000 population. Tuberculosis units account for 0.5 bed per 1,000 population. In Sweden there are nursing homes that specialize in the care of the mentally ill. These are included along with psychiatric hospitals in the category of psychiatric institutions.

It can be seen in table C that England and Wales has the lowest bed-to-population ratio whether only the general and specialized hospitals or all health institutions are considered. Australia and Canada also have lower bed-to-population ratios than do the other countries studied. Finland and Sweden have the most general and specialized hospital beds, the most psychiatric beds, and the most total beds per population.

In table D the distribution of beds in different kinds of general hospitals and general hospital units is presented. Concerning the ownership of hospitals, it is important and to be aware that

Table D. Percent distributions of beds in general hospitals by selected characteristics, according to country

Country	All beds	Hospital ownership		Type of general hospital			Type of unit within general hospitals			
		Public	Private[1]	Teaching	Local or rural	Other	Maternity	Psychiatric	Other long-term	Other short-term
	Percent distributions									
Australia	100	[2]77	23	[4]27	[6]45	28	[9]13	[9]3	[9,11]3	[9]81
Canada	100	[2]99	[3]1	[4]27	---	63	9	4	[12]7	80
England and Wales	100	98	[3]2	---	---	---	7	9	[13]4	80
Finland	100	91	9	[5]21	[7]40	39	[10]6	1	[14]1	92
France	100	65	35	[5]24	[8]3	73	[10]8	4	[15]11	77
Sweden	100	99	1	20	4	76	4	6	[13]16	74

[1]Includes both profit and nonprofit hospitals unless otherwise stated.
[2]Includes nonprofit hospitals as well as government-owned hospitals.
[3]Short-term beds in private hospitals.
[4]Full teaching hospitals only.
[5]Public university hospital centers.
[6]Nonmetropolitan or country hospitals.
[7]Local hospitals and hospital units in health centers.
[8]Public local hospitals.
[9]Does not include Victoria.
[10]Maternity, obstetrics, and gynecology units.
[11]Geriatric units.
[12]Tuberculosis and chronic disease units.
[13]Tuberculosis and geriatric units.
[14]Tuberculosis units.
[15]Intermediate-stay units: convalescence, rehabilitation, etc.

NOTE: Data are for most recent year available, 1972-77.

SOURCES: References 6, 9, 10, 13-15, 19, 23-25.

in Canada, though 99 percent of hospitals are called public, only about 40 percent are operated by units of government.[22] An equal number are run by nonprofit lay groups, and 20 percent are operated by religious organizations. Only institutions run for profit are referred to as private hospitals in Canada. Canada thus contains the highest percent of nongovernment general hospitals, though Australia and France also have a sizable number. The general hospitals in the other three countries are near monopolies of the government.

To obtain an approximate picture of the level of complexity of the general hospitals in the different countries, the percents of beds in two subtypes of general hospitals are presented. Teaching hospitals are assumed to provide, on the average, a more complex level of medical services than do the other general hospitals; and rural or local hospitals, which are usually small and unspecialized, are assumed to provide a less complex level of services than is average. It can be seen in table D that the countries have about the same percent of beds in teaching hospitals, but Finland and Australia have many more local or rural hospitals than do France and Sweden. Canada and England and Wales also have hospitals that would be classified as local or rural, but the number of beds accounted for by such hospitals was not available in the materials assembled for this study. The last section of table D concerns the distribution of general hospital beds in types of specialized units that are often treated differently in hospital statistical systems.

The final introductory table, E, presents utilization statistics from general hospitals in each country. It can be seen that England reports the lowest level of hospital use whether the number of discharges or the number of bed days per population is considered. Finland reports the highest level of use, again whether the number of admissions or of bed days per population is considered. Along with Finland, France and Sweden also have a much higher number of bed days per population than Australia, Canada, or England.

Two figures relating to average length of stay are given. The first includes all general hospital patients. The second, which is expected to be more meaningful for comparative purposes, is the reported average length of stay excluding the largest number of nonacute patients or units. Using either set of statistics, patients in Australia and Canada can be seen to average the shortest lengths of stay. If all Sweden's general hospital patients are considered, Sweden records the longest average stay; but if only acute specialties are compared, Sweden, along with England and Wales, has an average length of stay intermediate between the other four countries. Finland and France report appreciably longer average stays, even in their short-stay hospital units.

Table E. Utilization statistics in general hospitals by country

Country	Year	Admissions or discharges per 1,000 population	Bed days per 1,000 population	Average length of stay		Bed occupancy rate (percent)
				General hospitals	Short-stay units	
Australia	1975-76	190	1,586	8.0	[1]8.0	[6]77
Canada	1975	160	1,589	9.5	[1]8.8	
England and Wales	1976	109	1,414	12.9	[2]9.5	76
Finland	1976	198	2,860	14.0	[3]11.6	[7]75
France	1976	162	2,430	15.0	[4]12.2	84
Sweden	1975	168	2,580	15.4	[5]9.9	82

[1]Short-term units in general hospitals.
[2]Nonpsychiatric specialties excluding younger disabled in National Health Service hospitals.
[3]Excludes hospitals of institutions.
[4]Short-stay departments in public and private hospitals.
[5]Nonpsychiatric hospitals excluding chronic sick.
[6]General and allied special hospitals—other statistics for general hospitals only.
[7]Excludes nonspecialized hospitals of health centers.

SOURCES: References 9-11, 13, 14, 17, 18, 26-28.

Many other general characteristics of the countries could be examined, and further information about health services systems are presented in the summary section of this report. First, however, the hospital discharge data collected in each country are described.

Every country was found to have in operation a statistical system or systems for the collection of information on individual patients discharged from hospitals. The systems that collect discharge data on general hospital inpatients are described in detail in the first section of the chapter for each country. Discharge reporting systems covering other types of hospital patients are discussed second. Hospital reports that include aggregate data on hospital use are investigated in the third section of each chapter, and the fourth section deals with nationwide household surveys.

AUSTRALIA

Australia is made up of six States and two Territories. The States are New South Wales (population 4.8 million), Victoria (3.6 million), Queensland (2.0 million), South Australia (1.2 million), Western Australia (1.1 million), and Tasmania (0.4 million). The two Territories have much smaller populations. The Northern Territory contains 97,000 persons, and the Australian Capital Territory has a population of 198,000.[7]

Most hospital statistics are collected and compiled by authorities in the individual States rather than by national authorities. The States have established separate hospital morbidity data reporting systems, and each State's system is somewhat different, although efforts have been made to standardize the procedures for data gathering and analysis. The States also collect the bulk of the administrative hospital statistics available in Australia—the statistics concerning the facilities within hospitals, staffing, financing, and utilization of hospitals.

National authorities have had some involvement in the collection of hospital statistics. For instance, a nationwide survey of hospital facilities and services was conducted in 1972-73 by the Hospitals and Health Services Commission. A hospital discharge reporting system[a] was established in 1975 as part of Medibank, the National health insurance program, but diagnostic information has not been collected by that system. Also, a national morbidity survey that includes data on hospital use was started in 1977 by the Australian Bureau of Statistics.

General Hospital Discharge Reporting Systems

National general hospital statistics were first collected in Australia in the 1950's as part of a voluntary health insurance program established by the National Health Act. However, hospital services not covered by the insurance program were not included in the statistics, and substantial numbers of services were not covered until the passage of the Health Insurance Act in 1974. The 1974 Health Insurance Act created Medibank, which at first provided compulsory coverage of almost all general hospital and doctors' services. Hospitals were expected to begin forwarding statistical information to the newly established Health Insurance Commission as soon as their States signed cost-sharing agreements with the Commonwealth and started receiving hospital benefits. On July 1, 1975, South Australia, Tasmania, and the Territories began receiving benefits and forwarding data to the Commission. Victoria and Western Australia joined the program as of August 1, 1975; Queensland, September 1, 1975; and New South Wales, October 1, 1975.[26]

In 1976 the Medibank scheme was revised so that it entered into competition with private insurance funds. The majority of the Australian population were allowed to opt out of Medibank and obtain private health insurance. However, all the public and private hospitals approved by the Commonwealth Department of Health continued to have the responsibility to report statistics on users to the Health Insurance Commis-

[a]The term "discharge" is used by the authors to refer to both live discharges and deaths, though in Australia the term "separation" is used to refer to both. See the section "definitions and procedures" for further information.

sion.[b] On November 1, 1978, Medibank was again revised and became a totally voluntary system. The effect of this change on the collection of statistics is not yet clear.[29]

The Health Insurance Commission uses statistics from the Medibank system in their management of the insurance system—for reveiwing claims, processing claims, and preventing fraud and overservicing.[26] The statistics are also expected to serve as a national data base for research into trends in the delivery, use, and cost of hospital services. The Commission routinely provides some hospital statistics to the Commonwealth Department of Health and the State health authorities. It also attempts to meet special requests for statistics from government agencies, professional associations, university researchers, and others who agree to uphold the privacy provisions of the Health Insurance Act. However, so many request have come to the Commission in the first years of the system's operation that it has been unable to meet all of them.

Within each State and Territory in Australia, there also exists a separate system for the collection of hospital morbidity statistics.[c] These statistical systems have existed for various periods of time. For instance, Queensland's has been in operation since the 1930's, while the New South Wales system, first organized in 1968, did not cover all the State's general hospitals until January 1,1978.

Most of the systems are cooperative projects of the Australian Bureau of Statistics (ABS) and the State health authorities. In New South Wales the ABS and the Health Commission of New South Wales collect and analyze morbidity data. In Queensland, the Department of Health collects data from public hospitals and the ABS collects from private hospitals. The South Australian Hospitals Department and ABS have responsibility for the South Australian system, and in Western Australia, ABS and the Public Health Department are involved in the system. In Tasmania and the Territories, ABS performs all the data collection, processing, and analysis and then makes the hospital statistics available to the health authorities.

Until 1972 the Victorian Hospitals and Charities Commission and ABS collected and published data from nonmaternity public ward patients in Victorian public hospitals. However, the Hospital Computer Services at the Monash University Computer Center has now developed an alternative data system to which most public hospitals in Victoria have subscribed.

At least two important changes are expected in the hospital morbidity statistics systems in the near future. The first affects only South Australia, where the hospitals department is being joined with the public health department into a health commission. The commission will have a comprehensive planning and research section, which is expected to make considerable changes in the hospital data collection systems by the end of 1979.[31] By 1981 other changes will have taken place in the systems in most of the States. The ABS has announced that it will withdraw from the States' hospital morbidity systems by that time, continuing to receive only completed computer tapes from the State health authorities.[29] Since the ABS has had major responsibilities for collection and analysis of hospital morbidity data in most States, its withdrawal will necessitate general reorganization of most systems.

The State health authorities are the primary users of the statistics from the morbidity studies in every State except Victoria. Health authorities utilize the statistics in health planning and assessment of health care delivery at the State, regional, and hospital levels. Research is also undertaken into problems in health care delivery, such as cost containment, integration of services, development of an equitable distribution of resources, and discovery of effective ways to manage the care of the chronically ill.

The individual hospitals which participate in the reporting systems also receive tabulations of the data on their patients. In every State but

[b]Unless otherwise noted, the remainder of this description of Medibank statistics is drawn from information furnished by D. R. Harvey, Assistant General Manager, Data Management, Health Insurance Commission.[25]

[c]Unless otherwise noted, the description of State hospital morbidity statistics is drawn from the second paper of the Working Party on Hospital Morbidity Statistics of the National Committee on Health and Vital Statistics.[30]

Queensland the return of information to the hospitals is routine. In Queensland, hospitals' requests for data are filled. The hospitals vary considerably in their use of the data they receive. Some use it for management purposes, but that necessitates a rapid feedback process, and, with the exception of Victoria, most States have had delays of several months between the close of a collection year and the receipt of the tables by the individual hospitals. Planning of individual hospital services and areawide planning are also based on these data, but often only the large teaching hospitals use the data in this way. In fact, smaller hospitals in some States make no use of the data at all.

Other government and private agencies and individuals, such as university researchers, also obtain sets of tables or computer printouts of the morbidity data from the collecting agencies or from the State health authorities for specialized studies of health services.

Methods of data collection.—The Medibank reporting system is in continuous operation. Hospitals collect information from each individual patient's hospital record and forward data to processing centers located in every State and Territory. As well as compiling information on admissions and discharges, the hospitals report data on long—staying patients from time to time. Thus the count of bed days can include those of all patients hospitalized during the year rather than just those of separated patients, as is the case when data are obtained only from discharge slips. At the processing centers the data are computer processed and stored in hospital statistical files containing patient records filed according to hospital. The file is continuously updated and readily accessible.

In the State hospital morbidity studies, statistics are collected from participating hospitals by means of discharge forms filled out on every inpatient. The forms are sent to each State's data collection agency, which is usually the ABS but may also be the health authority or the computer service. The data collection agencies transfer the information on the discharge forms to computer tapes and edit and process it. Routine tabulations and statistics for special studies are then obtained from the tapes.

Coverage.— In the Medibank system, all public and private general hospitals are expected to report information on their patients to the Health Insurance Commission. During the reporting year July 1, 1976, to June 30, 1977, all but three private hospitals with a total bed capacity of 10 forwarded data to the Commission. There were 53 public hospitals with a total of 351 beds not reporting during the period, but they accounted for less than 1 percent of Australia's hospital beds, and in some instances the occupancy levels in these small hospitals may have been zero for the year.

The private hospitals did not forward data on all their users. Hospital admissions paid for by workmen's compensation or other third party insurance, such as automobile accident insurance, were not reported upon. Also excluded in the reporting system were Veterans' Affairs hospitals and mental hospitals. Mental patients receiving treatment in general hospitals, however, were included, and in recent years an increasing amount of inpatient psychiatric treatment has been taking place in general hospitals. State hospitals providing long-term care and nursing homes were also excluded from the reporting system.

Information about an estimated 72 percent of the discharges from Australia's general hospitals is collected through the State morbidity studies. Most of the patients not covered are those hospitalized in private hospitals. No private hospitals are included in the statistical systems of Victoria, South Australia, Tasmania, or the Territories. However, the Australian Capital Territory contains only one 50-bed private hospital, and the Northern Territory has none at all; so their public hospital reporting systems are largely complete. Queensland receives statistics from private hospitals, but because these must be pooled to meet confidentiality constraints, individual institutions cannot be compared nor interarea usage tables produced. Western Australia and New South Wales collect statistics from their private hospitals, though reporting from private hospitals in New South Wales only began in 1978.

All admissions to public hospitals are reported upon in the morbidity studies with the exception of the systems in Victoria and South Australia. Victoria's Hospital Computer Services covers 70 percent of the admissions to public hospitals in that State. In South Australia, all

public hospitals except one large maternity hospital are expected to report on their admissions. In the 1976-77 reporting period, however, 19 small public hospitals also failed to forward any data to the authorities, leaving 62 hospitals in the system.[31]

Thus in New South Wales, Queensland, Western Australia, and the Northern Territory, hospital morbidity statistics cover 100 percent of the inpatients in general hospitals. In the Australian Capital Territory 93 percent coverage is estimated; in Tasmania, 72 percent coverage; in South Australia, 65 percent coverage; and in Victoria, 50 percent coverage.

Hospitals in the reporting systems generally do not report on health of newborns. Western Australia is an exception, however. Information on all newborns there is reported to the Midwives Data Collection System and merged with the hospital morbidity data at the end of each year.[29]

Statistics on inpatients in Veterans' Affairs hospitals are reported to the Department of Veterans' Affairs rather than to the usual State authorities. The Department has provided the collected data for ABS since 1974 and had already been giving information to some individual States prior to that time.[32] Western Australia, Queensland, and Tasmania include the data from the Department of Veterans' Affairs in their published hospital morbidity and utilization statistics.

Inpatients in psychiatric hospitals are not included in any hospital morbidity data reporting system except the one in New South Wales. There a separate morbidity data collection system for psychiatric inpatients was merged with the general hospital morbidity study on January 1, 1978. The other general hospital morbidity studies include data on psychiatric patients who are hospitalized in general or specialized wards that are part of general hospitals.

Items collected.—The information collected in the Medibank statistical system is in two parts. The first concerns the hospital and includes the hospital number, type, region, postcode (postal area), and number of beds. The second concerns individual patients and consists of the patient's health insurance number, date of lodgment with Medibank, date of processing by Medibank, billing date by the hospital, accommodation status, admission and discharge dates, admission and discharge codes, bed days, surname and initials, postcode, date of birth, and sex. No information is available on patient diagnoses or treatments.

The statistics collected in the morbidity studies are different in each State and Territory, but the differences have been reduced in the last decade. Australia's National Health and Medical Research Council (NH&MRC) adopted a minimum basic data set for discharge abstracts in 1967, and it has been gradually accepted by the States since that time. Variability remains, however, both in some of the items on the forms and in the definitions or specifications used for items.

The NH&MRC's set consists of the following items:[30]

Hospital and patient identifiers.

Admission date, separation date, and mode of separation (discharge, transfer, death with autopsy, death without autopsy).

Patient's address, date of birth, sex, marital status, and country of birth.

Principal diagnosis, underlying problem, other conditions and complications, principal operation and other operations, and external cause of any accident, poisoning, or violence.

The identifying items used in the morbidity studies of the States and Territories are quite similar. All have the suggested hospital and patient identifiers. South Australia, Tasmania, and the Australian Capital Territory also include ward identifiers, and Western Australia collects the patient's name along with his or her number.

All the morbidity studies also collect admission and separation dates and mode of separation. New South Wales and Western Australia obtain more detailed information on the mode of separation than do the other States and Territories. They divide discharges into categories such as by hospital or own risk and separate transfers into nursing home, psychiatric unit or hospital, or other hospital. The Australian Capital Territory (ACT) also subdivides transferred into other ACT hospital or other hospital.

Other utilization items are included on the forms in several States. Western Australia collects time of admission as well as date. New South Wales, Victoria, and Western Australia report the source of the referral to the hospital—such as outpatient department, emergency, or other hospital. South Australia, Western Australia, and the Territories ask mode of admission, which is divided into categories such as vehicular accident, workmen's compensation, shipping, and, in ACT, elective, urgent, or other hospital.

The attending medical officer is identified in New South Wales, Western Australia, Tasmania, and the Northern Territory. New South Wales and Western Australia also identify the operating medical officer. The general practitioner is identified on the forms in Victoria and ACT. ACT also identifies the specialist involved in treatment. The type of accommodation is recorded in Victoria and South Australia. An item listing the place to which the patient is referred is on the forms in New South Wales, Victoria, Western Australia, and Tasmania, including the categories private doctor, outpatient department, home, nonreferral, and so on. Length of stay is recorded in Victoria, a discharge number in Queensland, and the state of health at separation in Tasmania.

The items on the NH&MRC data set concerning the patient's social and demographic characteristics are included in all the morbidity studies. In addition, information on the patient's race is collected in South and Western Australia, New South Wales, and the Northern Territory. In the latter two, race is divided into Aboriginal and non-Aboriginal. South Australia uses the categories Aboriginal, white, other, and not stated. The patient's occupation is also collected in New South Wales, Queensland, South and Western Australia, and Tasmania.

The principal diagnosis, principal operation, and external cause of accident, poisoning, or violence are recorded in every morbidity study, but there is considerable variation regarding the other medical items. Only South Australia, Western Australia, and Tasmania collect data on the underlying problem; Western Australia collects up to five such problems. All the States and Territories except Victoria and Queensland collect "other conditions." ACT can record one "other condition"; the Northern Territory and New South Wales, two; Tasmania, three; Western Australia, five; and South Australia, nine. Complications are reported everywhere except Queensland and the Northern Territory, and the number that can be reported varies from two in ACT to nine in New South Wales and South Australia. Operations other than the principal one can be recorded everywhere but Queensland. Generally there is a space for recording one other operation, but in Western Australia up to four can be given, and in South Australia, eight. Finally, Tasmania, Western Australia, and ACT report information on the site of any accident as well as listing the external cause.

The diagnoses reported on the discharge forms are coded using the full four-digit codes of the eighth revision of the International Classification of Diseases.[33] Operations are classified by the three-digit codes of the General Register Office of England and Wales. The ninth revision of the International Classification of Diseases (ICD-9), and its supplementary classifications on operations are expected to be introduced for coding in 1979. Coding is sometimes done centrally by the agency that collects the discharge forms and sometimes by the individual hospitals. Both practices can exist in the same State. In South Australia and Western Australia, for instance, most of the larger teaching hospitals code their own discharge forms. Most of the smaller hospitals write out diagnoses and operations on the forms and send them to the Australian Bureau of Statistics to be coded. The principal diagnosis is defined as the disease or injury that best characterizes the period of hospitalization; and the principal operation, if there are more than one, is the operation that best characterizes the stay in the hospital.

Definitions and procedures.—When calculating utilization statistics from the data collected in either the Medibank system or the State morbidity studies, no division is made between long-term and short-term patients. In most cases, however, it is possible to obtain data on short-term patients from the systems by using length of stay as the criterion of short-term care. Almost all of the hospitals that report to either system are primarily concerned with the care of short-term patients, but a small number of patients in these hospitals have stays

of several months or even several years. These patients have an impact on the statistics concerning bed days and average length of stay.

In both systems, transfers from one hospital to another are counted as discharges. Transfers within a single hospital from one ward or department to another are considered part of a single admission. Discharges and deaths are combined and are referred to as "separations" in most Australian publications.

In the Medibank system, a patient who does not stay overnight in the hospital before discharge is said to have used 0.5 bed day. In the State morbidity studies, a stay lasting less than 24 hours is counted as 1 bed day.[34] In the Medibank system, bed days are calculated in two ways—"occupied" bed days, the number of bed days used in the year whether or not the patients were discharged during the year, and "completed separation" bed days, which are limited to days used by discharged patients. In the State systems, only "completed separation" bed days are calculated. In both systems, average length of stay is obtained by dividing the number of bed days of discharged patients by the number of discharges.

Information published or available.—Some statistics from the Medibank reporting system were published in the Health Insurance Commission's 1975-76 annual report.[26] The Commonwealth Department of Health also has begun publishing some Medibank statistics in its annual reports, but the statistics primarily concern claims paid rather than utilization of services.[15]

The 1975-76 report presents the number of discharges, bed days, and average length of stay by hospital type, patient status, and State. Two types of hospitals are referred to in the tables—recognized hospitals, which are under the administrative control of State health authorities; and private hospitals, which are independently administrated. In recognized hospitals there are two possible patient statuses—hospital patient and private patient. Hospital patients are those in standard wards treated by the hospital staff. Private patients are those paying for more privacy in their room accommodations and treated by fee-for-service physicians. All patients in private hospitals have private status. Other tables in the report include bed days per 1,000 population, discharges per 1,000 population, and occupancy rates by hospital type and State.

A draft of hospital statistics for 1976-77 compiled by the Health Insurance Commission includes additional tables based on the data collected: percent distribution of discharges and bed days by hospital type and patient status for each quarter by State, number of discharges for the year according to average length of stay by hospital type and State, number of approved hospitals and beds according to level of bed occupancy by hospital type and State, and number of discharges, related bed days, and average duration of stay by age and sex in each State.

Queensland, Western Australia, and Tasmania routinely publish data from their morbidity studies. New South Wales also expects to begin an annual publication in the near future. Each State's publication contains a somewhat different set of tables.

In the bulletin *Patients Treated in Hospitals, Queensland, 1975,*[35] published in 1977, the number of patients treated in hospitals is broken down by disease and sex; by disease, sex, and duration of stay; by disease, sex, and age group; by disease, sex, average period of treatment, and type of hospital; by disease and usual residence; and by disease, sex, and occupation. Deaths are categorized by disease and sex. Operations are classified by body location and sex; and major accident cases are given by age, sex, and external cause of injury.

Western Australia's *Hospital In-Patient Statistics, 1976,*[36] published in 1977, contains somewhat similar tables. The number of patients is broken down by age and duration of stay. The age and sex distribution, total bed days, and average stay are given for each principal condition, as is the percent distribution of patients in various disease categories. The principal operation and external cause of injuries are both subdivided by sex, age, and duration of stay.

The most recent Tasmania bulletin, *Hospital Morbidity, 1976,*[37] was published in 1978. It includes tables in which the principal diagnosis is broken down by age and sex; by average length of stay and age; and by number of patients, total days in the hospital, average length of stay, and sex. The principal operation is broken down by the same set of variables in a second group of tables, and accident patients are reported by

external cause and sex. This publication also contains time-series tables on number of patients, on total days in the hospital, and on average length of stay for principal conditions and external causes of injuries.

The other States and Territories produce and distribute sets of unpublished tables that generally concentrate on the principal diagnosis, the principal operation, and the external cause of injuries. Statistics are commonly given on the number of discharges, the total number of bed days, and the average length of stay for patients in each category of the classification of diseases, operations, or external causes. Age and sex distributions for each category are also available from most studies.

In addition, statistics in morbidity tables in the Northern Territory are generally broken down by ethnic group and hospital. Usual residence, status at discharge, and deaths are variables in some tables. The ACT tables also include statistics on patients' usual residence and status at discharge. Further, the number of patients and their average length of stay in each category of principal diagnosis and operation are given for each doctor in ACT. In Victoria, the Hospital Computer Services tables give additional breakdowns on patients' payment status. One set of tables in South Australia lists all the discharges from the hospitals by principal diagnosis, giving 14 items of information on each discharge. A similar listing of discharges by external causes is also produced. Other South Australian tables include, in addition to the usual variables, the type of admission, pensioner entitlement, insurance benefits, occupation, place of residence, and country of birth.

The New South Wales reporting system produces a great number and variety of tables and indexes. Statistics are often broken down by individual hospitals or regions as well as being given for the State as a whole. Usual residence, source of funds and hospital insurance, country of birth, medical officer, and race (Aboriginal or non-Aboriginal), as well as sex and age, are used as variables. Bed occupancy statistics are reported along with the number of discharges, total bed days, and average days of stay. In a relative stay index, comparisons are made between the actual and expected number of cases, numbers of bed days, and average length of stay; and the significance of the deviation between the actual and the statistics is shown. There are also length of stay percent distributions; "leakage" tables, cross-tabulations of usual residence by region of hospitalization; and separate tables on patients in the hospital for more than 2 months. Finally, there are indexes which list all the data collected from the records of any patient who has a selected disease or operation or who has stayed over 2 months in the hospital.

In Western Australia, sets of unpublished tables very similar to those produced in New South Wales are available along with the data included in the regular publication.[29]

Other Discharge Reporting Systems

Data collection.—Separate discharge reporting systems are also maintained to collect statistics on patients in Veterans' Affairs (VA) hospitals and in psychiatric institutions. The VA system covers discharges from all repatriation general hospitals. The Department of Veterans' Affairs operates one such hospital in the capital city of each Australian State.[32] The hospitals are responsible for the treatment of veterans for conditions attributed to their military service. They also provide care to the general community to the extent that excess capacity is available after the entitled veterans are served. All are teaching hospitals for undergraduate medical students, and all provide medical, surgical, and psychiatric services. No maternity service is available. The Department also operates auxiliary hospitals that provide long-term medical and nursing home care and emphasize active rehabilitation. Both types of hospitals are included in the morbidity data collection system run by the Department. Two of the general hospitals have computerized, online admission and discharge systems, but most collect the data on discharge forms and then transfer it to punchcards that are fed into a computer.[30]

Most psychiatric care in Australia takes place in hospitals and clinics directly operated and owned by State mental health authorities.[d] In

[d]Unless otherwise noted, the description of psychiatric statistics is taken from reference 38, an Australian Bureau of Statistics paper.[38]

New South Wales, the hospital commission recently took over responsibility for psychiatric facilities when it merged with the department of health, which had previously operated them.[39] In the Territories there are no separate institutions for mental patients.

All State mental health agencies collect discharge data on all inpatients under their control. In addition, some States receive data from private psychiatric hospitals and from psychiatric wards in general hospitals. The general hospital psychiatric patients often must be reported twice, both to the general morbidity and to the mental health statistical systems. This duplication has been eliminated in New South Wales, however. The separate psychiatric statistical system was discontinued there as of January 1, 1978, and uniform morbidity data were henceforth collected from all hospital patients whether physically or mentally ill.

In Victoria and Western Australia, computerized registers of psychiatric patients have been created by the mental health authorities. In Victoria the register includes data on every person who was residing in one of the Mental Health Authority's psychiatric facilities on July 1, 1961, or who has been admitted since that time.[40] The Western Australia register has, since 1971, contained information on all psychiatric inpatients, whether in mental or general hospitals, and on all who make outpatient and day visits to hospitals for psychiatric care.[29]

Items available.—The information collected on patients discharged from repatriation hospitals closely follows the minimum data set recommended by the National Health and Medical Research Council (NH&MRC) for general hospital patients. The only recommended item not included is "underlying condition," but the VA Department does collect information on up to four "other conditions." In addition to the recommended items, the Department records the patient's name and a ward identifier, whether the patient is Aboriginal or non-Aboriginal, the mode of admission, and the place to which the patient is referred after discharge.[30]

The data collected are used on a monthly basis to produce the diagnostic and surgical indexes used in many research programs. Unpublished statistics are also forwarded to the Australian Bureau of Statistics and to several State health authorities. In addition, statistics are published in the Repatriation Commission's annual report. The 1976-77 report, published in 1977,[41] presents data divided by sex and given separately for each treatment category (general medical, surgical, tuberculosis, psychiatric and nursing care, or long-term) within each VA hospital. Statistics presented include total number of patients treated, total inpatient days; average days of treatment per patient; average number of beds occupied daily; number of admissions; median age of patients admitted; number of readmissions; readmissions as a percent of total admissions; number of discharged, including deaths; and mean length of stay of patients discharged. Also presented is a time-series table on the percent distribution of patients treated in 16 disease categories.

Data collected by the psychiatric discharge reporting systems are generally similar from State to State, but differences remain even though NH&MRC has adopted a minimum data set for mental health statistics.

The NH&MRC set includes the following utilization items: date of admission or registration, name of the institution or facility, source of referral (self or relatives, private psychiatrist, other medical practitioner, outpatient sector, and so on), type of admission (whether first admission), classification at admission (voluntary, formally recommended, or forensic), number of previous admissions, details of leaves (type of leave, date out, date in, days absent), total days absent on leaves, number of day patient and outpatient attendance, any changes in classification during stay, date of discharge or death, and outcome of episode (died in hospital, left against medical advice, referred to private psychiatrist, referred to geriatric unit, and so on).

The recommended social and demographic items include the patient's name, sex, age, date of birth, status, any pension entitlement, birthplace, year arrived in Australia if not born there, education, and occupation of patient and of the main income earner in the patient's household. The medical items recommended are the principal condition treated, any alcoholism or other drug dependency; and the cause of death, antecedent causes, and other significant conditions contributing to death.

In no State do the utilization items collected exactly match those recommended by the NH&MRC, but many of the differences are superficial. For instance, items on type of admission, previous admissions, classification at admission, and changes in classification frequently are designed in different ways, but similar information is generally collected about these points. The major departures from the recommended form come on such items as details of leaves, which are omitted from every State's forms except Queensland, and numbers of day-patient or outpatient visits, which are reported only in Queensland, South Australia, and Tasmania. In addition to the recommended items, New South Wales, Victoria, South Australia, and Tasmania include an item identifying the patient's doctor.

The recommended social and demographic items are all collected on the discharge forms used in Tasmania and Queensland. The forms used in Victoria and Western Australia omit age, but it can be ascertained from the date of birth. South Australia, Western Australia, and New South Wales do not collect data on pension entitlement, and New South Wales also omits the items on when the patient arrived in Australia and his or her education. Additional items collected besides those recommended include address (in every State), next of kin (in all but New South Wales), religion (in all but Tasmania and New South Wales), race (in Western Australia and New South Wales), person(s) with whom the patient was living (in Victoria and Queensland), number of children (in South Australia) and age at admission (in Queensland).

Except for the cause of death, which is not reported in New South Wales, all recommended medical items are collected on the discharge reporting forms. In Victoria the additional item "method used" is on the form if suicide was attempted. In Queensland detailed questions must be answered on the patient's condition: whether there is any mental retardation and, if so, to what extent; whether organic brain impairment or epilepsy is present; the extent of alcoholism; the type of drug dependency; the means if there was a suicide attempt; and any physical condition associated with the psychiatric diagnosis. In South Australia a list of questions is asked about the treatment the patient received. Whether electroconvulsive therapy, major or minor tranquilizers, antidepressants, lithium, social work, and/or psychotherapy are received by the patient is noted; and biochemistry, EEG, and X-ray tests are reported.

The data collected on the forms are handled in the same general way as the data on the general morbidity forms are. Statistics such as number of admissions, number of discharges, average period residents were in the institution, and percent bed occupancy are computed by the mental health authorities. The distribution of patients within diagnostic categories is examined and broken down by the various utilization, social, and demographic variables that are collected. The information is used in epidemiological and other similar research. Statistics are also published in most States, either in bulletins specifically devoted to mental health statistics, as in Victoria and Western Australia, or along with other kinds of health statistics, as is done in South Australia.

Aggregate Hospital Reports

No national health agency in Australia, governmental or private, regularly collects reports of aggregate statistics from hospitals on their facilities and utilization. The need to establish a routine reporting system to collect such information has been identified by national authorities, but it remains unmet.[42] Meanwhile, some national hospital utilization data have been collected in a variety of studies from time to time.

The Hospital and Health Services Commission conducted a survey of hospital facilities and services in 1972-73. Victoria did not participate in the study, but 99 percent of the remaining hospitals in the country did. Personnel in each hospital filled out a questionnaire that requested information on number of beds, average number of beds occupied, and average length of stay during the year ending June 30, 1973. These statistics were to be reported separately for seven types of services: medical and surgical combined, geriatric, pediatric, psychiatric, obstetric, neonatal, and other. Also to be reported were the number of births, number of operations, attendances in the outpatient departments and emergency rooms, and radiology and laboratory services provided by the hospital during the year.

Results from the survey were published in 1974 in *A Report on Hospitals in Australia.*[24] The average occupancy rates by State and hospital type, beds per 1,000 population for each State and type of hospital service, average number of births per year by size of hospital, percent of total operations performed by size of hospital, and the like are presented in the report.

The Uniform Costing Committee of the Hospital and Allied Services Advisory Council (HASAC) began collecting standard financial statements from all public hospitals in Australia in 1971. The data from the statements are presented in reports to HASAC, the latest one being *Uniform Statements of Costs, Source of Funds of Hospitals and Nursing Homes and Government Assistance to Allied Services in Australia in the Year Ended 30 June '74.*[23] Included in it are statistics on the number of public hospitals in each State and their total available beds, the number of inpatients treated, total bed days, daily average of inpatients, bed occupancy rate, and average length of stay for inpatients treated during the year.

In the past, the *Official Year Book of Australia,*[43] published by the Australian Bureau of Statistics, included hospital statistics such as the number of beds in each State, admissions, inpatients treated, discharges and deaths, and average daily number of inpatients. The 1975-76 yearbook reported, however, that ABS would no longer publish Australia-wide data on public and private hospitals and nursing homes. According to the yearbook, limited State information on these institutions would continue to be published by State offices of ABS. (See, for example, reference 44.)

In addition to the publications by the State offices of ABS, State health authorities in New South Wales, Victoria, Western Australia, the Northern Territory, and the Australian Capital Territory routinely publish statistics on the utilization of public hospital facilities.[39] The other State health authorities also collect information on public hospitals, but they do not publish it. The State publications are generally similar.[45-47] The report of the Health Commission of New South Wales, *Statistical and Financial Data, Public Hospitals,*[48] can be used as an example of the type of statistics usually presented. As the title indicates, the report presents a considerable amount of data on hospital income and expenditures. Some information on hospital personnel and outpatient treatment is also presented. The main utilization statistics given are bed days, daily average of occupied beds, and average length of stay. Data are presented for individual hospitals and regions as well as for the State as a whole. The statistics from hospitals in metropolitan areas versus country areas are separated in some tables; and medical, surgical, and obstetric hospitals are sometimes separated from convalescent hospitals, nursing homes, and the like. Within hospitals, statistics on newborns are given separately, and information on obstetric patients is often separated from data on other inpatients.

Household Surveys

A new source of national data on hospital use is the yearlong national health interview survey conducted by the Australian Bureau of Statistics. Commencing on July 1, 1977, the study was undertaken to provide basic data on the health status of the population. Data were expected to be used by the Federal and State Governments and by other health and welfare organizations for planning new facilities and services and for measuring the utilization of existing facilities.

Data collection.—A total of 15,000 private households were randomly selected for the survey, using a stratified, multistage area sample design. Approximately 12,000 of the households were drawn from regions of specific interest to the health authorities of the States and Territories, with the remaining 3,000 chosen from outside the designated regions. ABS interviewers obtained information on all members of the households selected. Individuals aged 14 and over were interviewed personally, and information on children under age 14 was gathered from their mothers. Certain groups of people, such as the occupants of motels and hotels, diplomatic personnel, and non-Australians on vacation in the country, were excluded from the study. More importantly, persons residing in hospitals, nursing homes, and other health institutions were also excluded.

Items available.—In addition to the items on hospitalization, the survey contained questions

on current or recent illnesses; chronic illnesses; accidents; general well-being; use of doctors, dentists, and other health workers; use of medicines; immunization history of children; and the type and extent of health insurance. The following social and demographic items were also collected: age, sex, geographic locality, country of birth, duration of residence in Australia and in the region where living, major activity, marital status, occupational group, educational status, gross income per person and per income unit, fluency in English, and number of household members.

The first question concerning use of hospitals was about whether or not the person had been admitted to any hospital, psychiatric hospital, nursing home, or convalescent home within the last year. The number of admissions, length of stay, and name and address of the facility in which each occurred was requested. The general reason for the most recent admission was asked. Response categories included having a baby, surgery, having tests done, observation only, or, if none of these others applied, a sickness, illness, or injury. No other medical information was obtained about the hospitalizations since it would overlap with the data collected in the State hospital morbidity studies and was expected to be less accurate than the morbidity study data, which are copied from medical records.[34]

The survey was divided into quarters, and selected data from the first quarter, which ended September 30, 1977, were published in a preliminary bulletin in April 1978.[49] That bulletin did not include statistics on hospital utilization, but it was to be followed by two other preliminary bulletins. The final reports of the study were expected to be published on the national, State, and regional levels in 1979.

CANADA

The Canadian hospital discharge reporting system[e] is integrated with the insurance system and is a collaborative effort of the health authorities of the 10 Provinces and the Federal Government. These diverse actors have been cooperating for 18 years on individual discharge reports and for several decades longer on annual hospital reports. Through their cooperation, Canada has been successful in developing a nationwide reporting system even though the National Government does not have the primary responsibility for hospital care.

General Hospital Discharge Reporting System

In April 1957 the Federal Parliament of Canada passed the Hospital Insurance and Diagnostic Services Act, which established a Federal-Provincial cost-sharing program to cover the expense of hospital care in general and allied special hospitals. Five Provinces began operation of the program on July 1, 1958, and the rest joined it over the next 3 years. Quebec, the last to join, entered the program January 1, 1961.[50]

One of the requirements of the hospital insurance program was that each Province collect information about each individual hospitalized patient. The information was needed to check whether patients were eligible to be covered by the program and to serve as the basis of payments to hospitals for services rendered on a patient-day basis.[51]

While the insurance program was going into effect, the Royal Commission on Health Services, known as the Hall Commission of 1961, was investigating Canadian health services. One of the recommendations of the Commission was that the Dominion Bureau of Statistics compile national hospital morbidity statistics.[52] Some Provinces had already developed discharge reporting systems, and the rest soon followed. They found the systems to be economically feasible, since individual reports were already required for the insurance program. National morbidity data were first compiled for 1960 and were first published in 1964.

Until 1969 national data were tabulated by both the Department of Health and Welfare and the Dominion Bureau of Statistics, now called Statistics Canada. In 1969 the two sets of statistics were reviewed, and it was decided that the small differences between them could not justify

[e]The term "discharge" is used by the authors to refer to both live discharges and deaths, though in Canada the term "separation" is used to refer to both. See the section "definitions and procedures" for further information.

continuing both. Statistics Canada assumed sole responsibility for producing the statistics and has continued reporting them annually.[20] The reports include the publications *Hospital Morbidity*[52]; *Hospital Morbidity, Canadian Diagnostic List*[53]; and *Surgical Procedures and Treatments.*[54] Data collected in 1974 were published in 1977.

The morbidity statistics are used for planning purposes on both the national and provincial levels.[55] The data serve as a basis for assessing hospital needs and for forecasting future bed requirements. For example, some quality control can be exercised by monitoring the data to be sure that complex surgical procedures do not take place in hospitals that lack appropriate facilities or supporting staff.[56] However, the statistics are not sufficiently detailed to allow their use for other kinds of hospital management.[50]

Epidemiological studies are also undertaken with the data. Changes in the incidence of certain diseases following the introduction of new kinds of treatment have been investigated, and historical trends in hospital morbidity have been examined.[56] Other special studies using the data have been done by a variety of government departments, universities, and research agencies. Attempts have been made to link the hospital data with other health and demographic statistics into comprehensive data systems for some areas.[57]

Methods of data collection.—The data are collected on admission-discharge forms completed by each hospital and submitted to each Province's hospital insurance commission. Most items are filled out in the hospitals, but the coding of the medical items is generally undertaken by the Provincial officials. The forms used differ from Province to Province. There is a common core of information collected in all Provinces, but somewhat different definitions or classifications of these common items are used. Efforts are under way to further standardize the collection of the items used on the national level.

The Provinces produce data files on tape from the forms and tabulate the data to meet their needs. Some statistics are published in most Provinces. In Saskatchewan and Nova Scotia, for example, the annual reports of the hospital insurance commissions include morbidity tables, and in Manitoba the commission publishes data in a statistical supplement to its annual report. Other Provinces, like British Columbia and Ontario, publish separate reports. Some Provinces also have unpublished tabulations that they can release for research purposes.

Statistics Canada routinely obtains copies of the data files from the Provinces and converts them to a standard format. The agency also performs a series of manual and computer checks on the tapes.[52] The tapes are examined for errors and completeness. Some errors or omissions cause the records to be rejected; others are corrected automatically. Blank records or records which are exact duplicates of others, for instance, are rejected. If age or sex is missing, however, it is filled in by choosing a value randomly from a table of age and sex groups. The value inserted must be consistent with the diagnoses and operations reported on the record. Once each Province's tape has been edited, it is merged into the national data set used to produce the routine publications.

Coverage.—Data are collected from all general and allied special hospitals in Canada, whether public, Federal, or profitmaking. Tuberculosis and mental hospitals are not included but have separate reporting systems. Psychiatric patients receiving treatment in a general or allied special hospital are reported to both the mental health and the hospital morbidity sections of Statistics Canada. This duplication made interpretation of the psychiatric statistics difficult in the past. Now, however, most of the units and facilities making two reports have been identified, and unduplicated statistics are being produced. Nursing homes and other long-term facilities not defined by the Provinces as hospitals are not included in the reporting system.

Statistics from the hospitals in the two Canadian Territories, the Yukon and the Northwest Territories, are also excluded. Together the Territories have approximately 65,000 population and 50 hospitals, including nursing stations, with 590 hospital beds.[20] The exclusion has not had a serious impact on the statistics. Furthermore, data from the Territories are expected to be included with the Provincial data in the national summaries in the near future.

All inpatients in the hospitals covered by the system, with only minor exceptions, are re-

ported. Some Provinces exclude from their reports those patients whose bills for treatment are not paid by the national hospital insurance program. Approximately 98 percent of the population is insured by the system. However, some hospital treatment may be the responsibility of the Workmen's Compensation Board or some other agency. It should also be noted that patients are reported by the Province in which they reside rather than by the Province in which they receive treatment.[52]

Items collected.—Information collected in all of the Provinces includes the patient's name, age, address, dates of admission and discharge, attending physicians, primary and secondary discharge diagnoses, and primary and secondary surgical procedures, if any.[50] The definition of the primary diagnosis is not the same in all Provinces. Some record "that condition which required the most medical resources";[52] others report the condition that precipitated the admission to the hospital. The secondary diagnosis may be either a complication that arose during the hospitalization or a second disease treated. The primary surgical procedure is the most important operation relating to the primary diagnosis, and the secondary operation is related to the secondary diagnosis.[55]

Diagnoses and surgical procedures are generally coded according to the eighth revision of the International Classification of Diseases, adapted (ICDA-8). There have been some exceptions, however. For instance, in 1974 Alberta used the second edition of the hospital adaptation of the International Classification of Diseases (H-ICDA), which could not be perfectly transferred into ICDA-8 at all levels of detail.[52] It is expected that all Provinces will start using the ninth revision of the International Classification of Diseases in 1979. Diagnoses are coded to four digits, but three-digit ICDA-8 codes are the most detailed ones published. Diagnoses are further collapsed into a 188-category classification referred to as the Canadian Diagnostic List and are available as well by the 16 ICDA-8 Chapter Headings.

Definitions and procedures.—In the analysis of the data from the morbidity study, no divisions are made between long-term and short-term hospital patients.[58] While most long-term care institutions are excluded from the study, the allied special hospitals which are included contain long-staying patients. Furthermore, long-term units which are part of general hospitals are included in the study.

A "discharge" is defined in the Canadian hospital system as the departure of a live inpatient. The total of all persons released either alive or dead is defined as "separations," and, in Canada, it is the number of "separations" that is usually used in the calculation of utilization statistics. However, either discharges of live patients or deaths can be separately identified and analyzed.

Transfers between hospitals are included in the count of discharges and new admissions. Transfers of inpatients moved from an active treatment unit to a chronic long-term care unit within a single hospital are also counted as discharges and new admissions. All other intrahospital transfers are considered part of a single hospital admission.

Data on newborn infants are reported in the study, but utilization statistics for adults and children are tabulated separately from those for newborns.

Information published or available.—The main table in *Hospital Morbidity*[52] presents the number of discharges,[f] the discharge rate per 100,000 population, and the average stay per discharge by the ICDA-8 list of diagnoses, sex, age group, and Province. The age groupings used are as follows: under 1 year, 1-4 years, 5-14, 15-19, 20-24, 25-34, 35-44, 45-64, 65-74, and 75 years and over. A second major table lists the number of discharges and bed days, the rates per 100,000 population of discharges and bed days, and the average stay per discharge by the 16 ICDA-8 chapters, sex, age group, and Province. The number of discharges and the average stay per discharge for newborns are shown in a third table by diagnosis and sex.

An introductory analysis section of the publication contains several additional tables. There are summary tables that give utilization statistics by sex and age group and by sex and Province. Trend tables show utilization statistics from 1970 to 1975, in one table given by age group, in another, by the total for all ages. The 20 leading causes of hospitalization, based first on the number of discharges and then on the number of

[f]The term "discharge" is used by the authors to refer to both live discharges and deaths.

bed days, are given in one table for males and in another for females. The percent distribution of discharges and bed days by age group and ICDA-8 chapters is also presented in a table. Finally, a table shows discharge rates over a 5-year period standardized to remove the effects of demographic changes in the population, by ICDA-8 chapter and sex.

Hospital Morbidity Canadian Diagnostic List[53] contains tables similar to those in *Hospital Morbidity*. It differs in that the main table and the table concerning newborns present statistics by diagnosis using the 188 categories in the Canadian Diagnostic List rather than all the three-digit ICDA-8 categories.

The publication *Surgical Procedures and Treatments*[54] also follows a format similar to that used in *Hospital Morbidity*; but instead of presenting data on all discharges, *Surgical Procedures and Treatments* is limited to statistics for discharged cases that had an operation or for the total number of primary operations performed. Tables typically show discharges, rates per 100,000 population, and average stay per discharge for operations and treatments, by the ICDA-8 list, age group, and Province. In addition to all the published data, a great deal of detailed information is produced which is not published but which can be obtained from Statistics Canada.

Other Discharge Reporting Systems

In the 1930's Dominion Bureau of Statistics organized an annual hospital reporting program in cooperation with the Provinces. It was decided at that time to create separate reporting programs for mental and tuberculosis hospitals, since these hospitals were generally operated only by the Provincial health authorities.[51] Annual reports were required from these specialized hospitals. Additionally, programs were initiated in the 1930's to gather admission and discharge forms on the individual patients treated in the hospitals. Both kinds of reports have continued to be collected to the present, though the tuberculosis statistics have become less important as the number of tuberculosis inpatients has decreased dramatically.

Data collection.—Several special definitions are used for the collection of mental health statistics in Canada.[59] Mental hospitals are differentiated from psychiatric hospitals. The latter provide only short-term intensive psychiatric treatment, while the former provide treatments for all types of mental patients. Both participate in the reporting system, as do public, private, and Federal institutions for the mentally retarded, homes for the aged and senile that treat elderly patients with mental disorders, hospitals for addicts, treatment centers for long-term inpatient care of emotionally disturbed children, hospitals for epileptics, and psychiatric units in general hospitals. In recent years some information has also been gathered on psychiatric patients in nonpsychiatric wards of general hospitals.

Admissions are divided into three types: first admissions who have had no previous psychiatric care in any psychiatric inpatient facility, readmissions who have had previous psychiatric inpatient care, and transfers-in, who are received directly from another inpatient psychiatric facility. There are also three types of discharges—discharges (not including patients on probationary leave), deaths, and transfers-out, who are patients moved directly to another inpatient psychiatric facility. A category called "patients on the books" is frequently referred to. This category consists of patients in residence in the institutions plus those on leave or boarded out but still not officially discharged.

Items available.—The admission and discharge forms completed on each inpatient include items for identification of the institution and the case number, age, date of birth, sex, marital status, and education of the patient. The admission information consists of the date of admission; source of referral—which can be self, therapist, community agency, etc.; method of admission—voluntary, emergency, involuntary, and so on; if transferred in, the name of the facility from which transferred and the date of admission there; if a readmission, the name of the previous facility and date of discharge from it. The primary and secondary admitting diagnoses are listed and coded according to ICDA-8. The discharge information consists of the date of leaving the institution and the official date of discharge. If transferred out, the institution to which sent is recorded. Disposition, to self or family, community agency, outpatient facility,

and so on, is recorded, and final primary and secondary diagnoses and the cause of death are given, again coded by ICDA.

Statistics Canada regularly publishes data collected on the admission and discharge forms in Volumes I and II of its *Mental Health Statistics* series. "Volume I: Institutional Admissions and Separations"[59] contains one inclusive set of tables for all institutions and takes from that set one for public psychiatric units and one for institutions for the mentally retarded. Each set includes a group of tabulations concerning first admissions. The type of institution and the age, sex, Province, diagnostic class, region of residence, and marital status of first admissions are given, with each table showing a cross-tabulation of two to four of these variables. A similar set of tables is published for readmissions, but it includes the number of previous admissions by diagnostic class and time off the books by sex and diagnostic class. Discharges are described using all the variables except region of residence and marital status. In addition, tables on the length of stay of discharges are presented by Province, sex, age, and diagnostic class. Deaths are broken down in the same way as discharges, and cause of death is divided by diagnostic category and sex. Transfers-in are examined by diagnostic class and type of institution.

In "Volume II: Patients on Books of Institutions,"[60] Statistics Canada uses data from the admissions and discharge forms to calculate how many patients are on the books in each institution each year. Sets of tables are presented in this volume for all mental health institutions, public mental hospitals, and institutions for the mentally retarded. In each set the number of patients on the books at the end of each reporting year is broken down by at least three variables at a time. Variables used include type of institution, sex, age, Province, time since admission, and diagnostic class. A separate set of tables shows time-series data on the total number of patients on the books and the rate per 100,000 population of patients on the books. The percent distribution of patients on the books by time since admission, sex, Province, type of institution, selected diagnosis, and the degree of mental retardation of patients in institutions for the retarded are also reported.

The statistics collected and published on tuberculosis hospitals were for years quite similar to those collected from mental health institutions. As inpatient treatment for tuberculosis declined, however, the statistics changed. In the 1960's, it was recognized that inpatient information by itself was obsolete as an indicator of the prevalence of tuberculosis or of the treatment measures in use.[61] Thus, in 1966 reports began to be collected on persons receiving drug treatment as well as on inpatients, and published statistics included both categories of tuberculosis patients. In recent years, institutional statistics drawn from annual reports made by the tuberculosis hospitals have been published by Statistics Canada together with the morbidity data. Data published on inpatients includes number and rate per 100,000 population divided by age group, sex, Province, diagnosis, and origin (Indian, Eskimo, and others).

Aggregate Hospital Reports

In 1931 Statistics Canada, then called the Dominion Bureau of Statistics, established a hospital statistics reporting system in collaboration with the Provincial health authorities. The Provinces agreed to distribute and collect annual hospital questionnaires and to report the data gathered to Statistics Canada so that national summaries of hospital statistics could be prepared. In 1952 the program was changed in two major ways.[51] The Canadian Hospital Association took on the responsibility for developing a Canadian Hospital Accounting Manual, which was to be used by hospital personnel in reporting the hospital's financial operations on the annual report forms. The use of this manual, which has been updated several times by the hospital association, has led to national uniformity in hospital accounting. The second major change was the separation of reports on the financial operation of the hospitals from reports on hospital activity, utilization, personnel, and educational programs. In 1958-59 the national hospital insurance program was introduced. At this time, the two reporting forms were again revised to meet the informational requirements of the insurance program's cost-sharing programs. Since the advent of national hospital insurance, the annual reports have been the joint

concern of the Health Insurance Directorate of the Department of National Health and Welfare and the Health Division of Statistics Canada.

As well as being used as a basis for insurance payments to hospitals and for routine publications, the data collected by the annual reports serve a variety of other purposes. On the national level, the data are used for long-term planning of the health services system as well as for ongoing evaluation and research. The Provinces have the responsibility for regulating and operating all except Federal hospitals. The Department of National Health and Welfare, however, acts as a consultant to the Provinces, professional associations, hospitals, and the like to assist in the improvement of health care.[62]

On the Provincial level, the data are also used for planning, evaluation, and research.[50] The Provincial health authorities make comparisons of hospitals, assess the kinds of care available in them, estimate future hospital costs, plan new hospital programs, and assert some kinds of ongoing administrative controls on the basis of the data collected. Individual hospitals also use the data for planning and administrative purposes.

Data collection.—Two annual return forms, parts I and II, are completed by the administrative personnel in each Canadian hospital according to detailed sets of instructions and definitions prepared by Health and Welfare and Statistics Canada.[63,64] Part I must be certified by the hospital authority when completed; part II must be certified by the authority and an auditor. In addition to the standard national form, Provincial health authorities sometimes add items of their own to the required report. Additional reports are submitted by some hospitals as part of a quarterly Federal survey of hospital indicators.

The annual returns are submitted to the Provincial health authorities, who edit them and send copies to Statistics Canada and Health and Welfare. Statistics Canada personnel do further manual editing and then code the forms and transfer them to computer tapes for further editing of errors and inconsistency. Statistics Canada produces three annual publications from the annual returns. Unpublished data, subject to certain confidentiality provisions, are also available from Statistics Canada.

Part I annual return forms are expected from all public, proprietary, and Federal general and allied special hospitals. Mental and tuberculosis hospitals have separate reporting systems. Almost 100 percent of the hospitals that are expected to report do so. In 1975 only 16 hospitals did not submit the return, and 14 of them had fewer than 20 beds. Most, in fact, were nursing stations averaging four beds.[14] Part II returns are required only from non-Federal public hospitals. The quarterly system is a voluntary one, and in 1978 it covered 56.6 percent of the hospitals, or 72.3 percent of the beds in public general and allied special hospitals.[51]

Hospitals with fewer than 50 beds do not make as detailed breakdowns of the information reported as do the larger hospitals, and they are excluded from a number of published tables. Hospitals in the Yukon and the Northwest Territories do report annually, and their data are included in the summary statistics for all of Canada. When statistics are broken down by Province, however, the Territories are frequently not reported separately but are instead included in the Canadian total.

The annual returns require counts on all adults, children, and healthy newborns treated in hospitals. The newborns are separately identified, and statistics are computed separately for the category of adults and children and the category of newborns. Similarly, while bassinets or cribs for newborns are reported, these are separated from other hospital beds.

Hospital units are identified in the annual returns as either long- or short-term. A short-term unit is defined as one "provided for patients who at the time of admission require extensive diagnostic and treatment services and/or skilled nursing care and comprehensive medical attention." Long-term units are "provided for patients who at the time of admission require regular medical assessment, treatment services and continuing nursing care."[14] In 1975 the average length of stay in public hospitals was 8.76 days for short-term units and 154.55 days for long-term units.

Items Available.—The utilization data collected in part I of the annual returns consist of information on bed days, movement of inpatients, and services provided to inpatients. The annual return instructions require that a distinc-

tion be made between "patient days during the reporting year" and "total days' stay" of discharges.[63] The former is the total volume of inpatient care, in bed days, of the hospital during the year. The latter is the sum of the bed days used since admission by all patients discharged from the hospital during the year. For both measures the admission day is counted as 1 bed day, but the discharge day is not. Again, transfers between hospitals are counted as discharges and new admissions; transfers within a single hospital from an active treatment unit to a chronic long-term care unit are counted as discharges and new admissions; but all other intrahospital transfers are considered part of a single hospital stay.

Measures of the movement of inpatients consist of several items[63]: number of patients in the hospital at the beginning of the reporting period, number of patients under care during the year; discharges; deaths, not including stillbirths; number of patients in the hospital at the end of the reporting period; and total days' stay of discharges. Since 1976 figures on inpatient movement have been reported separately for psychiatric short-term units, other short-term units, rehabilitation and convalescent units, extended care and chronic units, and other long-term units. Bed days are also reported separately for a more detailed list of short-term units (medical, surgical, intensive care, obstetrical, pediatric, psychiatric, and other). In addition, bed days are broken down by type of room accommodation—standard, semiprivate, and private—and by the agency which has responsibility for payment for the stay.

Hospital services reported include the number of autopsies done, number and type of laboratory test, radiology examinations and treatments, units and types of blood transfused, visits to surgical suites, deliveries in the obstetrical suite, and number of physical-medicine and rehabilitative treatments given. Housekeeping services are reported, including weight of laundry done in the year and so on. Information is also given on outpatients, day patients, and hospital personnel.

The Statistics Canada publication *Hospital Statistics: Volume I—Beds, Services, Personnel,*[14] presents utilization statistics by type of hospital—general full-teaching, general nonteaching with long-term units, rehabilitative, pediatric, and so on. The inpatient movement statistics are given by Province, type of hospital, and bed size of hospital. Number of admissions and percent distribution of bed days are given by different types of wards (medical, surgical, and so on) for each Province and according to types and size of hospitals. Mean and median length of stay in each type and size of hospital are given for long- and short-term units. Percent distributions of laboratory tests and radiology examinations are given by type of test for each Province and according to types and sizes of hospitals. Occupancy rates and rates of admissions, total bed days, and average daily number of patients per 1,000 population are given for each Province and, in the case of occupancy rates, for types and sizes of hospitals.

The publications of the Department of National Health and Welfare present less detailed breakdowns of statistics by type of hospitals but report numerous statistics, including number of admissions, bed days, average length of stay, percent occupancy, bed turnover, and bed turnover interval.[62] Average length of stay is calculated by dividing the number of live discharges and deaths into total days' stay of live discharges and deaths. The percent occupancy is the ratio of the average daily patient census to the number of available beds. Bed turnover is obtained by dividing the number of admissions in a year by the number of beds set up that year, and bed turnover interval is computed by dividing the number of admissions into the number of unoccupied bed days.

Other statistics on hospital utilization are also available in the annual Statistics Canada publications entitled *Hospital Statistics: Volume III— Indicators*[27] and *Mental Health Statistics: Volume III—Institutional Facilities, Services, and Finances.*[65] The former reports data from the voluntary quarterly survey of hospitals and presents a wide variety of statistics on utilization and costs. The data in the volume on mental health are drawn from special annual reports made by psychiatric facilities and from parts of the annual return made by general and allied special hospitals with psychiatric units. The publication is mainly concerned with facilities, per-

sonnel, and financial information, but includes some utilization statistics such as the average number of patients in institutions, the number of patients on the books, and patients treated each year over time.

Household Surveys

National household surveys have not been an important source of data on hospital utilization in Canada. However, the Canadian Sickness Survey was conducted in 1950-51 by the Department of National Health and Welfare and the Dominion Bureau of Statistics (Statistics Canada). It was undertaken to investigate ill health, health care, and expenditures for health care over a 12-month period in about 10,000 households and included questions on the number of hospitalizations, bed days, and operations. A complete report of the survey, *Illness and Health Care in Canada: Canadian Sickness Survey 1950-51*,[66] was published in 1960.

A new national health survey, undertaken in 1978, included a physical examination component and a household interview component. The survey was intended to be continuous, but because of budget reductions it was terminated after 11 months of operation. The data that were collected are being processed, but no results are available at present.[51]

ENGLAND AND WALES

England and Wales developed one of the earliest hospital discharge reporting systems, the Hospital In-Patient Enquiry (HIPE). HIPE was established by national health authorities and collected data on a 10-percent sample of discharges. In the 1960's health authorities became interested in collecting information on 100 percent of hospital discharges and started the Hospital Activity Analysis (HAA), which did so. In addition, hospitals in England and Wales have long submitted to national authorities annual hospital returns (also knows as SH 3's) on their activities and utilization. Information on hospitalization has also been collected in an ongoing series of household surveys.

General Hospital Discharge Reporting Systems

The establishment of the National Health Service (NHS) in 1948 provided the opportunity to implement a nationwide hospital discharge reporting system. In 1949 the Department of Health and Social Security and the General Register Office, now the Office of Population, Censuses and Surveys (OPCS), began the Hospital In-Patient Enquiry. At first they collected statistics on all discharges from teaching hospitals and on all discharges from general hospitals in two areas of England. The difficulties in handling the statistics on all discharges with the data processing equipment then available led to a change in 1953 to collection of information on only a 10-percent sample of discharges. The number of hospitals covered gradually expanded until in 1958 all the nonpsychiatric NHS hospitals were reporting upon a 10-percent sample of their discharges.[67]

HIPE was established to provide England and Wales with epidemiological and administrative information about hospital utilization. The information was expected to be helpful for comparative studies of community morbidity and use of health resources, and it was thought that the data would aid in hospital service planning.[68] Experience with the system, however, led to a reevaluation of the purposes for which it was suited. It became clear that community morbidity and hospital morbidity are not the same. Only for those conditions which almost always require hospital treatment, such as appendicitis, can community morbidity patterns be gauged by studying hospital use. The level of hospital use is found to be related to availability of facilities as well as to the level of existing community morbidity. Although accurate measures of community morbidity cannot be ascertained, comparative studies of hospital morbidity and of regional patterns of hospital utilization are possible, and such studies have been made by academics and government health authorities.

The Department of Health and Social Security made intensive use of the HIPE data for administrative and planning purposes, but regional and local authorities rarely did so.[69] The

length of time required to process the data was cited as one reason why it was not used more regionally and locally, and the use of a sample rather than total returns limited the usefulness of the data for local planning. Data on individual hospitals were not returned to the hospitals, so the HIPE could not be used by the hospitals for management purposes.

The perceived deficiencies of HIPE led to interest in development of a new reporting system, the Hospital Activity Analysis (HAA). To resolve the problem of delays between collection of data and availability of results, HAA is organized regionally instead of nationally. Also, information is collected on all discharges instead of on the 10-percent sample and is returned directly to hospitals and consultants to make HAA a useful management tool for administrators and clinicians.

The Department of Health and Social Security sponsored the establishment of HAA, but it was operated by the Regional Hospital Boards until 1974. The 1974 reorganization of NHS abolished the Regional Hospital Boards. The Regional Health Authorities, which assumed responsibility for operating hospitals after the reorganization, also assumed the operation of HAA. The first hospitals began collecting data on all their discharges in 1965, and the number doing so gradually increased until, in 1976, data on 97 percent of the discharges from general hospitals, excluding maternity patients, were being reported to the Regional Health Authorities.[70]

As with HIPE, not all the expectations that accompanied the establishment of HAA have been fulfilled.[69,71,72] The time required to make the data available has not decreased as much as was hoped. In some regions returns have been available as soon as 6 weeks after the submission of data, but in other regions up to 2 years have elapsed before returns were available. It is thought that delay will decrease as regions gain experience with the system, but it is likely to remain a problem because doctors in some hospitals are slow in filling out discharge summaries.

Use of the HAA data for hospital and clinical management has also not been as widespread as expected. Both administrators and physicians complain that HAA contains insufficient information. No statistics on resource use except bed use are available from HAA, and administrative data are not integrated with the HAA data. Physicians desire more clinical information than is available using the current codes for diseases, which are insufficiently detailed and report only diagnoses and operations. The accuracy of the statistics is also questioned. Many consultants find errors on their own patients in the returns and thus tend to disregard the data altogether. Special studies of the system have found it "grossly inaccurate"[73] in one instance and "almost as good as clinical notes"[74] in another. In addition, there are many complaints that the complex and lengthy way in which data are presented interferes with comprehension. Finally, the idea of using statistical material rather than individual perceptions of problems as the basis for decisionmaking about clinical practice or resource use is not thought to be generally accepted by administrators and physicians.[71]

HAA has not fulfilled the expectations for use in hospital management but has proved useful for local and regional planning purposes. The data have also been used in special studies to investigate resource use and comparative hospital practices.

Methods of data collection.—The 10-percent sample of discharges for HIPE has been drawn in several ways.[68] Before the establishment of HAA, hospitals usually reported on every 10th entry on a discharge register, starting from a randomly selected entry. Sometimes an admission register was used for the sampling, and every discharged patient whose permanent registration number ended in a certain digit was occasionally reported on. Other times, data were reported on every patient discharged whose day of birth ended in a specified digit, excluding the digits 1, 0, and 9. With the implementation of HAA random samples have been drawn by computer from the 100-percent returns.

It was found that in some hospitals the rules for sampling were violated over the years, and most national samples have not contained a full 10 percent of the total discharges. Usually, some hospitals failed to turn in their full allotment of forms. In 1975, 9.25 percent of all discharges in England and Wales and 9.19 percent of the discharges in England alone were reported on. To get annual estimates, the number of discharges reported was multiplied by a correction factor.

In 1975, the correction factor for England and Wales was 10.807, and for England alone it was 10.887.[75]

Since the data for HIPE are now drawn from the 100-percent returns of HAA, both HIPE and HAA begin with the completion of the same reporting form, designated HMRI (IP). It is recommended that the form be part of each patient's case notes.[76] As such, part of the form is filled in when the patient is admitted and the rest during the course of the patient's stay, with final information added at the time of discharge. Clerks, secretaries, nurses, and doctors are involved in completing various parts of the form, and since completing the form is part of the routine recordkeeping, it is thought that greater reporting accuracy results. Not all hospitals follow this recommended procedure, but all do report the same basic data to their Regional Health Authority.

Before the establishment of HAA the reporting forms were forwarded to OPCS, and all were coded in one central office. Coding is now done in the regions, sometimes by clerical personnel of hospitals, other times in subregional coding centers, and still other times by the regional authorities.[70] Variation in coding practices has followed this decentralization. While some items may be more accurately coded at the local level because local records are available for rechecking, other items are found to be less accurate. This coding variation makes the compilation of national summaries more difficult.

Coded data are transferred to magnetic tape and analyzed by the regional authorities, who prepare the output needed at the regional and local levels and draw the 10-percent sample for HIPE that is sent to OPCS. OPCS processes the sample, editing it for logical errors, and prepares the tabulations required by the Department of Health and Social Security and other national users.

Coverage.—The HIPE and HAA reporting systems cover most hospital discharges in England and Wales, but there are some exceptions.[77] First, the few private hospitals outside NHS do not report on any of their patients. In addition, convalescent hospitals and psychiatric hospitals operated by NHS are not included in the systems.

NHS hospitals do not report discharge information on all patients they treat. Private patients are usually not reported and neither are psychiatric patients in psychiatric departments. Psychiatric patients treated in general wards are reported, however. Patients in convalescent wards are not reported. Preconvalescent units do not complete discharge forms, but their patients are reported upon by the units into which the patients are first admitted. The admitting unit is responsible for recording the final discharge data after preconvalescent care is completed. Hospital staff treated as inpatients are also a special category. If they are treated in the hospital for an illness that normally would not require hospitalization, they are not included in the reporting system. If a special department is required for the staff patient's care, however, his or her record is included in the system.

Maternity patients and healthy newborns are not reported in the usual manner either. Special discharge forms are used to report their hospital stays. At present only a 10-percent sample of the stays are reported, and the sample is still sent directly to OPCS.[70] In some areas, experiments have been made with 100 percent reporting, but these have not yet become widespread.

Items collected.—The form HMRI (IP), which is generally used to collect data for HIPE and HAA, includes the following utilization items: hospital name, patient's unit number, date the patient was placed on the waiting list to be admitted, date of admission, source of admission (from waiting list, booked—that is with admission fixed in advance, immediate, transfer), number of days after admission before the first operation, date of the first operation, number of operations, date discharged, identification of the consultant under whom discharged, and type of discharge (to home, to another NHS hospital, to convalescent home, or death).[77] Also included are social and demographic items on the patient's home address, sex, age, date of birth, place of birth, marital status, and category. The category can be normal NHS, full paying, amenity (an NHS patient who pays a small charge for extra privacy), preconvalescent, convalescent, or staff.

Medical items include diagnosis, operation, and, for an accident patient, the place of the accident. The first diagnosis reported is the specific or principal specific condition treated

during the hospitalization. The underlying cause immediately responsible for the patient's symptoms[75] is given second, and four other relevant conditions or complications can be listed. The diagnoses are recorded using the eighth revision of the International Classification of Diseases (ICD-8). Injuries are classified by using the ICD-8 Nature of Injury codes. The first operation reported is the operation most closely related to the principal condition for which the patient was treated. Up to three other operations or investigations can be recorded. Operations are coded according to a classification system developed by OPCS. An accident is recorded as road traffic accident, home, work, other, or not applicable.

The forms pertaining to maternity patients include most of the same utilization, demographic, and social items. In addition, the date and details of delivery, complications, and previous pregnancies are recorded for the mother. Items reported concerning the newborn include sex, birth weight, single or multiple birth, whether transferred to a special-care unit, any diseases or abnormalities and the outcome, and whether stillborn, died within 24 hours, died after 24 hours, or discharged alive.[68]

Definitions and procedures.—The calculation of utilization statistics from the data collected in HIPE and HAA is done without separating data on long-term patients from data on short-term patients. Most of the information collected concerns short-term patients, but there are some exceptions such as the patients treated on geriatrics units and on units for the younger disabled.

In computing the number of discharges, deaths and transfers to other hospitals are counted along with regular discharges. Transfers from one unit or department to another within a single hospital are considered part of a single admission.

The discharge rate for the country as a whole is estimated from the 10-percent sample collected by HIPE. The total number of discharges is estimated from the sample and then divided by the estimated population at risk at midyear.

Among the other statistics calculated for the country as a whole from the HIPE data are mean and median duration of stay. The mean for a year is obtained by dividing the aggregate duration of stay of all patients in the sample by the number of patients reported hospitalized in the sample. The median is the length of stay of the middle case when all in the sample are ranked in order of duration of stay. It is touted as a good indication of the average length of stay since it is not affected by the abnormally long- and short-staying cases.

The average number of beds used daily is also computed. It is the estimated aggregate duration of stay of all inpatients divided by the number of days in the year. Waiting time, that is, the period of time on a waiting list, and mean and median waiting time are also computed.

Information published or available.—The statistics from HIPE have been published in the Department of Health and Social Security's annual series, *Hospital In-patient Enquiry*.[75,77] Some data from HIPE has also been presented in the Central Statistical Office's publication *Social Trends*[78] and, before 1973, in the annual report of the Department of Health and Social Security. Since 1973, statistics that were included in the annual reports have been published separately in *Health and Personal Social Service Statistics*.[17,18] The desired schedule for publishing has been to make preliminary tables available late in the year after the statistics were collected, and to publish the main volume the following spring, 2 years after collection. However, this schedule has not been met since 1972; it has taken about 3 years to publish the main tables.[70] Unpublished tabulations and standard reference tables are produced to meet special inquiries, and ad hoc tabulations of some kinds are prepared on request from DHSS or academic research centers.

The main tables in the report on HIPE present utilization, demographic, and social information on diagnostic groups. The sample numbers and estimated annual total discharges for each diagnostic group are given, as are the sources of admission, mean and median durations of stay, average beds used daily, beds per million population, discharge rates, and mean and median waiting times. In each diagnostic group the distribution of patients by region of residence, sex, age group, and marital status is given. Deaths from different diagnoses and hospital fatality ratios for different diagnostic groups are given. Most tables contain cross-

tabulations of several of these statistics. One table, for instance, shows diagnostic categories divided by sex and age groups and presents sample numbers, deaths in the hospital, mean duration of stay, discharge rates, and average beds used daily for each group in each category.

Similar tables are presented using the department where the patient was treated as the main variable. For each department sample numbers are given along with waiting times, average beds used daily, percent distribution of discharges, duration of stay, sex, age group, region of treatment, and diagnostic group. Tables also examine injuries divided by age and sex groups, region of treatment, and place of occurrence. Sample numbers, estimated total discharges, and mean duration of stay are given on injuries.

Operations are reported for different sex and age groups and regions of residence. The operation rates; mean and median durations of stay and mean and median waiting times for persons having operations; beds used per 100,000 population for different operations; and sample numbers of operations are published.

Statistics concerning maternity patients are sometimes reported together with statistics on other discharges in the tables presented in the HIPE report. In addition, some statistics are presented separately on maternity patients. The estimated total number of maternity discharges is given for different types of obstetric care and regions of residence. Total births, estimated total deliveries in the hospital, percent of births delivered in the hospital, and mean postnatal stay are also given by region of residence.

The tables of HIPE statistics presented in other routine publications are generally abstracted from the HIPE report. Statistics from HAA are not published as a rule, but sets of unpublished tables are distributed to regional and local authorities. Individual hospitals or hospital consultants can request specialized analyses along with the routine feedback. Health researchers can also obtain routine or special tabulations from the regional authorities.

Other Discharge Reporting Systems

Statistics have been collected on psychiatric inpatients since 1949 although they are not reported on by the HIPE or HAA systems.[79] The General Register Office and the Ministry of Health conducted separate studies until 1964, when the Mental Health Enquiry (MHE), operated by the Department of Health and Social Security, was created. In addition to individual reports on each psychiatric admission and discharge, complete censuses of all psychiatric inpatients were undertaken in 1963 and 1970-71. Information about the number and characteristics of inpatients is obtained by updating the censuses through the use of the admission and discharge reports.

The Department of Health and Social Security is itself the major user of the data collected.[72] It uses the information for national planning and for evaluation of psychiatric services. The statistics are also expected to be useful for medical research into mental illness and its treatment. They have been used by researchers to some extent but have become less helpful with the change in treatment patterns for mental illness. Instead of having prolonged hospital treatment, many patients are hospitalized for repeated short periods. The lack of a method to link records of patients from one hospital stay to the next makes it quite difficult to obtain from MHE the information necessary for investigating current questions about psychiatric treatment.

Data collection.—In addition to mentally ill patients in psychiatric hospitals and psychiatric units of general hospitals, mentally retarded patients are reported on by MHE. For both mentally ill and mentally retarded, one form is filled out at admission and another at discharge. Forms are sent to the Department of Health and Social Security, which codes and analyzes the data. Output on punchcards or magnetic tapes is returned to the regions for any further analysis they might wish to make.

Items available.—The information collected on the MHE admission and discharge forms is generally similar to that on the HIPE forms.[79] In addition to the usual utilization and sociodemographic items, several specialized items are reported. One of these is type of admission, which can be coded as direct from community; from general hospital nonpsychiatric unit; from psychiatric bed in a nursing home or hospital; from prison, approved school, etc.; or other. Transfers, whether from another hospital or

from another unit within one hospital, are considered new admissions. The legal status of patients is also coded, as is the source of referral (family doctor, courts, outpatient clinics, and so on). Previous psychiatric hospitalization is noted, as is the mental category (mental illness, psychopathic disorder, subnormality, severe subnormality, other). The I.Q. and mental age of the mentally retarded are also recorded.

Under diagnosis, the psychiatric condition for which the patient was admitted is reported first. An underlying or associated cause of the patient's condition is recorded second; and epilepsy, drug dependency, or alcoholism, if present and not reported in the other diagnostic spaces, constitutes a third reported item. The diagnoses are coded using ICD-8.

Finally, included on the discharge form are items concerned with outcome. Whether the patient is placed on probationary leave, requires no further treatment, is referred to psychiatric outpatient care, is transferred to a mental nursing home, or is referred for other types of aftercare is reported. The cause of death given on the patient's death certificate is recorded for deaths.

Statistics from the admission and discharge forms are routinely published in the Department of Health and Social Security's *Statistical and Research Report Series,*[79] and selections from the reports in this series are presented in other publications such as *Health and Personal Social Service Statistics.*[17,18] The tabulations published in the *Statistical and Research Report Series* generally concern numbers and rates of admissions, discharges, and inpatient populations. Admissions are reported by age and sex, hospital region, type of hospital or unit, source of referral, legal status of the patient, and diagnostic group. Discharges are also reported by most of these and by duration of stay and outcome. The age, sex, region, and duration of stay of resident populations are studied. Separate tables examine first admissions, admissions that are not first admissions, and all admissions. Admissions and discharges of patients in psychiatric units of general hospitals are presented separately as well as together with those of patients in psychiatric hospitals. Tables on mentally retarded patients are presented separately from those on the mentally ill.

Aggregate Hospital Reports

Hospitals in England and Wales have long collected information about bed availability, bed occupancy, admissions, and discharges on each ward and in each specialty. When the National Health Service was founded in 1948, all NHS hospitals began reporting the information to the Department of Health and Social Security in annual hospital returns (the SH3's). The annual returns have been collected every year since then.

Statistics from the annual returns are used for planning and management purposes on the national, regional, and local levels. While not as useful for some purposes as the more detailed data from HIPE and HAA, the information on the annual returns is generally more current.[69] Although there are procedural differences between the discharge reporting systems, the annual return data are also used to estimate the completeness of HIPE statistics.

Data collection.—Generally, hospitals compile information daily (between midnight and 9:00 a.m.) on beds used, admissions, discharges, and the like.[76] These "midnight bed state returns" are combined to obtain the data required on the annual return. The annual returns are sent to the Department of Health and Social Security, which processes them and produces regional and national summaries from them.

Returns are submitted by all NHS hospitals, including psychiatric and convalescent hospitals. Private hospitals do not report. The NHS hospitals do not report staff patients with conditions that would not normally require hospitalization, and healthy newborns are not counted as separate discharges. Day patients, outpatients, and other patients receiving only partial care from the hospital are reported, but they are not counted in with other discharges. Transfers between specialized units, as well as between hospitals, are counted as discharges and new admissions on the annual returns.

Items available.—The annual return SH3 form filled out by each NHS hospital reports separate figures for each clinical specialty. The average daily number of beds occupied in each specialty is the total of the daily number of inpatients in the specialty divided by the number

of days in the year. The average duration of stay in the year is also reported. It is estimated for short-stay cases by dividing the total number of bed days by the total number of discharges. For long-stay cases it is obtained by subtracting the admission date from the discharge date. Also reported are the average daily number of beds available, discharges and deaths, the size of the waiting list at the end of the year, and the annual bed turnover rate.

Statistics from the forms are published in a variety of routine publications such as *Health and Personal Social Service Statistics,*[17,18] *Regional Statistics,*[12] and *Annual Abstract of Statistics.*[80] The publications generally report utilization measures for all specialties, together first and then individually or in groups. The most detailed information on different specialties is found in *Health and Personal Social Service Statistics.*

None of the publications reports specific definitions of long- and short-term patients, and in most published tables these types of patients are reported together. However, some statistics for acute specialties are reported separately in *Regional Statistics,* and in *Health and Personal Social Service Statistics* there is a category called "nonpsychiatric, excluding geriatrics and units for younger disabled." This category had an estimated average length of stay of 9.5 days in 1976, while all nonpsychiatric specialties combined averaged 12.9 days.[17]

Household Surveys

Many other studies have been done concerning the use of hospital services in England and Wales. Most of these have been ad hoc investigations, but the Social Survey Division of the Office of Population Censuses and Surveys has conducted a continuous study since 1971. This General Household Survey (GHS) has examined five main subject areas: population, housing, employment, education, and health. It was undertaken to supply the Central Government with information to assist in resource allocation decisions. Results have regularly been sent to about a dozen Government departments, and researchers outside the Government have shown increasing interest in them.

Data collection.—The data for GHS are collected from a large sample of households in England, Wales, and Scotland. In 1975 about 15,000 households were included. Interviews are conducted with all adult members of these households, and information about children under 16 is obtained from the adults. Institutionalized individuals are excluded from the study. The sample is drawn in a two-stage process, first sampling electoral wards and then selecting addresses within each ward from the electoral register. The samples are stratified by type of area—between metropolitan and nonmetropolitan areas, by socioeconomic group of the head of the household, and by the proportion of the householders who are owner-occupiers.

Items available.—A great deal of information is collected about the social and demographic characteristics of the individuals who make up each household studied in GHS. Age, sex, marital status, length of time at present address, type of housing, skin color, country of birth, family size, type of employment, income, educational level, and region are investigated. The utilization of ambulatory and inpatient health services is studied, as is the incidence of acute and chronic sickness. Concerning hospitalizations, individuals are asked to report any inpatient care in the 3 months preceding the time of the interviews. They are asked whether they were NHS or private patients and how long a time they spent in a hospital. If they are currently on a waiting list to be hospitalized, they report how long they have been on it. For each hospital visit, medical information requested includes questions concerning what the doctor told the patient was wrong with him or her and whether any other treatments such as radiotherapy, physiotherapy, heat treatments, and the like were received.

OPCS has published the survey results in a series entitled *General Household Survey.* In 1978 data collected in 1975 and 1976 were published in the fifth and sixth numbers of this series.[81,82] The information in the publications on hospitalization has been limited to tables on the number of medical and surgical inpatient visits per 1,000 persons in a 3-month reference period and the average number of inpatient

nights per visit, both separated for different age and sex groups. Unpublished statistics are also available, subject to certain restrictions, in the form either of tables or of magnetic tapes of the data.

FINLAND

Finland's discharge reporting systems are the most inclusive of any in the six countries studied. Information is collected on all discharges from all hospitals registered by the National Board of Health, which includes all the public and private, general and specialized, and local and regional hospitals. All registered hospitals also complete aggregate annual reports for the National Board of Health that include information on utilization, and most hospitals forward data on utilization to the Finnish Hospital League. In addition, three national household surveys including data on hospital use and users have been undertaken to investigate health services utilization.

General Hospital Discharge Reporting System

In Finland there is one discharge reporting system, but it has three distinct parts, one for general hospital patients, the second for tuberculosis hospital patients, and the third for patients in mental hospitals and psychiatric units of general hospitals. Somewhat different discharge forms are used for the three types of patients, and statistics about the three types are usually tabulated and presented separately. The parts of the system will therefore be discussed as though they were separate systems. The part for general hospital patients will be described in this section, and the second and third parts will be discussed in the section "other discharge reporting systems."

The National Board of Health of Finland started operating a discharge reporting system covering general hospitals in 1960. The Board began with an advantage not present in most other countries. Legislation existed that gave it the authority to collect information on all health activities supported, even in part, by tax money. Hospitals could thus be required rather than requested to supply discharge statistics.[16] Nevertheless, during the first years of the system's operation, only general hospitals in certain districts of the country were required to report on their patients. In 1967 the system was expanded to cover all registered general hospitals.[83]

The reporting system was established to provide data for use in national planning and evaluation of hospital services, and it has proved useful for these purposes. The data were also expected to be used for research into health services and epidemiological questions. While data have not been used for research purposes to the extent expected, usage has increased in the last few years.[84]

Methods of data collection.—The discharge statistics are obtained from forms filled out on every patient at the time of discharge. Information can be written in on the patient's separation form, or it can be entered in coded form. Most forms are coded by hospital personnel, and in the larger hospitals data are usually also transferred from the forms to magnetic tapes before they are sent to the National Board of Health. The larger hospitals often perform their own analyses of the data. Additionally, the National Board returns routine information about individual hospitals' activities to the hospitals free of charge or at a nominal cost.

The National Board of Health stores the information from the discharge forms in a computerized data bank. Data are arranged in four ways: by patient identification number, by local area, by institution, and by diagnosis. Information is published on how the data bank can be used to answer specific questions but there has been little interest in producing regular statistical publications based on the discharge reports.[16]

Coverage.—The inpatients in all general hospitals, public and private, are covered by the discharge reporting system. The inpatients treated in health centers are also covered, and discharge statistics concerning them are usually combined with the statistics on the general hospital patients. Inpatients in registered hospitals of institutions, like military and prison hospitals, are covered by the reporting system, but their hospital use statistics are not usually combined with the statistics from the general hospitals and health centers. Hospitals of institutions that are

not registered with the National Board of Health are not covered by the reporting system. The nonregistered hospitals account for 6,916 beds out of the country's total of 72,492 beds, and almost all the patients they contain are long-staying.[9]

The nonregistered hospitals of institutions are not, however, the only facilities that treat long-term patients. Finland does not have a nursing home system for the treatment of the chronically ill. Many patients who would be in such a system in other countries, for instance in Australia and Canada, are treated in the general hospitals and health centers in Finland and are covered by the discharge reporting system. Further, the boundary between residential facilities and health care facilities is not clear in Finland, and some institutions that primarily provide residential care are included in the hospital system and covered by the reporting system.[85]

Items collected.—Basic information on the discharge forms includes utilization of services, social and demographic characteristics of patients, and patients' medical problems. Utilization information begins with identification of the hospital and department where treated. The type of place that referred the patient to the hospital and the place to which the patient was referred when discharged are also included, as are admission and discharge dates.

From 1967 through 1974 the social and demographic items collected included sex, date of birth, marital status, occupation, and area of residence. In 1975 date of birth was dropped as a separate item since it was already included on the form in the identification number of each patient. Marital status was also dropped. Coding of all occupations—which proved difficult, time consuming, and not very reliable—was changed to coding of only a few "risk" occupations. Area of residence remained on the form, and an item was added to identify patients who paid extra for the use of semiprivate beds.[84]

The medical information collected was also revised in 1975. Omitted were items on the patient's condition when discharged, results of treatment, and operations and treatments received while in the hospital. It was thought that information on the patient's condition at discharge could be obtained indirectly from the item on the place to which the patient was referred. The coding of the items on results of treatment had been found to be stereotyped, and the information collected had not been useful. The coding system for the item concerning operations and treatments had been problematic, and the information that resulted had again not been very useful, so the item was dropped until a new coding system could be devised. Left on the form were items concerning the main diagnosis, two other diagnoses, and the underlying cause of death. An item on the urgency of the patient's condition was also added.

The main diagnosis is defined as the main reason for being in the hospital. The second diagnosis is the underlying illness or an additional illness. The third diagnosis may be another additional illness, or it may be used to code the external cause of accidents. The coding system used is a five-digit adaptation of the eighth revision of the International Classification of Diseases. It is the same adaptation that is used in Sweden. Commonly, office personnel on each ward fill in the diagnosis in accordance with information from the patient's medical records. However, cause of death is usually recorded directly by a physician.

Definitions and procedures.—When utilization statistics are computed from the discharge reports in Finland, all short-term and long-term patients are considered together. The country has no designation of "short-term" for hospitals or beds. Because some hospitals are designated as being for chronic patients, an approximation of short-term discharges can be obtained by looking only at discharges from institutions for nonchronic patients, which on the whole are general hospitals. However, many long-staying patients are treated in general hospitals.[85]

The day of admission and day of discharge are counted as one when the discharge statistics are calculated. Deaths are included in the number of discharges, but they are identified so that they can be examined separately. Transfers between hospitals are counted as discharges and new admissions. Intrahospital transfers, which are not common, are regarded as one admission if the transfer concerns the treatment of the same disease. Healthy newborns are not counted as discharges.

The length of stay, calculated for each patient by computer, is determined by subtracting

the date of admission from the date of discharge. Mean length of stay is obtained by dividing the number of bed days by the number of inpatient visits to hospitals. Computer programs also exist to calculate many other utilization statistics, such as visits and bed days per unit of population, occupancy rates, and visits per bed.

Information published or available.—While no statistics from the discharge reporting system are regularly published, much information is potentially available in the system's computer data bank. For instance, utilization rates can be obtained for different age and sex groups, and medical information can be separated by age and sex. Hospital use in different areas of the country can be examined, and case mixes of different levels and kinds of hospitals can be compared.

Most studies using the data bank have concerned hospital visits rather than patients, but since each hospitalized individual has a unique identification number, it is also possible to conduct person-centered research. Repeat hospitalizations can be located, whether in the same or a different hospital, and complete hospital histories of individuals can be studied.

Some users have found the data bank slow and expensive. As a result some hospital regions have started to maintain their own regional discharge data registers, which contain the information required by the National Board of Health and other data of interest to the region. Most regional registers are processed by computers owned by the central hospital in a region. At present experiments are under way to explore the kinds of data systems that will be most helpful to the regions. It is thought that there would be great value in a system that could link the population register and information on the health facilities of a region with treatment information. The Finnish Hospital League is working with central hospitals to investigate the problems and possibilities of such a system.[86]

Other Discharge Reporting Systems

The National Board of Health established discharge reporting systems for tuberculosis and psychiatric inpatients before it began gathering data on general hospital discharges. Beginning in 1956 the discharges of all patients in tuberculosis sanatoriums were reported to the National Board of Health, and in 1958 a register of all new cases of tuberculosis was also begun. The discharges of all patients in mental hospitals were reported starting in 1957, and in 1963 an annual census of patients in mental hospitals began supplementing the discharge data.[16]

Procedures similar to those used in the general hospital discharge reporting system are used to collect and analyze the data on the tubercular and mental patients. The discharge forms used contain the same items that are on the general hospital discharge forms but require additional information. Special items to be filled in on patients in tuberculosis hospitals concern the observation of tubercle bacilli, results of tuberculin tests, history of tubercular illness, resistance to tubercular drugs, and drugs used in treatment.[87] The psychiatric forms included numerous special items until the beginning of 1977, when the forms were revised. Extra items concerning the treatment specialty, socioeconomic status of the patient, and type of admission remain on the psychiatric forms at present.

All the statistics collected on tubercular and mental patients are stored in the National Board of Health's central data bank. Again, many kinds of information are potentially available, but routine publications are not produced.

Aggregate Hospital Reports

Data collection.—Summary statistics on hospital utilization are collected by the yearly reports all hospitals send to the National Board of Health. Some summary statistics have been collected and published in Finland since the 1940's. However, it was 1963 before the first nationwide statistics were compiled.[88] Since then the National Board of Health and the Finnish Hospital League have both been involved in collecting annual reports from the hospitals and in publishing the results.

The National Board uses the statistics collected to supplement the discharge reporting system. National planning and evaluation of health services are aided by use of the annual reports. The reports are also used to check the completeness of the discharge reporting system. Data from the annual reports are published in the "Yearbook of the National Board of Health."[9] The national health administration's

yearbook is part of a series of annual reports that have been published for 124 years. Many volumes were called "Public Health and Medical Care," but the most recent one is entitled "Health Services." It was published in 1978 and covers health data of many kinds from the years 1971 through 1977. It is written in Finnish and Swedish, but the tables are labeled in English, and an English summary is included.

The Finnish Hospital League is an organization of the communal hospitals of Finland. Communes are the local administrative units of the country, and they operate 95 percent of the country's hospital beds.[89] The Hospital League was established in the 1960's to facilitate hospital administration. It attempts to develop ways in which hospitals can be more efficient and economical, and it serves as an advocate for hospitals in regard to national health care policy. To help pursue these goals, the Hospital League collects and analyzes statistics from annual reports of its members' hospital activity. The statistics are presented in a yearly publication entitled *Hospital Economics.*[28] The latest issue, published in 1977, presents statistics collected in 1976. The publications are written in Finnish, but some have English keys to tables.

The National Board's statistics are more inclusive than those collected by the Hospital League. The National Board's statistics include data on private hospitals and hospitals of institutions, registered and nonregistered; information on these facilities is excluded from the data published by the Hospital League in *Hospital Economics.* The Hospital League also excludes all but a handful of the hospital beds in health centers. In past years all the health center hospitals submitted annual reports to the National Board, but since 1977 only those under the direction of specialists have done so. Data from other health center hospitals are now sent to the Board as parts of other accounts of health center functioning.[9]

Items available.—The utilization statistics collected are quite similar in the National Board's and the Hospital League's aggregate reporting systems. The type of utilization statistic most frequently reported in published materials is bed days. This measure is thought to be especially appropriate for national planning purposes since it is not greatly affected by different practices concerning transfers and readmissions for the same condition.[85] It is also the measure used by the National Government to calculate reimbursements due to hospitals. Since in the Government calculation the day of admission and the day of discharge are regarded as 2 bed days, many published statistics follow this rule.[9] However, statistics are also presented that count the days of admission and discharge together as one. Whether the former "Finnish system" or the latter "international system" is used to calculate statistics is noted in the published tables.

Other utilization measures reported by the National Board and the Hospital League include number of admissions, average length of stay, and occupancy rates. Number of hospitals and number of hospital beds are also reported. Further, number of inpatient treatments, such as X-ray exams, operations, and laboratory tests, is compiled.

Most of these statistics are given per unit of population for types of hospitals, for each of the 21 hospital regions of the country, and for specialized departments within hospitals. A detailed list of specialized departments is used. It includes internal medicine and surgery, both broken down into subspecialties; gynecology; obstetrics; pediatrics; ear, nose, and throat diseases, ophthalmology, radiotherapy, neurology, skin and venereal diseases; lung diseases; psychiatry; and contagious diseases. Both the National Board and the Hospital League study changes over time in various of these statistics.

The National Board and the Hospital League also study other aspects of hospital operation besides utilization. Statistics on personnel, outpatient visits, and financial patterns are shown in the annual reports. These statistics are sometimes cross-tabulated with the utilization measures. For instance, the League studies various kinds of hospital costs per bed day.

Household Surveys

The Research Institute for Social Security is the research unit of the Social Insurance Institution, which administers the country's national health insurance program. The Research Institute regularly collects data on health care covered by insurance, but hospitalization is not

financed by insurance so it is not included.[16] However, in addition to the regular studies, the Research Institute has conducted three special national household surveys of health care use, and these have included data on hospital utilization.

The special studies were formulated to evaluate the effects of changes in the health services system. The first two, undertaken in 1964 and 1968, investigated the impact of the national health insurance program, which began operation in 1964. Since 1968 changes have occurred in the services covered by insurance, and ambulatory care has been reorganized, resulting in the growth of health centers. Therefore, another survey was conducted in 1976. The results of the 1976 survey are not yet available, but the 1964 and 1968 studies are described in a series of research reports and are summarized in a book published in 1974, *Health Services Use and Health Status Under National Sickness Insurance.*[90]

Data collection.—For the 1964 and 1968 studies, independent samples were drawn from Finland's population register. The samples did not include individuals in institutions or children under 15, but information on the latter was obtained during the interviews. Approximately 7,000 families were in each sample—23,516 individuals in 1964 and 17,910 in 1968. In 1964, 8.9 percent of the sample could not be interviewed; in 1968, 3.1 percent. The interviews were conducted by public health nurses, and respondents were asked about health service use for a period of approximately 5 months. Similar data collection procedures were used in the 1976 study.[91]

Items available.—Most questions in the surveys concerned the use of physician services, drugs, and dental services; but the number of bed days experienced by members of each family was also recorded. Social and demographic characteristics reported in the survey included the age, sex, marital status, and occupation of each individual; family size; the educational background of the family head; family income; and family expenses for health services. Medical information included any complaints of acute or chronic disorders.

The most frequently used measure of hospital utilization in published reports based on the surveys is the number bed days per 100 adults per 100 days. Age and sex distributions of these standardized bed days were computed. Standardized bed days are also presented by family income, by distance to the nearest physician, and by number of physicians in the commune. In each case, chronic and nonchronic illnesses are reported separately.

FRANCE

In France hospital statistics on public hospitals are usually collected separately from statistics on private hospitals. Most of the statistics are drawn from annual reports on facilities and utilization. Public hospitals have completed these annual reports for years, and more recently private hospitals have begun making them. However, the statistics from the two sets of reports are generally analyzed and published separately. Many public hospitals also participate in a morbidity study, but the study does not include any private hospitals even though 40 percent of all admissions are to private hospitals.[10] A national household survey conducted in 1970 is one of the few sources of data on both categories of hospitals.

General Hospital Discharge Reporting System

In 1968 the Ministry of Health and Social Security decided to establish a morbidity study in the public hospitals in France. The Ministry sent a memorandum to administrators in public hospitals requesting that they begin recording the diagnoses of all patients discharged from their hospital sectors as of January 1, 1969. Further memorandums revising the instructions for collecting and submitting the morbidity data were sent out in 1973 and 1975. Additional changes in the study are planned for 1979-80.[92]

The Ministry expected that the statistics collected in the morbidity study would be useful for planning and regulating the hospital sector at the national level and that local hospital administrators would be able to learn more about the needs of their clientele from the statistics. It was also thought that the data would be useful for medical and epidemiological research.[93]

Methods of data collection.—The memorandums sent by the Ministry to the public hospitals did not instruct them to collect individual discharge forms for each patient. Instead, each department in the hospitals was expected to compile a set of tables at the end of the year that reported in aggregate form data on all patients it had discharged during the year. The Ministry left it to the administrators in individual hospitals to make decisions on the specific procedures to be followed in compiling the tables. Thus a variety of personnel were involved in data collection. In some hospitals the chief physician of each department completed the tables, and in others interns or other subordinate physicians did so. In still other cases, nursing personnel and administrative personnel were in charge of the tables. There is concern that these different kinds of personnel did not always follow similar procedures in completing the tables or report the statistics with equal accuracy.[93]

After the tables were completed, they were usually sent to the Ministry for processing. The Ministry performed validity checks, corrected for underreporting, and confirmed reports of rare diseases. However, the tables collected in university hospitals were checked and corrected by the hospitals themselves before the data were sent to the Ministry. Some university hospitals also transferred the data from the tables to magnetic tape, processed it, and obtained tabulations for their own uses. These hospitals then forwarded the magnetic tapes to the Ministry. After making checks where necessary, the Ministry transferred the data from the rest of the hospitals to magnetic tapes and created a data file of information from all participating hospitals.

After 1978 these procedures were no longer followed. Instead, the Ministry is introducing the use of individual discharge reporting forms in the participating hospitals.[92] Once the new forms are in use, the Ministry will receive either the forms or magnetic tapes containing information from these hospitals.

Coverage.—Public hospitals in France are divided into four major categories: centres hospitaliers régionaux (regional hospital centers), centres hospitaliers (hospital centers), hôpitaux (hospitals), and hôpitaux locaux (local hospitals). The centres hospitaliers régionaux, centres hospitaliers, and hôpitaux were asked to participate in the morbidity study, but the hôpitaux locaux were not.[93] The hôpitaux locaux primarily provide treatment for long-staying patients, but some maternity patients are also treated in them. The centres hospitaliers régionaux, centres hospitaliers, and hôpitaux were expected to report on all discharges except those from psychiatric units or from hospice and annex sections. The hospice and annex sections provide a level of care similar to that given in nursing homes in other countries.[92]

At the end of the first year of the morbidity study reports were received on only 33 percent of the discharges that were expected to be covered. Only 26 percent of the hôpitaux discharges were reported, but 37 percent of the centres hospitaliers discharges and 42 percent of the centres hospitaliers régionaux discharges were covered. In some hospitals, concerns about violating the confidentiality of patient records impeded cooperation with the study, and in others, insufficient personnel were available to complete the records. However, by 1973 the proportion of the discharges expected to be covered that were reported had risen to 50 percent. The hôpitaux and centres hospitaliers showed marked improvement in their rate of information return, reporting on 55 percent and 57 percent respectively, in 1973. The centres hospitaliers régionaux continued to report on only 42 percent of their discharges.[94]

Discharges from psychiatric hospitals and private hospitals are not covered by the morbidity study. The exclusion of private hospital discharges is very important. Not only do private hospitals account for a substantial percent of all discharges, but also significant differences have been found between the patients treated in public versus private hospitals. Private hospitals treat more surgical patients but fewer medical patients than public hospitals do. They also treat fewer children of under 2 years of age or adults of over 65 years of age than public hospitals, and they treat a larger percent of women, especially women in their childbearing years.[95] Thus, looking at public hospital morbidity alone does not lead to an accurate picture of the age, sex, or diagnostic characteristics of all French hospital patients.

When the rate of reporting from covered

hospitals is considered together with the planned exclusions, one finds that less than 30 percent of France's hospital sector patients are actually being reported in the morbidity study. Furthermore, there is considerable variation in the rate of reporting in different regions of the country. No region reports on more than 79 percent of the discharges from its public hospital sector, and the rate is as low as 22 percent in one region.[94]

Items collected.—When the morbidity study began, hospitals were requested to report only diagnosis, sex, and whether the hospital stay was terminated by normal discharge or death. In 1973 they were asked to begin submitting tables of diagnoses by age groups and were instructed to calculate the number of days of hospitalization for each diagnosis.[93] Thirteen age groups were to be used: 0-28 days, 28 days to 1 year, 1-4 years, 5-9, 10-14, 15-24, 25-34, and so on up to 85 years and over. By 1975 concern had developed that certain types of services in many of the participating hospitals were failing to report or were underreporting their discharges. Thus, hospitals were asked to indicate which of their services were reporting and which were not so that corrections for consistent underreporting could be made in the national data.

Plans are under way to collect a great deal more information on each discharge when the individual reporting forms are put into use. Among the items to be collected are the following: identification of the hospital; mode of transportation to the hospital; date of admission; type of admission (direct or transfer); if transfer, hospital transferred to and from which transferred; type of service in which treated; date of discharge; and type of discharge (transfer or discharge). Also collected are the patient's date of birth, sex, nationality, area of residence; the socioprofessional category of the head of the household or the person financially responsible for the patient; the principal diagnosis; and, in accident cases, the cause of the accident.[92]

Until 1973 the most serious disease diagnosed for each patient was the one to be reported. Since 1973 the direction has been to code the principal disease treated or studied during the period of hospitalization. However, this direction has not always been followed. Sometimes the diagnosis reported has still been the most serious disease. At other times the diagnosis that led to admission or the one for which the most expensive care was given has been reported.[93] Further, for a growing number of discharges the diagnoses have either not been reported at all or have been insufficiently specified to be included in the analysis. By 1973, 10.2 percent of discharges fell into this indeterminate group.[94] The diagnoses have been coded using the D list of 300 diseases from the eighth revision of the International Classification of Diseases. Traumatic injuries have been coded according to the nature of the injury. The four-digit codes of the ninth revision of ICD will be used by some hospitals in 1979 and by all beginning in 1980.[92]

Definitions and procedures.—In the data collected in the morbidity study, no distinction is made between long- and short-term patients. Most discharges reported are from short-term units, but intermediate units containing convalescent patients and patients being rehabilitated are also covered, and these patients averaged hospital stays of 72 days in 1974.[10]

The number of discharges reported by each hospital is supposed to include only discharges which take place from January 1 through December 31 of a particular year. However, some hospitals include in their yearly total patients still in the hospital on December 31 and report their length of stay as the period from their admission to December 31. Other hospitals, while not counting patients until they are discharged, compute lengths of stay which began in the previous year by counting only the period from January 1 through discharge date.[92]

Deaths are counted as discharges, but they are often analyzed separately. Many French patients return to their homes when they are about to die, which lowers the rate of hospital deaths. Transfers between hospitals are counted as discharges. Transfers from one service to another within a single hospital are supposed to be treated as part of a single hospital stay, but nearly half of the hospitals that participate in the morbidity study do not follow this procedure.[92] Instead they report stays for each hospital service separately, so that if a patient is transferred three times, three different stays are recorded. Women hospitalized for normal deliv-

eries are excluded from some analyses, but they are included in the total number of discharges unless they are specifically said to be excluded.

Information published or available.—Statistics from the morbidity study were first published in bulletins of the Ministry of Health and Social Security in 1971. They have appeared in the *Bulletin de statistiques sociales* (1971), the *Bulletin de statistiques Santé-Sécurité Sociale* (1972; 1973, 1974), *Santé Sécurité Sociale, Statistiques et commentaires* (1975-77), and *Santé et Securité Sociale: Tableaux édition 1975-1976.* The statistics in the 1977 publication were collected in 1974.

Most of the published data concern distributions of discharges in diagnostic groups. For instance, in the 1977 publication,[96] one table presented the number and relative frequency of discharges in 22 diagnostic categories by sex. Others reported the percent distribution of discharges in diagnostic categories in each age group by sex. The proportion per 100 discharges that had injuries was reported for each age group in categories of types of injuries by sex, and similar breakdowns were published for cardiovascular diseases, diseases of the digestive system, respiratory diseases, and complications of pregnancy and delivery. The number of deaths per 100 discharges in each major category of disease was also reported by sex. The average length of stay for patients in different diagnostic groups was given, and the percent of discharges in each of the six principal diagnostic groups was reported by sex for 1974 and 1970.

Other Discharge Reporting Systems

Data collection.—Statistics on psychiatric hospitalizations are periodically collected by the psychiatric section of the National Institute of Health and Medical Research (Institut National de la Santé et de la Recherche Médicale—INSERM). These statistics cover adult services in psychiatric hospitals and psychiatric services in general hospitals.

Procedures used to collect data on psychiatric patients are similar to those used in the general hospital morbidity study.[97] Each service keeps a record of certain information about its hospitalizations, and at the end of the year the information is transferred to a set of tables that is sent to INSERM. The chief physician for each service is responsible for completing the tables.

Items available.—The information sent to INSERM by the psychiatric services allows INSERM to compile five types of tables. First, the number of hospital patients on December 31 of the reporting year is available by sex, age, diagnostic category, patient status (present in the hospital on December 31, on trial discharge or extended leave, or absent from the hospital for other reasons on December 31), and length of stay. Second, the number of admissions during the year is given by sex, age, diagnostic category, and type of admission (first admission to any psychiatric service, transfer from another psychiatric service, admission for the second time or more, and unknown). Third, the number of discharges is shown by sex, age, diagnostic category, type of discharge (transfer to another psychiatric service, discharge other than transfer, and escape), and length of stay. Fourth, the number of deaths, which is not included in the number of discharges, is given by sex, age, diagnostic category, and length of stay. Finally, the number of hospital cases treated during the year is shown by sex, age, diagnosis, and type of hospitalization (hospitalization begun before January 1 of the year and ended during the year, hospitalization begun and ended during the year, hospitalization begun during the year but not ended by December 31, hospitalization begun before January 1 and not ended by December 31, and total hospitalizations).

Statistics from the tables are published by INSERM and are included in bulletins of the Ministry of Health and Social Security. An example of the information published is that in *Santé Sécurité Sociale, Statistiques et commentaires.*[97] A group of tables is presented in this publication concerning each of the five categories of psychiatric patients: those who were patients on December 31, admissions, discharges, deaths, and all those who were treated during the year. The number in each category is shown by sex and age group (under 15 years, 15-19, 20-24, 25-34, 35-44, 45-54, 55-64, 65-74, 75-84, 85 years and over) and by sex, age group, and diagnostic category. For each category the number and percent distribution of patients is also given by sex and diagnostic category. In addition, the number and percent distribution of

hospital patients on December 31 are presented by patient status and sex; the number and percent distribution of admissions are given by type of admission and sex; the number and percent distribution of discharges are given by type of discharge and sex; the number of hospital cases treated during the year is given by sex, diagnosis, and type of hospitalization; and the rate of deaths of psychiatric patients per 1,000 deaths in the general population is given by age and sex.

Aggregate Hospital Reports

Before the hospital morbidity study was organized, the Ministry of Health and Social Security collected hospital data from questionnaires sent to the administrators of public hospitals. These questionnaires were first distributed in 1961, and the Ministry has continued to collect them annually from all public hospitals every year since that time.[98] The Ministry also collected some data on private hospitals in 1962 and 1968. Then, beginning in 1972, private hospitals also began filling out annual questionnaires and forwarding them to the Ministry. While most of the data now reported by private hospitals are similar to those reported by public hospitals, the statistics from the two sets of questionnaires have generally been analyzed and reported separately.[99]

Almost all French hospitals complete and return the annual questionnaires, making the questionnaires a much better source of hospital statistics than the morbidity studies. Less than 1 percent of private hospitals failed to report in 1973[99]; and all public hospitals, including local and psychiatric hospitals, made returns.[100] Patients treated in the annex and hospice sections of hospitals are reported on in the returns.

The statistics from the annual questionnaires have been published since 1963 in various Ministry of Health and Social Security bulletins. Data from 1972 on have been published in issues of *Santé Sécurité Sociale, Statistiques et commentaires.*[99,100] Some information from the reports was also included in *Santé et Sécurité Sociale: Tableaux édition 1975-1976.*[10]

The statistics that are reported primarily concern hospital beds. The number of beds in different kinds of hospitals, in the various sections of hospitals, and in the geographic regions and departments are reported; and percent changes in the distribution over time are calculated. Also reported are the beds per 1,000 population, admissions per bed, and occupancy rates.

Utilization measures reported include admissions, admissions per 1,000 population, bed days, and average length of stay. Admissions include transfers, whether between hospitals or between services within a hospital. Sometimes discharge rates are also reported, and when they are, deaths are given separately from other discharges. Average length of stay is obtained by dividing the number of bed days by the number of admissions.[98] Percent changes in the number of admissions and bed days are frequently reported. Changes from one year to the next and from 1961 until the year under study are frequently reported.

The beds and patients in the annex and hospice sections of public hospitals are usually reported on separately from other beds and patients. Statistics concerning intermediate-stay sections (rehabilitation units, convalescence units, and the like) and psychiatric sections of public hospitals are also usually separated from those on short-term sections. The short-stay sections are divided into three groups: general medicine and medical specialities, general surgery and surgical specialties, and gynecology and obstetrics, and statistics are reported separately for each group. Information on public hospitals is further subdivided into the four categories of hospital establishments: the centres hospitaliers régionaux, centres hospitaliers, hôpitaux, and hôpitaux locaux.[100]

Utilization statistics on private hospitals are presented in somewhat different categories from those used for public hospitals. Information is reported separately on medicine and medical specialties, surgery and surgical specialties, maternity with no surgical treatment, maternity with surgical treatment, convalescent services, rehabilitative services, tuberculosis services, and, finally, psychiatric services. These categories are further subdivided into those in profit and in nonprofit hospitals.[99]

The statistics published on psychiatric patients are similar to those reported on general hospital patients, but again somewhat different reporting categories are used. Psychiatric services

in public general hospitals are reported separately from those in public psychiatric hospitals, and both are separated from those in private psychiatric institutions, which are themselves divided into profit and nonprofit categories. Psychiatric utilization statistics are also given separately for males and females; for adults and children; and for first admissions, transfers, and readmissions.[10]

Household Surveys

No regular household surveys on health are conducted by the French Government, but ad hoc studies have been made. One of the most extensive of these, undertaken in 1970, was a study of the consumption of medical care.[95] The study was a joint project of the National Institute for Statistics and Economic Studies (Institut National de la Statistique et des Études Économiques—INSEE) and the Research Center for Observation and Study of Living Conditions (Centre de Recherche pour l'Étude et l'Observation des Conditions de Vie—CREDOC).

The study was based on a sample of 7,393 families in the metropolitan areas of France. Except for persons living in institutions, who were excluded from the sample, and persons living alone, who were underrepresented, the sample was considered representative of the French population. Information on many aspects of medical care was obtained from the families, including data on a total of 1,235 hospitalizations during a 6-month period.

The data have been published in several CREDOC publications including "L'hospitalisation et sa place dans les dépenses médicales en 1970,"[95] and "Influence des facteurs socio-économiques sur l'hospitalisation."[101]

The hospitalizations studied were divided into three major types: those in public general hospitals, those in private general hospitals, and those in specialized hospital establishments. The latter included psychiatric hospitals, convalescent centers, sanitoriums, and other long-term establishments.

Utilization information gathered on these establishments included average length of hospital stay, median length of stay, number of days of hospitalization per person per year, and discharge rate, that is, the percent of the population with a hospital stay. These figures are not comparable with the statistics from the annual questionnaires, because transfers between services within a single hospital were counted as one stay in the survey but as new admissions in the annual statistics.[95]

Along with the utilization measures, a number of sociodemographic variables were collected. These include age, sex, education, family size, occupational group of the head of the family, family income, and source of payment for hospital care. The effects of these characteristics on hospital utilization, singly and in combination, were studied.[101]

In addition, information was reported on the medical problem which accounted for the hospitalization and on the number and types of surgery experienced by the hospitalized patients. This information was examined for different age and sex groups and for different kinds of hospital establishments.

Further information was being collected in 1978 in a new household survey sponsored by CREDOC. Data on a representative sample of 2,000 to 3,000 public and private hospitalizations were expected to be collected in this survey.[102]

SWEDEN

In Sweden a variety of studies have been undertaken to collect statistics on hospital utilization. No single study produces comprehensive data on all hospitals and types of patients, but in combination the studies make available a wide range of information. Discharge abstracts concerning hospital patients are collected in three separate programs. One program covers the somatic patients (those physically ill or injured) in approximately three-fourths of the country's hospitals. The second covers all patients in psychiatric hospitals and in psychiatric units of general hospitals. The third covers all obstetrical patients and newborn infants throughout the country. In addition, utilization statistics are compiled by the National Board of Health and Welfare from annual reports sent to it by the country's hospitals. Household surveys provide further information.

General Hospital Discharge Reporting Systems

Three levels of organization in health care are especially important in Sweden. The first level is the county. Sweden is divided into 23 counties and 3 independent communes, and the counties and communes range in population from 54,287 to 1,491,345.[13] In each county a county council is elected, which, along with other duties, has direct responsibility for most health care delivery in the county. The second level is the region. For purposes of health planning, the counties and communes are combined into seven health regions, which range in population from 642,314 to 1,547,946. Third is the national level. The National Board of Health and Welfare (NBHW) is the principal national governmental agency for supervising and promoting health care.

In 1964 NBHW began an experimental program to collect discharge statistics from somatic hospitals. At first only hospitals in one of the seven health regions, the Uppsala region, were involved in the program. However, local authorities in other areas of the country soon became interested in collecting similar statistics, and they began setting up programs that made use of forms and procedures similar to those used in the NBHW program. By 1969 approximately 60 percent of the discharges from Sweden's physical disease hospitals were reported.[103] The NBHW's experimental program ended that year. NBHW was willing to continue to assist hospitals in development of statistical programs and to analyze the discharge data, but it stopped financing the programs.[87] In 1970 the county councils that were interested took over the financial responsibilities. Interest in the programs continued to grow, so that in 1978 approximately three-fourths of all discharges from somatic hospitals were reported.[104]

There were several reasons for the establishment of the reporting systems. First, it was expected that the resulting data base would be useful in hospital planning on local, regional, and national levels. Also, it was thought that the data base would make possible hospital morbidity studies and other research into the use of health care services in the country.[87]

During the initial experimental period of data collection in the Uppsala region, emphasis was placed on returning detailed diagnostic breakdowns to the individual hospitals and hospital departments participating in the study.[104] This provided a validity check of the data and was also expected to enhance the cooperation of the participants with the program.

In 1969 production began on publications reporting data from the program. These publications, along with unpublished data from the program, were sent to a variety of individuals and authorities having an interest in health care.[87] Executives and politicians at different levels of the country's health care system received them, as did other local, national, and international authorities. Various enterprises in the country's drug industry, individuals involved in consultative and marketing activities, and scientific institutions and research workers also obtained reports.

The data have been used for a number of specialized studies. An international comparison of hospital caseloads has been done using the Uppsala region's statistics.[105] The variations between Swedish hospitals in average length of stay for certain conditions have also been investigated,[106] and a linkage study of hospital stays for particular conditions over a 4-year period has been completed. Studies of drug complications and of surgical procedures are also being done.

Methods of data collection.—A form is filled out on each patient discharged from hospitals participating in the reporting system. The individual hospital departments are responsible for completing the forms. Departmental personnel fill in verbal descriptions of diagnoses but also code the diagnoses and operations along with other required information. Some hospitals transfer the information from the forms to magnetic tape and process it for their own use.

Either the forms or the tapes are sent to the county councils. The councils create on tape data files that contain the discharge information from all reporting hospitals in the county. They may perform their own specialized analyses of the data. They also submit the tapes to NBHW. NBHW performs a series of checks on the tapes and then processes the data and adds them to its

information bank. Statistics are produced from the information bank for publications and other uses.

Coverage.—In the Uppsala region and the three county Skåne area, all somatic hospitals participate in the reporting system. Both public and private hospitals report; and nursing homes, some of which are equivalent to hospitals in the United States, are also included. Together the Uppsala and Skåne areas account for 28 percent of the population of Sweden, and they are considered representative of the country as a whole.[107]

Coverage of the discharges in the remainder of the country is less comprehensive. Since participation in the reporting system is voluntary, a few county councils have decided not to finance it in any of their hospitals. Other county councils are interested in statistics only from the major hospitals they operate, especially the teaching hospitals. Thus the country's small hospitals and nursing homes are underrepresented in the data sent to NBHW from the country as a whole.[104] Patients in psychiatric hospitals and psychiatric units in somatic hospitals are excluded from the reporting system, as are obstetrical patients and their newborn babies.

Items collected.—The discharge forms developed by NBHW[103,87] and used in most hospitals contain items which identify the hospital, department, patient, and medical record. The dates of admission and discharge are reported, as are the form of admission (from domicile, acute; from domicile, nonacute; from inpatient care, acute; from inpatient care, nonacute) and the form of discharge (to domicile; to inpatient care; dead, post mortem performed; dead, no post mortem performed). Whether or not the patient was previously treated for the same illness in the department earlier in the year is noted. The date of birth, sex, marital status, and insurance fund number are also required.

Up to eight diagnoses can be recorded. The first-named diagnosis is the condition whose investigation or treatment was the main reason for keeping the patient in the hospital.[103] Diagnoses are coded according to five-digit codes from the eighth revision of the International Classification of Diseases, adapted in Latin and Swedish for hospital use. As many as 16 operations can be reported. They are reported according to diagnosis—operations for the main diagnosis are reported first; for the second diagnosis, second; and so on. When more than one operation is undertaken for treatment of a single diagnosis, the operations are given in order of importance. The anesthesia used for each operation is also coded. The surgical codes are taken from a list of four-digit categories compiled by NBHW from the codes for operations and procedures developed in England by the Office of Population Censuses and Surveys,[104] and the anesthesia is coded according to a three-digit Swedish classification. The immediate and underlying causes of death are reported. Finally, special information is given on patients in lung departments or sanatoriums—whether or not they had been treated previously for tuberculosis and whether tubercle bacilli were present or absent.

Definitions and procedures.—Both long- and short-term patients discharged from hospitals participating in the study are reported on, but they can be separately identified. All units in Swedish hospitals are designated as either long- or short-term. The designation is made on the basis of the intensity of care given in the unit. Therefore, separating discharges by the unit in which they were treated isolates short-term discharges. In addition, some utilization statistics for patients discharged from long-term hospitals are calculated separately from the statistics for discharges from short-term hospitals.

In the calculation of utilization statistics, deaths are counted as discharges, but they can be examined separately if desired. Transfers, whether to another hospital or to a different department within a single hospital, are generally counted as discharges and new admissions. They can be examined separately.

The number of bed days used by a discharged patient is obtained by subtracting the admission date from the discharge date. The entire period of stay is counted even if the admission occurred before the year under consideration. The average length of stay is calculated by dividing the total number of bed days by the total number of discharges.

Information published or available.—In 1969 NBHW began publishing data from the discharge reporting system in the *Patient statistics series.*

Publication numbers 1,[103] 2,[108] 6,[109] 8,[110] 10,[111] 11,[112] 13,[113] and 16[114] of this series contain data from somatic hospitals in the Uppsala region. The last three publications in the series, numbers 17,[115] 18,[116] and 19,[107] report data from both the Uppsala region and the three-county Skåne area. Statistics collected from hospitals in other areas have not been regularly analyzed thus far,[87] and the most recent statistics reported from the Uppsala region and Skåne were collected in 1973. NBHW is currently discussing the form and content of future publications.

One set of tables that has been published presents 10 items of information on each diagnostic category in the five-digit classification. The first item is the total number of patients with the diagnosis as either their main or secondary diagnosis. The remainder of the items are on patients for whom the diagnosis was the main cause of hospitalization. These items consist of the number of days in the hospital and the number of discharges, which is also given for the following categories: males, persons under 15 years of age, persons 70 years and over, persons with the diagnosis operated on, persons treated earlier in the year in the same department for the diagnosis, persons transferred to other hospitals or departments, and deaths.[107]

In another publication[116] diagnoses are grouped into a list of 99 categories. In each category information is given on patients whose main diagnosis was included in the category. This information includes total number of discharges; number of discharges that had been acute admissions (patient had entered the hospital at a time not agreed upon at least 24 hours before admission); number of bed days, number of days on leave, average duration of stay, numbers of patients aged 0-14 years, 15-44, 45-64, 65-74, and 75 and older; number treated earlier in the year in the same department for the same main disease; number transferred from another hospital or department; number transferred to another hospital or department; number of deaths; number with the diagnosis operated on; number of bed days for patients having operations; and number of preoperative bed days for patients having operations. Subtables of the same items of information in the 99 categories are given for each hospital department—internal medicine, surgery, pediatrics, and so on. Subtables are also given for each kind of department by county.

In addition, tables have been published which report the total number of discharges; discharges per 10,000 population; bed days; bed days per 10,000 population; and average length of stay for all hospitals and for short-term hospitals in the Uppsala region, in the Skåne area, and in the individual counties in each area. These tables present utilization statistics separately for males and females for a detailed list of age groups: 0-1, 1-4, 5-9, 10-14, 15-19, and so on up to 80-84, and 85 and older.[115]

Other kinds of analyses have been done at times, and the unpublished data in the information bank can be used for special research purposes. The publications are in Swedish, but tables of contents, summaries, and texts for all the significant tables are also given in English.

Other Discharge Reporting Systems

The National Board of Health and Welfare has also developed a psychiatric discharge reporting system and a medical birth registration system. The development of a system to report on psychiatric inpatients preceded the collection of discharge statistics on somatic inpatients.[103] NBHW was authorized to start collecting psychiatric data in 1962. At that time psychiatric treatment was primarily the responsibility of the National Government. In 1967 the county councils took over the provision of such care, but NBHW still received discharge data directly from psychiatric hospitals until 1969, when the county councils took over the task of collecting and processing the data. The councils deliver information on tapes to NBHW, and an agreement has been reached between NBHW and the councils which reduces the amount of information routinely submitted.[117]

The medical birth registration system grew out of the discharge reporting system for the Uppsala area. When NBHW began the system, maternity patients were reported upon in the same manner as other patients. In addition, a separate discharge form was filled out on each newborn discharged from the hospitals. In 1969 a single, distinct form was put into use to report

on both the mother and infant. In 1973 NBHW expanded the reporting system to cover births occurring in all areas of the country.[118]

Data collection.—The psychiatric reporting system obtains data in two ways.[119] First, when a psychiatric patient is discharged from a hospital, a copy of his or her record card is sent to the appropriate authority, which is now the county council. Second, information is collected about patients resident in psychiatric facilities on December 31. NBHW was loaned the record cards of the patients resident at the end of the year annually until 1969, but since then the information has been collected only in certain years.

Generally speaking, all psychiatric inpatients, whether in psychiatric hospitals or in psychiatric departments of general hospitals, have been included in the reporting system. However, there have been some exceptions. Until 1967 departments for children, which accounted for approximately 400 beds out of the total 28,000 psychiatric beds, were not included.[120,117] Until 1973 mental nursing homes, institutions which provide care for less serious mental disturbances, were not included. Since then publicly owned mental nursing homes, containing 6,314 beds, have reported, but private ones, containing 2,748 beds, have not.[104]

In the medical birth registration system, statistical forms are supposed to be filed on all deliveries. Almost all births in Sweden take place in hospitals and are reported by hospital personnel. In the case of a home birth, the form should be completed by the medical personnel attending the birth. Studies have been done on the completeness of the reporting system—about 1.0 percent of newborns, but only 0.5 percent of newborns who died, were not reported in 1973.[121]

Items available.—The information collected on psychiatric patients is similar to that collected on the somatic patients.[87] The hospital, department, patient, and medical record are identified by number. Date of admission and type of admission (voluntary, court order, back from probationary discharge, and so on) are reported, as are the date and type of discharge (probationary discharge, to institution for mentally handicapped, to psychiatric department, and so on). Previous admissions in the same department earlier in the year are noted, as are age, sex, marital status, insurance fund number, and diagnoses. Diagnoses are coded using the same ICD classifications as with somatic patients.

In the calculation of utilization statistics,[119] discharges on probation and deaths are regarded as discharges. Transfers to other hospitals are counted as discharges and new admissions, but transfers within a hospital from one ward to another are generally considered part of a single admission. The duration of stay is obtained by subtracting the date of admission from the date of discharge and includes time on leave and in family care.

Six publications of psychiatric statistics have been produced by NBHW. Four are in the *Patient statistics* series: numbers 3,[120] 4,[122] 9,[123] and 14.[117] One report preceded the series.

The latest report, "Psychiatric In-Patient Care 1973: Statistics of the National Board of Health and Welfare," is in the *Statistical reports* series[119] published by the National Central Bureau of Statistics. It presents information on the number of psychiatric discharges, number per 100,000 population, and mean and median lengths of stay. Statistics on discharges often exclude the number of deceased and transferred patients, but separate tables present information on the deceased. Separate statistics are also presented for adult patients and for children and adolescents. Patients in mental nursing homes are also examined separately from those in psychiatric hospitals or psychiatric departments of general hospitals. Discharges are reported over time (1962-73) and by average length of stay, sex, mean age, age at discharge, diagnosis, and type of discharge.

In the medical birth registration system, numerous specialized items of information are collected.[121] Attributes of mothers that are reported include parity, diagnoses during pregnancy, obstetric diagnoses, and operations. Characteristics reported on newborns are birth order, birth weight and length, gestational age, sex, whether a single or multiple birth, and any malformations, diagnoses, neonatal procedures, or deaths. These items are in addition to the usual information: identification of the patient, department, and hospital; admission and discharge dates; marital status and age of mothers. The

diagnoses are coded according to the ICD classifications.

Statistics on births in the Uppsala region from 1964 to 1968 were published in 1973 in number 12 of the *Patient statistics* series.[118] More recent information from the years 1973 and 1974 was reported in 1977 for the whole country in the *Statistical report* series[121] published by the National Central Bureau of Statistics.

The emphasis in the published materials is on the newborn infant and especially on perinatal mortality and factors influencing it. For the most part, characteristics of mothers are related to characteristics of their babies rather than analyzed separately. Statistics usually reported are number of births, percent distributions of births in various categories, and rate per 1,000 births of various events. The average length of hospital stays, number of births in each hospital, and births per bed are also reported. Tables report births by type of hospital—that is, by level of specialization of the facility—but utilization measures are not usually cross-tabulated by other factors.

Attempts are under way to see if the small amount of social information collected on the birth registration slips can be supplemented by information from other national registers.[104] Sweden has an income register that contains information on all citizens' taxable incomes and a marital register that lists family relationships between individuals. Census data are collected on education and occupation but are not available because of confidentiality restrictions.

Aggregate Hospital Reports

Data collection.—Before the discharge reporting systems were created, the National Board of Health and Welfare compiled information on Swedish hospitals from annual reports that the hospitals were required to submit to the Board. The county councils had the responsibility for collecting these reports from individual hospitals. The councils, along with NBHW, used the information for planning purposes and to monitor the provision of hospital services.

One of the advantages to the hospitals of the discharge reporting systems is that they replace the annual report. Hospitals that file discharge slips on all their patients receive back from NBHW the same consolidated lists of patients by diagnoses that hospital personnel themselves previously had to compile for NBHW. The information from the discharge slips is combined with data in annual reports from hospitals not in the discharge systems, and the national summaries of hospital utilization are compiled. These summaries report on all discharges from all Swedish hospitals—public, private, general, specialized, and long- and short-term.

Items available.—National summaries of hospital statistics are published regularly both by NBHW and by the Federation of County Councils. NBHW includes the hospital data in its annual report, "Public Health in Sweden."[13] The data are also published in the *Statistical reports* series of the National Central Bureau of Statistics in "Hospital Service Statistics."[124,125] The Federation presents hospital statistics in its so-called LKELP publications and in its yearbook.[126]

The published statistics are usually separated into categories of medical short-term, medical long-term, surgical short-term, psychiatric, and a few other general and specialized categories. Short- and long-term units are defined in terms of the intensity of care offered. The categories are further subdivided into more specialized groups. For instance, surgical short-term is broken down into surgery, gynecology and obstetrics, ophthalmology, and otolaryngology. The psychiatric category separates child and adolescent units from general psychiatric units. One group of beds called "technical beds" is not included in the above categories. This group includes beds in postoperative, intensive care, and special newborn care units.

The information on hospitalization published for each of these categories includes the number of beds, number of bed days, occupancy rates, number of admissions, average length of stay, and number on waiting lists. Rates per 100,000 population for beds, bed days, and admissions are also given. Trend data are often presented either by showing data from a series of years or by calculating indexes that compare statistics from 2 years when 1 year's statistics are given the value of 100. For example, the 1976 admission index for psychiatric care was

128 when 1970 equaled 100.[124] Statistics for each of the categories of kinds of care are given by county and region as well as for the country as a whole. In calculating these statistics, deaths are counted as discharges, and both interhospital and intrahospital transfers are generally counted as discharges and new admissions.

Household Surveys

A small amount of information on hospital use has also been collected in Sweden as part of the continuous Survey of Living Conditions begun in 1974 by the National Central Bureau of Statistics. The survey covers six welfare components: health, employment, housing, education, finances, and social relations. Its purpose is to supply information for public discussions, planning, and implementation of social reforms.

The survey collects data on a representative national sample of the Swedish population aged 16-74 years. Each year 12,000 persons are selected for personal interviews that consist of some 400 questions. In 1974 the nonresponse rate was 17 percent.[127]

Data from the survey are published in the *Living Conditions* series created by the National Central Bureau of Statistics. The first report on health, "Health and Medical Care Utilization 1974," was published in 1976. It contains information on longstanding illness, reductions in functional capabilities, incidence of restricted activity, outpatient visits, taking of medicines, dental status and dental care utilization, and hospital use. Diagnoses are not reported. The tables on hospital use include data on the number of persons hospitalized in a 3-month reference period and are shown by age and sex; by age, sex, and socioeconomic group; and by age, sex, and region of the country.

SUMMARY

The preceding descriptions of the major sources of hospital utilization statistics reveal similarities and differences in the data available in six countries. In this section several aspects of the data are highlighted and compared from country to country. The major emphasis again is on the general hospital discharge reporting systems. The operation of the systems is reviewed, with special attention to the coverage of each and the items of information collected by each. The other sources of hospital statistics in six countries are also summarized, and the advantages they possess over the general hospital discharge reporting systems for certain purposes are noted. In addition, selected characteristics of the health services systems of each of the countries that can be expected to have an impact on hospital utilization statistics are discussed. Finally, suggestions are made on the basis of the findings of this study for further research into the status of cross-national hospital statistics.

General Hospital Discharge Reporting Systems

This study is limited to nationwide general hospital discharge reporting systems, with two exceptions, the Hospital Activity Analysis in England and Wales (HAA) and the State morbidity studies in Australia. HAA is included even though it is organized on a regional basis, since its operation is basically uniform throughout England and Wales, and since it is closely interconnected with the national Hospital In-patient Enquiry. The Australian State morbidity studies are described since the national discharge reporting system does not contain any diagnostic information on hospital inpatients.

Almost all the discharge reporting systems collect individual abstracts on 100 percent of the hospital patients they cover. HIPE, in England and Wales, is an exception, collecting abstracts on only a 10 percent sample of discharges, but 100 percent reporting is done in the country by HAA. France's hospital morbidity study is another exception, at present reporting only aggregated data on inpatients. However, individual abstracts are expected to be in use by 1980. The French study is also the only one in which substantial numbers of hospitals included in the reporting system failed to report.

The reporting systems have been in existence for varying periods of time, as is summarized in table F. Queensland, Australia, began operating a State hospital morbidity study in the 1930's, and England and Wales started HIPE on an experimental basis in 1949. However, most

Table F. General hospital discharge reporting systems in operation, by country

Country	Reporting system	Agency or agencies responsible	Year begun
Australia	Medibank statistical system	Health Insurance Commission	1975
	State morbidity studies	State health authorities and State offices of Australian Bureau of Statistics; in Victoria: Hospital Computer Service	1930's-1970's
Canada	Hospital morbidity study	Statistics Canada and Provincial hospital insurance commissions	1960
England and Wales	Hospital In-patient Enquiry (HIPE)	Department of Health and Social Security and Office of Population Censuses and Surveys	[1]1949-1958
	Hospital Activity Analysis (HAA)	Regional Health Authorities	1965
Finland	Discharge reporting system	National Board of Health	1960
France	Public hospital morbidity study	Ministry of Health and Social Security	1969
Sweden	Discharge reporting system	County councils and the National Board of Health and Welfare	1964

[1]Begun in some areas in 1949 and reached current coverage in 1958.

systems were not established until the 1960's, and a few, for instance Medibank in Australia and the French hospital morbidity study, are still in the process of change and development.

Table F also shows that a range of types and levels of agencies is responsible for the general hospital discharge reporting systems. The most numerous are national health agencies, which are solely in charge of the systems in Finland and France and are cosponsors of the systems in England and Wales and Sweden. National statistical agencies are involved in operating the systems in Canada and England and Wales, and the national Health Insurance Commission in Australia handles the Medibank statistical system.

On the regional level, health agencies are system sponsors in some of the Australian States and in England and Wales for HAA. State offices of the Australian Bureau of Statistics are also usually involved in the Australian State studies, and in Victoria a computer service collects and analyzes hospital data. The Provincial hospital insurance commissions are involved in the Canadian system, and the county councils in Sweden are systems sponsors.

The purposes for which the reporting systems were established were generally similar from country to country. The primary purpose usually given was to collect data to be used in planning and evaluation of the health services system. Epidemiological research and research into problems in the delivery of health services were also expected to use the data collected by the systems. Use of the data for administrative purposes was also cited in some countries as a rationale for the development of the systems, as was its use for management of hospitals or for clinical practices in hospitals.

The data from the systems have not proved equally useful for all these purposes. Plans for use of the data for management have probably been the least fulfilled. The length of time consumed by data processing has reduced the potential of most systems to provide data for ongoing management, and other problems have also been discovered such as the lack of sufficient detail in the data collected and the reluctance of hospital personnel to use it. Other difficulties have been more common in one system than in another. For instance, in France the low and varied response rate to the hospital

morbidity study has rendered it less useful for many purposes than other systems. In Finland, because the central data bank has been slow to process data and expensive to use, less research than was expected has been generated. In Australia, the Health Insurance Commission has not been able to keep up with all the requests by researchers for Medibank data.

Despite the problems, a good deal of use is made of the data collected by most systems. National health agencies are usually the heaviest consumers of the data, making use of it for administration, planning, and research. Regional health agencies also often draw upon the data collected by the systems for these purposes, and universities and other nongovernmental groups have undertaken a variety of studies using the data.

The data collected by the general hospital discharge reporting systems are published on a periodic basis by every country except Finland. Some systems produce annual publications from the data collected, including reports from several of the State morbidity studies in Australia, from the Canadian hospital morbidity study, and from HIPE in England and Wales. Series of published reports have also been made from the data collected by the French morbidity study and the Swedish reporting system. Statistics from Medibank have been published in recent annual reports of the Health Insurance Commission and the Commonwealth Department of Health. Generally, statistics are published 2 to 3 years after they are collected.

Unpublished tables compiled from the data collected by the reporting systems are frequently distributed on a routine basis to those who participate in the systems and to other interested parties. Each system also maintains computer files of the information collected, from which data for individualized purposes can be obtained.

The coverage of the hospital discharge reporting systems is summarized in table G. This information is of critical importance for cross-national use of the data from the systems. The inclusion or exclusion of certain categories of hospitals or patients in different systems can render comparisons of the data misleading unless corrections are made to allow for the differences. A brief inspection of the table makes clear that there are numerous differences in the patterns of coverage.

First, the extent to which the general hospitals in each country are included in the discharge reporting systems is variable. Nearly 100 percent of the general hospitals are covered by the Australian Medibank system, the Canadian system, the HIPE-HAA systems in England and Wales, and the Finnish system. In the Swedish system and the Australian State systems approximately three-quarters of the general hospital discharges are reported. In Sweden, data on all the hospitals are reported in two areas, the Uppsala region and the Skåne area, which together account for 28 percent of the population. In Australia, three State systems and the Northern Territory's system cover 100 percent of the general hospitals. These areas together account for 59 percent of the population of the country. In France, less than 65 percent of the general hospital beds are covered by the system, and approximately half of the discharges from the covered hospital beds have not been reported on. The level of reporting from covered hospitals is less than 100 percent in all areas of the country; it is as low as 22 percent in one region and ranges to a high of 79 percent.

Patients discharged from private hospitals are more likely to be excluded from the discharge reporting systems than are patients from public hospitals. In France and England and Wales no private hospitals are reported on by the systems. In England and Wales, private patients in National Health Service hospitals are generally excluded, as well as patients in private hospitals. However, together these two groups of patients account for only a small percent of all the discharges in the country. In France the exclusion of private patients is much more important since they account for half of the discharges and have different utilization, demographic, social, and medical characteristics as a group than do public hospital patients.

In Sweden and Australia, some private patients are included in the studies, and some are excluded. The Medibank system in Australia covers all patients in private hospitals except those covered by workmen's compensation or other like third-party insurance. Three State systems in Australia cover all private hospital patients; the others exclude all such patients. In

Table G. Coverage of general hospital discharge reporting systems, by country

Country	General hospitals	General hospital patients in —		
		Public hospitals	Private hospitals or beds	Psychiatric units
Australia:				
Medibank	All approved hospitals covered.	Covered.	Covered, with some exceptions (See "other categories").	Covered.
States	All approved hospitals covered in New South Wales, Queensland, Western Australia, and the Northern Territory, Australian Capital Territory, 93 percent covered; Tasmania, 72 percent; South Australia, 65 percent; Victoria, 50 percent. Country as a whole 72 percent covered.	All covered except in Victoria, 70 percent discharges covered; and South Australia, 70 percent hospitals covered.	Covered in New South Wales, Queensland, Western Australia. Not covered elsewhere. (Northern Territory has no private hospitals.)	Covered.
Canada	All covered in Provinces. Not covered in Yukon or Northwest Territory.	Covered.	Covered.	Covered.
England and Wales[1]	All National Health Service general hospitals covered.	Covered.	Patients in private hospitals or private beds of National Health Service hospitals not covered.	Not covered.
Finland	All covered.	Covered.	Covered.	Not covered.[2]
France	Returns from centres hospitaliers régionaux, centres hospitaliers, and hôpitaux. Coverage of these varies from 79 percent to 22 percent in different regions.	Approximately 1/2 of the patients covered.	Not covered.	Not covered.
Sweden	All somatic hospitals covered in Uppsala region and Skåne area. Approximately 3/4 of all somatic hospital patients covered in country as a whole.	All covered in Uppsala region and Skåne. Most are covered in other areas, but small hospitals underrepresented.	Covered in some areas but may be excluded in others.	Not covered.

[1]Hospital In-patient Enquiry and Hospital Activity Analysis.

[2]Discharge reports from general, psychiatric, and tuberculous hospitals in Finland are all part of a single reporting system, but separate statistics are produced for each. Statistics concerning general hospital discharges do not include discharges from psychiatric units of the hospitals, which are combined with psychiatric hospital discharges.

Table G. Coverage of general hospital discharge reporting systems, by country—Con.

Country	General hospital patients in —			Other hospitals
	Long-term units	Other special-care units	Other categories	
Australia:				
Medibank	Covered.	Covered.	Hospitalization in private hospitals paid for by third parties such as workman's compensation not covered.	Psychiatric, Veterans' Affairs, and State hospitals providing long-term care not covered. Nursing homes not covered.
States	Covered.	Newborns not covered.	Covered.	Veterans' Affairs hospitals not covered. Psychiatric hospitals not covered except in New South Wales.
Canada	Covered.	Covered.	Uninsured hospitalizations and hospitalizations paid for by third parties such as workman's compensation not covered.	Allied special hospitals covered. Psychiatric and tuberculosis hospitals not covered. Nursing homes not covered.
England and Wales[1]	Convalescent units not covered.	10-percent sample of maternity patients and newborns covered, report on specialized forms.	Some staff patients not covered.	Psychiatric hospitals not covered. Local authority institutions for long-term care not covered. Maternity hospitals report on a 10-percent sample of patients on specialized forms.
Finland	Covered.	Newborns not covered.	Covered.	Registered hospitals of institutions and patients in hospital beds in health centers covered. Nonregistered hospitals of institutions and psychiatric and tuberculosis hospitals[2] not covered.
France	Intermediate stay rehabilitation, convalescent units, etc., covered.	Covered.	Patients in hospital and annex sections not covered.	Psychiatric and local hospitals not covered.
Sweden	Covered.	Maternity patients and newborns not covered, reported in separate system.	Covered.	Psychiatric hospitals not covered.

Sweden, since each county council decides which hospitals will be part of its reporting system, some may exclude private hospitals. Here again, there are so few private hospital patients that their exclusion does not significantly bias the data collected.

In Canada, a small number of patients in public and private hospitals, those whose hospitalizations are not paid for by the national hospital insurance, are excluded from the reporting system. Almost all the population is covered by the insurance, but hospitalizations paid for by workmen's compensation and those of the Canadian Forces, the Royal Canadian Mounted Police, and inmates of Federal prisons are excluded.

Some public hospital patients in Australia, France, and Sweden are also excluded from the discharge reporting systems. Victoria, Australia, does not cover 30 percent of its public hospital discharges, and in South Australia, 30 percent of the public hospitals did not report data on their patients in a recent reporting year. In Sweden, some county councils chose not to cover all public hospitals, and the smaller public hospitals are generally the ones left out. In France, the small public local hospitals are all excluded from the study, and, as previously mentioned, only half the discharges from the covered public hospitals are reported on. The highest-level teaching hospitals tend to be somewhat underrepresented among the hospitals covered by the French study.

Within the general hospitals covered by the discharge reporting systems, certain categories of patients are not always reported on. The category most often excluded is that of patients in psychiatric units; reporting systems in all four of the European countries examined exclude these patients. However, the systems in Canada and Australia include the discharges from psychiatric units, and the New South Wales morbidity study includes data on discharges from psychiatric hospitals as well. Since psychiatric patients tend to be hospitalized for longer periods than patients with somatic problems do, their inclusion could confound such cross-national comparisons of the hospital utilization statistics as number of bed days per population and average length of stay.

Also of importance for international comparisons is the handling of data on maternity patients and newborns. Healthy newborns are not reported as discharges in the Australian State studies, the Finnish reporting system, or the Swedish reporting system. Sweden operates a separate birth registration study to gather information on newborns and their mothers, who are also excluded from the general hospital discharge reporting system. In England and Wales, data on maternity patients are also handled separately from discharge data on other NHS patients. Special reporting forms are used to gather information on the maternity patients and newborns, and only a 10 percent sample of maternity patients is examined. In Canada, information on newborns is gathered in the hospital morbidity study but is analyzed and reported separately from data on children and adults discharged from hospitals. In France, data on maternity patients are often presented separately from other discharge data.

The extent to which long-term patients are covered by the reporting systems is extremely important to note when the data are used for cross-national comparisons. It might be assumed that since general hospitals are primarily for acute care, all general hospital discharge reporting systems would cover acute patients almost exclusively. Such is not the case. Though short-term patients account for the majority of the hospital discharges in every system, the proportion of long-term patients covered varies significantly from country to country, and the variation has an appreciable effect on the utilization statistics reported by the systems.

The reporting system in Australia includes only a small number of long-term patients. Though the psychiatric units and geriatric units located in general hospitals are included in the systems, these units account for only 6 percent of the hospital beds covered by the reporting system.[24] Nursing homes and State hospitals providing long-term care are excluded from the systems. If a 30-day stay is used as the criterion by which to define a long-term patient, 4 percent of the discharges covered by the Medibank study in the 1976-77 reporting year were long-term. The average stay of all patients covered by the study in that year was 8.3 days.[25]

In Canada the patients covered by the hospital morbidity study had an average length of

stay of 11.1 days in 1975.[52] However, included in this figure were patients in psychiatric and other long-term units of general hospitals and the long-term patients in the allied special hospitals. The beds in long-term facilities account for 24 percent of all the beds covered in the study.[14] If the 30-day stay is used as the criterion for defining long-term patients, 5.5 percent of the discharges covered in the study in 1972 were long-term patients.[128] The hospital morbidity study does not separate statistics on long-term patients from statistics on short-term patients, but from the annual reports it was learned that if the patients on short-term wards had been considered separately, their average length of stay would have been 8.8 days.

In England and Wales, the HIPE and HAA studies exclude the long-term patients in convalescent and psychiatric units of National Health Service hospitals, but they cover patients in geriatric units and units for younger disabled patients. These units account for 22 percent of the beds covered by the studies, and the patients in them accounted for 4 percent of the discharges in 1974.[17] HIPE and HAA do not make distinctions between long- and short-term patients, but data from the annual reports revealed that the average length of stay in nonpsychiatric NHS hospitals was 12.9 days in 1976 if the geriatric and younger disabled patient units were included. If they were excluded, the average length of stay was only 9.5 days.

Finland's reporting system covers long-staying patients in general hospitals, health centers, and registered hospitals of institutions. One study found that 24 percent of the beds in general hospitals were used for patients staying 30 days or more and that 50 percent of the beds in hospitals of institutions contained long-term patients.[16] Statistics are available from the Finnish reporting system that exclude hospital of institution patients, and these statistics gave the average length of stay as 11.6 days for 1975.[85] If the hospital of institution patients were included, the average stay would be approximately 14.0 days.[9]

In France, patients in psychiatric units of general hospitals and in the hospital annex section are excluded from the public hospital morbidity study, but patients in intermediate-stay units such as rehabilitation and convalescence units are covered. In 1974 these units accounted for 11 percent of the beds covered, 12 percent of the bed days, and 2 percent of the admissions. The morbidity study does not separate data on long- and short-term patients, but data from the annual reports can be used to estimate the impact of the long-term patients on the morbidity study statistics. Patients in the short-term units covered by the study had an average length of stay of 12.2 days in 1974, but patients in all units covered averaged 13.7-day stays.[10]

The Swedish discharge reporting systems cover long-term patients in general hospitals and long-term hospitals. Some of the published statistics from the Uppsala and Skåne areas separate the long- and short-term hospitals. In those areas the long-term hospitals account for 39 percent of the beds covered and, in 1973, 43 percent of the bed days and 4 percent of the discharges. They averaged a 160.1-day length of stay in 1973 while the short-term hospitals averaged 11.0 days.[115] The short-term average still includes a sizable number of long-term patients cared for within the general hospitals. NBHW reported in its public health publication that the average stay of patients in general hospitals is 9.9 days when chronic care units are excluded.

As well as the coverage of the discharge reporting systems, it is important to be aware of the kinds of information collected by each system. Table H gives a list of the items of information collected in the United States Hospital Discharge Survey and shows which of them are collected by the reporting systems in the six countries.

Some items are common to all of the systems. The reporting hospital is identified in every system, and the patient is identified by name or number or both in every system except France's public hospital morbidity study, which will begin doing so in the near future. The length of stay of each patient and whether he or she was discharged alive or dead is given in each system. The sex and age of patients is also always reported. In France patients are presently reported in grouped age categories, but by 1980 hospitals will be reporting the date of birth of each individual patient.

Diagnostic information is reported for patients in every system except Medibank, but the extent of it varies from the report of 1 diagnosis

Table H. Whether or not selected items are collected by general hospital discharge reporting systems, by country

Country	Item[1]										
	Identification of hospital	Identification of patient	Date of admission	Date of discharge	Whether discharged alive or dead	Date of birth or age	Sex	Race	Marital status	Diagnoses	Operations
Australia:											
Medibank	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No
States	Yes	Yes	Yes	Yes	Yes	Yes	Yes	[7]Yes	Yes	Yes(1-10)	Yes(1-8)
Canada[2]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes(2)	Yes(2)
England and Wales[3]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes(6)	Yes(4)
Finland	Yes	Yes	Yes	Yes	Yes	[5]Yes	Yes	No	[8]No	Yes(3)	[8]No
France:											
During present study	Yes	No	[4]No	[4]No	Yes	[6]Yes	Yes	No	No	Yes(1)	No
Projected for 1980	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes(1)	No
Sweden	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes(8)	Yes(16)

[1]List taken from U.S. NCHS Hospital Discharge Survey—Medical Abstract. See reference 128.
[2]Basic items reported to Statistics Canada by Provinces.
[3]Items collected by the Hospital In-patient Enquiry and the Hospital Activity Analysis.
[4]Aggregate bed days reported by each hospital for each diagnosis.
[5]Included in patient identification number.
[6]Grouped.
[7]Race given in New South Wales, South Australia, Western Australia, and the Northern Territory.
[8]Dropped in 1975.

in the French system and some Australian State systems to the ability to report up to 8 diagnoses in Sweden and 10 in South Australia. Information on operations experienced by patients may or may not be collected. Medibank and the systems in Finland and France do not report on them, but the other systems report at least one operation and usually more if applicable.

Race and marital status are the least likely to be reported in the systems. The race of patients is not noted anywhere except in some State systems in Australia that obtain information on whether patients are Aborigines. The marital status of patients is available in the Australian State systems, HIPE and HAA in England and Wales, and the Swedish system; but Medibank in Australia, the Canadian system, the Finnish system, and the French system do not report it.

The discharge reporting systems also gather various other items of information. The address of each patient or some other information on the area of residence of each is available almost everywhere. The country of birth of patients or their nationality is reported in Australia by the State systems and in England and Wales. Nationality will be added to the French system by 1980. The occupation of discharges is noted by most of the Australian State systems. Certain high risk occupations are also recorded in Finland, and the socioprofessional category of patients and of the head of the household of which the patients are a part will be recorded in France's system in the future. Information about other social characteristics of patients such as the educational level, family size, length of residence, and religion, which may be important in assessing the functioning of the health services system, are not collected by these systems.

Other items of information besides those listed in the table are also reported. Admissions and discharges that are transfers are often identified. The type of accommodation patients had and whether they paid extra for privacy or other privileges in the hospital are also reported in several systems. The external cause of accidents is usually reported when applicable. Less frequently, the physicians who admitted or treated the patient are identified. Other items, including cause of death, whether or not an autopsy was done, anesthesia used during operations, and time on the waiting list before hospitalization, are also reported in a few systems.

The types of personnel who complete the

discharge forms and, especially important, who choose the diagnoses to be reported, their order and the codes for them, vary as much within countries as they do between countries. Sometimes clerical personnel of hospitals complete the forms; in other cases medical personnel—from nurses to the physicians who head hospital departments—are in charge of them or are responsible for filling out parts of them. Some of the larger hospitals code the forms themselves; others send the forms to local, regional, or national authorities for coding. Little information is available on the accuracy with which forms are completed and coded; and the studies which have been done, primarily in England, tend to be contradictory.

The definitions of the principal or first diagnosis that are supposed to be followed by those who complete the forms are given in table J. Most are similar, referring to the main disease treated or studied during the hospital stay as the principal diagnosis. Some variation is known to exist in coding practices in different Provinces of Canada and in France, where the admitting diagnosis or the condition that requires the most medical resources is sometimes reported in spite of instructions to the contrary.

The eighth revision of the International Classification of Diseases is used at present (1978) to code the diagnoses in each system. In Finland and Sweden, a special five-digit adaptation of ICD-8 is used, which is comparable but more detailed. Alberta, Canada, started using the second edition of the Hospital Adaption of the International Classification of Diseases (H-ICDA) in 1974. It cannot be translated perfectly into ICDA-8. Most countries are making plans to begin using the ninth revision of the International Classification of Diseases in the next few years.

The definition of the principal operation to be reported is generally the most important one related to the principal diagnosis. Canada uses the International Classification of Diseases codes to record operations, but Australia, England and Wales, and Sweden use the coding system developed by the General Register Office (now the Office of Population Censuses and Surveys) in England, or an adaptation of it.

The discharge reporting systems also differ

Table J. Coding of diagnoses in general hospital discharge reporting systems, by country

Country	Coding of diagnoses	
	Definition of principal diagnosis coded	Code used
Australia (State studies)	Disease or injury which best characterized the period of hospitalization.	ICD-8
Canada	In some Provinces, the condition which required the most medical resources. In others, the condition that precipitated the admission to the hospital.	ICDA-8, except in Alberta, which used H-ICDA
England and Wales	Specific or principal condition treated during hospitalization or found to be the underlying cause immediately responsible for the patient's symptoms.	ICD-8
Finland	Main reason for being in the hospital at the time.	ICD-8, adapted in Latin and Swedish (five-digit codes)
France	Principal disease treated or studied during hospitalization.	ICD-8
Sweden	The condition the investigation or treatment of which was the main cause for keeping the patient in the hospital.	ICD-8, adapted in Latin and Swedish (five-digit codes)

in some of the procedures they use to calculate utilization statistics from the data they collect. One important difference is in how they handle transfers. In all six countries a transfer from one hospital to another is considered a discharge and a new admission, but in some systems transfers from one service to another within a single hospital are also counted as discharges and new admissions. This is generally the case in Sweden. In France hospitals are instructed to consider intrahospital transfers as part of one admission, but approximately half still report them as discharges and new admissions. In Canada transfers from an active treatment unit to a chronic long-term care unit within a single hospital are considered discharges and new admissions, but other intrahospital transfers are counted as part of a single admission.

A few of the systems differ in their treatment of inpatient stays of less than 1 day. In HIPE in England and Wales these stays are counted as using 0 bed days, and the Australian State systems count such stays as using 0.5 bed day, but Medibank and most other systems either count them as 1 bed day or count the admission and discharge day together as 1 day, which works out the same. Most systems calculate average length of stay by dividing the number of bed days used by patients discharged during the reporting period, including bed days which fell before the period, by the number of discharges. The Medibank system also obtains a bed-day count on all patients in the hospital during the reporting period whether or not they have been discharged, but this count excludes the discharges' bed days that occurred before the reporting period began. In France some hospitals report only the discharges' bed days that occurred in the reporting period, and others add the number of patients in the hospital on the last day of the reporting period together with the number of discharges that took place during the period. All systems count deaths together with other discharges when calculating statistics.

Since the general hospital discharge reporting systems have all these differences, it might be thought that it is simply not possible to use them as a source of data for cross-national research. That conclusion is hardly justified. Indeed, the systems have much potential for comparative research, providing a wealth of similar and detailed data on the majority of general hospital patients in every country except France. It is because they have this potential that the variations between them have been discussed in such detail. Once the differences are understood, ways to adjust the data to take them into account can be devised.

Sources of Utilization Statistics in Addition to the General Hospital Discharge Reporting Systems

Other sources of hospital statistics also exist in each of the six countries. They are listed in table K. For some purposes, these sources may be preferred to the general hospital discharge reporting system, or researchers may need to combine information from them with data from the general hospital discharge reporting systems.

The other discharge reporting systems cover, with a few exceptions, patients excluded from the general hospital reporting systems. In Australia data from Veterans' Affairs hospitals are included in the reports made by some of the State morbidity studies, and patients in psychiatric units may be reported to both the State morbidity studies and the State psychiatric studies. In Canada, too, psychiatric patients in general hospitals are reported to both the hospital morbidity study and the psychiatric discharge reporting system. In every country, the psychiatric discharge reporting systems are the primary source of data on psychiatric inpatients. In Sweden information about maternity patients and their babies must be obtained from the Medical Birth Registration, and in Finland and Canada information on patients in tuberculosis institutions must be gathered from the separate studies covering them.

These reporting systems usually follow procedures similar to the general hospital reporting systems, and they collect similar items of information with some deletions and additions specific to the patients they cover. The systems covering the same kinds of patients are more comparable in coverage from one country to the next than are the general hospital discharge reporting systems, but certain factors still need to be noted when using the data from them for cross-national comparisons. For instance, when

Table K. Sources of hospital utilization statistics in addition to the general hospital discharge reporting systems, by country

Country	Studies of hospital use		
	Discharge reporting systems other than the general hospital discharge reporting system	Aggregate hospital reports	Household surveys
Australia	State psychiatric systems	National survey of hospitals in 1972 by Hospitals and Health Services Commission	National Health Survey begun in 1977
	Veterans' Affairs hospital system	National reports collected from public hospitals since 1971 annually in the Hospital and Allied Services Advisory Council	
		Reports collected by States annually	
Canada	Psychiatric system	Annual reports collected since 1930's by Statistics Canada and Health and Welfare	Survey undertaken in 1950-51 and 1978
	Tuberculosis system		
England and Wales	Psychiatric system	Annual hospital returns collected since 1948 by the Department of Health and Social Security	Continuous General Household Survey begun in 1971
Finland	Psychiatric system[1]	Annual hospital returns collected by the National Board of Health nationwide since 1963	Surveys in 1964, 1968, and 1976
	Tuberculosis system[1]	Annual reports collected by the Finnish Hospital League from communal hospitals	
France	Psychiatric system	Annual questionnaires on facilities and use collected by the Ministry of Health from public hospitals since 1961 and from private hospitals in 1962, 1968, 1972, and annually thereafter	Survey undertaken in 1970 and a survey presently under way
Sweden	Psychiatric system	Aggregate reports collected annually from hospitals not involved in general hospital discharge reporting system by county councils and the National Board of Health and Welfare	Continuous Survey of Living Conditions begun in 1974
	Medical Birth Registration		

[1]The psychiatric and tuberculosis systems are actually subsections of the single discharge reporting system that also covers general hospitals.

comparing psychiatric data, whether or not the psychiatric systems cover institutions for the mentally retarded needs to be ascertained. The degree of development of alternative psychiatric care facilities in each country should also be examined.

The collection of aggregate hospital reports preceded the development of discharge reporting systems in most countries, and the reports continue to be submitted annually by the general and specialized hospitals in each country. In Australia the national Hospital and Allied Services Advisory Council has collected annual reports from public hospitals since 1971, and a survey was done of all the hospitals in every State but Victoria in 1972. The Australian States also collect reports from hospitals annually, but again only public hospitals are included. In France both public and private hospitals submit annual reports to the Ministry of Health and Social Security, but somewhat different information is collected from each, and

most of the data from the two sets of reports are analyzed and reported separately.

In Sweden annual reports are submitted by some hospitals to the county councils, which in turn forward them to the National Board of Health and Welfare. The hospitals that take part in the discharge reporting system, however, no longer have to file these reports. All the hospitals in Canada and Finland and all the National Health Service hospitals in England and Wales make annual reports on their facilities, use, and personnel in addition to their participation in discharge reporting systems. Only one nongovernmental agency, the Finnish Hospital League, is involved in the collection of reports, and the National Board of Health in Finland duplicates most of the information the Hospital League collects in its annual reports.

The information in the annual reports is not as detailed in the area of characteristics of individual hospital inpatients as are the discharge reporting systems, but the reports have some advantages. Most include information on outpatients treated by hospitals, the number and distribution of beds in different hospital departments, the numbers and kinds of hospital personnel, aggregate reports of use of such hospital services as laboratory tests and X-rays, and the financial aspects of hospital operation. The information allows study of such things as the cost of a patient day, the average number of laboratory tests per admission, and occupancy rates.

Other advantages are specific to certain countries. For instance, in Canada the annual reports, unlike the hospital morbidity study, separate utilization statistics on long- and short-term patients; and statistics from the annual reports are available for a considerably longer period of time than are those from the discharge reporting system. In England and Wales the annual reports are the only source of data that go back to the beginning of the National Health Service and that cover all patients in all NHS hospitals—the psychiatric and maternity hospitals as well as others. In Finland data from annual reports, unlike the data collected by the discharge reporting systems, are regularly published; and the reports cover all hospitals—psychiatric and tuberculosis hospitals, registered and unregistered hospitals of institutions, health centers, and general hospitals. In France the annual reports are completed by almost all hospitals, including the local hospitals excluded by the discharge reporting system. Hospitals report on their annex sections as well as on their short- and intermediate-stay sections, and more utilization statistics are published from these reports than are published from the discharge reporting system. In Sweden hospitals in all areas of the country are included in the summaries made from the annual reports and the discharge reporting system data, and more recent statistics are published from these combined sources than from the discharge reporting system alone.

Household surveys also collect information on the hospital utilization of a national sample of patients in each country. In England and Wales and Sweden continuous household surveys collect data on many aspects of the welfare of the populations, including health data. In France, Finland, Canada, and Australia household surveys examining the health and health services utilization of the populations are either in progress or have recently been conducted. The surveys are not primarily concerned with hospital use; usually only a few questions about hospital use are included, and the published reports from the surveys usually contain only a brief discussion of and a few statistics on hospitalizations. Because the samples for the surveys do not include persons in hospitals or other institutions, the extent of hospital use is underestimated in them. However, the surveys do contain much information about the social characteristics of patients, including data on their economic status that is not available elsewhere. They are also a source of person-oriented rather than visit-oriented data. Detailed analyses of hospitalizations are not often done at present except for the reports from the 1970 survey in France in which the social characteristics of hospital patients were analyzed. Still, the potential value of the surveys should not be overlooked.

Health Services Systems

In addition to understanding the statistical systems that gather hospital utilization data,

those who intend to use hospital data cross-nationally must have some knowledge of the health services systems in operation in the countries they compare. There needs to be an awareness of the relationships between hospitals and the other health services in each country and of other aspects of the health services systems that affect the rate of hospital use. Therefore, in this section certain characteristics of the health services systems in the six countries studied will be examined. The discussion is not intended to be a comprehensive description of health services systems in any of the countries but rather will concentrate on selected characteristics that are expected to have an impact on the hospital utilization statistics.

First of all, since chronic patients can have an important effect on hospital statistics, further attention will be given to the long-term care facilities available in each country and to the separation of long-term care from hospital care. Second, the patterns in the provision of ambulatory care will be examined. The availability of physicians and the separation between physicians providing inpatient care and those providing ambulatory care will be discussed, as will the availability of other kinds of health personnel and of programs for ambulatory care. Finally, the financial incentives or disincentives for hospitalization in each country will be explored.

The number of beds per population in nursing homes and other similar institutions for long-term care were given in table C for each country. It was seen that Finland and France had the most beds, 6.7 per 1,000 population, Canada the next highest with 6.2, Australia with 4.0, Sweden with 3.7, and England and Wales with 3.4. It must be noted that these figures refer to only approximately equivalent beds. Often the level of care given by nursing homes and equivalent facilities is difficult to distinguish from the care given in long-term units of hospitals or in long-term hospitals. On the other hand, in many countries residential institutions that provide little if any medical services are not separated from nursing homes either.

In Australia, general hospitals have long sought to exclude patients requiring chronic care.[24] Separate institutions for chronic patients had been built in the cities earlier on. Some specialized in specific diseases such as tuberculosis or mental illness while others admitted patients with a variety of long-term illnesses and disabilities. Nursing homes were introduced to provide care for chronically ill aged persons. These homes have existed in Australia for many years but have been growing in importance and number since the Second World War. This does not mean that a complete separation of long- and short-term care exists. Outside the urban areas it has not been possible to build separate inpatient institutions for different types of patients, and so the small rural hospitals treat chronic as well as acute patients. Furthermore, where nursing homes exist, they are often not well distributed, making transfers difficult and resulting in some of the chronically ill remaining in general hospitals for long periods.

In Canada, besides hospitals, there are nursing homes, hostels, and homes for the aged. In the past these institutions were quite limited in number, but over the past decade the number of beds in them has been rapidly expanding.[20] The number of beds in long-term hospitals also began increasing in the 1960's, but by the mid-1970's their growth had leveled off.[128] Even with the expansion, most beds in long-term institutions are filled, and some chronically ill and aged persons are left in acute hospitals for lack of alternative facilities.[58]

In England and Wales the term "nursing home" refers to a private institution that provides care for convalescent patients who can afford the fees.[130] These nursing homes are not numerous, and most of the chronically ill cannot afford to stay in them. Local social service authorities provide most of the accommodations for the chronically ill and elderly. They license private and voluntary residential facilities and directly administer old-age homes. The number of places in these facilities has been growing for the last 20 years, and in some areas they are now sufficient to meet the needs of the chronically ill. In other areas, however, there is still a shortage.

In Finland, over half of the care of chronically ill patients takes place within the general and specialized hospitals.[16] The remainder is provided in public and private retirement homes and other social welfare institutions. The coordination between the social welfare institutions and the health institutions has been problematic

in the past,[131] making movement of patients between them difficult in many cases.

In France many public hospitals have hospice sections that house chronically ill and elderly people, but these are not considered part of the hospital system of the country. They are categorized together with private retirement homes and independent public hospices that provide care for similar people. Within the hospital system there are geriatric units that also provide care for the elderly.

Finally, in Sweden, the chronically ill may be cared for in a variety of institutions. Approximately 20 percent of the beds in general hospitals provide chronic care, usually in geriatric units.[130] Small cottage hospitals and nursing homes are almost entirely devoted to the care of the chronically ill, and there are separate nursing homes for the care of chronic psychiatric patients. Homes for the aged are also numerous, but since only about 5 percent of their beds are used for the chronically ill, they were not included in the bed-to-population ratio. All facilities for long-term patients have been growing rapidly in the last two decades.

These brief descriptions make clear that in none of the six countries are hospitals, even the general hospitals, devoted entirely to acute patients. In addition to the units specifically designated for chronic care, chronic patients often remain in acute hospital beds because insufficient long-term facilities are available or because there are difficulties in transferring patients to the existing facilities. However, it is also evident from these and earlier remarks that the proportion of long-term patients in hospitals and the extent to which acute patients can be separated from long-term patients varies greatly between Australia, where the separation appears most marked, and Finland, where it appears least marked.

The ratio of physicians to the population also varies from country to country. England and Wales had the lowest ratio, 13.1 physicians per 10,000 population in 1974. It was followed by Australia with 13.9 physicians per 10,000 (1972) and France with 14.7 (1975).[6] In Finland, the number of physicians has been growing rapidly; the physician ratio there was 13.3 per 10,000 in 1974 but reached 16.2 per 10,000 in 1977.[9] Canada's ratio was higher, 17.1 physicians per 10,000 in 1975,[6] and in Sweden, where there has also been a rapid increase in the number of physicians, there were 18.0 physicians per 10,000 in 1975.[18]

The percent of physicians who are general practitioners is decreasing in almost every country. France is the only country where over half of the physicians, 57 percent in 1973,[22] are still in general practice. In Finland, approximately 50 percent were general practitioners in 1976,[9] and this was also the case in Canada. In Canada, however, many general practitioners concentrate their practices in single medical disciplines.[20] In Australia, 44 percent of physicians were general practitioners in 1972[22]; in England and Wales, 35 percent were general practitioners in 1973[132]; and in Sweden only 12 percent of physicians remained in general practice in 1969.[22]

In Australia and Canada most physicians, general practitioners and specialists, are in private practice. They provide ambulatory care and usually follow their patients when they are hospitalized. Approximately one-third of Australian physicians and one-fourth of Canadian physicians are employed by hospitals and primarily provide inpatient care. They may, however, also see ambulatory patients in hospital outpatient clinics.

In the other countries, ambulatory and inpatient care are more likely to be provided by separate physicians. In England and Wales, general practitioners provide only ambulatory care for the most part, though there are some exceptions. General practitioners in rural areas usually follow patients in the small local hospitals, and approximately one-fourth of the general practitioners in urban areas do some part-time hospital work. However, most inpatient care is provided by specialists employed by the hospitals. These specialists see some ambulatory patients in hospital outpatient clinics, and some also maintain part-time practices in which they see ambulatory patients. In addition, a small number of physicians not affiliated with the National Health Service provide ambulatory care and follow patients in the private hospitals.

In France, a similar pattern exists in the provision of physician services. About 70 percent of French physicians, general practitioners, and specialists are in private practice, and they

concentrate on ambulatory care services. As a rule they cannot follow their patients when they are admitted to public hospitals. The public hospitals are staffed by physicians employed by the hospitals who provide inpatient care. Again though, there are exceptions. Since local public hospitals do not have staff physicians, general practitioners in the rural areas provide the inpatient care in them. Also, some 40 percent of private physicians, mostly specialists, do part-time work in the other public hospitals. In addition, private physicians can admit patients to private hospitals, and physicians employed by public hospitals provide some ambulatory care in outpatient departments of the hospitals.

In Finland and Sweden, the majority of physicians are employed by the hospitals. In addition to handling inpatient care, these physicians provide a significant amount of ambulatory care. In Sweden, half of all ambulatory visits take place in outpatient departments of hospitals. In Finland, in addition to visits to outpatient hospital departments, 60 percent of the hospital-based physicians conduct private practices in which they see ambulatory patients. About 10 percent of the beds in general hospitals are reserved for these doctors to admit their private patients. Generally, however, the same physician who treats the patient outside of the hospital will not follow the patient in the hospital.

Ambulatory care in Finland and Sweden is also provided by medical officers employed by local authorities. In Sweden, district medical officers account for 30 percent of ambulatory care. Most officers are general practitioners. Over half work in health centers alongside specialists and other general practitioners. In Finland, local health officers supervise local hospitals and, more recently, the health centers in addition to providing ambulatory care. Only a small number of physicians in either country engage in full-time private practices, and these practices are limited almost entirely to ambulatory care.

The effects of these patterns in the provision of physician services on the utilization of hospital services have not been sufficiently studied. However, certain hypotheses are suggestive. For instance, the employment of most physicians in hospitals could be expected to increase the emphasis on hospital care. If the hospital-based physicians do not usually follow the same patients on an ambulatory basis, the length of stay of inpatients could also be expected to be higher since physicians would be expected to take extra precaution that the patients had recovered before severing contact with them. When most physicians provide ambulatory care and follow their patients in the hospital, admission rates might be expected to be higher than in systems where ambulatory-care physicians do not have admitting privileges; but the length of hospitalizations would be expected to be shorter, since supervision of the patient does not cease upon discharge. Physicians who provide only ambulatory care might have an incentive to refer patients to hospital physicians under the capitation system of payment in England and Wales in which a single fee is paid to the physician per person per year regardless of the amount of care given, but ambulatory care physicians who are paid on a fee-for-service basis as in France would be expected to be more reluctant to refer patients.

The availability of other types of medical and supportive services can also be expected to have an impact on the use of hospital services. Nursing services provided outside of hospitals and other home-help services are important in this respect, and each of the countries has developed some of these services.

In England and Wales, Finland, and Sweden local authorities have long employed public health nurses to provide ambulatory care and home nursing. The nurses have been responsible for a wide range of primary care services, especially in rural areas where fewer physicians have been located. A sizable number of midwives also have been employed in these countries by local authorities. They are not usually involved in home deliveries since almost all births take place in the hospitals, but they handle much of the prenatal care.

In England and Wales local authorities in many areas have well-developed programs for other home-help services. Domestic help, shopping assistance, night sitting, laundry services, and hot meals are among the services provided. In Finland, the health centers and community social welfare agencies have cooperated in the organization of home-help services. Some local

parishes also employ deaconesses—religious sisters with nurses' training—to provide home-help. In all three countries, attention is being given to the expansion of home-care services.

Canada and Australia do not have as well established or widespread programs for ambulatory nursing services and home care, but interest in these types of programs is high and many are now being started. In Canada, in addition to the development of home-help services, some hospitals have initiated partial care services, such as day surgery, for ambulatory patients to reduce hospital use. In Australia, some voluntary organizations have been operating home nursing programs for years, and many of them are now being expanded. In addition, government home nursing and home-help programs have begun in recent years. For example, in Western Australia a Community Health Services Nursing Service was established in 1971 to cover underprivileged areas of the State.

In France there appears to be the least development of public health nursing and home-help services. While some services do exist, they do not provide an alternative to hospitalization for many French patients. It should be noted, however, that French physicians continue to make many house calls on their patients, which is not common in the other countries.

The way in which hospitalization and other health services are financed, and especially their cost to the patient, may encourage or discourage hospital use. The six countries use a variety of procedures to finance health services. In England and Wales, most services are paid for by the national government. In Finland the national government is responsible for the largest share of health care costs; it provides subsidies to the local governments. The local governments use the subsidies and their own funds to finance most hospital and ambulatory care. The national health insurance covers other ambulatory care expenses such as visits to private physicians, traveling, and drugs. In Sweden the local governments pay for inpatient and outpatient hospital services. The national health insurance system pays the local governments small subsidies for hospital services and covers most other ambulatory care. In Canada and France, both hospitalization and other health services are covered by national health insurance programs. In Australia a combination of private and government insurance programs cover health services.

Despite the differences, hospitalization is generally the best covered of the health services. In Australia all residents are eligible for free treatment in standard wards of public hospitals, attended by staff physicians. If they wish more private accommodations, to be treated by a private physician, or to use a private hospital, extra fees will be charged, but private insurance programs are available that will cover them. In Canada, hospitalization in standard wards is free to the patient in most instances, but some Provinces have established small fees, especially for daily care in extended care hospitals. The National Health Service in England and Wales also provides care on standard wards free to the patient, except for minor user charges on prescriptions, dental services, eyeglasses, and the like. In Finland hospitalization is free to the patient except for a small daily fee for "housekeeping services" such as meals and cleaning, which is presently $3.00. In Sweden there are no charges: hospitalization is provided without charge to the patient. On the other hand, in France the national health insurance covers only 80 percent of the cost of most hospitalizations unless they are prolonged or especially costly. Private supplementary insurance, carried by 60 percent of the population, covers part of the patient's cost, but by law the patient is left with at least 5 percent of the cost.

Physician's fees and other treatment charges outside of the hospital are less extensively covered by the national health insurance in France than is hospital care. The patient is left to pay 25 to 30 percent of these fees out-of-pocket, though again supplementary insurance may cover all but 5 percent. In Sweden patients also pay a portion of the fees for physician services and for laboratory tests and other services required on an ambulatory basis. Since 1970 there has been a limit to the extent of the patient's expense, and it now stands at $4.00 per physician visit, including all the services required relative to the visit. In Finland ambulatory care can be obtained from local health officers for small fees, $0.60-$0.75 at present, and the charge is expected to be completely eliminated by 1980. Ambulatory care from physicians in private practice is more costly; patients pay a

small deductible and 25 to 40 percent coinsurance for it. In England and Wales, ambulatory care is free except for the small user charges on prescriptions, dental services, eyeglasses, and the like. In Canada physician services are covered by the national health insurance program, but some Provinces pay less than 100 percent of the fee schedule rate for the services, and physicians may bill patients for the difference, about 10 to 15 percent of the fee. In Australia Medibank will pay 40 percent of the scheduled rate for medical fees, leaving patients with a maximum of $20.00 to pay for any one service for which the scheduled fee is charged. Private insurance plans may pay 100 percent of the medical fees.

Long-term care outside of hospitals is likely to be the most costly to the patient. In Australia nursing home care in all public and 70 percent of the private homes is paid for by the national Department of Health, but patients must contribute $6.70 for each day of care. In Canada the insurance program provides universal coverage of nursing home care in only three Provinces, and in them a daily fee of from $5.50 to $8.50 per day is presently charged to the patient. In other Provinces patients are responsible for the entire cost of nursing home care, but subsidies are available for those who cannot afford the fees. In England and Wales the cost of care in the facilities provided by the local authorities is charged to the user on an ability to pay basis. However, in Finland and Sweden, the long-term care facilities can be used without charge to the patient.

It can be seen that the patients in England and Wales have the least financial incentive to choose hospitalization over ambulatory care, and patients in Finland and Sweden have the least financial incentive to prefer hospitals to long-term care facilities. However, the charges for health services in all six of the countries are not for the most part serious barriers to obtaining care. Use of private medical services, and in some places, use of long-term care facilities are the most likely to be affected by financial considerations

Conclusion

The hospital discharge statistics discussed in this paper have the potential to be a useful source of data for cross-national research. However, care must be taken in the interpretation of them. The coverage of the reporting systems and the procedures used in analyzing the data can produce differences in the statistics that should not be mistaken for significant differences in the utilization of hospitals from one country to the next.

Further exploration of aspects of hospital data regularly collected in different countries would be helpful to understand how to eliminate the irrelevant statistical artifacts. First of all, the question of the degree of impact on the statistics of differences in the coverage of the reporting systems needs to be examined in greater detail. It is clear that the differences are important, but with the study of additional data, estimates of the extent of the differences could be made. Then appropriate adjustments could be made in the statistics.

The accuracy of the data collected by different systems also should be studied in more detail. It is important to discover whether the completion of statistical reports is done with the same general level of accuracy in each of the reporting systems and what the level is. Information on the quality of the coding of data and on the efficiency of editing procedures also should be obtained.

The effects of differences in the health services systems on the use of hospitals also need further study. A better understanding of different patterns of organization for the provision of physician services and of the importance of alternatives to hospital care is necessary to properly interpret cross-national differences in hospital use.

The status of statistics on other aspects of hospitals, such as the facilities they contain, numbers and types of personnel, and costs, would also be useful to examine. These statistics are important in their own right and could increase understanding of utilization statistics. Information is needed on what types of statistics are available, how comparable they are, and whether they are of good quality.

A final suggestion for further research is that the hospital discharge data in other countries should be surveyed. It is not certain that the six countries chosen for examination here have hospital statistical systems representative of

most industrialized countries, though they do present examples of the major types of systems and of the differences that can exist between them. It may be discovered that some statistical systems are more or less common in other countries. Especially interesting would be the exploration of statistics in the other countries that contain a sizable number of private hospitals, since these hospitals are often excluded or treated differently in the systems studied here.

Continuing research into the status of routine health statistics collected by individual countries offers a significant return.[g] Many questions about health services systems are of deep concern to this and other countries of the world. Further research will provide a basis for the use of an enormous amount of data that have the potential to answer these questions.

[g] Further research on the status of international hospital statistics is under way. The discharge reporting systems in three additional countries have been examined by the authors, and discharge data from these three countries, the six countries discussed here, and the United States are being analyzed. In the analysis adjustments are made in the discharge data for differences in the patterns of coverage and in the definitions and procedures used by the reporting systems in the ten countries.

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APPENDIXES

CONTENTS

APPENDIX I

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APPENDIX II

MAJOR REFERENCES CONCERNING HOSPITAL UTILIZATION, BY COUNTRY

The following table lists the major references concerning hospital utilization for the six countries studied in this report. The numbers in parentheses are from the references following the text, which give bibliographic information in addition to that found here.

Country	Description of general hospital discharge reporting systems	Statistics from general hospital discharge reporting systems	Statistics from specialized discharge reporting systems	Statistics from aggregate hospital reports	Statistics from household surveys
Australia	Report to the National Committee on Health and Vital Statistics by the Working Party on Hospital Statistics (30)	Medibank Annual Report of the Health Insurance Commission (26,133) State Studies Queensland: *Patients Treated in Hospitals in Queensland* (35) Western Australia: *Hospital In-Patient Statistics* (36) Tasmania: *Hospital Morbidity* (37)	Veterans' Affairs *Annual Report* of the Repatriation Commission (41) Psychiatric Annual reports in some States (134)	Hospitals and Health Services Commission: *A Report on Hospitals in Australia* (24) Annual report of the Hospital and Allied Services Advisory Council Uniform Costing Committee (23) Annual reports of the State Offices of the Australian Bureau of Statistics (44) Annual reports of the State health authorities (47,48)	Australian Bureau of Statistics bulletins: *Australian Health Survey* (49)
Canada	Ramsey: The hospital discharge abstract system of Saskatchewan Hospital Services Plan (56) Thompson: The hospital discharge abstract system in British Columbia (55)	Statistics Canada: *Hospital Morbidity* (52) *Hospital Morbidity, Canadian Diagnostic List* (53) *Surgical Procedures and Treatments* (54)	Psychiatric Statistics Canada: *Mental Health Statistics, Volume I: Institutional Admissions and Separations* (59) *Mental Health Statistics, Volume II: Patients on Books of Institutions* (60) Tuberculosis Statistics Canada: *Tuberculosis Statistics, Volume I: Morbidity and Mortality* (61)	Statistics Canada: *Hospital Statistics: Volume I—Beds, Services, Personnel* (14) *Hospital Statistics: Volume III—Indicators* (27) *Mental Health Statistics, Volume III—Institutional Facilities, Services and Finances* (65) Department of National Health and Welfare: *Annual Report of the Minister* (62) Health Insurance and Resources Directorate and the Health Economics and Statistics Division: *Supplementary Statistical Compendium of the Hospital Insurance and Diagnostic Services Program* (128)	Department of National Health and Welfare: *Illness and Health Care in Canada: Canadian Sickness Survey 1950-51* (66) Statistics from the 1978 Canada Health Survey not yet published

Country	Description of general hospital discharge reporting systems	Statistics from general hospital discharge reporting systems	Statistics from specialized discharge reporting systems	Statistics from aggregate hospital reports	Statistics from household surveys
England and Wales...	Alderson: Central Government routine health statistics (68) Ashley: Present state of statistics from hospital in-patient data and their uses (69) Morris et al.: *Cogstats: Some Notes on the Use of Statistics in the Divisional Management Of Hospital Medical Services* (72) Wilson: Hospital In-Patient Enquiry for England and Wales (67)	Department of Health and Social Security, Office of Population Censuses and Surveys, Welsh Office: *Hospital In-Patient Enquiry: Preliminary Tables for England and Wales* (75) *Hospital In-Patient Enquiry: Main Tables for England and Wales* (77)	Department of Health and Social Security: Psychiatric hospitals and units in England: in-patient statistics from the Mental Health Enquiry (79)	Department of Health and Social Security: *Health and Personal Social Services Statistics for England* (17) Welsh Office: *Health and Personal Social Services Statistics for Wales* (18)	Office of Population Censuses and Surveys, Social Survey Division: *General Household Survey* (81,82)
Finland.....	Kool: *Hospital Statistics and a Minimum Basic Data Set* (84) Nordic Medico-Statistical Committee: *Computer-Based Patient Statistics: Part One—Hospital In-Patients* (87)	Statistics not routinely published	Psychiatric and tuberculosis statistics not routinely published	National Board of Health: Yearbook of the National Board of Health (9) Finnish Hospital League: *Hospital Economics* (28)	Purola et al.: *Health Services Use and Health Status Under National Sickness Insurance: An Evaluative Resurvey of Finland* (90)
France.....	Lecomte et al.: *La Morbidité Hospitalière: Méthode d'Enquête* (93)	Statistics published in *Santé Sécurité Sociale—Statistiques et commentaires* (94, 96) *Santé et Sécurité Sociale: Tableaux* (10)	Psychiatric statistics published in *Santé Sécurité Sociale—Statistiques et commentaires* (97)	Statistics published in *Santé Securité Sociale—Statistiques et commentaires* (99,100) *Santé et Sécurité Sociale: Tableaux* (10)	Lecomte et al.: L'Hospitalisation et sa place dans les dépenses medicales en 1970 (95) Mizrahi, A. and A.: Influence des facteurs socio-economiques sur l'hospitalisation (101)
Sweden.....	Nordic Medico-Statistical Committee: *Computer-Based Patient Statistics: Part One—Hospital In-Patients* (87)	National Board of Health and Welfare: Publications in the Patient Statistics Series (e.g., 107, 115, 116)	Psychiatric National Central Bureau of Statistics: Psychiatric in-patient care: statistics of the National Board of Health and Welfare (119) Maternity National Central Bureau of Statistics: Medical Birth Registration: statistics of the National Board of Health and Welfare (121)	National Board of Health and Welfare: Public health in Sweden (13) Federation of Swedish County Councils: *Statistical Yearbook for Counties* (126) National Central Bureau of Statistics: Hospital service statistics: statistics of the National Board of Health and Welfare (124,126)	National Central Bureau of Statistics: Health and Medical care utilization (127)

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ADDITIONAL SOURCES OF INFORMATION ABOUT HOSPITAL UTILIZATION, BY COUNTRY

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VITAL AND HEALTH STATISTICS Series

Series 1. Programs and Collection Procedures.—Reports which describe the general programs of the National Center for Health Statistics and its offices and divisions and data collection methods used and include definitions and other material necessary for understanding the data.

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Series 10. Data From the Health Interview Survey.—Statistics on illness, accidental injuries, disability, use of hospital, medical, dental, and other services, and other health-related topics, all based on data collected in a continuing national household interview survey.

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Series 12. Data From the Institutionalized Population Surveys.—Discontinued effective 1975. Future reports from these surveys will be in Series 13.

Series 13. Data on Health Resources Utilization.—Statistics on the utilization of health manpower and facilities providing long-term care, ambulatory care, hospital care, and family planning services.

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