

*Health Services in the
Chicago Area*
A Framework for Use of Data

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FOREWORD

The launching of comprehensive health planning through Federal legislation and with Federal financial support must at this time be considered more an expression of dissatisfaction with the present system than assurance that a wholly new one will eventuate.

The essentially private character of the present health services system is obvious. It has been largely molded by the American model of demand directed by the flow of dollars as they expressed consumer interest. From the first it has been acknowledged that medical care is a unique service not well adapted to this design. The consumer often has no choice but to use care whether or not he can pay if he is to survive. Further, our ethical precepts dictate that urgently needed medical care be available irrespective of ability to pay.

Our concept of proper procedure in the delivery of medical care has never been wholly compatible with market-place forces shaping the system. Free care by physicians, hospitals treating all emergencies, hospitals built with public funds for the poor, and, indeed, voluntary and government health insurance are all amendments to the concept of consumer demand as an exclusive determinant of the medical care system.

Present dissatisfactions with the delivery system focus on increasing medical care costs. There is little evidence of effective controls thought to be inherent through competition elsewhere in our economy. Further, efforts to equalize opportunities for care for those of low income have not brought more than stopgap results.

Comprehensive health planning is intended to provide a method for coping with current problems. Planning has a number of facets. Certainly the development of factual information is primary for complete understanding of the operation of the system. This monograph is a beginning, using available information. While the authors indicate that more information is needed, they have shown that many data are available and can be presented in an orderly fashion to increase understanding of the system in a metropolitan area.

FOREWORD

However, this monograph is but a first, if helpful, step in planning. Planning, in addition to a description of the present, requires an outline of action which will bring improvement. Comprehensive health planning legislation has defined the arena for such development. Efforts to rationalize the system through planning require examination of alternatives. However, strong forces are ready to defend the status quo which so reflects our economic system.

Strengths and weaknesses in the medical care system are to some degree inherent in the consumer demand model. However, a viable alternative method of organizing health services which has general acceptance on the part of all parties concerned has yet to be suggested. A different system may gain persuasive support, but, for the present, areawide health planning must concentrate on study of the current system and a search for less global approaches for improvement. This monograph presents an approach which should be useful to other metropolitan areas in this search.

GEORGE BUGBEE
Director

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PART I TOWARD A CONCEPT OF A HEALTH SERVICES SYSTEM

CHAPTER 1

INTRODUCTION

A. Relevance to Policy

Recently Congress passed three laws which may have incalculable effects on the prevailing structure of delivering personal health services in this country. They portend a new era because personal health services are experiencing the end of a free-wheeling development of the prevailing structure and financing of the health care system. The structure and financing of personal health services in the United States have been determined largely by the providers of services with few, and noncontroversial, government restraints such as licensure. The general public has been the primary and direct source of funds for the daily operation of this system since its inception, later buttressed by voluntary health insurance. Government has been the usual source of funds for special groups (indigent and veterans) and special diseases (mental disease and tuberculosis).

The three laws mentioned are PL 89-97 (1965) known as Medicare for the Aged and Medicaid for the Indigent; PL 89-239 (1965) known as the Regional Medical Program or the Heart Disease, Cancer, and Stroke Program; and PL 89-749 (1966) called the Comprehensive Health Planning Program. The first piece of legislation, Medicare, is having an impact on reimbursement methods for hospitals and on physicians' fee practices and has influenced hospitals to set up utilization review committees. The second law, Heart Disease, Cancer, and Stroke, is an attempt to improve the delivery of services to heart disease, cancer, and stroke patients by integrating practitioners more closely with medical schools and other types of medical centers. It is largely an attempt to raise the quality of services for these types of patients. The third law, Comprehensive Health Planning, is an attempt to influence the distribution and combination of facilities and programs in a given area, usually a state, in order to prevent overlapping of services, fill out services where they are sparse, and push for improved distribution of services.

The first law is an attempt to implement the generally accepted public

policy objective of equalizing access to health services regardless of income. The second law, sparked by federal negotiation and funds, challenges the existing patterns of caring for certain types of patients suffering from illnesses which account for nearly two-thirds of all deaths by encouraging the examination and consideration of the current delivery methods according to more or less natural regions. The third law attempts to rationalize the delivery system within certain political jurisdictions on a state level.

All of these laws necessitate various types and degrees of planning, and hence pertinent facts are needed. The Medicare Act was formulated on as detailed a factual basis as any health and welfare legislation in the history of the country, and the collection of routine data to evaluate the operation of the Act is continuing. Heart Disease, Cancer, and Stroke and Comprehensive Planning, however, require the kind of data on the structure and functioning of the health services system which exist in rather fragmentary form. In fact, there is hardly even a conceptual model of the health services system by which the pertinent data can be selected and collected to reveal the chief structural and functional aspects of the system for intelligent application of the two Acts.

Although this case study was conceived before the passage of the Heart Disease, Cancer, and Stroke Act and the Comprehensive Planning Act, they clearly increase the relevance of the study to current problems and issues regarding the delivery of personal health services. It is then hoped that this monograph will serve two major purposes: (1) the presentation of a conceptual framework of regionalization of personal health services with supporting pre-collected data in order to comprehend the structure and functioning of the health services system in general, and (2) the employment of this conceptual framework to illustrate its value for clarifying and, at least in part, resolving some of the thorny public policy problems facing the health field today. We wish to caution the reader not to take this concept too literally. This is not to be an exercise in elegant model construction but to present a concept of system and how it can be applied in quite general terms to the health services. It is hoped that this report will stimulate more precise model building as more data on the health system become available.

This country has witnessed a great deal of systematic research in the operation of the health services system, from household surveys of how families use and pay for health services to extensive studies of the health

services of a particular area.¹ An extensive "factual universe" has been accumulated to help in comprehending the health services structure and to assist in the formulation of public policy, particularly as it relates to how the general public uses and pays for personal health services. Increasingly, however, and commendably, research interest is being directed to the health services delivery system itself. With hardly any exceptions, all research relating to the personal health services so far has stopped before the patient went through the doors of the examining room of the physicians' private offices or out-patient departments. There has been virtually no study of the flow of patients through the health services structure—their origin, point of entrance, routes within the structure, and point of exit. Even the patterns of affiliation of physicians to hospitals are obscure although physicians are the prime gate keepers and decision-makers in the system.

In view of the apparent paucity of data on the structural and functional aspects of the personal health services, how, then, can there be any formulation of public policy to direct intelligent rationalization and regionalization of personal health services? What are the current channels of patient flow, decision-making, and check points in the system relating to controls on quantity of services, flow of funds, and incentives to high quality? At what points should the system be allowed relatively spontaneous free-play; at what points should there be constraints for the good of the whole? But even more fundamentally, to what extent is a rational health services system possible on the basis of current professional judgment and systematically established criteria? In this case study we propose to examine these problems, though with some trepidation.

We propose to undertake this task by using the Chicago metropolitan area of six counties plus Lake County in northern Indiana (Gary) as

¹ See, for example, Odin W. Anderson, "Influence of Social and Economic Research on Public Policy in the Health Field," *Milbank Memorial Fund Quarterly*, XLIV:11-51, July, 1966, a review of research in the social and economic aspects of health services from the latter Nineteenth Century to 1965; Walter J. McNerney and Study Staff, *Hospital and Medical Economics: A Study of Population, Services, Costs, Methods of Payment and Controls*, Chicago: Hospital Research and Educational Trust, 2V., 1962; Ronald Andersen and Odin W. Anderson, *A Decade of Health Services: Social Survey Trends in Use and Expenditures*, Chicago: University of Chicago Press, 1967; and Odin W. Anderson and Paul B. Sheatsley, *Hospital Use—A Survey of Patient and Physician Decisions*, University of Chicago, Center for Health Administration Studies, Research Series No. 24, 1967. It goes without saying, of course, that the ancestor of all studies on health services in the United States is: I. S. Falk, Margaret C. Klem, and Nathan Sinai, *The Incidence of Illness and the Receipt and Costs of Medical Care Among Representative Families; Experiences in Twelve Consecutive Months During 1928-31*, Chicago: University of Chicago Press, 1933. (Committee on the Costs of Medical Care, No. 26).

the region for a case study. We will attempt to demonstrate the development of a conceptual model of a total health services system as exists in the Chicago metropolitan area using pre-collected data from the region itself and projection of estimates on the region from national studies or other areas within the nation.² We will try to show the extent to which already existing data, as described, can be used to show the structure and functioning of the health services system in the metropolitan region and what kinds of additional data will need to be generated by special studies to fill out the obvious gaps in knowledge.

Studies of special problems in the Chicago metropolitan area have been completed and others are in the process of completion by the Hospital Planning Council for Metropolitan Chicago and the Chicago Regional Hospital Study. Their studies will be referred to in due course as pertinent.³ A previous study concentrating on the Chicago metropolitan area was conducted by the United States Public Health Service 20 years ago.⁴ This very large study emphasized the public health care systems, environmental sanitation, and public health. While it was by no means a systems approach, neglecting the larger private sector almost altogether, it nevertheless is a source of much valuable historical information.

The authors are introducing a disclaimer at this point that the report is, then, not intended to be a source of exhaustive statistical and other types of information on the Chicago metropolitan area. Those desiring such detail should consult the Appendix, and even the sources listed there are not necessarily exhaustive. The data and information are, therefore, highly selective and what the authors like to call "pivotal" in that they are central to an understanding of the conceptual framework being developed. There are, also, of course, data not available at all, and gaps will be pointed out. Not only are the data selective, but in addition most of the estimates are at best quite crude although they are, presumably, accurate enough to support the conceptual framework being developed. Conversely, there are estimates, of use and expenditures, for example, which, by

² Several years ago the first such attempt for a large city, but limited to the flow of funds, was done by Nora K. Piore, an economist, for New York City: "Metropolitan Medical Economics," *Scientific American*, 212:19-27, January, 1965.

³ The Hospital Planning Council is the voluntary planning agency for the area hospitals and is funded about equally by government and by business and industry. The Chicago Regional Hospital Study was funded by the National Institutes of Health and co-sponsored by the Council and the Illinois Department of Public Health, with the participation of the Center for Urban Studies and the Center for Health Administration Studies, University of Chicago.

⁴ *The Chicago-Cook County Health Survey*, New York: Columbia University Press, 1949.

more refined techniques and prodigious statistical manipulations, might result in greater precision but which are hardly worth the effort given the intent of this report.

We subscribe to the view that public policy directed to exceedingly complicated enterprises such as the health services system needs to be based on systematic knowledge as to its nature, structure, and functioning. This would seem to mean that there needs to be developed a concept of the nature of the system and a selection of the factual information necessary to understand the system. So far, it seems to us, Americans are obsessed by isolated facts and presumptions of facts taken out of perspective. Examples are:

(1) It is presumed that there are an undetermined number of cobalt bomb installations in hospitals which duplicate services unnecessarily in certain areas. Still, no systematic study has been done to determine the extent of duplicating "waste" of resources and effect on professional incentives.

(2) It has been demonstrated that the hospital admission rate and the incidence of surgical procedures are lower in group practice-prepayment arrangements than in the prevailing voluntary health insurance arrangement. Hence, the lower hospital admission-surgical rate is "better" because these particular components thus cost less. Still, there has been no systematic study of the effect on the total range of services and their costs when hospital admission and surgical rates are lowered. In fact, there is no knowledge as to why they are lower. The fact itself is so dazzling in view of the rising hospital expenditures that it is grasped as a specific means to reduce costs.

(3) It is a fact that approximately 35 per cent of the private medical dollar is paid by insurance; hence, this is presumed to indicate a deficiency of 65 per cent. Here, however, there are systematic studies which also show that the portion of the expenditure paid for by insurance rises as expenditure rises. That is, insured families with total expenditures under \$200 have less than ten per cent of their costs paid by insurance, on average, while families with expenditures of \$1,000 or over have about half of all expenditures paid for.⁵

(4) In Scandinavia the death rates from heart disease for men over fifty are appreciably lower than in the United States. Ergo, it is postulated that the Scandinavian health services are more effective in this area than those in the United States. Overlooked completely here is the

⁵ Andersen and Anderson, 1967, *op. cit.*, p. 94.

variance in life styles which results in a high incidence of heart disease and consequent mortality. It is assumed that heart disease is medically preventable rather than a reciprocal of life styles and health services.

(5) It is assumed that visits to emergency departments in hospitals are increasing because, among other reasons, private physicians are unavailable at short notice for non-emergency conditions. This may be so, but not known is the extent to which the emergency department is deliberately used by the private practitioners as an extension of their own office practices. How can these two practice sites be interrelated? There are, of course, many other reasons as yet not differentiated.

(6) The prevailing opinion now is to reduce the number of general hospital beds and increase beds in nursing homes and convalescent hospitals, and, further, strive to increase home care services. It is, of course, assumed that the American public will "buy" this redistribution. This may be so, but the general hospital is a medical powerhouse which both the general public and the medical profession want fast access to and reluctant dismissal from. The possible alternative is that the nursing homes become, in effect, general hospitals for non-surgical patients. Further, the American home is generally a badly equipped place, both psychologically and physically, to care for long-term patients, often terminal, even if buttressed by services from the hospital. Heretofore, the hospital has been a replacement for the home; it is going to be more difficult for the home to replace the hospital for long-term and intractable patients.

The list can be extended, but it may suffice to illustrate our concern regarding glib generalizations from simple facts and individual experiences.

The saving grace, we believe, is that facts and individual experiences are eagerly sought by policy-makers, but our plea is for more facts which will reveal increasingly the workings of the *entire* health services structure and that such facts be used in a systems sense. There is now a great deal of interest in "planning" in order to give some order to this seeming congeries of autonomous units.⁶ Whether planning is directed from a central authority or emerges from agreement between parties at interest, a factual base is necessary. So far, in this country, it is hoped that planning of health services will result from interested and reasonable parties looking squarely at the facts so that the autonomous units will reduce their self-interest for the good of the whole. The balance between the interest of the individual unit and that of the total system is a very tenuous

⁶ For a short but complete overview of health planning in the United States, see: J. Joel May, *Health Planning: Its Past and Potential*, Center for Health Administration Studies, Perspectives Series No. A5, 1967.

one and difficult to determine. We would suggest, however, that a tension between the two must exist constantly for a viable system—a constant challenge and response as exists in this country.

So-called "voluntary" planning requires a very high degree of rationality and understanding. It helps considerably, of course, if the resources are relatively abundant. In this regard the country is fortunate. Hence, the health services system cannot be considered independently from the American social, economic, and political system of which it is a part. Directed planning beyond the extent to which it is done in other sectors of the economy—such as in the U.S.S.R.—is unrealistic because it runs counter to the grain of society generally. Undoubtedly in the U.S.S.R. an "open" health services system would also be unrealistic unless the Russian economy continues to decentralize and permits a private sector, however small. In either case, we assume that a working concept of a health services model and a factual base to illuminate it are helpful and, indeed, essential.⁷

B. The Concept of Structure, Flow, and System

The concept of system is a very old one in human thought, ranging from conceptualizing the physical universe to human social systems. Engineering would be inconceivable without it; biology and physiology would be helpless. It is only in modern times, however, that the concept of social system is beginning to be systematically explored by sociologists, economists, and political scientists. The interest in economic and social indicators is an outgrowth of this type of thinking. These are the so-called macro approaches. Operations research within formal organizations represents the so-called micro approach. Obviously the two terms relate to some idea of scale and detail.

It is only within the last few years that the systems approach to the health services has become popular, i.e., considering the entire range of services and personnel and patients as an interrelated whole. Usually at best there have been descriptions of ideal models of health services delivery systems with admonitions that the services and personnel should be of high quality, that the physicians and nurses need to be dedicated and kind to patients, that patients be wise and sometimes even grateful,

⁷ See, for example, Odin W. Anderson, "Health Services Systems in the United States and Other Countries," *New England Journal of Medicine*, 269:839-843, 896-900, October 17 and 24, 1963; Mark G. Field, *Soviet Socialized Medicine; An Introduction*, New York: Free Press, 1967; David Mechanic, *Medical Sociology; A Selective View*, New York: Free Press, 1968, Chapter 10, "Some Notes on Medical Care Systems: Contrasts in Medical Organization between the United States and Great Britain."

and that the services not be priced out of the market because then low income groups could not afford them. Despite admonitions against costliness the personnel should be adequately remunerated. And then there should be emphasis on prevention, early diagnosis, and rehabilitation. Still, there need to be controls on "overuse" of some kind.

The systems approach is objective in that it tries to determine what it is possible to achieve with certain resources, organizational arrangements, professional predilections, and public expectations. The systems approach can posit a range of alternatives, again with reasonable possibility of achievement, and suggest the net results as to professional and patient satisfaction, organizational arrangements, possibilities for innovations, and overall cost.

The health services structure lends itself to analysis as an enterprise with boundaries that are definable, somewhat analogous to the military establishment, the educational system, the automotive industry, and the Roman Catholic Church. The personnel, clientele, facilities, funding and so on are related to the primary problem of sick people. Without illness and disease there would, of course, be no health services system. Patients enter the system at certain points; personnel are recruited and trained in certain ways; patients and personnel meet at certain points and in certain settings. All types of people within the system are taught to behave toward each other in certain prescribed ways.

There is a reciprocity between the larger society and the health services system. Ever since the series of studies conducted by the Committee on the Costs of Medical Care from 1928 to 1931, study after study and the increasing production of reams of indicators have helped to yield some understanding of the structure and functioning of the personal health services system. As said previously, however, the dynamics of the system are dimly understood, as is, indeed, true of all large enterprises. The large systems approach promises to be helpful. How "open" or "closed" do various systems have to be in order to accomplish their respective purposes? At what points should liberating forces be released; at what points should there be constraining forces?

Until recently it would seem that the health services system has had a great deal of freedom to evolve—the underlying philosophy has been one of letting the liberating forces of expansion and spontaneous adjustment between units and parties at interest have free play. Now, it seems that the emphasis is on constraining the system in various ways, usually through the funding mechanisms, with little or no knowledge as to how this can be done while still maintaining a viable and dynamic system. The "wasteful" system of the past may now be transformed into an

overall "tight" system of the future because the levers of efficient control are not known in any efficient sense. Hence, controls become gross, usually through the overall budget, franchising, and the stopping of something undesirable rather than the starting of something desirable. This is the dilemma, and it requires very sophisticated public policy formulation on how to structure and operate a personal health services system in an affluent society. In an impoverished society this is simple, i.e., as little as possible. In an affluent society we would stress that it should be as much as possible, related to the public's discretionary purchasing power and the government's taxing power in some sort of interaction.

C. Elements of a Health System

The elements of a health services system are seemingly self-evident, but perhaps it is useful to describe the major components that need to be delineated in order to approach health services in an orderly manner. All of these components are interrelated in some way and interact with various degrees of intensity. So far, our knowledge of how these various components interact and influence one another is quite limited. At best there are general indicators which describe the structure of the system; at worst the indicators which reveal the dynamics of the system are less useful than none at all because they have no points of reference. We read into them what we desire rather than suspending judgment until more is known about them. Utilization rates of hospital and physician services are examples. There are no such entities as "proper" rates although it is necessary to know the volume of services generated by a given population in a given health services delivery system to work out costs at least.

Before delineating the elements, it may be well to present several ways of looking at the health services in systems terms:

(1) The economist would look at the system largely in terms of allocation of resources and flow of funds as to their origin, rates, destination, what they purchase, unit prices, and so on. The health system reveals a financing structure of increasingly large magnitudes and bears study as to its relationship to the gross national product, the price structure in general, consumer behavior, the interrelationship between the private and public sectors, and related matters.

(2) The political scientist would look at the health services system mainly as a system of power relationships and decision making units. Who has the power to tell somebody else what to do? What is the flow of power? How is power balanced? What are the social and legal sanctions operating?

(3) The sociologist would look at the health services as a social system of interacting personnel and patients; the pecking order; who likes, and hates, and is indifferent to whom; the social origins of nurses and physicians; the structure of the system as it relates to the flow of patients, and so on.

(4) The medical profession would look at the system primarily in terms of its ability to facilitate the interaction of patients and physicians, the sites of and equipment for treatment, the professional prerogatives desired, methods and amounts of payment, and, of course, many other factors.

(5) The administrators of the system, those who make the day-to-day administrative decisions within the policy frameworks of hospital planning agencies, hospitals, medical care programs, and insurance agencies, need to draw on a composite of the foregoing plus the usual managerial tools of accounting, finance, personnel administration, and negotiation and bargaining.

The five ways of looking at the health system can each be carried out in rather pristine forms to the exclusion of any of the others depending on the purity of the model one builds. There are undoubtedly other approaches as well, e.g., psychological models. This report will be largely eclectic, pulling together the data generally available and written for the most part with reference to public policy. Since it has been written by sociologists, it may be that this report will be more "sociological" than anything else. Systems thinking has many adherents among sociologists, and we prefer the orientation of looking at the health services as wholes and in context. It would seem that an eclectic approach is useful for public policy purposes. Presumably, public policy decisions normally draw on a wide range of sources of information and experiences arranged in some sort of framework which will assist in comprehending the total health services system. Obviously, many judgments must be made on the basis of these facts and inferences from them which are rarely conclusive. Such decisions are known as professional judgment—social and political action-oriented decisions can rarely be anything else. The health field is rife with these judgments, a central characteristic of the health services system which makes policy makers very distressed in the face of rapidly rising costs.

There may be some sort of logic in listing the major elements of the health services system within which there are sub-elements that can be delineated depending on the amount of detail desired. Certainly, the fundamental reason for the creation and maintenance of health services is the universal fact of illness and disease which afflicts mankind. An

illness and disease-free society has never been known; and it seems reasonable to predict that there will not be an illness and disease-free society in the future. We subscribe to the notion that in any time and place there is a disease pattern as measured by mortality and morbidity more or less related to certain combinations of social and technological developments. Further, all societies try to do this rationally, i.e., on the basis of scientific research and evidence as to diagnosis and treatment. The following appear to be major elements: (1) people; (2) disease; (3) facilities and personnel (providers of services); (4) finance; (5) patterns of use of services; (6) organizational structure or methods of delivering these services. These elements are, of course, interrelated, and this reasonable assumption leads to the concept of system.

It is difficult to state *a priori* which elements are more important than others. Conceivably it is possible and perhaps even practical to have only a gross knowledge of the number of people in an area while developing certain types of health delivery systems, and it might not even be necessary to know anything about the patterns of mortality and morbidity. The health services then evolve in a sort of trial-and-error, stimulus-response, demand-and-supply framework, which indeed has been characteristic of health delivery systems since the beginning of scientific medicine hardly a hundred years ago. The problem now seems to be to "rationalize" this development, tidy it up as it were, to make it more "efficient" and/or "effective." As we said before, this requires concepts and knowledge and, even with these present, the "rationality," "efficiency," and/or "effectiveness" of systems become hardly more than the best judgments of professionals. And experts are known to disagree.

What seems to unify the parties at interest and create a consensus of similar concern resulting in similar conventional wisdom is the rapidly rising cost of health services. There seems to be little acceptance of the observation that fundamentally a shift in social priorities is taking place (which is certainly demonstrable) and that the issue is possibly one of slowing the pace of cost increases while this shift continues. "Rationalization," "efficiency," and/or "effectiveness" might well be regarded as ends in themselves in streamlining the system so that there is easier access by patients, improved routing within the system, and a proper exit, but there is hardly any guarantee, as seems to be implied and desperately hoped, that the system will hence cost less. In fact, making the system more "efficient" and "effective" in the sense of reaching all those who need or could profit by medical care might well cost much more. Modern medical technology is relatively very expensive and inherently so.

We must return, however, to the list of major elements. Although it

may not be crucial for the operation of a health service to have relatively precise knowledge of the number and composition of people in a service area,⁸ such data are certainly necessary if it is the public policy objective to tailor the health delivery system rationally to the demands and needs of the population. Population, mortality, and morbidity data are minimally necessary for this purpose. The age and sex compositions of the population are essential because mortality and morbidity rates are clearly related to these characteristics and provide the substratum of need. Also, the rank order of causes of death gives some idea of the leading killers in a particular society, and leading killers such as heart disease, cancer, and stroke become the targets for the allocation of resources.⁹ Of course, it might be just as socially beneficial for increased economic productivity to concentrate resources on a non-lethal but highly prevalent disease such as arthritis. In any case, vital statistics are used in some gross way to guide public policy. It is obviously useful to keep track of certain vital indices such as birth rates because they affect hospital use patterns. It was reported, for example, that some hospital administrators and obstetricians were mystified a couple of years ago when the maternity ward occupancy began to fall to dangerous levels (i.e., dangerous from the standpoint of optimal use of current facilities) until someone looked at the birth rates routinely published state by state. Obviously, health services planning must have minimum population data.

The third major element (population and disease being the first two) is facilities and personnel. This category creates many problems of definition as to types of hospitals, physicians, nurses, and other types of personnel. The major institutional categories are short-term general and long-term special hospitals and nursing and convalescent homes. The usual unit of measurement is the bed, but it is also necessary to add the number and types of ancillary services, and type of accommodations (ward, semi-private, and private). In this country the type of hospital varies considerably as to ownership and main sources of funds and, hence, overall control. It is thus obviously necessary to make these differentiations in order to determine the decision and policy making structure. So far, for example, nursing homes are predominantly operated for profit and general hospitals have been and continue to be owned by private, non-profit corporations. Adjuncts to the general hospital, such as out-

patient departments and provisions for emergencies, need also to be tabulated. They are feeders to the in-patient facilities as well as important components of out-of-hospital physicians' services in general.

The M.D. is the basic measuring unit for the front-line of services, and those holding this degree and licensed are the chief decision makers regarding diagnosis and therapy. It is then important from a systems standpoint where physicians are located, in what kinds of situations, and with what types and range of hospital affiliations. The flow of patients through the system is hardly discernable without such information. There is a great deal of information on the proportions of physicians in the eighteen or so major specialties, the proportion in private practice, in salaried positions providing patient care, in teaching, research, and administration. A medical manpower policy is inconceivable without such information, as is also the concept of the primary physician. The prevailing opinion is that the primary physician, i.e., the general practitioner, now constitutes only a third of the physicians in practice, and that this proportion is still declining. Little or nothing is known of the extent to which specialists, particularly internists, obstetricians, and pediatricians, also provide primary care. Little is known, also, about how osteopaths, who hold the same physician's license as M.D.'s, fit into the system.

Then there are the supportive personnel represented by the very important registered nurse component and its subsidiaries of licensed practical nurses and nurses' aides. There is now also an increasing proportion of R.N.'s entering specialty type nursing, which changes the personnel composition of nurses and has implications for planning. Also, increasingly and rapidly during the post-World War II period, other medical technical specialties have proliferated in the laboratories, X-ray and pathology departments, inhalation therapy departments, and so on. They are, of course, a direct expression of expanding medical technology.

Another component of supporting personnel, somewhat autonomous compared to nurses and medical technicians, is the pharmacist. Drug stores are scattered all over an urban area, and although the bulk of the pharmaceutical trade is prescribed by physicians, a minor but sizable portion (one-third) is sold directly to customers. The larger hospitals engage their own pharmacists, but the bulk of prescriptions is handled by the "corner drug store."

Another free-standing component of professional service is the dentist whom, like the physician, the patient seeks directly. Again, as with physician-related services, there are dental specialties, private practitioners, and supporting personnel such as dental hygienists. And again, as

⁸ In this connection we like the concept of "community of solution" described in the report of the National Commission on Community Health Services entitled *Health Is a Community Affair*, 1966, as a discussion of the problem of service areas.

⁹ A crude measure we like of the level of health of a given country is to determine the rank order of leading killers. If the leading cause is heart disease, we realize that the country is doing well.

with physicians, there is little known about their practice sites, types of practice, and flow of patients through the dental care system.

Within the framework of what is regarded as legitimate health service, there is also a large component as measured by number of units and expenditure of health care goods. It is then necessary to compile information on eyeglasses, hearing aids, trusses and braces, wheel chairs, and perhaps even wigs.

Outside the framework of regular health services, it would seem desirable to count the facilities, personnel, and goods relating to chiropractors, Christian Science practitioners, naturopaths, naprapaths, and other types of personnel which people seek when they are ill. It would seem reasonable to assume that these "other" services are related to the larger stream of personal health services in some way, as adjuncts to them or as reactions against them, or possibly they are separate universes altogether.

A fourth element of the health services system is money: sources (direct pay, insurance, taxes, etc.), amount, destination, component of service, per cent of gross national product, per cent of consumer income, and so on. The financial perspective reveals a great deal as to public policy toward the health services. It reveals in large part the social and political priorities of a particular country.

A fifth element comprises the indices of use. The usual measurement units are hospital admissions, length of stay, physician and dentist visits, proportion not seeing a physician or dentist in any given year, number of prescriptions, and other more or less standard measurement units. All these can be related to age, sex, diagnosis, income, and so on. For deeper comprehension of the operation of the health services system, however, there is need for more refined units of measurement than are now the case. For example, a physician visit is a very crude unit of measurement without some idea of the procedures during the visit, the specialty of the physician, and the type of practice.

The sixth element of a health service system, and the one in which there is presently considerable debate, is the organizational structure or the method of delivering services. The structural features can be delineated quite easily as to centralization-decentralization of authority and sources of funds, the working arrangements between physicians and the hospitals and other facilities, the practice arrangements of physicians and dentists, and other features which hardly need elaboration. It is possible to delineate methods of control on quantity and quality of services or at

least the general philosophy and atmosphere in which services are provided.

In terms of services and goods easily definable as those which have a common sense relationship to illness, disease, and death, the foregoing are reasonably clear. Certainly, there would be little or no disagreement over the facilities and personnel which are legitimized by the various accreditation agencies and state licensure. The parameters for health services and goods are then reasonably clear for public policy and analytic purposes. Still, there are gray areas overlapping the clearly defined health goods and services and those which are usually not defined in those terms but which still impinge on each other and interrelate. More obvious examples are housekeeping services for households with a housewife sick in the hospital or convalescing at home, and the processing and sale of dietetic foods. Another example is the extent to which relatives help out and buttress the "official" health system when a member of the family is disabled. Hence, it would seem that in order to obtain a total comprehension of the functioning of the health services system it is necessary to include these types of helping services. There would seem to be a great deal of contributed labor here which does represent a social cost of some sort. A great deal of institutional care is not narrowly "medical" care in the strict sense of the term but a spillover from the structure of the family of the patient and the facilities in the home. Those who are pushing hard for more home care need to bear this in mind.

CHAPTER 2

THE PREVAILING AMERICAN STRUCTURE

Vigorous proponents and opponents of reforms of the current health services system tend to have rather one-sided views of this system—mostly virtue with few vices, or mostly vices with little virtue. Obviously, this obscures understanding and the possibilities for orderly change. We make the assumption, of course, that orderly change is desirable and possible without attempting to define “orderly,” but even this assumption can legitimately be disputed. Presumed good has risen from very disruptive transformations, but our faith in rational and deliberate, hence paced, change persists. If there is no substance in this faith, then, indeed, the whole concept of planning for orderly change is fallacious and we can take to polemics and the streets.

It seems reasonable to believe, however, that a description of the prevailing structure and nature of the American health services system—to the extent that there is good information, well-stated experiences, and reasonable inferences—will assist in the formulation of realistic social policy and continuing transformation of this system. Indeed, this exercise is hardly new, but still, it seems, with exceedingly few exceptions, that commission reports of various kinds are written in a social and political vacuum, as if there are no problems so intractable that they will not be solved by proper motivations and attitudes. Still, as legislation is hampered out between the parties at interest, and new forms of health insurance benefits are negotiated, and new delivery systems fashioned in some way, the compromises from the “ideal” reveal that there are ineluctable forces and situations which appear to determine the “wave of the future” no matter how well-intended and utopian are the objectives and vaguely stated recommendations to attain them. We happen to have a bias against utopian thinking, attractive though it can be, because such thinking obscures ends and means and results in disillusionment and frustration. Utopian thinking is not limited to idealists among American liberals; it is also the bane of conservative idealists who believe a utopian society died with President McKinley.

The American health services system developed in a particular social,

political, and economic context and bears all its earmarks. A health services system is (so far at least) a subsystem of the larger society and is shaped by the prevailing characteristics of that society. The frequent criticism that the American health system is not a system at all but simply a loosely related and sometimes totally unrelated congeries of discrete units is in simple terms true, but so, seemingly, is the American social system. Because of the incredible expansion of the American health services system in terms of facilities, personnel, use, and money, it is by no stretch of the imagination a “sick” institution. Its very vitality as measured by the foregoing is the real basis for the alarmists’ attitudes toward it, since they see this vitality as largely unharnessed and unchecked.

Still, sociologically, the American health services system can be treated as a system although it is not a formally organized system from a bureaucratic standpoint. (We use the word bureaucracy not as an epithet but as a term for a deliberately organized system.) Students of organization have attempted to set up a typology of organizations from decentralized to centralized, loosely structured to highly structured, informal to formal, and so on.

It is popular, and also correct, to describe the American health services system as pluralistic. Sociologically and politically, pluralism is defined as a social and political system in which no one group can force its will on any other group arbitrarily because the groups at interest are relatively evenly balanced as to power relationships. Hence, given a fairly well defined consensus as to overall social and political objectives (in the case of the health field, equalizing access to health services regardless of income) the parties at interest then enter into bargaining, negotiating, and compromising. The “loser” retains enough power to come back and fight another day, and the “winner” is never so victorious that he completely destroys his opponent. If he did in our system, he would hold an empty bag. In this kind of a system, change and reform are incremental rather than completely and quickly transforming. The politics of Medicare up to 1965 is illustrative.¹

To some, pluralism is chaos and what is necessary is a high degree of rational planning, mainly stimulated by the Federal Government through financial inducements and various specifications to be met by the states in order to receive the funds. There is, as yet, no frontal and mandatory

¹ See for example, Odin W. Anderson, “Health Services for the Aged: The Cutting Edge of Public Policy,” in *The Uneasy Equilibrium: Private and Public Financing of Health Services in the United States, 1875-1965*, New Haven, Conn.: College & University Press, 1968, Chapter XXI.

directive, i.e., the states and local communities can, so to speak, take it or leave it. The mandatory features from the Federal Government are still pretty much limited to obligatory payroll deductions for Medicare. So, the substance of a pluralistic system persists. Possibly, the main issue is, then, whether or not the system is too pluralistic, i.e., are there too many disparate units for significant bargaining. This may be so, but the trend has been toward fewer and larger power blocs of big buyers and big providers. Simultaneously there is and will continue to be a significantly large sector of the population which prefers to buy its health services from a variety of delivery methods, hence assuring physicians and hospitals multiple markets and a range of options of practice sites.

Along with these background observations as to the core characteristics of the American health services system, it may be appropriate to point out its salient components. The core of the American health services system is the voluntary hospital and the privately practicing physician. These two major components deliver the vast majority of the volume of personal health services as measured by number of patients and total expenditures in a year. Other important components of the system are residual, peripheral, or not associated with the larger system at all. Residuals of the system are services for poor people, outpatient departments, to some degree emergency departments insofar as they are given low priority in staffing, nursing homes, and home care services. Parallel to the system and crossing over to the general hospital are the psychiatric units in these hospitals. Otherwise mental hospitals are quite separate systems with their own staffs, medical philosophies, and human problems.

The general hospitals and the medical profession are autonomous entities entering into agreements as to staff privileges, standards, and admission rules and regulations. Essentially, the hospital is the physician's "workshop." The hospital and physicians each bill patients separately. The physicians control their own private offices separately from the hospital. Recent trends as to physician office quarters at or adjacent to the hospitals have still not disturbed the basic pattern described. There is also a trend toward full-time chiefs of staff in hospitals, but still the essential pattern described persists and, in the authors' estimation, will change slowly and probably, in the foreseeable future, not fundamentally. Rather, there will be a variety of patterns, and their relative dominance in relation to the whole will shift.

Another fundamental characteristic is the variety of sources of capital and operating funds for this system. True, insurance and other third-party payors are the sources of an increasing majority of the operating funds, but there is still a substantial amount coming from the patient directly

and, particularly in large cities, from public sources. The hospital administrator, then, has to put together financing from various sources. The physician has a variety of sources of payment to contend with also, as does the nursing home director. The impression is created that the providers feel besieged by the large buyers of services as to reimbursement and fees, volume and quality. Still, the voluntary hospitals and the physicians retain great bargaining power—they are the custodians of an increasingly sought after service. In the last analysis the Government can control the whole system by legislation, if such should be passed, but the same fundamental problems of a viable health service system would then bedevil the politicians and the government administrative apparatus.

Characteristically, planning is supposed to be done by the give and take of groups at interest in accordance with well-documented facts. Reasonable men will, therefore, agree to agree in the larger public interest rather than in the interest of a particular hospital. So far, planning is limited to facilities, the presumption undoubtedly being that the physicians will follow the hospitals.

This brief description of the characteristics of the American health services system hardly does it justice, but we hope it is an adequate prelude to the case study of regionalism and personal health services in the Chicago metropolitan area. Since this metropolitan area is a segment of the larger American system, we believe it is reasonable to assume that it is a mirror of the larger system with variations due to its largely urban character and the composition of its population. Hence, we assume that this metropolitan area varies only in degree from national patterns and in essence is substantially the same. We hope that the brevity of this description will be filled out in considerable detail as we attempt to show what can be done with existing data arranged in an appropriate manner to reveal the structure and functioning of a health services system in a major metropolitan area.

PART II
A CASE STUDY

CHAPTER 3

THE CHICAGO METROPOLITAN AREA

The Chicago metropolitan area is a relatively self-contained economic entity essentially transcending the political boundaries of the City of Chicago, Cook County, six other counties including Lake County in northern Indiana (which contains the City of Gary), and the many other suburban villages and cities, amounting to 147 separate cities with populations of at least 2,500 as of the 1960 census.¹ Each has its own real estate tax base and each is responsible for its water, sewage disposal, elementary and secondary education, police and fire protection, and control of sanitation and communicable diseases. Also, each is responsible for its zoning ordinances governing the types of land use permitted.²

The City of Chicago and its metropolitan area form several kinds of areas depending on the activity involved. As noted, the strictly governmental activities are limited geographically to the political jurisdiction of the cities, towns, and villages, or occasionally to the counties, and must, therefore, operate within such jurisdictions unless administrative devices are set up whereby they can operate on various endeavors such as the Sanitary District dealing with sanitation and stream pollution. More recently there is cross-jurisdictional concern with air pollution.

People flow in, out, and through these political jurisdictions at will, working in one area, shopping in another, and residing in still another. The services tied to their residences are, as mentioned, police and fire protection, elementary and secondary education, and traditional public health activities such as garbage and sewage disposal and communicable disease control. The personal health services directly associated with the political jurisdictions in which people reside are those for the indigent

¹ Evelyn N. Kitagawa and Karl E. Taeuber, *Local Community Fact Book, Chicago Metropolitan Area, 1960*, Chicago Community Inventory, 1967. Derived from map on p. viii.

² The following reports, among others published earlier, discuss this problem: Pierre deVise, *Chicago at Mid-Century: The Transportation Base*, Chicago Regional Hospital Study, Working Paper No. II.3, January, 1967; and Pierre deVise, *Chicago at Mid-Century: The Population Base*, Chicago Regional Hospital Study, Working Paper No. II.6, July, 1967.

and other low-income segments of the population who seek tax-supported personal health services, frequently travelling long distances, as in the case of Cook County Hospital, the only tax-supported general hospital for the medically indigent in a county with over five million people.

The private health services are, therefore, geared to the economic entity of the Chicago metropolitan area, responding historically and currently to the dominant economic forces of the area rather than to the political jurisdictions. Thus the general hospitals which have been built since World War II are found largely in the suburban areas, and nursing homes have proliferated all over the metropolitan area largely as a response by the private sector to a rapidly emerging need which is not being met rapidly enough by the public sector. There is, of course, a great deal of financial transfusion into this system by various levels of government, but the initiative has been largely nongovernmental though stimulated by government sources of payment for services.

The health services system in the Chicago metropolitan area and in the United States then has had a response to the market—the effective demand of people by direct-pay and by voluntary health insurance—which accounts in large part for the current distribution of general hospital and nursing home beds, physicians, dentists, and pharmacies. The needs of poor people have been more or less fitted into this prevailing system through private charity and public subsidy, with varying results to say the least. However, the health care system is far from approximating a private profit-making industry because of the constraints on it to provide stand-by services regardless of profitability, admit in essence all types of patients, meet somehow the needs of the poor, and so on. This is admittedly a very brief description of what is an involved, important, and fascinating problem, i.e., the ability of the private sector (both non-profit and profit) to deliver health services and the nature of the relationship between the private and public sectors in this complicated endeavor.

We conclude from the foregoing that the personal health services system in the Chicago metropolitan area is, like the region itself, a more-or-less self-contained entity. Almost all of the people living in this area are also treated in the area. With five medical schools, several very large hospital and medical complexes and the range of specialties they represent, plus the comparative abundance of facilities and personnel, there is likely a very small flow of patients out of the region. It seems reasonable to assume that there would be a small net *gain* of patients coming

from outside the region because of the economic and medical dominance of the region. For example, the Hospital Planning Council found in its study of all hospital discharges for February, 1965, that 2.6 per cent of the patients discharged from Chicago area hospitals had come from outside of the region. Hence, the data to follow are assumed to reveal a relatively self-contained health care system. They are intended to aid in the comprehension of its structure and functioning within the region itself and within the larger system of which the health services are a sub-system.

CHAPTER 4

PEOPLE AND THEIR CHARACTERISTICS

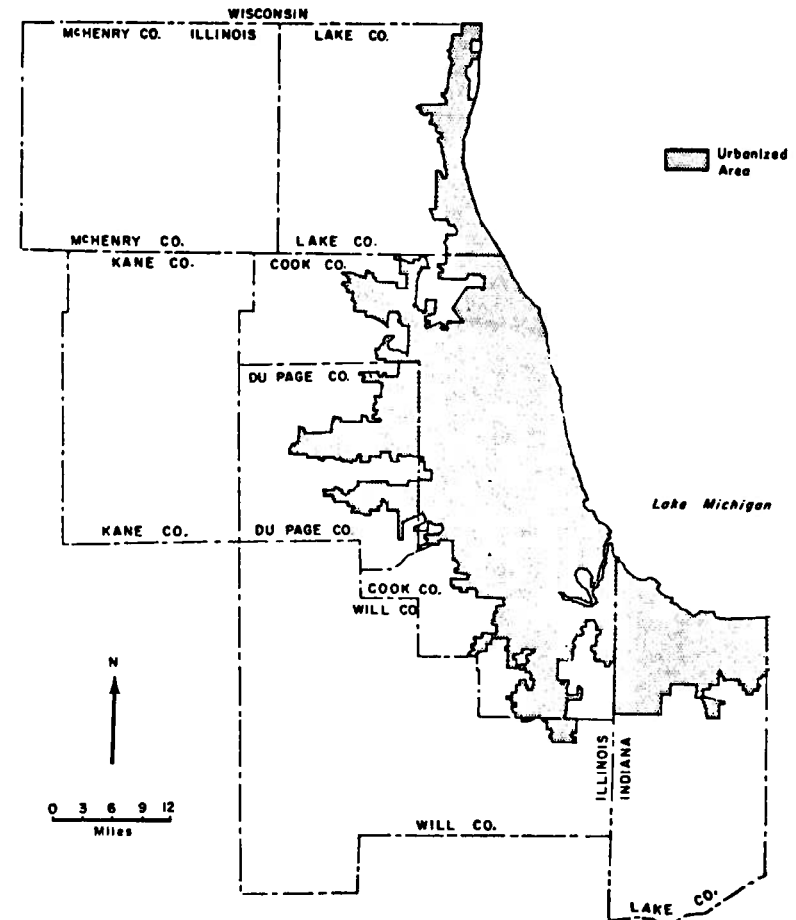
The distribution of the population, the arrangements of business, industrial, and residential areas, and the cobweb pattern of streets and highways resemble on the map a kidney bean. Growth and development can take place only in three directions, north, west, and south, because of Lake Michigan on the east. Hence, the streets and highways form a radial pattern culminating in the center and on the concave edge of this kidney shape. The omnipresence of Lake Michigan and the relatively open access to this magnificent lake front (and the very knowledge that it is there even when little used) help to make the heavy urbanization bearable.

In this area which is approximately 70 miles long on the lakefront and 30 miles wide at the widest point live approximately seven million people. The outlying area to the west accounts for another half million (see map). The City of Chicago alone contains slightly less than one-half of this population, and Cook County outside of Chicago, 1,840,000, or 5,300,000 altogether. The other counties range in population from about 100,000 to 400,000 except Lake County, Indiana (containing the City of Gary), which approaches 600,000.¹ Lake County, Indiana, comprises less than ten per cent of the total population of the Chicago metropolitan area. The tax-supported services are naturally provided by the State of Indiana and its political subdivisions, but some have been estimated by prorating Illinois data. Presumably, in the private health sector the residents in Lake County, Indiana, respond to the attraction and medical referral patterns of the Chicago metropolitan area in the manner characteristic of the private sector in general.

The population can be classified and stratified by all the usual demographic, sociological, and economic indices. About 20 per cent are poor by the currently popular standards, 37 per cent of the adults have an eighth grade education or less, 45 per cent have four years of high school or less (but graduated eighth grade), and ten per cent have been to college

¹ This county will be included and excluded from totals in subsequent statistics in this report depending on the availability of data. Inclusion or exclusion will always be mentioned.

THE CHICAGO METROPOLITAN AREA, INCLUDING
LAKE COUNTY, INDIANA



Source: Chicago Community Inventory, University of Chicago

but failed to graduate. Around eight per cent are college graduates.² Naturally, there are very few farmers, so the population is an exceedingly urban one, completely dependent on a job or other sources of cash income. Around 12 per cent of the population are under five years of age and eight per cent are 65 and over. From the standpoint of health services these groups are the high users of services, and until recently, at least, the proportions on both extremes of the age cycle have been increasing, both nationally and locally. The Chicago area population is slightly better educated than that of the country as a whole, considerably more urban, and very slightly younger.

The income levels range as shown in Table 1, and, of course, the proportions within this range vary considerably from area to area. In some small areas such as census tracts, the "poverty" segment may be as high as 65 per cent; in others, there is no "poverty" segment.

It is reasonable to assume that the ethnic and religious composition of the population has some effect on the structure and functioning of the health care system, and it is certainly well-known that race has an effect. The importance of the ethnic and religious factors is only dimly known, but it may be reasonable to assume that a proportionately large number of Catholics go to Catholic sponsored voluntary hospitals, and possibly there is also some ethnic differentiation. Presumably, Jewish patients go to Jewish hospitals (of which there are three), but still the preponderance of patients in Jewish hospitals are non-Jewish.³ Presumably, also, relatively high income patients go preponderantly to well-known, prestige hospitals. In any case, when attempting to develop a model of the health care system for as heterogeneous a population as the Chicago metropolitan area, these factors must be recognized so that there is some approximation to social realities. There seems to be a tendency for model builders of systems in the health field to ignore these sticky variables. In a heterogeneous population, patients, facilities, and personnel are still far from being "more or less" automatically interchangeable as would seem to be possible where ethnic, religious, and race differences are absent.

Clearly, however, the white/non-white classification has tremendous implications for the flow of patients in the health care system as to entry,

² Derived from *United States Census of Population, 1960*, Illinois, Final Report PC(1)-15C, Table 73, p. 293. Based on adults 25 and over. Excludes Lake County, Indiana.

³ See, e.g., these suggestive studies: Richard L. Morrill and Robert Earickson, *Hospital Service Areas: Religion, Race, National Origin and Hospital Use*, Chicago Regional Hospital Study, Working Paper No. I.4, December, 1966; Robert Earickson, *Simulation Model of Nonwhite Hospital Use in Chicago*, Chicago Regional Hospital Study, Working Paper No. III.3, May, 1967.

routes within the system, and points of exit. The civil rights aspect has had a direct impact here, possibly even more than the poverty aspect. In the Chicago metropolitan area 15 per cent of the population is non-white (compared with 11 per cent nationwide) with 97 per cent of the non-whites in the area being Negro. The main concentration, however, is in the City of Chicago and then further concentration in certain parts of the city, south and west. The non-white portion of the city comprises one-third of the population, or approximately one million people, but some areas are from 90 to 100 per cent non-white.

The population of the Chicago metropolitan area continues to increase

TABLE 1
INCOME DISTRIBUTION OF FAMILIES AND OF ALL RESIDENTS
OF THE CHICAGO METROPOLITAN AREA, 1965

INCOME	PER CENT OF FAMILIES		
	White	Non-White	Total Population
Under \$3,000.....	12%	29%	15%
\$3,000-6,999.....	30	42	32
\$7,000-9,999.....	26	17	24
\$10,000-24,999....	30	12	27
\$25,000 and over...	2	*	2
TOTAL.....	100	100	100
INCOME	PER CENT OF ALL RESIDENTS		
	White	Non-White	Total Population
Under \$3,000.....	21%	38%	24%
\$3,000-6,999.....	30	38	31
\$7,000-9,999.....	22	14	21
\$10,000-24,999....	25	10	23
\$25,000 and over...	2	*	1
TOTAL.....	100	100	100

Source: Derived from Table 1, non-farm residents, Current Population Reports, Series P-60, No. 53, December, 1967, *Consumer Income*, U.S. Department of Commerce, Bureau of the Census.

Note: The white/non-white breakdown is for all U.S. non-farm residents for 1965, not just for Chicago metropolitan area residents. Chicago metropolitan area income is slightly higher than shown but this should not alter the percentage breakdown appreciably. The total population breakdown has been adjusted for the racial composition of the Chicago metropolitan area.

* Less than one-half of one per cent.

although by varying rates within the area, both by migration into and within the area and by a net increase of births over deaths. Estimates are that by 1975 the population will have increased from seven and one-half million to nearly ten million.⁴ It is assumed that the total population of the City of Chicago will remain quite constant, although increasing in the proportion non-white from the current one-third to a future one-half or more. In sum, then, there will need to be on the average a continuing increase in facilities and personnel, assuming current ratios.

In the Chicago metropolitan area (including Lake County, Indiana) currently there are approximately 150,000 births a year, a rate of 22 per 1000 population although apparently decreasing. Around 69,000 people die annually. Considering the fact that virtually all births take place in hospitals and over one-half of the deaths, there must be beds for these people, given current custom and medical practice. At the present time a philanthropic maternity service in Chicago provides home deliveries for 2,000 births in a year, but this is decreasing. Close to one-quarter of the total births are non-white although the non-white population comprises but 15 per cent of the total population of the metropolitan area.

⁴ Estimate made by National Planning Association.

CHAPTER 5

MORTALITY AND DISEASE PATTERNS

A self-evident assumption is that the health services exist because people are concerned with being ill and dying prematurely, i.e., from so-called preventable causes given current knowledge. Hence, the standard method of measuring the effect of the health services system on a population is by various indices of illness, disease, and death. Certainly, it is a reasonable assumption that timely and proper health care can postpone death from some causes, and prevent, cure, or palliate some diseases. At the same time, however, it is also reasonable to assume that a salubrious environment, only moderately stressful life styles, balanced diet, exercise, good housing, and so on probably have a greater indirect and direct effect on the disease patterns and age at death than do health services as such.

Not long ago the senior author and an associate made an estimate that since nearly all of the decline in overall mortality after the turn of the century was due to the near-elimination of communicable diseases (pneumonia-influenza, tuberculosis, and gastritis) as a cause of death, the remaining residual is about all that is left to work with considering current medical technology. This residual of communicable diseases now accounts for less than six per cent of the deaths.¹ In the early thirties it accounted for 19 per cent and, of course, at the turn of the century even more, i.e., one-third of all deaths. However, maintaining the present *pattern* of causes of death is in itself a constant achievement even though dramatic improvements are not visualized unless there are specific therapeutic and preventive break-throughs regarding the leading killers: heart disease, cancer, stroke, and accidents.

Even though the overall impact of even optimum health services (given the continuation of debilitating life styles associated with both poverty and affluence) may be relatively small, it is still necessary to maintain a tremendous and complex medical technology literally on a standby basis.

¹ Odin W. Anderson and Monroe Lerner, *Measuring Health Levels in the United States, 1900-1958*, Health Information Foundation (now Center for Health Administration Studies), Research Series No. 11, 1960.

This is necessary to care for the highly emergency nature of heart disease, cancer, stroke, and injuries from accidents even though it may be difficult to demonstrate substantial life-prolonging effects of treatment.

A more subtle and sophisticated and, consequently, more difficult measure of health levels is the incidence and prevalence of morbidity in a population. It is, of course, illness (real or presumed) which stimulates people to seek health services although all people with illnesses are not seen by physicians. Studies have shown that people reporting the common cold see physicians very seldom, but close to 100 per cent of people with identifiable heart attacks (if they do not die immediately) are seen by physicians. Presumably there should reasonably be some differentials between types of illnesses and seeking physicians' services for them, and in a fairly rough way there is evidence that this is so.² The perennial problem is how to relate the right illness to the right type of health personnel at the right place and time. Inherently, however, it would seem that the people's perception of medical need, even in optimum conditions, has a high degree of variability, and any health care system must, therefore, allow this kind of leeway.

It is not even enough, however, to limit oneself to mortality and morbidity in considering a modern health services system. There are also the problems of prevention, rehabilitation, palliation, and management of illness. If these problems are met in any degree commensurate with their extent, e.g., senility, mental retardation, physical therapy after strokes, the necessary organization of facilities and personnel would expand the prevailing health services system enormously.

That is to say, the life saving objective for health services is decreasing in relative importance while the quality of life objective is increasing in importance—optimizing the functioning of human beings, minimizing pain, and assuring some degree of freedom from the anxiety associated with ill health.

With the foregoing background the mortality and morbidity statistics to follow will seem quite inadequate as a measure of the impact of health services on the health of the population and as a justification for the tremendous and increasing expenditures on these services. Cost-benefit justifications for health services are quite meaningless if cast largely in terms of economic returns to society and economic productivity. Some other type of social and personal benefit analysis must be made relating to quality of living in general.

² Jacob J. Feldman, *The Dissemination of Health Information—A Case Study in Adult Learning*, Chicago: Aldine, 1966.

A. Mortality

As was mentioned previously, there are approximately 69,000 deaths in the Chicago metropolitan area annually, a rate of about ten deaths per 1000 population. This is a rather standard general death rate for populations in developed areas. The rate for the United States is 9.4, disregarding differences in age composition. The states of Alaska and Hawaii have rates of 5.3, undoubtedly reflecting a younger population. The states of Vermont, Massachusetts, and Missouri, probably for the opposite reason, have rates exceeding 11, while the Illinois rate is 10.2. The crude mortality rate in a large city such as New York is 11.0 compared to a City of Chicago rate of 11.8.³ There would then seem to be nothing particularly unusual about the Chicago area rate.

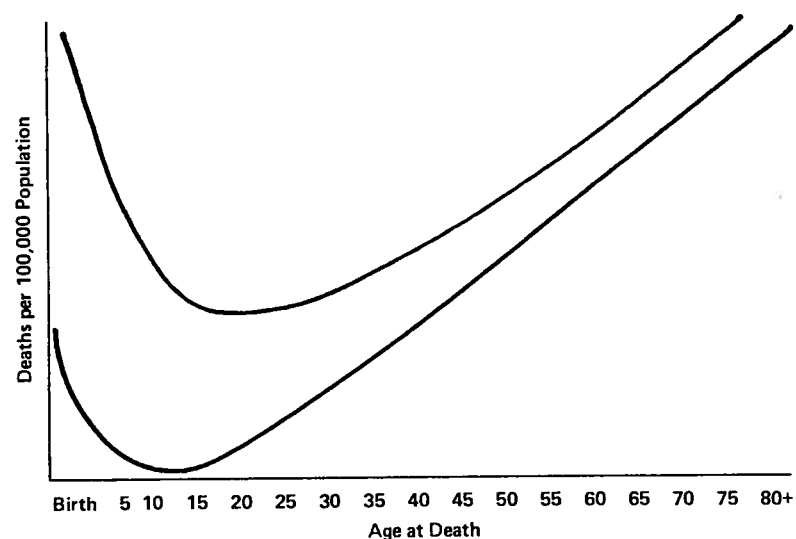
When the death rates are examined by age-group, one finds the usual "J" shape of magnitudes by age, relatively high for age groups under five, lowest for ages five to 14, and then sloping upward rapidly after age 14 and, of course, accelerating after age 65. In all times and places for which death rates by age have been reported, the familiar "J" shape is found, indicating the biological basis for death rates which can be modified by environment but not so much that the basic pattern is changed. In an undeveloped area, e.g., the curve will look as in the top line of the figure on page 36 while the bottom line represents developed areas. These lines are plotted on a semi-log scale which reveals the relative rather than the absolute differences in death rates between the age groups.

It will be noted that the greatest relative improvements in death rates have taken place in the age-groups under 14 or so. These improvements are usually and reasonably attributed to the great decline in infectious and communicable diseases discussed earlier. Within these general changes in patterns there are, of course, continuing differences between income groups and social classes in a developed area such as the Chicago metropolitan area. A low-income group, e.g., will have a mortality pattern approximating the top line of the figure, and a high-income suburban area would approximate the lower line. There is still a fair amount of room for improvement in the death rates for low-income areas, and such measures then need to be specific to area. Since the "poverty"

³ New York rate calculated from Table 14, p. 27, *Morbidity and Mortality, Annual Supplement, Summary, 1966*, Vol. 15, No. 53, National Communicable Disease Center, U.S. Department of Health, Education, and Welfare. Chicago rate from *Vital Statistics, Illinois, 1964*, Illinois Department of Public Health, Springfield.

areas contain a minority of the total population, improvements in mortality rates will be reflected only minimally in the overall death rates.

As it is popular to formulate priorities in the health field in relation to the leading causes of death, these causes are then publicized a great deal. There is a desire to live as long as possible; hence attempting to make a dent in the leading killers—heart disease, cancer, stroke, and accidents—has some logic although the mitigation of these causes is quite intractable for the time being. Another method of setting targets is to



pick other causes of death which are quite specific as to diagnosis, prevention, treatment, and control, e.g., diabetes as to diagnosis and control, and polio as to prevention.

Literally every cause of death is related to age and frequently to sex as well; usually the higher the age the higher is the incidence of most causes. It is within living memory when the pattern was almost the opposite, as infants and children were carried off in large numbers by the infectious and communicable diseases. Today the only major exceptions to increasing mortality with increasing age are pneumonia, which afflicts the very young and the very old most heavily; accidents, which have a fairly even spread; and congenital malformations, which take their toll, of course, among the very young (Table 2).

These foregoing characteristics are presented to illustrate the need for

as much specificity as possible in setting priorities and methods of implementing objectives according to certain health indices. Each cause of death requires a different strategy because of age, sex, race, income, residence, the natural history of the disease, and methods of diagnosis, prevention, cure, and management.⁴

TABLE 2
DEATH RATES BY AGE GROUP FOR THE TWELVE LEADING
CAUSES OF DEATH, CITY OF CHICAGO, 1964

CAUSE OF DEATH	RATES PER 100,000 POPULATION							
	0-4 Years	5-14 Years	15-24 Years	25-44 Years	45-64 Years	65-84 Years	85 and Over	All Ages
Heart disease.....	0.5	0.8	7.5	101.9	684.7	3151.2	10566.7	538.9
Cancer.....	6.1	6.5	10.0	50.7	342.5	994.1	1311.1	195.9
Stroke.....	0.7	0.6	3.4	17.2	102.1	602.1	1988.9	96.1
Accidents.....	35.2	17.4	40.2	33.2	47.2	82.4	144.4	39.9
Congenital malformations and diseases of early infancy.....	441.5	3.9	3.4	1.5	3.5	2.4	.....	53.9
Pneumonia and influenza.....	124.8	4.0	6.6	23.9	51.2	192.6	661.1	55.5
General arteriosclerosis.....	.....	.....	.....	0.2	9.8	139.1	1072.2	21.1
Diabetes.....	0.5	0.2	1.4	4.1	30.9	131.2	177.8	21.8
Cirrhosis of the liver.....	.....	.....	0.5	18.4	51.1	55.6	22.2	21.7
Other circulatory diseases.....	0.7	0.8	1.6	5.0	17.9	60.6	100.0	12.1
Suicide.....	.....	.....	6.4	11.0	14.9	20.9	27.8	9.1
Hypertension.....	.....	.....	0.2	4.8	10.8	57.1	200.0	10.2
All other causes...	56.0	12.0	36.1	69.1	139.4	414.5	755.6	105.8
All causes combined.....	666.0	46.2	117.3	341.0	1506.0	5903.8	17027.8	1182.0

Source: *Vital Statistics in Illinois, 1964*, Illinois Department of Public Health, Springfield, 1967.

It is well known that the leading cause of death is heart disease, accounting for 40 per cent or so of the deaths, followed by approximately 15 per cent for cancer, and ten per cent for stroke. The next highest, considerably smaller than the top three, is accidents, five per cent. Because of the high proportion of Negroes with their high infant mortality rates, this is not true for the City of Chicago. Consequently, fully two-thirds

⁴ See, e.g., an attempted model of strategy of disease control: Odin W. Anderson, *Syphilis and Society; Problems of Control in the United States, 1912-1964*, University of Chicago, Center for Health Administration Studies, Research Series No. 22, 1962.

or more of the deaths are caused by the four leading causes. Presumably, roughly the same rank order of causes of deaths holds for various income groups although the concentration in the first three may vary. On simple inspection this, indeed, proves to be the case as seen in the table below which substitutes white/non-white differences for a rough approximation of income differences.

Among whites it is revealed that the first three leading causes of death account for 72 per cent of the deaths, while among non-whites they ac-

TABLE 3
CAUSES OF DEATH IN THE CHICAGO METROPOLITAN
AREA BY RACE, 1964

CAUSE OF DEATH	PER CENT OF ALL DEATHS	
	White	Non-White
Heart disease.....	45%	34%
Cancer.....	17	14
Stroke.....	10	9
Diseases of early infancy.....	3	9
Accidents.....	5	5
Influenza and pneumonia.....	3	8
Arteriosclerosis.....	2	*
Diabetes.....	2	2
Homicide.....	*	3
Cirrhosis of the liver.....	1	2
Other circulatory diseases.....	1	*
Congenital malformations.....	*	1
All other causes of death.....	11	13
TOTAL.....	100%	100%

Source: *Vital Statistics in Illinois, 1964*, Illinois Department of Public Health, Springfield, 1967.

* Less than one-half of one per cent.

count for 57 per cent of the deaths. Causes of death among non-whites are thus more diffused among all causes of death than among whites, indicating that non-whites die of more causes that are preventable either by medical care or by wholesome social conditions. Illustrative is the fact that nine per cent of the deaths among non-whites are attributed to diseases of early infancy, compared with three per cent for whites. Similarly, eight per cent of the deaths among non-whites are attributed to influenza and pneumonia compared with three per cent for the white population. These rates would still show great discrepancies even after adjustment for the younger age of the non-white population. Almost half of the children

under 15 in the City of Chicago are Negro compared with only 15 per cent of the people over 65.

As a gross summary of the twelve leading causes of death in the Chicago metropolitan area (including Lake County, Indiana) for one year, it may be useful to reveal the approximate number of deaths from these causes in a population of approximately 7.5 million.

The next leading causes of death in the area were emphysema, stomach ulcers, kidney infections, and homicide in that order. Estimates are that

TABLE 4
NUMBER OF DEATHS IN THE CHICAGO METROPOLITAN AREA FROM THE TWELVE LEADING
CAUSES OF DEATH, 1964

Cause of Death	Number of deaths
Heart disease.....	30,400
Cancer.....	11,800
Stroke.....	6,000
Congenital malformations and diseases of early infancy.....	3,400
Pneumonia and influenza.....	2,800
Accidents.....	2,800
Arteriosclerosis.....	1,240
Diabetes.....	1,240
Cirrhosis of the liver.....	1,150
Other circulatory diseases.....	750
Suicide.....	600
High blood pressure.....	570

Source: Derived from *Vital Statistics in Illinois, 1964*, Illinois Department of Public Health, Springfield, 1967.

out of the 69,000 deaths in the area in a year, over 34,000 occur in general hospitals. This figure is introduced here simply to indicate what a staggering human relations problem the area hospitals have with 150,000 births and 34,000 deaths in one year taking place in them. (This works out to an average of over 200 deaths per general hospital, varying, of course, by size of hospital, or 1.2 deaths per bed per year.)

The most popular and specific measures of health levels and the relative effectiveness of health services and mothercraft are infant mortality and maternal mortality. They are regarded also as the most sensitive indices of medical and social conditions. The Chicago metropolitan area, at least as measured by the City of Chicago and Cook County, has an infant mortality rate (number of deaths before one year of age per 1000 live births) of around 23, slightly higher than the national average of 22.

States vary between 17 and 34.⁵ Infant mortality rates by family income and area vary greatly, sometimes by more than 100 per cent, particularly when comparing white and non-white groups. In the City of Chicago, e.g., the white infant mortality rate is 22 and the non-white is 41. Since the white rate can be theoretically lower than it is, it stands to reason that the non-white rate could be much lower were medical services and social conditions for this group improved. The higher the infant mortality rate, the greater is the proportion of deaths that can be attributed to preventable causes such as communicable and infectious diseases, and the smaller is the proportion from inherently biological causes, e.g., congenital malformations. So, at some point there is an irreducible minimum given current knowledge and controls. There are rates today in other countries as low as 15 and even 13 infant deaths per 1000 live births.

In absolute terms 3500 infants in the Chicago metropolitan area die within their first year of life. Of these close to 3000 die at birth or during the first month of life. Almost 2500 additional babies are still-born (and not counted in the usual infant mortality rates). If the overall infant mortality rate could be reduced to 15, the number of infant deaths could be reduced to about 2300. If the non-white infant mortality rate could equal that of the white rate, there would be a reduction of about 700 infant deaths per year, using the most current white rate of 21.7 deaths per 1000 live births. These may or may not be practical targets in the Chicago area. There are such rates in Scandinavia for example. To attain the low rates of the countries mentioned, there will have to be great changes in mothercraft practices, maternal and child health services, and improvements of social conditions among the low-income groups. The birth rate of low-income groups is half again as much as that of the higher income groups and the Chicago area birth rate is somewhat higher than that of Scandinavia, indicating that the whole, very difficult area of adequate birth control education and motivation will also have to be gone into.⁶ Even then there can be no guarantee that the Scandinavian rates can be equalled, but that improvements are possible would seem to be beyond question.

The maternal mortality (number of deaths due to pregnancy per 10,000 live births) rate is remarkably low regardless of class, race or residence. It is now less than three per 10,000 births in Illinois. As re-

⁵ *Monthly Vital Statistics Report, Provisional Statistics, Annual Summary for the United States, 1967*, National Center for Health Statistics, Vol. 16, No. 13, July, 1968.

⁶ For example, there were 379 births in 1966 in the City of Chicago alone to girls who were 14 or under. (Zackler, Jack, et al., *The Young Adolescent As An Obstetrical Risk*, Chicago Board of Health, to be published in the *American Journal of Obstetrics and Gynecology*, February, 1969.)

cently as thirty years ago the rate was 58. Forty-seven mothers, the majority of them non-white, died of causes connected with childbirth in the Chicago metropolitan area in 1964.

B. Morbidity

The prevailing reporting of vital statistics enables one to make estimates for mortality based directly on Chicago metropolitan area data. Since there is no similar routine reporting for morbidity (except for a few reportable communicable diseases), it is necessary to draw on nationwide data produced by the National Center for Health Statistics, U.S. Public Health Service. It has been shown that the mortality patterns for the Chicago metropolitan area are quite close to national patterns. Hence, it would seem reasonable to assume that morbidity patterns would also be relatively similar as to prevailing types of morbidity and rank order although there might be some differences in absolute volume. In any case, morbidity surveys are exceedingly complicated and costly ventures, and, unless very refined measures are required for specific purposes, a special survey is hardly worth the cost and effort. Thus, it would seem that estimates of morbidity from the National Health Survey applied to the Chicago metropolitan area would be useful for the purpose of this report. The relationship between gross morbidity, facilities and personnel, and use of health services is at best very imprecise anyway. Even for rather specific diseases such as diabetes there is assumed to be an appreciable reservoir of undetected and unmet need. Nevertheless, morbidity data can still provide a general picture of the volume of illness and disease in a society as perceived by the general population. Since this population by and large initiates the seeking of care, results of household morbidity surveys at least give a base line of the public's perception of illness and disease and the extent to which services are sought. These results are augmented by actual physical examinations for many conditions. (In a subsequent chapter morbidity as measured by use of services rather than perception alone will be presented. A component of use is the extent to which "well" people seek checkups, advice, etc.)

Pragmatically, morbidity is usually classified into acute and chronic, acute conditions lasting less than three months and chronic conditions more than three months and including around 20 or so diagnoses which are obviously long-term such as heart disease and asthma. Acute conditions, of course, fluctuate greatly and affect virtually everybody during a year. As the term suggests, acute conditions have a quick onset and recede rapidly. Chronic conditions can have either a quick or a gradual onset, but they persist indefinitely in various degrees of instability and stability

and are not as universal as acute conditions. Both types of conditions lend themselves to detailed classifications as to cause, severity, debility, and deadliness. Thus, they require varying strategies as to diagnosis, therapy, cure, prevention, and palliation, not to mention priorities. As was indicated in the section on mortality, priorities are placed on the major lethal diseases, and there is not necessarily a direct relationship between the prevalence of a disease and its deadliness, although it may be very debilitating, e.g., arthritis.

It is a common statistical practice not to lump together the incidence and prevalence of acute and chronic conditions for a population because of the oranges and apples fallacy of so doing. When they are lumped together, the gross morbidity curve by age is "U" shaped, the lowest morbidity being in the teenage and early adult age groups. However, when the morbidity curves are shown for acute and chronic diseases separately, they resemble the following:



For acute conditions the younger the age, the greater is the incidence; and for chronic conditions the older the age, the greater is the incidence. The tradeoff for an adult is anything but cheerful. What society and medicine have done so far is to change the composition of the causes of morbidity and mortality from acute to chronic conditions and to delay death until now two-thirds of deaths occur after age 65.

From the nationwide sample surveys of the population by the National Center for Health Statistics it is then possible to reveal the gross picture of morbidity in the Chicago metropolitan area. The National Health Survey studies have estimated that there are 213 acute conditions per 100 people per year. The female rate, characteristically, is slightly higher than the male. Thus in the Chicago metropolitan area one can expect over 14,000,000 acute conditions a year. The common sense classifications are shown in Table 5.

In this group there are, of course, relatively trivial conditions which, like the common cold, can naturally lead to more serious conditions. It is seen that over one-quarter of the acute conditions are attributed to the

common cold, which is not preventable. For whatever it is worth as a health index, there are four million or so common colds in the Chicago metropolitan area in a year. More seriously, there are over two million cases of influenza, over 81,000 cases of pneumonia, and 124,000 or so cases of bronchitis. Among injuries there are 500,000 fractures, dislocations, and sprains, and almost 400,000 "contusions and superficial injuries."

Almost 400,000 cases of diseases of the ear are reported and over 180,000 cases with diseases of the skin. Presumably varying proportions of people with these conditions, depending on the category, have seen physicians. There are few or no estimates on per cent seeing a doctor for acute

TABLE 5
NUMBER AND PER CENT DISTRIBUTION OF ACUTE CONDITIONS OCCURRING IN THE CHICAGO METROPOLITAN AREA PER YEAR

Condition	Number	Per Cent
Infective and parasitic conditions.....	2 million	13%
Respiratory conditions.....	7 million	55%
Upper respiratory conditions.....	(5 million)	(37%)
Common cold.....	(4 million)	(29%)
Influenza.....	(2 million)	(16%)
Digestive system conditions.....	1 million	5%
Injuries.....	2 million	14%
All others.....	2 million	13%
TOTAL.....	14 million	100%

Source: Estimated from NCHS, *Vital and Health Statistics*, "Acute Conditions, Incidence and Associated Disability: U.S., July, 1964-June, 1965," Series 10, Number 26, p. 15.

conditions although estimates have been made by the National Health Survey for chronic conditions.

Suffice it for the time being, however, to refer to a study on public attitudes and actions regarding the presence of certain conditions.⁷ In this attitude study of a nationwide sample of adults it was found that of those who had a cough lasting for several weeks during the previous year, about 50 per cent had seen a physician; 50 per cent of those with frequent headaches had seen a physician; 77 per cent had seen a dentist when they had a toothache; and 40 per cent had seen a physician among those who had complained of sore throat and running nose for a few days.

Among people who had suffered accidents, it was reported by the National Health Survey that 84 per cent of the cases were "medically attended," and among them 93 per cent of the persons injured in auto-

⁷ Feldman, *op. cit.*, p. 46.

mobile accidents were medically attended. In order to qualify as an accidental injury for the purposes of the National Health Survey, the injured person had either to have been away from his "usual and customary activities" for at least one day or to have been medically attended or both. Many trivial injuries are thus omitted by using these criteria. In effect, then, what the data show is that 16 per cent of all people disabled for at least one day by an accident did not consult a doctor, although in the case of automobile accidents this was the case for only nine per cent.

Quite clearly, a large portion of perceived acute conditions are not seen by the physician (or dentist). This is not to imply, of course, that all conditions should be seen by health professionals, but it is reasonable to assume that many conditions are not treated which should be, and possibly there are some conditions treated which did not need a physician's attention. Such are the "inefficiencies" in relating patients and the health system. Presumably, in time it may be possible to reduce this inefficiency by increasingly wise use by the public and more effective response to this type of demand on the part of health professionals than is now true. Even so, the perception of need and the volatile medical technology will continue to be dynamic indefinitely, precluding a tidy relationship.

Chronic conditions are very directly associated with advancing age, particularly the so-called degenerative type of chronic condition. Respiratory conditions such as asthma, however, are quite diffused throughout the age span. With this exception, then, the management of most chronic diseases is mainly one of dealing with people in advanced age-groups who have multiple disabilities. One grim statistic that stands out is the well-documented estimate by Shanas in a nationwide household survey of the aged that at any given time 14 per cent of those 65 years of age and over *who were not in institutions* actually live in situations of near-total surveillance because of physical and mental disabilities.⁸ Projected to the Chicago metropolitan area this would mean that 80,000 or so people in this age group live at home with very serious illnesses or disabilities. About five per cent of the total population of the aged, or an additional 30,000, live in institutions in the area, including nursing homes, homes for the aged, and mental hospitals. That is, at any one time there are over 100,000 aged persons living in the Chicago metropolitan area who require near total surveillance.

Obviously, then, there is a tremendous reservoir of chronic conditions in a population of 7.5 million people with various degrees of intensity of

⁸ Ethel Shanas, *The Health of Older People; A Social Survey*, Cambridge, Massachusetts: Harvard University Press, 1962, p. 36.

contact with the health care system. In terms of their magnitude the estimates of selected chronic conditions are as shown in Table 6.

In some instances the National Health Survey has attempted to estimate the extent to which patients with selected chronic conditions have been "medically attended." Such estimates will be applied to the Chicago

TABLE 6
NUMBER OF CHRONIC CONDITIONS AND PER CENT OF POPULATION
SUFFERING FROM THESE CONDITIONS
CHICAGO METROPOLITAN AREA

Condition	Number of People	Per Cent of Population
Hypertension ^a		
Definite.....	700,000	12%
Borderline.....	600,000	10%
Arthritis and rheumatism.....	400,000	6%
Sinus trouble.....	300,000	5%
Asthma and hay fever.....	300,000	5%
Hearing impairments.....	225,000	4%
Syphilis ^a	200,000	3%
Visual impairments uncorrected by glasses.....	125,000	2%
Coronary heart disease ^a		
Definite.....	115,000	2%
Suspected.....	100,000	2%
Chronic bronchitis.....	100,000	2%
Hernias.....	100,000	2%
Peptic ulcers.....	90,000	1%
Diabetes.....	60,000	1%
Crippled.....	40,000	1%
Cancer ^b	30,000	.....
Tuberculosis ^b	22,000	.....

Source: Projected from NCHS, *Vital and Health Statistics*, Series B, Numbers 12, 17, 20, 21, 27, 35; Series 11, Numbers 5, 9, 10. Cancer estimate from "Cancer on the Rise," *Medical World News*, December 1, 1967. Tuberculosis estimate from *TB, Chicago and Cook County, 1966*, Tuberculosis Institute of Chicago.

^a Obtained by actual physical examination. All other conditions obtained from household interview except cancer and tuberculosis which are projected from the number of new cases reported.

^b The population base used in computing estimates for cancer and tuberculosis included Lake County, Indiana, and was based on 1965 estimated population. All other estimates exclude Lake County, Indiana, and are based on 1960 population.

metropolitan area. For arthritis and rheumatism, although close to 80 per cent had had medical attention at some time, less than one-half were currently under care. On the other hand, over 90 per cent of the reported diabetic cases were under care. Apparently close to 90 per cent of the hernia cases had had medical attention and a third of the patients reported being under care currently. Among heart disease cases, the per cent under

care was not available but is undoubtedly quite high, and virtually all of the cancer patients can be presumed to be currently under care.

The foregoing data on the incidence and prevalence of morbidity and the extent of attention by the health system for selected conditions are hardly precise. They are presented to show the state of the information on the functioning of the health care system in relation to the measures of morbidity available. Perhaps, in time, precision will improve so as to relate need, demand, and facilities and personnel more systematically than at present. So far, the possibility of reaching this goal is, to say the least, elusive.

CHAPTER 6

FACILITIES AND PERSONNEL

The health facilities and personnel in the Chicago metropolitan area did not, of course, appear overnight. This simple but profound fact makes rational planning frustrating for the purist. At the same time there is still a somewhat relentless logic in the distribution of facilities and personnel given the historical premise of individual and local initiative and financing. In some ways this traditional American process has reached a plateau, so that now an increasingly great problem is how to harness this initiative and create incentives for its persistence within the current concepts of "creative federalism" and the "partnership for health," concepts based on cooperation and reciprocity between the private and public sectors. The Federal Government claims rightly that it cannot improve the health services without such cooperation; and the private sector is gingerly feeling its way.

The current distribution of health facilities and personnel is, therefore, a result of conditions that were permitted to shape the system as it now exists.¹ To some, the result has been a mess; to others the result is a viable core for continued expansion and improvement. Whatever the viewpoint, there is no alternative but to work with what does exist. And what does exist is, even today, of almost overwhelming size. Out of a total labor force of about three million in the area, about 140,000 people are involved in the direct provision of health services and an additional 50,000 or so are peripherally associated with the health field for a total of almost 200,000 Chicago area residents, or over six per cent of the work force, based on national estimates. Actually, this is certainly a minimal figure, since the Chicago metropolitan area is one of the medical centers of

¹ Richard L. Morrill, *Historical Development of the Chicago Hospital System*, Chicago Regional Hospital Study, Working Paper No. I.2, December, 1966. The author makes an interesting and pertinent observation in this connection:

"Although, in the future, planning may be somewhat more important than in the past, individual and community decision-making will probably remain the dominant forces. For this reason, extension of past behavior in the location and expansion of hospitals will probably provide closer prediction of future patterns than models we might devise on the basis of needs and goals. *That is, we suspect that coordinated centralized planning will continue to be weaker than the traditional entrepreneurial approach*" (italics ours), p. 1.

the country and includes as well most of the major health field organizations.

We subscribe to the view that, in the main, hospital facilities have not been duplicated, given the desire for convenience, ethnic and church aspirations, and a rapidly growing metropolitan area and economy. Allegations of false pride leading to gross mislocation of facilities have probably been exaggerated. The location of physicians' offices would seem to be more important than the location of hospitals. The inner-city hospitals have been victims of rapidly changing neighborhoods over which they have had little control coupled with a governmental policy which has prevented most new residents of the neighborhood from using private hospital care. Only the biggest hospitals have been able to exercise some modicum of control over their adjacent areas through Federal financing to save hospitals and universities. Some hospitals have disappeared or have been modified drastically as to staff and clientele; others have moved to the suburbs; still others have been created in the suburbs from scratch.

A. Facilities

Serving a metropolitan area of 7.5 million people there are currently over 54,000 beds in the various types of hospitals: general, tuberculosis, mental, short-term special, long-term chronic, and Federal governmental. The ratio of beds to population is then roughly seven beds per 1000 population or slightly better.² About one-half of the beds are owned by various governmental units, the other half by non-profit corporations. The vast majority of general hospital beds are owned by non-profit corporations, and the long-term hospital beds by governmental units, the standard American pattern. Table 7 gives an overall view.

Dealing with general hospital beds for the moment, there are 109 general hospitals with over 29,000 such beds in the Chicago metropolitan area, or a ratio of four beds per 1,000 population, a rather usual average in relation to the national picture.³ There is a wide variation by county and City of Chicago due largely to the very rapid growth in population in suburban counties over the last 20 years. The City of Chicago has, in fact, experienced a net gain in its bed/population ratio during this period, not because of an increase in beds but because of an absolute de-

² If the 23,000 or so beds in nursing homes, homes for the aged, and sheltered care homes are added, the ratio is 12-13 per 1000 population.

³ This discussion excludes Veterans' Administration hospitals which will be referred to later on. It does include the one osteopathic hospital in the City, however.

crease in population. Conversely, all but one of the suburban counties show a decrease in beds related to population because new construction has not kept pace with the increase in population. The City of Chicago showed an increase in the number of beds in relation to population of more than 25 per cent; the rest of Cook County remained constant; and the other suburban counties revealed net losses (except one which had a 12 per cent gain) from 11 to 21 per cent. The overall net loss for the area was seven per cent. It is difficult to interpret the significance of these shifts, but it would seem that modern transportation and roads would mitigate the variable bed ratios in the region. If hospitals are to become

TABLE 7
HOSPITAL BEDS BY TYPE OF SERVICE AND OWNERSHIP
CHICAGO METROPOLITAN AREA, 1966

Type of Service	Number of Beds	Per Cent of Total Beds	Per Cent of Total Beds Publicly Owned
General.....	29,200	55%	11%
Tuberculosis.....	2,400	4	100
Mental.....	15,000	28	94
Short-term special...	460	1	49
Long-term chronic...	2,800	5	92
Federal general.....	3,700	7	100
TOTAL.....	54,560	100%	49%

Source: *Hospitals*, J.A.H.A., Guide Issue, August 1, 1967, and *Hospitals and Approved Schools of Nursing*, Directory, 1967, Illinois Department of Public Health, Springfield.

community medical centers, however, it may be necessary that their service areas be more clearly determined, particularly for emergency services, than they are now.⁴ In the meantime, however, the proximity of physicians would seem to be of primary importance.

Of continuing importance in the American hospital scene are the various loci of ownership reflecting a heterogeneous society and the various sources of control.⁵ It was stated earlier that the backbone of the general hospital system in this country is the voluntary hospital. The Chicago metropolitan area is typical in this respect. As measured by both the

⁴ See Richard L. Morrill and Robert Earickson, *Hospital Service Areas: General Patterns of Hospital Use*, Chicago Regional Hospital Study, Working Paper No. I.3, December, 1966.

⁵ See Richard L. Morrill, *Hierarchy of Hospital Services: Classification of Hospitals*, Chicago Regional Hospital Study, Working Paper No. I.8, December, 1966.

number of hospitals and beds, the voluntary hospitals stand out. They constitute 90 per cent of the hospitals and about 80 per cent of the beds. Only two per cent of the general hospital beds in the Chicago metropolitan area are operated for profit (this is also true for Illinois as a whole), compared with 15 per cent of the beds in California and 10 per cent of the beds in New York State.

There are also six short term specialty hospitals with about 500 beds. Three of these are voluntary, two under public auspices, and one proprietary.

TABLE 8
PROPORTIONS OF GENERAL HOSPITALS AND BEDS
IN THE CHICAGO METROPOLITAN AREA
BY OWNERSHIP, 1966

OWNERSHIP	PER CENT OF TOTAL	
	Hospitals	Beds
Protestant.....	15%	17%
Catholic.....	28	29
Jewish.....	3	6
Negro.....	3	1
Community non-profit....	41	28
Proprietary.....	4	2
University.....	3	6
Public.....	3	11
TOTAL.....	100%	100%

Source: *Hospitals, J.A.H.A.*, Guide Issue, August 1, 1967.

The trends in the shifts in ownership of Chicago area general hospitals since World War II are of particular interest because all but community non-profit and public hospitals have remained in constant proportions. The community non-profit hospitals have increased their proportion of beds from 19 to 28 per cent, and the public hospitals have fallen from 21 to 11 per cent. There are only three public hospitals in the area, the largest one by far being the Cook County Hospital. This is the only public hospital serving the City of Chicago and Cook County which have about four-fifths of the entire population in the metropolitan area. Even though publicly supported hospital programs such as Medicare and Medicaid are increasing, the tax supported hospitals are giving way to or being absorbed by the larger voluntary system. The Chicago area shows in a small way what seems to be a

national trend in the large cities. In order for government to carry out its mandates, it must turn to the voluntary hospitals, short of improving, expanding, or building new hospitals of its own.

A parallel system of hospitals in that it has patients, staff, and conditions more or less distinct from those of the general hospitals is the mental hospital complex. Historically, the care of mental patients in institutions has been primarily a state responsibility and, indeed, 94 per cent of the 15,000 mental hospital beds in the area are state supported and concentrated in six hospitals. There are a few proprietary hospitals, three non-profit and one sponsored by the Catholic Church. One of the public hospitals provides over 200 beds to mentally retarded children. Still, most of the hospitalized mentally retarded children from Chicago are housed at a state-supported school well outside of the metropolitan area. Seventy-five per cent of the admissions there are Chicago area residents.

In addition to the mental hospitals there are now 25 psychiatric units with over 900 beds in general hospitals in the Chicago metropolitan area. Twenty-three per cent of the general hospitals, almost always the larger ones, now have these units. Psychiatric units in general hospitals are largely a post-World War II development and, indeed, now account for one-third of the psychiatric admissions in the area. There are also four non-licensed "rest homes" for the mentally ill with about 200 beds, seven non-licensed schools for the mentally retarded with 150 beds, and three residential schools for emotionally disturbed children.

We know that the general hospitals in the Chicago metropolitan area are occupied overwhelmingly by the residents of the area. The mental hospitals, however, are occupied by residents outside as well as inside the Chicago metropolitan area because they are state institutions serving a larger jurisdiction. This observation is made to indicate that the bed-population ratio for mental hospitals in the metropolitan area should be calculated on a larger geographic base than the metropolitan area. The same is very likely true for tuberculosis hospitals in the area of which there are seven with 2,400 beds, all under state or local governmental control. Likewise, there are five general Veterans' Administration hospitals with 3,700 beds serving a much larger area than where they happen to be located. It is difficult, therefore, to determine how VA hospitals fit into the health services of the area from existing information. There are somewhat similar difficulties for mental hospitals, but admissions have been tabulated by the patients' home address to get around this problem.

The final category of institutions is those serving patients with long-

term conditions not normally cared for in short-term, acute general hospitals, or mental or TB hospitals. It is, of course, well known that there is still an appreciable, but not a well-defined, proportion of long-term patients in general hospitals and mental hospitals who should be in a more general type of long-term care institution. The placing of the right patient in the right institution is still far from precise and will probably not be possible for some time to come, given difficulties in financial arrangements, medical care continuity, and public opinion.

TABLE 9
NUMBER OF BEDS IN LONG-TERM GENERAL CARE INSTITUTIONS BY TYPE
AND OWNERSHIP, CHICAGO METROPOLITAN AREA, 1965

TYPE	NUMBER OF INSTITUTIONS			
	Proprietary	Voluntary	Governmental	Total
Long-term chronic hospitals*	.....	.....	5	5
Nursing homes.....	230	7	5	242
Homes for aged.....	.....	72	.....	72
Sheltered care homes.....	7	1	.....	8
TOTAL.....	237	80	10	327

Type	Number of Beds			
	Proprietary	Voluntary	Governmental	Total
Long-term chronic hospitals*	.....	.....	2,740	2,740
Nursing homes.....	13,800	550	640	14,990
Homes for aged.....	.....	8,000	.....	8,000
Sheltered care homes.....	100	40	.....	140
TOTAL.....	13,900	8,590	3,380	25,870

Source: *Directory of Licensed Homes*, Illinois Department of Public Health, Springfield, July, 1966.

* Note that these hospitals are included in the table on hospitals also.

Almost by definition, patients in long-term chronic hospitals, nursing homes, homes for the aged, and sheltered care homes have general or specific disabilities which will remain with them the rest of their lives. They require everything from constant to intermittent care of a nursing and custodial nature indefinitely. These patients represent intractable problems which modern medicine is unable to cure but is able only to palliate and manage. They are the "stepchildren" of the system because

they are uninteresting and unrewarding to highly trained health personnel. The medical dramas take place in the general hospital and particularly in the operating room and the intensive care units.

The institutions providing long-term care of a supportive and custodial nature are not easy to delimit. Should homes for the aged be included? It is our inclination to do so because it can be reasonably assumed that a great many of the people in these homes have various degrees of disability. Many are, of course, homeless, but presumably many are too difficult to care for at home. Another similar category is the sheltered care homes, catering to discharged long-term mental patients. There are relatively few of these homes, however. Nursing homes and long-term chronic hospitals are easy to classify because they are licensed either as nursing homes or hospitals.

On the basis of the foregoing estimates, there are 3.5 long-term beds per 1000 population in the Chicago metropolitan area. If the homes for the aged and sheltered care homes are excluded, this ratio can be reduced by one-third. It is seen that the proprietary and voluntary sources of ownership supply the vast majority of the bed for long-term care. The public sector has still done little in this matter but appears to be moving largely in the direction of regulation, licensing, and buying such services as legislative mandates determine.

B. Personnel—Physicians

It is a truism that the number and distribution of physicians in an area are the results of a number of complex factors which have not yet been determined in any refined manner. Presumably, the distribution results partially from access to some type of hospital affiliation and partially from the choice of an office location which can attract patients of certain income levels, ages, sexes, and disease categories. Obviously, a surgeon must have a hospital affiliation; for a general practitioner this is less pressing but still regarded as important professionally. Specialists are more likely to cluster in the downtown areas of the city and outlying suburbs. In any case, the plotting of locations of physicians' offices and the "market" areas they serve continues to be a difficult exercise.⁶ From a systems standpoint it would seem that a systematic knowledge of the physicians' hospital affiliations and their admission and referral patterns is fundamental, but such information is almost totally lacking.

We then revert to the general and aggregate information available.

⁶ See Philip H. Reese, *Movement and Distribution of Physicians in Metropolitan Chicago*, Chicago Regional Hospital Study, Working Paper No. 1.12, June, 1967.

There are close to 10,500 non-federal physicians (M.D.'s) in the Chicago metropolitan area (excluding Lake County, Indiana) of whom 358, or 3.4 per cent, are inactive, presumably retired or housewives. Adopting the usual measure of number of physicians per 100,000 population, the area then has a ratio of about 165 physicians per 100,000 population. This is exactly the same ratio as that for physicians in all metropolitan areas combined and is, of course, considerably above the ratio for the country as a whole (140 non-federal physicians per 100,000 population).⁷ If the inactive physicians are excluded, the ratio drops to 158.⁸ If physicians in full-time research and administration are excluded, there is another slight drop. If, however, only the number of physicians in private practice (solo or group) is calculated, the ratio then drops to 110 physicians per 100,000 population. There is a rough logic in using this ratio as the benchmark of physician supply because undoubtedly the physicians in private practice provide a volume of service greatly exceeding their proportion of the total physician supply.

Others who provide a great deal of direct service are interns (six per cent), residents and fellows (13 per cent), physicians salaried by the hospital (five per cent), and medical school faculty (three per cent), totalling almost 27 per cent of the overall physician supply. Interns and residents can be regarded largely as resources for physicians in private practice and for medical school faculty, many of whom are also in private practice. Thus it can reasonably be inferred that the people in the metropolitan area have theoretically direct access to 7,000 physicians. It is significant that 13 per cent of physicians are still in training after they have earned their M.D. degrees and have been licensed. It is unlikely that any profession has as high a proportion in full-time training as does medicine (see Table 10).

There is fairly detailed information on the distribution of specialists and general practitioners in the metropolitan area thanks to the currently maintained roster of physicians of the American Medical Association. The type of specialty is self-designated by the physicians filling out the A.M.A. questionnaires. Around 38 per cent of the physicians in private practice, or 2600 or so, report themselves as general practitioners (Table 11).

⁷ Derived from Table H, page 14, of *Distribution of Physicians, Hospitals, and Hospital Beds in the U.S., 1967*, American Medical Association, Chicago, 1968. The physician/population ratios for the Chicago metropolitan area are based upon 1963 data and have been computed using an area population of 6.4 million for 1963 (excluding Lake County, Indiana).

⁸ Compared with a ratio of 250 per 100,000 population in New York City, 179 in Los Angeles, and 134 in Detroit. James A. Campbell, M.D., et al., *Report on Education in the Health Fields for State of Illinois Board of Higher Education*, February, 1968, Appendix IV, p. 33.

TABLE 10

NUMBER OF PHYSICIANS IN THE CHICAGO METROPOLITAN AREA BY TYPE OF PRACTICE, 1963

Type of Practice	Number	Per Cent
Private practice (solo or group)....	7,000	67%
Interns.....	580	6
Residents and fellows.....	1,400	13
Full-time hospital employees.....	560	6
Medical school faculty.....	350	3
Administrators.....	130	1
Research.....	90	1
Total Active.....	10,110	97
Inactive.....	360	3
TOTAL IN AREA.....	10,470	100%

Source: *Distribution of Physicians in the United States, 1963*, Vol. I, American Medical Association, Chicago, 1967.

TABLE 11

DISTRIBUTION OF PHYSICIANS IN THE CHICAGO METROPOLITAN AREA BY TYPE OF PRACTICE AND SPECIALTY, 1963

Specialty	Private Practice	Interns, Residents, Fellows	All Other M.D.'s	All M.D.'s
Medical Specialty				
Allergy.....	*	*	*	*
Dermatology.....	1%	1%	1%	1%
Internal medicine ^a	13	16	23	15
Pediatrics.....	7	7	6	6
Surgical Specialty				
Surgery ^b	12	16	8	13
Obstetrics-gynecology.....	7	6	3	6
Ophthalmology.....	4	3	2	3
Otolaryngology.....	2	2	1	2
Urology.....	2	1	1	2
Other Specialty				
Anesthesiology.....	3	3	3	3
Psychiatry and neurology..	6	8	8	7
Radiology.....	2	4	8	3
Pathology.....	1	4	14	3
All other specialties ^c	2	28	17	9
General Practice.....	38	1	5	27
TOTAL.....	100%	100%	100%	100%

Source: *Distribution of Physicians in the United States, 1963*, Vol. I, American Medical Association, Chicago, 1967.

* Less than one-half of one per cent.

^a Includes cardiology, gastroenterology, and pulmonary diseases.

^b Includes general surgery, neurosurgery, orthopedic surgery, plastic surgery, colon and rectal surgery, and thoracic surgery.

^c Includes physicians with unrecognized specialties and physicians who indicated they were specialists but did not indicate a specialty. Includes all but 46 of the interns.

It would seem unlikely that general practitioners are the only group which provides family medical care or general care for a person. It would seem reasonable to assume that some of the specialists provide this type of care at least in part, particularly internists, pediatricians, some surgeons (considering their presumed large supply) and obstetricians-gynecologists. Again, there is a great lack of information as to how and to what extent specialists do in fact practice as generalists. It is known, however, that in 1963, nationwide, almost a third of the population named a specialist as their source of medical care.⁹ There is also a total lack of information as to referral patterns between physicians of various types of specialization. It seems reasonable to assume that there is a great deal of informal group practice among physicians in private practice. To what extent it is desirable for physicians to be organized in formal group practices under some form of systematic peer surveillance and control is being debated vigorously. In the meantime, physicians are responding to specialization by referrals, organizing in private small or large single and multiple specialty groups, or entering some form of salaried service, including the medical staffs of hospitals. There is no systematic information on what is really taking place in this spontaneous manner although it can be safely assumed that the great bulk of referrals is among so-called solo practitioners.

It would seem that the distribution of physicians by specialty is not markedly different from the national average. Certainly the same trends have occurred in the Chicago metropolitan area as elsewhere, i.e., increasing specialization and a decreasing proportion of physicians who call themselves general practitioners. Still, it is worth noting that two-thirds of the families in the area say they take their own children to a general practitioner rather than a pediatrician, a third of the women would prefer a G.P. to a specialist for delivery of a baby, and fully a fourth would prefer a general practitioner for an operation. These preferences are particularly strong among older area residents and among low income groups.¹⁰

The "proper" distribution of specialists, not to mention their location and practice arrangements, is much discussed, but at present judgments can hardly be based on systematic criteria. Again, good information on practice patterns and arrangements might help. A general feeling of shortage, however, is pervasive, and it is likely very real in view of queueing at physicians' offices, increases in so-called non-emergency

visits to hospital emergency departments, and the public policy objectives of increasing care for the poor. The current system and supply of M.D.'s are then seriously strained.

In part because of this strain on supply, the osteopath has been getting more recognition as a legitimate source of medical services over the years. This is certainly true in various states, particularly California. In some midwest states osteopaths constitute an appreciable minority of physician personnel. They are fully licensed as physicians in most states, including Illinois, and they take the same state examinations as M.D.'s. Up until now, however, it has been virtually impossible for them to get a hospital appointment in the general hospitals of Illinois and most other states. The osteopaths, then, have their own hospitals, and there is one in Chicago with 171 beds. Chicago also has one of the five schools of osteopathy in the country with about 250 students and an annual graduating class of 45. In recent years facilities in the Chicago area have been expanded and improved. There are 152 osteopaths in practice in the Chicago metropolitan area (including 12 in Lake County, Indiana). This is, of course, an exceedingly small number compared to the 7,000 or so M.D.'s in private practice in the area.

C. Personnel—Nurses and Other Salaried Health Personnel

In the Chicago metropolitan area (exclusive of Lake County, Indiana) reside close to 32,000 registered nurses. As is the case nationwide, about one-third are not actively engaged in nursing, leaving a total of about 19,500 employed nurses. There are close to 400 registered nurses who are men, usually working as nurse anesthetists or in the mental hospitals and the Veterans' Administration hospitals. Over two-thirds of the active nurses are working in hospitals or other institutions. It is of interest to note that about 15 per cent of the nurses are engaged in private duty nursing or work in physicians' and dentists' offices (Table 12).

There is a great deal of rather intense concern with the supply of nurses in the Chicago metropolitan area, as there is elsewhere. Normally, about ten to twenty per cent of the budgeted positions in general hospitals for staff nurses are unfilled.¹¹ In mental hospitals the proportion of unfilled positions is even greater. The breach is being filled by licensed practical nurses (L.P.N.'s) and nurses' aides. Usually, one finds today that the licensed practical nurses and nurses' aides together overbalance the registered nurses in number. Obviously, a great deal of substitution has

⁹ Andersen and Anderson, *op. cit.*, p. 14.

¹⁰ Campbell, *et al.*, *op. cit.*, Vol. II, June, 1968. Based on completed interviews with 615 families in the Chicago Standard Metropolitan Statistical Area.

¹¹ It is 16 per cent according to *Nursing in Illinois, An Assessment, 1968, and a Plan, 1980*, Illinois Study Commission on Nursing, Chicago, 1968, p. 24.

been taking place in recent years. In the metropolitan area hospitals there are over 4,600 licensed practical nurses and probably at least 40,000 aides currently at work judging by data prorated from a study conducted by the Bureau of Health Manpower, U.S. Public Health Service, and the American Hospital Association and entitled *Manpower Resources in Hospitals, 1966*. Certainly the least that can be said is that the nursing field is in tremendous flux. The closing of diploma schools and the shift to baccalaureate and associate degree programs presage the need to look at the nursing personnel supply carefully. These problems are nationwide and hardly peculiar to the Chicago metropolitan area although this area is

TABLE 12
DISTRIBUTION OF ACTIVE REGISTERED NURSES
IN THE CHICAGO METROPOLITAN AREA
BY WORK SITE, 1966

Site	Per Cent
Hospital or other institution.....	68%
School of nursing.....	4
Private duty.....	7
Public health.....	4
Board of education.....	3
Industry.....	3
Physicians' and dentists' offices....	8
Other and unknown.....	3
TOTAL.....	100%

Source: Unpublished data obtained from Illinois Department of Registration and Education, Chicago, 1967. Based on 1966 nursing licensure renewals.

relatively retarded at present in the shift to college education for R.N.'s.

In the course of the development of the health field and its technology, many parallel technical specialties have emerged. Table 13 has been assembled simply to show how they have proliferated in range and number.

The foregoing figures are given in a gross form simply to reveal magnitudes. There will be no attempt to relate the various personnel in hospitals to beds or other measures. Indeed, this is still a fairly fruitless exercise because there are no generally accepted measures. Suffice it to say that in this country it seems that a personnel-bed ratio of 2.5 is usual in general hospitals, less in chronic disease hospitals, and still less in nursing homes. These ratios have been increasing for a long time in response to perceived needs of the administrators, access to funds, and availability

of personnel. These gross trends are being questioned seriously, but the extent to which there can be any systematic rationalization of the health structure remains to be seen. The least that can be said is that even though there is great concern, the distinct impression continues that in general the health field needs more personnel regardless of any new methods of delivering services.

TABLE 13
OTHER SALARIED HEALTH PROFESSIONALS IN
CHICAGO METROPOLITAN AREA
HOSPITALS, 1965

Type of Professional	Number
Dietitians (ADA certified).....	550
Medical record librarians (RRL)...	300
Medical technologists (ASCP).....	2,660
Occupational therapists.....	210
Pharmacists (RPh).....	440
Physical therapists.....	980
Social workers (MA).....	670
X-ray technologists (ARRT).....	1,100
TOTAL.....	6,910

Source: *Manpower Resources in Hospitals, 1966*, American Hospital Association, Chicago.

D. Personnel—Dentists

It would seem that the number and distribution of dentists is much more directly related to the dental "market" than is true for physicians. As observed for physicians, there are very few systematic data on the reasons for the number and location of dentists. All that can be presented are gross aggregates for the Chicago metropolitan area. About 5,000 dentists are found in the area, serving a population of 7,500,000 people. Ninety-five per cent are in private practice, compared with two-thirds of physicians, and a very small percentage are inactive, less than two per cent. Ninety-two per cent report no specialty, indicating that there must be little referral practice among them. (See Table 14.)

Presumably, dentists are found where they are reasonably accessible to patients with relatively good incomes. Surveys have shown that there is an exceedingly high correlation between dental care and family income although a surprisingly high proportion of so-called upper income groups do not seek dental services regularly. Very few of the dentists are employed by public health departments or dental schools, around

TABLE 14
PERCENTAGE DISTRIBUTION OF CHICAGO AREA
DENTISTS BY SPECIALTY, 1965

Specialty	Number	Per Cent
Orthodontics.....	145	3%
Oral surgery.....	81	2
Pediatric dentistry.....	34	1
Periodontics.....	26	*
Endodontics.....	24	*
Prosthodontics.....	15	*
Oral pathology.....	5	*
No specialty.....	4,556	92
Not yet in a specialty.....	92	2
TOTAL.....	4,978	100%

Source: *Distribution of Dentists in the United States by State, Region, District and County, 1965*, American Dental Association, Chicago, 1968.

- * Less than one-half of one per cent.
- * The 92 interns and residents are not yet classified.

TABLE 15
PERCENTAGE DISTRIBUTION OF CHICAGO AREA
DENTISTS BY TYPE OF PRACTICE, 1965

Type of Practice	Number	Per Cent
Private practice.....	4,717	95%
Dental intern or resident....	92	2
Dental school faculty.....	63	1
Public health employee.....	11	*
Dental association employee	11	*
Total active.....	4,894	98
Inactive.....	84	2
TOTAL.....	4,978	100%

Source: *Distribution of Dentists in the United States by State, Region, District and County, 1965*, American Dental Association, Chicago, 1968.

- * Less than one-half of one per cent.

1.5 per cent. Although the Chicago Board of Health reports that it employs 29 full-time dentists to staff its dental clinics in the public schools, these dentists do not all appear to list themselves as public health dentists with the American Dental Association. (See Table 15.)

Overall, about three quarters of all families in the Chicago metropolitan area claim that they have a regular dentist who is used by at least one family member.¹²

E. Supporting Industries

The foregoing on facilities and personnel has covered in the detail available what are generally regarded as the more obvious components of the health services system. In a system as vast and complex as one in a large metropolitan area, there are myriad details which, while seemingly small, add up to a visible part of the total structure. Their absence would be felt by the structure immediately.

(1) Other Entries to the System

There are over 1,900 retail drug stores in the Chicago metropolitan area and, therefore, at least that many registered pharmacists working in them. Presumably the great majority of these pharmacies retail a great range of goods and products in addition to pharmaceutical products and prescriptions. Relatively few are engaged exclusively in filling prescriptions and handling strictly pharmaceutical products. The generalized drug store is a distinctly American institution. It can be assumed that there is one drug store (exclusive of those in hospitals) for roughly each five physicians. Given this low ratio, it is no wonder that retail drug stores handle a wide range of goods and products in addition to pharmaceutical products. It is also no wonder that drug stores are so well-scattered and convenient of access. Although the normal direction of the patient with prescription in hand is from the physician to the drug store, it is undoubtedly frequently in the reverse direction because of the pharmacist's acquaintance with the physician resources of his immediate vicinity.

A fair amount of informal "medical" care is evidently dispensed in pharmacies, judging by the Campbell Report alluded to several times earlier in this chapter. This survey suggested that one adult in eight in the Chicago area had consulted a pharmacist about a cough during 1967. Ninety-three per cent of the time, the pharmacist recommended a drug; three per cent of the time, he recommended medical care. Only 20 per cent of the individuals who originally saw a pharmacist about their cough later went to see a doctor about it.

¹² Campbell, *et al.*, *op. cit.*, Vol. II, June, 1968.

Another entry to the system is the ambulance service. This service can hardly be described as systematic in the sense of providing a stand-by service well-known to the population. In the City of Chicago a public service is maintained by the Chicago Fire Department with 25 ambulances, limited to city residents and free of charge.

There are reported to be 47 private ambulance companies advertising at 66 different locations and sharing 26 ambulances. Many are funeral directors, again a characteristic American phenomenon. Private ambulances are used by suburban residents. They are also used extensively by City of Chicago residents for non-emergencies, for transport to suburban hospitals, for transfers between hospitals and nursing homes, and, in a large number of cases, because residents are unaware of the service provided by the fire department.

(2) Suppliers of the System—Blood Banks

The blood banks are overwhelmingly operated by the general hospitals, all of which have them. Still, as few as seven blood banks independent of the hospitals account for more than half of the blood drawn and stored (87,000 pints out of 150,000 a year). Five of the seven independent blood banks are community services, run by non-profit associations such as medical societies, and two are operated for profit. In addition, the American Red Cross moved into the area in 1968 with its program of encouraging voluntary donations from the community at large rather than placing primary responsibility on the patient to replace the blood used.

(3) Suppliers of the System—Miscellaneous

There are many enterprises connected with the health field, serving the Chicago metropolitan area and in many instances a much larger market area. It would seem that frequently overlooked are health food stores dealing with dietetic foods, hearing aid dealers who are the sole vendors for correcting hearing, opticians, orthopedic appliance suppliers, commercial laboratories, and others. The range and number of such suppliers are seen in Table 16.

Perhaps the nurses' registries should also be included in that they help to facilitate home nursing service and to some degree private duty nursing in the hospitals. In the Chicago metropolitan area there are 32 private duty nursing registries and 29 Visiting Nurse Associations.

It goes without saying, of course, that there are other large producing and distributing enterprises which serve the health industry directly and indirectly: pharmaceutical manufacturers and their network of distribution and sales, food industries, and financial institutions and health insur-

ance agencies. The latter two will be considered in the chapter "Sources and Destinations of Funds."

TABLE 16
OTHER ENTERPRISES SUPPLYING THE HEALTH
SERVICES SYSTEM BY ORDER OF
MAGNITUDE, 1966

Type of Enterprise	Number in Area
Commercial laboratories.....	722
Dental..... 380	
Medical..... 231	
X-ray..... 111	
Opticians.....	375
Retail..... 234	
Wholesale..... 141	
Hospital equipment and supplies distribution.....	262
Hearing aid dealers.....	244
Physician and surgeon equipment suppliers.....	169
Health food stores.....	102
Retail..... 27	
Wholesale..... 75	
Orthopedic appliance suppliers.....	72
X-ray suppliers.....	65
Eye sight training institutions.....	34
Artificial limb suppliers.....	29
Artificial eye suppliers.....	6
Artificial breast suppliers.....	5
Artificial larynx suppliers.....	2

Source: Hand counted from a complete set of Yellow Pages for the Chicago metropolitan area. See Appendix, pp. 115-116.

F. Educational and Training Institutions

The institutions which educate and train the varied health personnel are also suppliers of the health services system. The Chicago metropolitan area has a seeming abundance of these institutions. This is not to assume, of course, that they educate and train exclusively for this area. There are no systematic studies on where the graduates go, but it seems reasonable to assume that the area loses more graduates to other parts of the country than it gains from them. In any case, the very presence of the many institutions to be listed has some real, although difficult to determine, influence on the health services system in the Chicago metropolitan area, particularly the five medical schools.

These five medical schools have a student enrollment of about 2,160 and graduate over 500 physicians a year. There are plans for expansion

in all medical schools in various stages of implementation so that in a few years there should be a considerable increase in enrollment. All but one of the medical schools are privately owned and three of them are associated with private universities. One of the private medical schools is autonomous. One of the larger medical schools is owned by the State of Illinois, as part of the University of Illinois. It is, of course, this medical school which is most concerned with being the main source of supply for physicians in the State of Illinois. Recent studies have shown that Illinois sends many more physicians to other states than it obtains from other states. In 1965, for example, it graduated 6.8 per cent of all M.D.'s but licensed only 3.6 per cent of all M.D.'s licensed that year.¹³

¹³ Campbell, *et al.*, *op. cit.*, Vol. I, p. 36.

TABLE 17

SCHOOLS TRAINING HEALTH PROFESSIONALS IN THE CHICAGO METROPOLITAN AREA:
NUMBER, ENROLLMENT, GRADUATIONS, AND LENGTH OF COURSE, 1965

Type	Number of Schools	Enrollment	Graduations	Length of Course
Dietitian (ADA)	3	39	39	One year internship after college graduation
Licensed Practical Nurse (LPN)	10	1,130	840	One year with equivalent of high school education
Medical Record Librarian (RRL)	2 ^a	8	7	One year after two years of college
Medical Technologist (ASCP)	32	180	110	One year after three years of college
Occupational Therapist (OT)	1	28	12	Fifteen months after three years of college
Optometrist (OD)	1	251	78	Four years after two years of college
Pharmacist (RPh)	1	300	110	Four years after one year of college
Physical Therapist (PT)	1	18	18	One year after college graduation or after RN
Registered Nurse (RN)	7 AD 34 diploma 4 BS	6,800	1,500	Two years—AD Three years—diploma Four years—BS
Social Worker (MA) . . .	3	560	200	Two years after college graduation
X-ray Technologist (ARRT)	38	340	150	Two years

Source: Registered nurses and licensed practical nurses: Illinois Department of Registration and Education. All other personnel: *Health Resources Statistics—1965*, U.S. Department of Health, Education, and Welfare, Public Health Service, National Center for Health Statistics, Washington, D.C., Publication Number 1509.

^a One of these schools is too new to have students currently.

All of the licensed or registered salaried health professionals, with the exception of licensed practical nurses, are at least high school graduates prior to entering their health field studies. Complete enrollment figures for the Chicago metropolitan area are provided in Table 17.

G. Personnel—Other Practitioners

In almost any area of endeavor which tries to supply human beings with services and goods they desire, such endeavors are classified into official and unofficial, approved and unapproved, legitimate and illegitimate, and so on. This would seem to be particularly true of the health field so "clothed with the public interest." Although a wide range of practitioners are licensed by the state permitting them to practice within the confines of their licensure, there always remain a minority of practitioners who are classified as outside the pale of the main stream of the science and art of medicine. Nevertheless, these practitioners, to whom it is difficult to apply a collective name free of invidious connotations (such as secondary practitioners, fringe practitioners, cultists, and so on), persist because their services are sought and paid for by a wide cross-section of the population. The proportion of such services in relation to total services is, of course, exceedingly small, probably under five per cent, or at the very most ten per cent. They may represent a safety valve and a substitute for the mainstream of medicine. Less kind critics of this mainstream might say that the very persistence of "secondary practitioners" is a sign of the failure of medicine. Maybe so, but any one system never seems to be able to satisfy everybody all of the time and certainly not some people some of the time.¹⁴

A relatively large group of practitioners beyond the pale of official medicine are the Doctors of Chiropractic. This school of medical practice subscribes to a one-cause concept of disease and a single therapy, i.e., spinal manipulation and adjustment. Regardless of the seeming fallacies of such concepts, chiropractic persists and even seems to flourish. As in most other states, licensure is mandatory for this group in Illinois. Al-

¹⁴ Perhaps this may be the place to mention regularly licensed M.D.'s who may practice illegally, such as abortionists. It is quite impossible to determine what proportion of the physicians in an area engage in this kind of illegal practice and in what volume. It is common knowledge that a great many illegal abortions are performed. For Cook County alone it is estimated that about 50,000 abortions are performed illegally each year, or more than one abortion for every three births. (*Chicago Sun-Times*, Nov. 17, 1968, p. 3.) This particular procedure is mentioned because it represents a rather widespread demand which uses a certain supply of physicians and other practitioners and represents certain expenditures. Further, a bungled criminal abortion then enters the health services system legitimately when care is sought.

though government health programs such as Medicare and the Illinois Department of Public Aid give full recognition to osteopaths, they have thus far refused to legitimize chiropractors. There appear to be 341 licensed chiropractors in the area, but over 80 are apparently not in practice.¹⁵ In addition, there appear to be 32 chiropractors practicing without a license and 25 more practicing in Lake County, Indiana, outside of Illinois jurisdiction, for a total of 311 chiropractors actually at work in the area. There are two schools of chiropractic in Chicago, but only one is approved by the American Chiropractic Association. It has 290 students and a graduating class of 40.

The second group of practitioners is the naprapaths and naturopaths. Naprapaths believe that the source of all illness is diseased ligaments, which may be corrected by massage, heat lamps, and high colonics, otherwise known as enemas. There are 150 or so of these practicing in the Chicago metropolitan area, particularly in the city itself. Licensure (as "drugless practitioners") is optional in this category. There are also two schools, but no enrollment figures were available.

There are over 360 Christian Science practitioners in the area and one hospital of 13 beds. Twenty-two visiting Christian Science nurses are also reported. Neither practitioners nor nurses require a state license. Interestingly, the average length of stay at the "hospital" is 47 days. Normally, the Christian Science practitioners are women who appear to be engaged in this activity part-time.

This completes the section on the facilities and personnel of the health services system. Although it is not feasible to measure the contribution of other supporting personnel and services which are not normally regarded as "health" related, they should at least be mentioned to indicate the gray areas between strictly health related activities and other personnel and services which are a latent reserve. Reference is then made to friends, relatives, and homemaker services to assist families when one of the members is ill. Occasionally one sees a crippled person being pushed in a wheel chair on the sidewalk, the helper having no professional health status, as it were. There must be more of this assistance to the health system than meets the eye, and, in a strict sense, it should be included in considering the total of goods and services and their costs that

¹⁵ This finding is consistent with the findings of a 1958 survey of chiropractors in California which found that 23 per cent were inactive. This study also showed that another quarter practiced only part time. (*Chiropractic in California*, Stanford Research Institute, The Haynes Foundation, Los Angeles, 1960.)

are entailed in caring for the ill, disabled, and the dying. In this last respect, the undertaking industry should also be included.¹⁶

¹⁶ The average funeral cost in the City of Chicago in 1966 was almost \$1,600 according to data supplied by the Chicago Memorial Society for estates clearing through probate court. Although these costs may be considered unusually high and it may be argued that probated estates are atypical, the cost is in line with the \$1,200 average cost nation-wide found by Jessica Mitford (*The American Way of Death*, New York: Simon and Schuster, 1963) in 1962. Assuming an average cost of \$1,500 for each of the 69,000 deaths in the Chicago metropolitan area, the annual expenditures for this peripheral sector of the health care system now stand at over \$100 million.

CHAPTER 7

PROGRAMS FOR SELECTED GROUPS

The past and continuing tendency in this country is to slice off for some sort of special handling selected groups and diseases from the general population and its illnesses and the prevailing structure of organization and funding. Before the turn of the century these problem groups were mainly the poor and the mentally ill. The poor were provided for in some way by private philanthropy, free services by physicians and hospitals, and tax supported programs by local communities as residuals or by-products of the larger and mainly self-supporting private system. The mentally ill who were dangerous, excessive nuisances, or homeless were placed in mental institutions somewhat removed from the mainstream of both society and medicine.

The care of the poor stemmed from an old social commitment to care for those unable to care for themselves; the mentally ill were removed to protect society. Later, tuberculosis sanatoria were constructed, partly by private funds but mainly by public funds to remove and cure the patients suffering from this disease which was quite ravaging and infectious within living memory. Concurrently, the U.S. Public Health Service stimulated the creation of maternal and child health clinics at local levels to reduce maternal and infant mortality. After World War I Congress established the hospital and medical program for veterans which has since become a firm fixture in the American medical-political landscape. Mention might also be made of venereal disease control programs and programs for crippled children. Since 1966, the aged have been covered by Medicare. Specific programmatic attacks are now being made on heart disease, cancer, and stroke.

The list could be extended, but the point is that these relatively specific programs still represent a minority of total expenditures and use in relation to the entire health system; and the prevailing structure of ownership, autonomy, and direction remains essentially intact. Medicare, and possibly Medicaid, both government financed programs, are having an impact on reimbursement methods, and cost and volume controls, the results of which are hardly predictable. A great deal will, of course, depend on

the extent to which government can induce the prevailing structure to modify itself by incentives and directives. There will be continuous confrontation for some time to come, and the programs for selected groups and diseases are the past and current wedges to induce change. For this reason, among others, it is pertinent to describe the programs for those unable to pay for their own care and for the mentally ill in the Chicago metropolitan area and to see how these relate to the larger prevailing structure. Some of this has been implicit in the foregoing chapter on facilities and personnel, but it is made explicit in this section. Later on, the chapter on origins and destinations of funds will provide information from another perspective.

A. The Poor

In the Chicago metropolitan area in 1968 there were about 325,000 people who were recipients of public aid for the basic essentials of food, clothing, and shelter. About 280,000 of these were in the categories of Aid to Dependent Children, Aid to the Blind, Aid to the Disabled, and Old Age Assistance. These four programs are financed by matching grants from the Federal Government. The segments of the population covered by the categorical programs are implicit in the titles, the great majority of whom are children¹ and the aged, 70 and 9 per cent respectively. Then there is a general assistance category with over 45,000 recipients, a completely state and locally financed program for the unemployed between the ages of 18 and 65. Those who can qualify for assistance outside of these age-groups receive such assistance from the appropriate categories. Those within this age group who are blind and disabled receive assistance from the appropriate programs. At any one time less than five per cent of the population in the area is receiving public aid. This population is heavily concentrated in the City of Chicago where, by selected categories, ten per cent of the children and six per cent of the aged are recipients of welfare at any one time.² About a quarter of all Negroes in the City of Chicago receive public aid at any one time.

Cutting across all these categories there is a tax-supported medical program for all the recipients of Aid, which on paper can be described as follows. With a system of acute care as predominantly voluntary as in the Chicago metropolitan area, it is quite natural that the health care system for the ten to 20 per cent of the population unable to pay for all or even

¹ Includes mothers caring for these children.

² These and previous figures taken from *Public Aid in Illinois*, June, 1968, published by the State of Illinois Department of Public Aid.

part of their medical care (depending on definitions) relies heavily on the private sector in the form of government payments on behalf of the categories described and another segment called the medically indigent. There are certain large segments of care for the indigent and medically indigent that are not provided by the private sector but by public agencies and institutions which have set up a system parallel to the voluntary system, overlapping and interrelating the two systems. To understand the overall health services system, the parallel public and voluntary systems must be delineated.

In order to understand the structure of the public system, a basic distinction must be made between the two types of indigent patients: those who are actually on relief and whose medical care is clearly the responsibility of the Illinois Department of Public Aid and those who are self-supporting but who lack the funds to pay for medical care. Medicaid, the companion bill to Medicare, was written to aid those in this latter group who have approximately the same incomes from working that they would have were they on relief, but implementation has been slow in Illinois. Eligibility is not determined until the medically indigent person has already gotten sick and is in the process of receiving care, and many physicians and hospitals are reluctant to provide extensive treatment and then be left holding the bag for the money if eligibility is denied. In any case, the Illinois Medicaid standards of \$150 a month for a single individual and \$300 a month for a family of four as maximum income exclude a large number of persons unable to pay for their own care.³ Actually, relief recipients, or at least those in the federally aided programs, are much better able to receive care within the private system than are the self-supporting medically indigent. Because of many factors, however, relief recipients are heavy users of the public facilities along with the medically indigent.

The Illinois Public Aid Department through the counties pays for visits to any private physician, for home visits in emergencies, for prenatal care, delivery, and postnatal care from a private physician, for prescribed drugs, for symptomatic dental care from a private dentist, and for hospital care in any private hospital for any length of time. In actuality, the recipient uses the private system much less than this generous concept of care would imply. In the City of Chicago, for example, where most of the relief recipients are concentrated, only about a third of the practicing physicians had contracted with the department to treat relief

³ For a good discussion of Medicaid in Chicago, see Lawrence Bloom, *et al.*, *Toward Comprehensive Care for All Chicagoans*, Chicago Regional Hospital Study, Working Paper No. IV.10, Nov., 1968.

recipients in 1966 (the payment for an office call was \$3.00 then). The contract arrangement was done away with in January, 1967, and the fee raised to the most common fee for that procedure but there have been few additional participants in any real sense. Most of the physicians accepting welfare patients limit their practices to only a few patients so that about 100 doctors account for three-quarters of the visits paid for by the Department. Only about half of these doctors have hospital privileges of any sort, effectively closing off the possibility of voluntary hospital care for all except emergency conditions when the recipient may become a ward patient treated by house staff.⁴ The Department paid \$35 for complete prenatal care and delivery in 1966 and found very few obstetricians who would participate. Less than a fifth of the dentists in private practice in Chicago have contracted to provide dental care, and the number of relief recipients treated by any one dentist is usually quite small.

In addition to using the public health care system for any of the services provided him by law, the relief recipient is required to use the public system for large segments of his health care, specifically, preventive care for children (this appears to be unobtainable anywhere for adults) and all except symptomatic dental care. Until 1966, the medically indigent individual was expected to use the public system for all his health care. In that year, certain small programs for accident victims and maternity cases were begun with much administrative difficulty and now Medicaid is beginning to inch slowly into the arena. Perhaps here is also the place to mention the Division of Services for Crippled Children which is an entirely separate administrative body serving medically indigent children with congenital heart disease, cleft palate, cystic fibrosis, and other severe defects. Financial eligibility requirements are more liberal than for Medicaid (\$600 a month for a family of four). In 1966, about 5,000 Chicago area children were provided services under this program.

Much of the "public" care, of course, is provided by voluntary hospitals in the form of out-patient clinic care. Hospitals are usually reimbursed less than actual cost for public aid recipients, frequently after long delays, and absorb the cost as bad debts for non-recipients. There is, however, a distinct public, or perhaps we should say medically indigent,

⁴ There are colorful and depressing reports on case studies of selected physicians practicing in the slum areas: Pierre deVise, *Slum Medicine: Chicago Style; How the Medical Needs of the City's Negro Poor Are Met*, Chicago Regional Hospital Study, Working Paper No. IV.8, May, 1968; and Yen Peterson, *The Welfare Physician in Cook County: A Profile of 73 Welfare Physicians, Patient Volume and Earnings in 1966*, Chicago Regional Hospital Study, Working Paper No. IV.7, February, 1968.

health care system with its own facilities and organizations which will now be described:

In-patient hospital care—Cook County Hospital, which is included in the enumeration of hospitals in the previous section on facilities, is the source of hospitalization for all medically indigent not on relief (except for those who become private hospital “free patients” or bad debts) and for a substantial minority (about 40 per cent) of the categorical relief recipients. Lake County General Hospital, in Lake County, Illinois, serves the same function. The other counties in the area have no county hospital; categorical relief recipients (of whom there are relatively few) are paid for in the private hospitals; the medically indigent probably become bad debts but sometimes are paid for by township supervisors (frequently at so many cents on the dollar).

Physician care—Within the City of Chicago the Chicago Board of Health operates 35 Well Baby Clinics which provide preventive care for children under two years of age. Most of these clinics operate only one or two days a week. A small amount of pre-school child care is also provided. The Infant Welfare Society, a voluntary agency, provides the same care but in a limited geographical area not served by the Board of Health. Care for sick children and adults is provided by a large, full-time, out-patient clinic at Cook County Hospital and by the 15 private hospitals in Chicago and the three in suburban areas which operate clinics for the medically indigent, as mentioned above.

Of course, all of the general hospitals in the area contribute to medically indigent care in the use of their emergency rooms, many of the emergency patients later being sent to Cook County Hospital. There are also six independent clinics, connected not with hospitals but with voluntary agencies—Catholic Charities Hearing and Vision Testing, Harbor Light Center (sponsored by the Salvation Army), Erie Neighborhood House, Marcy Center, and two clinics run by Chicago Boys’ Clubs. In addition, the Board of Education provides a health screening service with referral to appropriate clinics and an inoculation service for children who missed these at the Infant Welfare Clinics or who are new arrivals in the area. The Board of Health also operates a Venereal Disease Clinic.

Home visits—Physician visits are provided by a public agency, the County Physician’s Service, which is a branch of the Department of Public Aid. Categorical aid recipients are *not* eligible for this service since the Department will pay a private physician to make a house call for a recipient (in practice, these home visits are almost impossible to obtain since even the private physicians who treat welfare recipients will not

come into their neighborhoods at night). The income requirements for using the County Physician’s Service are the same as for the Public Aid Department, that is, individuals earning less than or the same as they would receive were they on relief. Most of the clients are over 65. Nurse visits in the home are provided by two agencies which share the burden almost equally—the Chicago Board of Health Visiting Nurse Service and a voluntary agency, the Visiting Nurse Association.

Maternity care—The Chicago Board of Health operates 18 clinics for prenatal care with delivery at Cook County Hospital. In addition, a private voluntary agency, the Chicago Maternity Center, operates a clinic for prenatal care with delivery in the home or, in complicated cases, at Chicago Wesley Memorial Hospital, which absorbs the cost for patients not on relief. The annual number of deliveries is now under 2,000 and decreasing, in line with the general nationwide shift toward hospital deliveries.

There are also seven homes for unwed mothers in the area, all of them operated by voluntary agencies, but these serve almost exclusively mothers who are planning to place their babies for adoption, an option which is very rarely open to non-white mothers. Overall, these homes serve a small minority of the unwed mothers in the area, 1,167 out of 13,940 illegitimate babies born in Cook County last year.⁵ Many of the mothers pay for all of the services received and the others usually pay for at least part of their prenatal and hospital care, so that these agencies cannot be considered as strictly, or even primarily, public agencies. For example, the four agencies supported by the Community Fund financed over half (57 per cent) of their services from fees. The three non-fund agencies did even better than this.

Planned Parenthood, another voluntary agency, operates six clinics for low-income women. Until 1966, the Department of Public Aid was prevented by law from paying for relief recipients who received services at these clinics, but this ruling has since been changed and has permitted the opening of a birth control clinic at Cook County Hospital as well. At least a third of the maternity cases in the City of Chicago do not pay for their own care;⁶ including cases which go into the big hospital charity clinics with partial payment, this figure may well approach one-half. Considering the metropolitan area as a whole, the per cent of maternity cases unable to pay for their own care is about one-quarter.

⁵ Welfare Council of Metropolitan Chicago, *Volume of Services, 1966–1967*, Publication Number 1028, November, 1967, p. 8.

⁶ This compares with 44 per cent of the births in New York City in 1961 paid for by city funds according to Nora K. Piore in *Metropolitan Medical Economics*, *op. cit.*

Prescribed drugs—This is the one area where the private health care system appears to be utilized extensively by relief recipients with the Department of Public Aid paying private drug stores to fill prescriptions. Recipients using public facilities and medically indigent not on relief obtain drugs from the Cook County Hospital dispensary or free of charge or at reduced rates from private out-patient clinics.

Dental care—Elementary school children can receive care from 56 dental clinics operating in public schools but run by the Board of Health rather than by the Board of Education. About 75,000 children actually use the free dental service in a year, for a total of about 150,000 visits. These clinics are not limited to children in the 56 schools (there are 495 public elementary schools in the city) or to public school children but they are limited to residents of the City of Chicago. A few of the suburban school districts also operate programs, but by no means all. The Chicago Board of Health Clinics employ only 29 full-time dentists, since most of the clinics are not open full-time. In addition to the Board of Health Dental Clinics, six voluntary clinics are in operation, three of them run by the dental schools in the area and three by other voluntary agencies: the Salvation Army, Chicago Boys' Clubs, and Casa Central. In addition, five general hospitals offer a dental clinic as part of their out-patient service and three neighborhood houses operate very small clinics.

Nursing home and chronic care—Oak Forest Hospital, a county-operated facility, is the main source of care for patients with chronic conditions who are unable to pay. However, over a third of the aged who are patients in the private nursing home system are there under Department of Public Aid funds and, of course, the sixty per cent of patients who are in the Veterans' Administration hospitals with non-service connected disabilities represent a considerable number of chronic cases who would be in nursing homes or Oak Forest if it were not for their veteran's status.

B. The Mentally Ill

The care of the mentally ill tends to be a public responsibility on an in-patient basis, since most private patients become medically indigent very quickly when faced with long-term in-patient mental hospital care. There is more of a distinction between private patients and the medically indigent in out-patient mental health facilities although the "medically indigent" in this case tend to be those of lower-middle-class income who cannot afford private psychiatric fees but who do pay something toward their care.

There are 22 agencies providing out-patient services for mental health care, half of them public and the others voluntary. The 11 public facilities

include the Board of Education which provides primarily psychological testing services, the Illinois Pediatric and Psychiatric Institutes which are primarily in-patient hospitals mentioned in the facilities section but which also operate out-patient clinics, the Institute for Juvenile Research (IJR) which is a residential school for emotionally disturbed children with an out-patient clinic, a series of clinics operated by the Chicago Board of Health (Mental Health Clinics), two clinics connected with the Criminal Court and the Municipal Court, a clinic run by the University of Illinois, the Chicago Mental Health Center, and two clinics operated by the state mental health system.

In addition to the 11 voluntary agencies with out-patient psychiatric clinics, 19 general hospitals offer psychiatric clinics as part of their general clinic services, as mentioned in the general hospital section.

As can be seen, the health care system for the medically indigent is a conglomeration of public facilities which parallel private facilities, voluntary agencies some of which serve private paying patients as well, and private facilities which are reimbursed for the care from governmental sources or use funds from their own endowments. The above description as well as the description of facilities, practitioners and personnel in the previous chapter has been purely a quantitative one in order to sort out the complexities of the system and to give a picture of its framework. If there is one thing that can be safely said, it is that this system of care is fragmented.

The impact of Medicaid on the medical care programs in the State of Illinois is still to be determined. There is little doubt, however, that even under optimal financing and administration, a reservoir of unmet need will remain. In other words, there is little chance that the public health care system will be dismantled in the near future. Medicare, for those 65 years of age and over, is clearly having an impact in that almost all of the people in this age-group are covered for hospital and nursing home care and physician services so that very few remain medically indigent for short term care. Undoubtedly, a great deal of pressure has been taken off the old age assistance categories in this regard.

CHAPTER 8

THE USE OF SERVICES

Measurements of the use of various types of health services can be regarded as a crude means of determining the level of demand in a given time and place and also as a measure of morbidity seen by physicians and other health personnel. The chapter on morbidity and illness gave a crude idea of the nature of "need" in a population. Measures of use of physician and hospital services suggest some sort of a relationship between perceived morbidity and the use of health services. In general, it is not reasonable to assume that a population should be expected to seek services for every illness perceived. In all likelihood there is a relationship between the perceived severity or pain felt during an illness and the likelihood of seeking care. It seems reasonable to assume that the great majority of people with heart disease, cancer, stroke, diabetes, pneumonia, to mention a few severe illnesses, should and would be likely to seek some sort of health care after the symptoms are clear. It is less likely this would be done for a common cold. In any case, there are no recognized and standard criteria as to when a person should seek physicians' services and, if so, how soon after a symptom is recognized except for the unequivocal and dramatic conditions mentioned. Short of this, what can be done so far is to present the patterns and volume of use of various types of services that can be expected from a population living in a metropolitan area such as the Chicago area.

Most of the data have to be based on estimates from nationwide studies on use applied to the Chicago metropolitan area. Some data are obtained directly from programs such as mental hospitals because the state government collects statistics on use for fiscal and planning purposes. Chicago Plan Blue Cross is a segment of the private sector which publishes gross utilization data on its own subscribers but they account for less than half of the area population enrolled in hospital insurance. The remainder is by private insurance companies, which do not pool their utilization data. Thus, by and large, reliance must be placed on estimates drawn from various sources, but particularly nationwide studies conducted by the National Center for Health Statistics. It is assumed that such estimates are

valid enough for the purpose of this report to indicate some of the gross use patterns in an area. As knowledge on an area accumulates, and as it may be necessary to have more refined data, special studies can be conducted. In the meantime, however, this report is written to demonstrate how data from various sources, derived by various means, can be used to comprehend the use patterns in a metropolitan area.

A. General Hospitals

In a population of approximately 7,500,000 people in a large metropolitan area one can expect one million admissions to general hospitals or over 130 admissions per 1000 population. Since some patients have more than one admission it is estimated that about ten per cent of the population is hospitalized in a given year, or 750,000 people. Assuming that the average length of stay is about eight days, there are then eight million or so general hospital days used, or a little more than one day per person in the area. One can expect a "J" shaped curve of use by age as measured by admissions, the rate rising rapidly after the middle-aged stage of the life cycle. The length of stay, however, is somewhat shorter for the middle-aged compared with the older age groups. One can normally expect a higher rate of use for females than for males. Further, one can expect a fairly standard distribution as to length of stay. About 57 per cent of the admissions stay five days or less and three per cent stay more than 30 days.¹ These variable lengths of stay can be related to age and diagnosis.

National data, not available by race, have been projected to the population of the Chicago metropolitan area to determine the admissions by diagnosis. Since Chicago contains a higher proportion of non-whites than the country as a whole and since non-whites have a higher admission rate for deliveries and a lower admission rate for most other causes, the projection would be expected to understate the admissions for obstetrics and overstate the admissions due to other causes, particularly less urgent conditions. This is, in fact, the case. Obstetrical care, the largest single reason for admissions (15 per cent) is understated by six per cent, based on actual live births recorded in the area for 1965. It is estimated from the best data available that other admissions are overestimated by about five per cent.

In Table 18 can be seen the rank order estimates of the number of hospital admissions by diagnosis for an area of 7,500,000 people. Theoretically, this table can be refined to show rates by age, sex, family income, and so on. For the moment this hardly seems necessary because

¹ Table 13, page 28, *Vital and Health Statistics*, Series 10, Number 30, National Center for Health Statistics, U.S. Public Health Service.

the age differentials should be quite self-evident: upper respiratory conditions would be expected to have a relatively low slope in relation to age whereas heart disease would show a sharp slope, i.e., rising with age. The diagnoses inherent in the female are, of course, self-evident.

TABLE 18

NUMBER OF ADMISSIONS TO GENERAL HOSPITALS IN THE CHICAGO METROPOLITAN AREA, REASON FOR ADMISSION, AND RANK ORDER OF ADMISSIONS, 1965

Reason for Admission	Number of Admissions	Per Cent of Total Admissions
Delivery	144,700	15%
Upper respiratory conditions	59,600	6
Other respiratory conditions	55,400	6
Injuries except fractures and dislocations	52,000	5
Digestive system conditions except ulcers	47,600	5
Heart disease	45,900	5
Benign and unspecified neoplasms	44,000	5
Genito-urinary disorders	40,200	4
Fractures and dislocations	36,000	4
Female breast and genital disorders	31,500	3
Ulcers	24,200	3
Hernias	23,600	3
Cancer	23,400	3
Complications of pregnancy	22,300	2
Endocrine, allergic, and metabolic disorders, except diabetes	20,400	2
Gallbladder disease	19,600	2
Infective and parasitic diseases	19,200	2
All other diagnoses	242,700	25
TOTAL	952,300	100%

Source: Projected from *Vital and Health Statistics*, Series 10, No. 30.

All these diagnoses have variable impacts on the hospital system. Assuming that a survey of a representative sample of hospital admissions in the State of Massachusetts can be applied to the Chicago metropolitan area, it is estimated that over 40 per cent of the admissions, or around 400,000 out of approximately one million, were admitted the same day that the physician recommended hospital admission.² Around 40 per cent of the admissions, therefore, required round-the-clock standby facilities and personnel for handling emergencies of various degrees of severity.³

One can speculate on the number of patients with certain diagnoses in a

² Anderson and Sheatsley, *op. cit.*

³ This, of course, will vary by the season of the year, with more than 40 per cent of the beds being required immediately during the winter months and fewer during the summer when much elective surgery is done.

year and the probability of their being hospitalized. It is estimated, for example, that there are five million cases of upper respiratory infections and there are 60,000 hospital admissions for this diagnostic category. In other words, just over one per cent of such cases result in hospitalization. As a contrast, there are an estimated 115,000 people in the area with medically established coronary heart disease and 46,000 were in the hospital in the course of a year, or 40 per cent. It is likely, however, that this percentage is much higher, approaching 100 per cent, if there were information on what proportion of these 115,000 heart patients had ever been in a hospital for that condition. Cancer patients show an astonishingly high percentage who had been in the hospital during the year, 78 per cent of 30,000 cases.

TABLE 19

NUMBER OF CASES, HOSPITAL ADMISSIONS, AND PER CENT HOSPITALIZED BY DIAGNOSTIC CATEGORY, CHICAGO METROPOLITAN AREA

Disease or Condition	Number of Cases in Area	Number of Hospital Admissions*	Per Cent Hospitalized Per Year
Upper respiratory infection	5,000,000	59,593	1.2%
Influenza and pneumonia	2,000,000	55,403	2.8
Infective and parasitic	1,750,000	19,232	1.3
Digestive system disorders	700,000	47,604	6.8
Fractures and sprains	500,000	35,980	7.2
Open wounds and lacerations	500,000	51,961	10.4
Coronary heart disease	115,000	45,875	39.9
Hernia	100,000	23,593	23.6
Peptic ulcer	90,000	24,171	26.9
Cancer	30,000	23,418	78.0

* Includes multiple admissions for the same case during the year.

Source: Number of cases in area projected from the following copies of *Vital and Health Statistics*: Series B, Nos. 17, 25, 37; Series 10, No. 26; Series 11, No. 10. Cancer estimate from *Medical World News*, December 1, 1967. Number of admissions in area projected from *Vital and Health Statistics*, Series 10, No. 30.

Overall nationwide data show that low-income families have just as high and even higher hospital admission rates than high-income families. This is also true for the Chicago metropolitan area on an overall basis. Since the poor have a much higher birth rate, however, excluding maternity admissions leaves us with 102 admissions per 1000 population in areas defined as poverty areas as compared with 116 in non-poverty areas.⁴ In any case, the non-white patients enter the hospital in a marked-

⁴ Joyce Lashof and Mark Lepper, *Preliminary Report on Patterns of Medical and Health Care in Poverty Areas of Chicago*, Chicago Board of Health, 1966. Of course, part of this difference is because the poverty area population with its large component of non-whites is considerably younger than the non-poverty population and thus less apt to be in need of hospitalization.

ly different manner from white patients. An estimate was made that whereas 40 per cent of the non-white hospital patients are admitted through a physician's office, 90 per cent of the white patients are so admitted.⁵ Obviously, the two groups are using virtually different systems.

B. Physicians' Services

The Chicago metropolitan area is served by 7,000 or so physicians in private practice and an additional 2,500 or so in other direct care to patients. It is estimated that they see two-thirds of the population during the year, or almost five million people, and these are seen an average of seven times. The average for the total population is five times. By sheer volume this is, of course, a lot of people being exposed to physicians. There are likely 300,000 surgical operations in a year or about four per 100 population, almost all in the hospital.

Obviously, there are again physician use patterns by age, sex, and diagnosis. Physician visits by age follow the familiar "J" shaped curve. Females use more services on the whole than males, particularly after 15 years of age or so. Physicians' services are provided in a variety of sites—offices, clinics, homes—and at all times. The proportion of visits by site and probably time of day has shifted over time judging from trends generally, i.e., fewer home calls, more office and clinic visits, and fewer night calls. Overall, however, there has also been an absolute increase of visits per person, doubling over the last 30 years.

Drawing on national estimates and excluding physician visits in the hospital (which presumably have also been increasing) over 80 per cent of the visits are in physicians' offices, 12 per cent in clinics, and five per cent at home. The reduction in home visits has been drastic. Clearly, national data show that the lower the family income, the lower is the rate of physician visits. Further, low-income groups are much more likely to use out-patient departments and related sites than high-income groups, hardly a surprising revelation but important for understanding the operation of the health services system. Certainly, the same pattern would be found in the Chicago metropolitan area with social surveys of use.⁶

Some data specific to the Chicago metropolitan area give estimates of physician visits outside of the prevailing fee for service, private care system. There were about 670,000 emergency room visits in the City of Chicago alone and over two million clinic visits, with the hospital clinics accounting for somewhat over half of these.

The non-hospital clinics in Chicago are operated by a multitude of

⁵ Robert Earickson, *Simulation Model of Nonwhite Hospital Use in Chicago*, Chicago Regional Hospital Study, Working Paper No. III.3, May, 1967, p. 17.

⁶ See Andersen and Anderson, *op. cit.*

public and private agencies, with the visits dividing up about as follows. There are six private agencies operating clinics which served 16,000 patients totalling 28,000 visits. Then there are four public clinics treating tuberculosis and venereal disease with 480,000 visits. Although not clinic care, narrowly defined, physician visits were provided in the home by the County Physicians' Service mentioned earlier to families which could qualify under its income requirements and were not on public assistance. This service made 17,000 calls during the last reported year. The two home visiting nurse associations made a total of 300,000 visits to about 18,000 individuals.

In summary, considering all types of emergency room and clinic visits and services in the home, at least three million non-private physician and nurse visits for perhaps 400,000 individuals took place in the City of Chicago alone. These three million visits approach 20 per cent of the total physician visits for all residents of the city. In other words, 20 per cent of the physician visits took place outside of the prevailing voluntary system.

Because of the variety of sites and programs and sources of funding it is difficult to coordinate all the foregoing data. What is intended, at least, is to reveal the fragmentary nature of information on use of services in a large metropolitan area by showing the gross picture. Even these isolated data are better than nothing to get some inkling of the functioning of the health services system.

C. Dentists

Drawing on nationwide estimates it can be assumed that 40 per cent of the population in the Chicago metropolitan area see a dentist at least once during a year, or three million people. There are the usual age and sex differences in use, but for this service the age curve is an inverted "U" (∩) rather than the common "J" shape for hospital and physician services. Visits to dentists rise rapidly after 15 and drop suddenly after age 65. Women visit dentists oftener than men. Judging by nationwide studies the differences in use by family income are very wide; only about 16 per cent among those with family incomes of \$3,000 or less see a dentist in a year compared with 58 per cent among those with incomes of \$10,000 or more.⁷ It is estimated that there were 300,000 visits to 18 dental clinics in the city by about 60,000 patients with low incomes. As mentioned previously, public school dental clinics account for another 150,000 visits. Visits outside the prevailing private system of dental care thus account for less than five per cent of all dental visits in the area even allowing for a small amount of public dental care provided in suburban areas.

⁷ Andersen and Anderson, *op. cit.*, p. 47.

D. Mental Hospitals and Out-Patient Departments

Traditionally, and with some logic, admissions and out-patient visits to mental health clinics and admissions to general hospitals and physicians have been reported separately. There is, of course, no routine method of determining what proportion of visits to physicians in private practice (including psychiatrists) are for psychiatric care. If one applies the ratio from a comprehensive prepayment plan in New York City which pays for short term visits to psychiatrists, in the Chicago metropolitan area there would be about 600,000 such visits or 1.6 per cent of total visits.⁸ The proportion of visits to all physicians which can be classified as psychosomatic and psychiatric is a moot question depending on definitions. The literature usually indicates that they constitute a sizable minority.

From the Chicago metropolitan area (excluding Lake County, Indiana) there are 29,000 admissions to mental and general hospitals for psychiatric reasons annually. (It will be recalled that there were about one million admissions to general hospitals in the area.) About 45 per cent of the admissions were to the psychiatric units in general hospitals, about 35 per cent to the state mental hospital system, and the remaining 20 per cent to private mental hospitals.

The Cook County Mental Health Clinic, the largest psychiatric unit in the area accounting for nearly one-half of all psychiatric unit admissions, sends about three-quarters of its patients to the state mental hospital system after screening. These patients are then counted twice, once under the psychiatric units and again under the state mental hospitals. Eliminating this duplication, about 25,000 area residents were admitted to mental hospitals during a year, a rate of about 38 admissions per 100,000 population. At any given time, however, there are close to 17,000 patients from the Chicago metropolitan area in mental hospitals plus 3,000 or more on the books of the hospitals but on temporary leave or conditional discharge. It is estimated that the in-patients use nearly nine million hospital days, or approximately the same number of days as in general hospitals. Table 20 shows admissions and days.

The data on utilization of long term stay hospitals other than mental hospitals are quite fragmentary, but it is estimated that admissions for tuberculosis in the area run about 3,000, with about two-thirds of them being to the state and municipally operated TB hospitals. These hospitals account for about 700,000 patient days annually for Chicago area residents, perhaps 800,000 including Lake County, Indiana, residents. There

⁸ Helen Hershfield Avnet, *Physician Service Patterns and Illness Rates*, Group Health Insurance, Inc., New York, 1967, p. 122.

were about 30,000 admissions to Veterans' Administration hospitals in the area and, assuming 85 per cent occupancy, about one million patient days. A total figure for nursing home admissions appears to be completely unavailable, but, assuming 90 per cent occupancy, the patient days for long term chronic hospitals and nursing homes total about six million annually. Adding in Veterans' Administration patient days and tuberculosis patient days gives about eight million patient days annually. It will be recalled that this is almost exactly the same number of days as those used annually by patients in general hospitals and only slightly less than those

TABLE 20

ADMISSIONS TO MENTAL HOSPITALS FOR CHICAGO METROPOLITAN AREA RESIDENTS
AND TOTAL NUMBER OF DAYS OF CARE BY TYPE OF OWNERSHIP, 1965

Type of Ownership	Admissions	Per Cent of Total	Days	Per Cent of Total
State mental hospitals.....	10,700	36%	6,200,000	69%
Psychiatric units in general hospitals.....	12,300	42	282,000	3
Private mental hospitals.....	6,000	20	312,000	3
State hospitals for mentally retarded.....	375	1	2,000,000	22
Private schools for mentally retarded.....	144	1	276,000	3
TOTAL.....	29,519	100%	9,070,000	100%

Source: See Appendix, pp. 120-121.

used by mental patients. Or, put another way, acutely ill patients in general hospitals account for only about a third of all patients hospitalized at any one time. Long term, chronically ill patients (including the mentally ill) account for two-thirds of the patients in hospital beds in the Chicago metropolitan area at any given time.

The foregoing has revealed the number of patients using various types of services in a metropolitan area of 7,500,000 people. It shows the relatively raw nature of the data on use. The origin of the patients, points of entry into the system, and points of exit from the system are too grossly known to reveal the flow of patients through the system. The presumption of this report is that such information is necessary for greater understanding of how the health services system functions.

CHAPTER 9

SOURCES AND DESTINATIONS OF FUNDS

There is an axiom that the priorities a society places on certain goods and services can be inferred from an examination of expenditures and sources of funds. Further inferences can be made regarding the centralization or diffusion of decision-making for such expenditures. The chapters on facilities, personnel, and programs revealed a great deal of diversity or "pluralism" of ownership, sources of capital funds, and public obligations for special groups in the population and special disease problems. Patterns of sources and destinations of funds reveal a similar pluralism, characteristic of the American health services system generally. The power of the purse always means some degree of control over the supply and demand of goods and services and the implicit and explicit setting up of social priorities. The health field today is a prime example of the problem of balancing the private and public sectors and, within these sectors, the levels of government, employers, employees, and insurance agencies, and finally the family unit. Bargaining, negotiating, conflicts, and accommodations are going on ceaselessly among the parties at interest. So far, no one party has enough power to determine what should be the level of use and expenditures or what particular delivery method should be the prevailing one except insofar, of course, as the persistence of the currently prevailing system represents consumer and producer choice rather than inertia.

The prevailing structure of the health services described in the foregoing has persisted because it somehow grew quite spontaneously out of the matrix of the American society and economy and assumed its current contours as early as 1920. Since the 1930's and particularly since 1945 the sources of funds have shifted from the public at time of service and private philanthropy for capital to voluntary insurance and government. The private and public sectors are now literally locking horns despite the slogans of "creative federalism" and "partnerships for health." The following description of the major sources and destinations of funds will give some idea of the diffusion of influence over the health services system.

During the last year when estimates were possible, 1965, \$1.7 billion was spent on the health services system in the Chicago metropolitan area

from all sources and for all health related purposes, including construction and research. About three-quarters of this total came from the private sector and one-quarter from various governmental sources. Medicare has changed this ratio, possibly to 70-30. Total expenditures for direct services from all sources (direct pay, insurance, philanthropy, and government) came to \$1.438 billion, \$1.175 billion from the private sector and \$263 million from the public sector. This leaves a balance of \$.26 billion (of the foregoing \$1.7 billion) for construction and research. The total per capita expenditures for the global amount (\$1.7 billion) come out to be \$235 in a year, a figure which becomes comprehensible in relation to the astronomical figures given. Of this \$235 per capita, \$201 was for direct services. This figure is subdivided into \$162 for consumer expenditures in the private sector and \$39 in the public sector. Henceforth, the primary concern will be with the expenditures for direct services, and the two sectors will be discussed separately.

A. Private Expenditures for Health Services

The estimated expenditure of \$162 per man, woman, and child in the Chicago metropolitan area was divided by type of service as follows:

TABLE 21
PER CAPITA EXPENDITURE FOR HEALTH CARE IN THE
CHICAGO METROPOLITAN AREA BY
TYPE OF SERVICE, 1965

Type of Service	Expenditure	Per Cent
Hospital care.....	\$ 48.00	30%
Physicians' services.....	52.00	32
Dentists' services.....	15.00	10
Other professional services	3.00	2
Drugs.....	23.00	14
Eyeglasses.....	7.00	4
Nursing home care.....	7.00	4
Net cost of health insurance	7.00	4
TOTAL EXPENDITURE	\$162.00	100%

Source: Projected from *Social Security Bulletin*, Vol. 30, No. 2, February, 1967.

These estimates are derived from official sources in the Federal Government. They are also reasonably close to estimates made by nationwide surveys of households in terms of the percentage distribution of components.¹

¹ Andersen and Anderson, *op. cit.*, p. 52.

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Per capita estimates for all services by age and sex groups came out as follows:

TABLE 22
PER CAPITA EXPENDITURE FOR HEALTH CARE IN THE
CHICAGO METROPOLITAN AREA BY AGE
AND SEX, 1965

Age	Male	Female	Both Sexes
Under 6.....	\$ 80	\$ 68	\$ 75
6-16.....	78	76	76
17-24.....	96	200	153
25-44.....	136	219	179
45-64.....	232	260	246
65 and over.....	266	272	270
All ages.....	140	182	162

Source: Projected from *Social Security Bulletin*, Vol. 30, No. 2, February, 1967.

The patterns are familiar. Distributions could also be shown for type of service by age-groups, but it may suffice simply to indicate that the young spend relatively more for physicians' services and drugs and less on hospital care than the aged.

On the basis of the foregoing table it can then be speculated that a Chicago area family consisting of a husband and wife under 25 with two pre-school children would have spent a total of \$443 on health care. A family with a father in his late forties, mother in her early forties, and three school age children would have spent on an average a total of \$679. An aged couple over 65 years would spend \$544, and so on. Of course, most people spend less than this but a few people spend a great deal more in any given year. These per capita estimates exclude individuals on public assistance but do include all the medically indigent in the area, who spend relatively little on health care. Thus, for a family using the private sector completely, the average expenditure will be somewhat higher than shown.

B. Expenditures on Behalf of the Indigent and Medically Indigent

Expenditures on behalf of the medically indigent fall into two categories: the \$263 million worth of governmental expenditures and \$15 million supplied by private, non-consumer sources, i.e., philanthropy, both calculated from national data. The two major fund raising appeals in the area are the Crusade of Mercy, which distributed \$1.4 million to health care agencies, and the Jewish Federation, which distributed \$1.7 million. These two central appeals provide the major funds from any one

source but more important in the overall consideration is the approximately \$10 million contributed to the voluntary hospitals annually or received in the form of income from endowments.

The following table shows actual governmental expenditures in the Chicago metropolitan area. The sum of these expenditures, \$262 million, is extremely close to the \$263 million estimated for governmental expenditures using national data. This match is not nearly so accurate as might first appear, as the Chicago metropolitan area is undoubtedly much higher on public expenditures than the nationwide projection used would indicate. In other words, expenditures for 1965, even after exhaustive research, are probably understated in Table 23.

One large omission is the medical care portion of expenditures for Workmen's Compensation. This was not included in the table since only nationwide data were available. These data show a per capita expenditure of \$3.25. Most of this cannot really be considered public expenditure,

TABLE 23
PUBLIC EXPENDITURES FOR HEALTH CARE IN THE CHICAGO METROPOLITAN AREA, 1965

Public Agency	Expenditure
<i>Cook County</i>	
Department of Public Aid.....	\$ 63 million
Cook County Hospital.....	30 million
Oak Forest Hospital.....	11 million
Chicago Board of Health Clinics.....	4 million
Board of Health home nursing services.....	1 million
Cook County Health Department (excludes Chicago).....	1 million
<i>Other Illinois Counties</i>	
Department of Public Aid and other county programs.....	10 million
<i>Lake County, Indiana</i>	
Department of Public Aid.....	4 million
Other county programs.....	4 million
<i>State of Illinois</i>	
University of Illinois Research and Educational Hospital.....	11 million
Illinois Eye and Ear Infirmary.....	1 million
Division of Services for Crippled Children.....	1 million
Mental hospital system (\$7.29 per day times 6,165,580 days)....	45 million
State schools for the mentally retarded (\$7.29 per day times 1,941,070 days).....	14 million
Tuberculosis hospitals (\$22.74 per day times 686,200 days)....	16 million
<i>State of Indiana</i>	
Mental hospital system (\$7.29 per day times 540,000 days)....	4 million
State schools for the mentally retarded (\$7.29 per day times 165,000 days).....	1 million
Tuberculosis hospitals (\$22.74 per day times 54,896 days)....	1 million
<i>Federal Government</i>	
Veterans' Administration hospitals.....	40 million
GRAND TOTAL.....	\$262 million

Source: See Appendix, pp. 121-126, for a complete listing of sources.

however, since two-thirds of it was paid by private insurance carriers and another 13 per cent by self insurance. Still, applying the 23 per cent of the total paid out by state insurance funds to the \$3.25 per capita gives \$0.74 per capita from public funds or a public expenditure for medical expenses covered by Workmen's Compensation of almost \$6 million in the Chicago metropolitan area in 1965.² Also omitted from the table are smaller expenditures for the medical care of military dependents and for medical costs incurred in connection with vocational rehabilitation.

Of course, two new large public programs have entered the picture since 1965: Medicare and the Office of Economic Opportunity health care provisions. Taking these two programs into account, there is little doubt that public expenditures for health care in the Chicago metropolitan area are now (1968) well in excess of \$300 million annually.

C. Sources of Funds for the System by Components

It was stated earlier that the sources of funds are divided approximately 75 per cent in the private sector and 25 per cent in the public sector for all expenditures, and possibly 80 per cent and 20 per cent respectively for direct services. Within the private sector there is a diversity of sources: direct pay, insurance, and philanthropy. The proportions by source vary by component of services, e.g., general hospitals receive about 65 per cent of their incomes from insurance; dentists hardly any. Judging by national data, it can be assumed that the private sector gets about 35 per cent of its income from insurance and 60 per cent from direct pay with probably only five per cent from private philanthropy. All physicians get about 25 per cent of their incomes from insurance, but surgeons probably 40 per cent because of the nature of the health insurance benefits, and other physicians correspondingly less.

(1) Payment for Hospital Care

Primary data are available for the Chicago metropolitan area including Lake County, Indiana, for the source of payment for all patients discharged from *general* hospitals in the area in February, 1965. The three general Veterans' Administration hospitals, which account for three per cent of all hospital discharges (28,959 out of 952,167 in 1965) and which provide care without charge, are *not* included in these data.

For the area as a whole, about three-quarters of the discharges were covered by insurance which paid at least half of the bill and about ten per

² Ida C. Merriam and Alfred M. Skolnik, *Social Welfare Expenditures under Public Programs in the United States, 1929-1966*, U.S. Department of Health, Education, and Welfare, Social Security Administration, Research Report No. 25, 1968, pp. 67-68, 230.

cent were covered by other third party payers, mostly public aid. Only fifteen per cent were completely self-pay. The "other and unknown" category includes the medically indigent not on public aid, that is, patients in "free beds" in the private hospitals or patients who were found on discharge to be unable to pay the bill although they had occupied a paying bed. Had the Veterans' Administration hospitals been included, this category would have expanded greatly.

TABLE 24
SOURCE OF PAYMENT FOR GENERAL HOSPITAL CARE
IN THE CHICAGO METROPOLITAN AREA
BY RACE, FEBRUARY, 1965

SOURCE OF PAYMENT	PER CENT OF PATIENTS		
	White	Non-White	Total*
Blue Cross.....	33%	18%	31%
Private insurance....	46	27	43
Public aid.....	3	36	8
Self-pay.....	15	15	15
Workmen's Compensation.....	1	1	1
Other and unknown.	2	3	2
TOTAL	100%	100%	100%

Source: Hospital Planning Council, 1965 Discharge Study, unpublished data.

* Includes discharges with race not reported.

The overall patterns of sources of payment to general hospitals on the basis of this survey in the area follow closely the national patterns. Only a small portion of the income for general hospitals now comes from direct-pay or self-pay patients. The sources are hardly monolithic, however, when it is seen that Blue Cross accounts for less than a third (the largest single source) and the multitude of private insurance companies for over 40 per cent. In this connection there are likely several hundred insurance companies involved and they do not have reimbursement agreements with the hospitals as is true of Blue Cross. With the advent of Medicare the governmental sector has been expanded and is now reputed to be close to 20 per cent of the general hospital income. The other sources of income will then be proportionately smaller, but the diversity of sources of funds remains.

Here is probably the appropriate place to mention the actual cost of general hospital care in the Chicago metropolitan area in 1968. The hos-

pital room and board rates, of course, vary with the size of the hospital with the larger, more complex hospitals having the higher rates. The vast majority of the beds (about 65 per cent) are concentrated in the semi-private (two-bed) accommodations. Since room and board charges account for roughly one-half of the total hospital per diem charge, it can be concluded that the average per diem charge for general hospital care in the Chicago metropolitan area is upward of \$70 and the average cost for a hospital stay is about \$560, allowing eight days for a stay (Table 25).

TABLE 25
ROOM RATES IN GENERAL HOSPITALS, CHICAGO
METROPOLITAN AREA, JUNE, 1968

Type of Accommodation	Charge Per Day
Intensive care.....	\$68
Private.....	42
Semi-private.....	37
Ward.....	31

Source: Chicago Hospital Council, Memorandum 55, June 3, 1968.

(2) Physicians

There is hardly any more information on the sources of physicians' incomes in private practice than stated previously. Perhaps the medical society sponsored Blue Shield Plan pays about 10–15 per cent of the expenditures for physicians' services and the private insurance companies another 10–20 per cent. Only a small fraction of the income comes from welfare patients, probably less than five per cent on an average with only a small number of physicians, estimated at 100 in Chicago, whose major income is from that source. Physicians' services are covered for those 65 and over under Medicare (and now over 95 per cent of the aged have elected to participate in Part B); it is difficult to estimate what proportion of physicians' income on an average is now coming from this source. Probably around 15 per cent is a good guess, since we know that the aged account for about 20 per cent of all physician visits and that about three-quarters of the physician charges incurred by the aged are reimbursed by Medicare.³

It would seem to be of interest to indicate at this point that probably 40

³ *Health Insurance Statistics*, Social Security Administration, Department of Health, Education, and Welfare, CMS-4, Sept. 25, 1968.

per cent of the physicians' income is derived from the hospital site of practice. For surgeons in a full-time surgical specialty, the income earned using hospital facilities must approach 90 per cent. Of greater significance, perhaps, for determining the influence of the chief decision-makers in the system, is the fact that physicians control the expenditure of close to 80 per cent of the medical dollar presented in the foregoing table. Thus, 9,500 physicians determine the expenditure of \$1.1 billion in the Chicago metropolitan area, or \$115,000 per physician. Physicians determine the volume of all services except unprescribed drugs (or one-third of expenditures for all drugs), dental care, and some appliances. The rest are determined by dentists or the public without the prescription of a professional. Physicians determine the unit price of their own services, but other services are priced by others.

(3) Dentists

Almost the total source of income of dentists is from private patients who pay directly. A small fraction is paid by public welfare and an even smaller fraction by insurance.

(4) Drugs

Pharmacists get almost all of their income for prescriptions from private patients directly with a small fraction coming from welfare and an even smaller fraction from insurance. Of course, a substantial proportion of the income of *drug companies* is from hospitals.

(5) Nursing homes

About a third of nursing home income comes from public welfare because of the high proportion of elderly aid recipients in them. A large portion also comes from private sources, very little of it from insurance. Medicare, however, is beginning to make itself felt in this area also.

(6) Other

Remaining goods and services are private duty nursing, home care services of various kinds, appliances such as glasses, braces, trusses, hearing aids, and wheel chairs. There are no estimates readily available, but it can be safely assumed that the great majority of expenditures for the foregoing come from patients paying directly. The growth of major medical insurance will certainly make itself felt here. For some items there is probably a quite visible portion coming from public welfare and other governmental sources, e.g., orthopedic appliances for crippled children and veterans.

CHAPTER 10

POLICY AND DECISION MAKING STRUCTURE

The title of this chapter, although descriptive of our intent, is pretentious because it implies more than it can deliver. Nevertheless, rather basic to the understanding of the structure and functioning of the health services in the Chicago metropolitan area is the need to show as far as feasible with current information, experience, and inferences, the sources and flow of power, policy and decision making, and funds in the system in broad terms. Undoubtedly, a great deal of this is already implicit in the foregoing, and, perhaps, more directed attention will not yield much. Still, we believe it may be of value to bring this problem to a higher level of consciousness than seems to be the case generally. The fact that close to \$2 billion is involved and over 90 per cent of the people annually is enough to arouse the public and private interest in this growth industry. A great deal is at stake.

Certainly, relatively powerful agencies and individuals within and without the health system know in general how the system works and what possibilities for manipulation of it there are for whatever purpose. Usually it seems that reports of commissions of various kinds hide behind a barrage of facts, and it is only by reading the public policy recommendations carefully that one can sense the "wheeling and dealing" that has gone on behind the scenes and assess the relative ability of agencies and individuals to influence the direction of change which the recommendations purport to support. The "public interest" is not easy to define.

Since World War II, however, studies have been increasing, and good ones, by political scientists and sociologists, in the decision making processes of communities. The terms "power structure," "influentials," "elites," "sub-elites," "negotiations," "bargaining," and "accommodation" have become part of everyday speech, particularly among the so-called intelligent laymen and newspaper reporters writing on public problems. It would seem that the social and political process of social change is being brought to a level of consciousness among more and more people although undoubtedly successful politicians and successful administrators of large enterprises have known this all the time by the seat of their pants, as it were. Bringing this process to a higher level of visibility will undoubtedly result in greater subtleties in the use of power and influence in society.

There have been several studies of this nature specific to Chicago.¹ Other studies or reviews dealing with the general problem generic to the concept of political and social power have appeared.² They are exceedingly worthwhile and it would seem that their appearance in recent years is more than coincidental. That is, they are symptoms of efforts to move from dealing with public problems primarily in engineering terms (highways, public transportation, sanitation, architecture) to dealing with many more variables of a social and political nature. It is at long last being recognized that all these variables are intermeshed and that the accusation of "playing politics" is meaningless because "politics" is essential to the process of accommodation and compromise among the parties at interest.³ Hence, those who do not like this process call it chaotic and those who feel congenial to it call it pluralism; those who do not like either lump them both together as "the human condition."

By this time it is probably quite obvious that we subscribe to the concept of pluralism because it facilitates change while working in relation to the American social and political characteristics. The problem is, then, mainly one of assuring that the countervailing forces are of relatively equal power, particularly those which purport to represent the general public. The general public is, however, difficult to define. In this country it would seem that the health services system has been mainly a mutual response of the providers of services and the broad middle and upper income buyers of services, buttressed by government investments in research and stimulation of capital funds and some sort of taxation for special groups and selected diseases as described previously.

The extent to which the general public should be concerned directly with policy and administrative problems has been debated for many years. The generally private system characteristic of this country is pervaded by a mixture of "community representation" characterized by the self-perpetuating boards of directors of voluntary hospitals. A survey of the occupational composition of the boards of directors of the Chicago metropolitan area voluntary hospitals and other voluntary organizations in the

¹ Martin Myerson and Edward C. Banfield, *Politics, Planning and the Public Interest; The Case of Public Housing in Chicago*, Glencoe: Free Press, 1955; Edward C. Banfield, *Political Influence; A New Theory of Urban Politics*, Free Press, 1961. Peter H. Rossi and Robert A. Dentler, *The Politics of Urban Renewal; The Chicago Findings*, Free Press, 1961.

² Francis X. Sutton, et al., *American Business Creed*, Cambridge, Mass.: Harvard University Press, 1956; Floyd Hunter, *Top Leadership, U.S.A.*, Chapel Hill: University of North Carolina Press, 1959; Arnold M. Rose, *The Power Structures; Political Process in American Society*, New York: Oxford University Press, 1967; Terry N. Clark, ed., *Community Structure and Decision Making: Comparative Analyses*, San Francisco: Chandler, 1968; Robert A. Dahl, *Pluralist Democracy in the United States; Conflict and Consent*, Chicago: Rand McNally, 1967.

³ See, e.g., Odin W. Anderson, *The Uneasy Equilibrium*, op. cit.

health field revealed, predictably, that 50 per cent of them came from business and industry, 15 per cent were related to the health field in some way, and ten per cent were housewives, who undoubtedly were in most cases wives of men in business and industry. The remaining 25 per cent (including 15 per cent whose occupation was not determined) trailed off into community service and politics, religious affiliations, and education.⁴ Whether this sort of social source of policy making, unrepresentative of the community, which of course it is, can be regarded as good or bad is debated. In any case, minority groups, particularly the poor, are clamoring for a voice alongside the better established segments of the population. This is reminiscent of organized labor's complaints thirty years ago. One hears less about these now, in large part because of labor's collective bargaining outlets.

The hospital-sponsored Blue Cross plans and the medical profession-sponsored Blue Shield plans are chartered as non-profit corporations, with policy emanating from self-perpetuating boards of directors representing broadly the hospitals, the medical profession, and the public. The Blues, as they are frequently referred to, are quite self-conscious of their non-profit status. "Profits" do not accrue to stockholders but are returned to the corporation for greater health insurance benefits and/or smaller premiums. The Blues regard themselves as working mainly in the public interest within the framework of professional and community service, and, therefore, they retain a quasi-public or quasi-private image.

The private insurance companies are normally a so-called profit making enterprise whose profits go to stockholders. Their overhead, benefit structure, policy requirements, and methods of paying the hospital vary widely and in some cases approach that of the Blues.

Among both the Blues and the private insurance companies it can be said that there is a legitimate mixture of public interest and self interest. It would be utopian to deem otherwise. The buyers of services, that is, employers and through them the general public, can theoretically influence the prevailing structure through the premium and health insurance benefit negotiations. Otherwise, in terms of their political clout, minority groups such as the poor and possibly also the occasional self-sustaining family with extremely high medical care expenditures which the usual health insurance benefit structure is not designed to cover are victims of a system which in general is vigorous and has a continuing potential.⁵

⁴ Center for Health Administration Studies, unpublished data.

⁵ Since it is the intent of this report to delineate the dominant features of the health services system in the Chicago metropolitan area, it may seem to some readers

Segments of the public are represented, so to speak, by Congress, the state legislature, city councils, and the county boards of supervisors regarding governmentally sponsored and supported services for the poor, the aged, and the mentally ill in state institutions and those served by neighborhood clinics.

There are, then, a large number of buttons to press simultaneously in order to move the system in a particular direction. The system is so pluralistic, or so fragmented depending on one's viewpoint, that the parties at interest need to enter into coalitions of various kinds depending on objectives. It would seem that a tremendous advantage of the private sector is its ability to transcend political jurisdictions. (There are 147 cities alone in the Chicago metropolitan area, it will be recalled.) The Federal Government's arrangement in Medicare to buy services from the hospitals and physicians in the private sector is a case in point. Medicare, then, even transcends state lines.

In attempts to "regionalize" the prevailing health services structure, a two-pronged approach is indicated in the Heart Disease, Cancer and Stroke Act, PL 89-239, and the Comprehensive Planning Program, PL 89-749, described in Chapter 1. These acts are trying to reconcile the concept of a health services region which transcends political boundaries with some sort of Federal-state planning concept which needs to be within traditional political boundaries in order to assure political accountability through various levels of government. Certainly, in the foreseeable future it will be possible to assess the results of a system in which government tries to move the voluntary system toward a more "rational" structure than now prevails and to determine if the essential pluralism of our system will work adequately enough to allay the political appeal of an increasingly centralized financing and administrative structure. The Chicago metropolitan area can be a continuing case study in this regard.

with specific interests that we have minimized or, worse, ignored particular medical care programs. For example, health services in industry were not covered. Two specific programs having to do with delivery methods receiving a great deal of official attention today are the Union Health Service and the Civic Medical Center. The first is an out-patient clinic established by the Chicago Janitor's Union, Local 25, Building Service Employees International Union, in 1955, which now serves members of 15 different unions, totalling less than 20,000 individual subscribers. Very few dependents are enrolled. Doctor visits totalled 30,000 in 1964. As can be seen, this pre-paid group practice, presumably the largest in the Chicago metropolitan area, serves a very limited clientele. The Civic Medical Center is a group practice prepayment plan organized during the Thirties and located in the Loop. This plan has been contracting for a number of years as to both staff and subscribers. (It now has only seven part-time physicians and about 500 subscriber families.) It never has found a large employer sponsor such as is true for Health Insurance Plan of Greater New York in New York City (H.I.P.), and Kaiser-Permanente on the West Coast.

PART III
OBSERVATIONS AND CONCLUSIONS

CHAPTER 11

WHAT DO WE KNOW?

Once the information and data on the structure and operation of the health services system in a region are placed in a framework, as has been attempted in this report, it would seem that more is known about this system than is generally realized. We think it is a fair generalization that public policy regarding many important problems in society is established on the basis of less information than is actually available. What is usually lacking is a conceptual framework in which to order even the information and facts that are readily accessible. A general systems approach should help in visualizing how the information and facts fit into an interrelated whole, thus providing a basis for distinguishing between the relevant and irrelevant. This kind of conceptual framework also helps to determine where there are gaps in information which can be filled by properly selected and executed research projects.

In this connection we make no artificial distinction between so-called theoretical and practical research. Any research that helps to illustrate the structure and operation of the health services system is useful both for increasing understanding of the operation of the health system and for public policies that purport to flow from solidly based information and data. We assume that once the social policy objectives are more or less agreed on, information and data are useful to evaluate the alternative means toward these objectives. At least this is the rational approach to the solution of social problems even in a pluralistic system of bargaining and negotiating between parties at interest. The informational and factual universe, as it were, helps to establish the limits within which debate remains rational. It should differentiate between utopian dreams and attainable goals in relation to objective circumstances.

What, then, do we know about the structure and operation of the health services system in the Chicago metropolitan area? We hope the following list will be illustrative.

1. The number, distribution, and composition of the population base.
2. The number of births and the number of deaths by age and cause.

3. Some gross estimates of the number of illnesses by age, sex, and diagnosis, with some relationship to income and race.
4. The number of health facilities and personnel according to the usual classifications and units of measurement, e.g., beds.
5. Some idea of the gross distribution patterns of facilities and personnel.
6. A listing of the various types of health services programs for special groups in the population and how, in general, they relate to the prevailing health services system.
7. Some estimates of the gross patterns of use of the various services, particularly hospitals and physicians, by age, sex, and to a slight degree income and race. There are some very rough estimates of the extent to which people with selected diseases actually see a physician. There are estimates as to where patients enter the system and the sites of treatment.
8. There are reasonably accurate, i.e., for the purpose, estimates of the sources and destinations of funds, revealing the relative diffuseness of financial control. It is likely that a region has never been visualized in terms of its total expenditures before, providing a basis for thinking in terms of financial magnitudes.
9. There was an attempt to make more explicit the nature of the decision-making structure and the diffusion of policy making within the generally accepted value of assuring relatively equal access to health services.

The increasing availability of the foregoing information and data is no mean achievement. Its sudden absence would be painful indeed, and even the limited comprehension we now have of the structure and operation of the health services system would vanish. It would seem that there is an informational and factual base of sufficient breadth and depth on which to mount research projects to generate necessary data now lacking. The chief limitation of the current information and data for a deeper understanding of the structure and operation of the health services system is that one can in the main obtain only a static picture of the system, namely, at best the structure and at worst a simple inventory of seemingly disparate parts. As everyone is aware, this system is undergoing severe pressures internally and externally in the face of rising demand, continued proliferation of medical technology, and increased cost.

More specifically, it would seem that the health services system in the Chicago metropolitan area shares with the rest of the country, and certainly other large cities, generic problems. The documentation in this regard we feel is quite abundant. Obviously by whatever definition, there is a large problem regarding health services for the poor. This report should help show some of its dimensions. It is clear that there is both a problem of the good things of life in general and the relatively proper distribution of health facilities and physicians. The current private health system is in-

herently incapable of serving the poverty areas given its traditional incentives of physicians practicing where they can make a living and in pleasant surroundings. Obviously, the system needs to be beefed up considerably in this regard.

On a more general but still basic level this report indicates that the area faces the universal problem of rising unit costs and overall expenditures, and increasing pressures of demand on the system. Health insurance benefits need continuing improvement. The area has problems in filling out its extended care facilities, home care, rehabilitation, and preventive medicine. There are problems of quality determinations and controls. All these require judicious consideration and, where helpful, systematic research in order to guide and direct the system and where indicated leave it alone to work out its own balance. We then turn to the last chapter dealing with further research.

CHAPTER 12

FURTHER RESEARCH

Further research in the health services system in the Chicago metropolitan area should be directed to an element of the total system which ramifies through the entire structure. An inventory approach to the system is now no longer useful unless combined with some sort of systems analysis. In essence, we know the overall items of the system as to facilities, personnel, use, finance, and so on, as presented in this report. We must explain more about how they are interrelated. Otherwise it would seem that intelligent planning is very difficult. The blind men and their concept of the elephant is an appropriate analogy here. Perhaps it may be useful to classify research approaches into two broad groupings, both of which are directed at dynamics: A. Large Systems; B. Small Systems.

A. Large Systems

(1) It would then seem that a primary approach is to study the specifics of how the patients flow through the health services system: their origin, how and where they enter the system, routes within it, and the exits. This can be done by a general population sample to pick up people who seek services and follow them through the system. Some selected diagnoses can be followed, as well, e.g., heart disease, cancer, stroke, ulcers, etc. Further, trauma cases can be followed to determine how the system handles them. In this basic approach, people, facilities, and personnel are involved simultaneously in a process. Various linkages can be constructed among these elements. One can determine what types of physicians are exposed in what proportions to what types of patients. One can relate patients to physicians and physicians to hospitals to determine referral patterns. The possibilities for intensive analyses of the operation of the system would seem to be endless.

(2) Another approach, which has already been exploited at least in part in the Chicago metropolitan area, is to determine for each hospital the areas from which patients come. What is the hospital service area as the hospital now operates?¹ Simultaneously, however, it is also necessary

¹ Hospital Planning Council for Metropolitan Chicago, Technical Report No. 2, April, 1966. *Hospital Study Districts for Metropolitan Chicago; A Geographic Analysis and Methodology*, by Pierre deVise, Chicago: The Council, 1966. Also other studies reported by the Chicago Regional Hospital Study mentioned previously.

to learn a great deal about the patterns of affiliation that practicing physicians have to hospitals because physicians determine in the great majority of instances where their patients are hospitalized.

(3) Another study which would reveal many of the linkages within the health system would entail taking a sample of physicians in practice to determine patient load, diagnostic case mix, referral patterns, type of practice, and so on. A typology of physicians' practices could be set up, from solo practice to salaried group practice. The focus in this approach is the physician and the illnesses he sees in the population.

(4) The hospitalized patient can yield a great deal about the operation of the system with reference to the hospital as was done in Massachusetts.² A sample of discharges can be studied as to the chain of events and decisions that led to hospital admission and discharge. Information can be obtained from the patients, hospital records, and associated physicians.

(5) Possibly a more specific problem and one certainly regarded as critical in the health services today is the operation of the hospital emergency department. Again, it is necessary to go beyond the inventory and head counting approach and study staffing patterns, methods of payment and financing, and composition of patients, and the relationship to the police and fire departments, other hospitals, ambulance companies and so on. Emergency services are in essence a total community problem, and a general systems approach must be taken to understand the handling of trauma in the system.

(6) The health services and programs provided for the poor can be studied to determine how the prevailing structure does or does not supply at least a modicum of service to this segment of the population. There are various studies now being sponsored by the Office of Economic Opportunity directed to this segment of the population.

(7) It would be very useful to learn more about the structure and functioning of the long-term care facilities. This area of service is expanding rapidly. Long-term facilities serve "spillovers" of the prevailing system which is designed primarily to serve short-term, acute patients.

B. Small Systems

Under this classification can be placed studies dealing with the internal operation of the hospitals, the analysis of subdivisions of programs, cost accounting procedures, job analyses, salary analyses, and a host of other studies of this type which are being conducted all the time. These are all necessary within the operational structure of institutions and programs.

² Anderson and Sheatsley, *op. cit.*

Our emphasis is, of course, on the need to take the larger systems approach for the purpose of planning and public policy formulation.

There is, of course, a continuous and endless need to collect more or less isolated information and facts which help to illuminate, though dimly, the structure and operation of the health services system. There are many such illustrations in this report. It is useful to know the distribution of expenditures for services at points of time, the incomes of physicians, the per diem rates of hospitals, the number of employees in relation to beds, the number of beds, and so on and on. These should be collected routinely, as most of them are. Periodically, however, the crank must be turned to determine how these elements relate to each other. If we do anything less than this, we will continue to grope in the dark, and the one who asserts the loudest that such and such is reality will be listened to although another viewpoint may be equally erroneous or correct, and all by accident.

APPENDIX

I. SOURCES OF DATA

Any compilation of an assortment of data necessarily relies on a great variety of sources which are not comparable and must utilize a great number of different techniques necessitated by the absence of more exact data. Whenever possible, data from the Chicago metropolitan area have been used. Whenever this was not possible, projections from national data have been used with adjustments for population differences between the nation as a whole and the Chicago area. In several cases when neither Chicago area nor national data were available, data from other cities or states have been applied to the Chicago area population.

There may be several reasons for lack of precision: (1) nature of the source; (2) data do not all pertain to the same year (the most recent data available span a nine year period from 1960 to 1968); (3) there is not complete agreement on the boundaries of the Chicago metropolitan area. It spans two states in the United States Bureau of the Census compilations but is limited to Illinois for state registration and education purposes. Thus, much of the data omits Lake County, Indiana, which accounts for about eight per cent of the total population of the area. (4) Some data are not available at all for certain purposes. Then it is necessary to rely upon educated guesses or projections gleaned from partial records.

For those who would like to know how the data were assembled, this methodology presents a discussion of sources of data, dates, and techniques used.

II. METHODOLOGY

A. Vital Statistics

1. Mortality—These statistics are derived from actual data for the Chicago metropolitan area. Causes of death were added up by county for each of the twelve leading diagnoses; Lake County, Indiana, data were obtained by using the death rates for each diagnosis for the white and non-white population of the City of Chicago and applying them to the 1965 estimated population of Lake County, Indiana. This method gave a total number of deaths in 1964 in the Chicago metropolitan area of

68,840. These deaths were then distributed by age group for each of the twelve most common causes of death. In order to do this, it was necessary to use death rates since actual number of deaths by diagnosis was broken down by age only for the City of Chicago and for the remainder of Illinois. The actual City of Chicago death rate was applied to the city's estimated 1965 population; for the remainder of Cook County and the other Illinois counties, the downstate Illinois rate was used, and for Lake County, Indiana, the City of Chicago rate was used. Separate calculations were made for each sex and for each race.

The total number of deaths became 72,991 using these rates adjusted for age, sex, and race. This is an excess of 4,151 deaths over the actual figure, or about six per cent higher. Almost all of the excess is contained in three diagnostic categories: heart disease, cancer, and pneumonia and influenza. The other categories show projections very close to the actual number of deaths and, in one category, stroke, projections are actually 500 deaths *lower* than actual deaths.

The six per cent excess is probably due to two factors: the death rate in the primarily wealthy suburbs surrounding the City of Chicago is probably lower than the death rate assigned to them (Illinois outside of Chicago) and the death rate for Lake County, Indiana, is almost certainly lower than the Chicago rate assigned to it. Adjustment by race, which has been done, has kept the excess in the projection down to six per cent; adjustment by income appears to be necessary to reduce the discrepancy still further, and the data for this adjustment are unavailable.

2. **Natality and Neonatal Mortality**—The actual number of white and non-white births was obtained for each of the Illinois counties in the Chicago metropolitan area for 1964. The white and non-white birth rates for Cook County were applied to the estimated 1965 white and non-white population of Lake County, Indiana, in order to obtain the number of births there in 1964. These data were obtained from *Vital Statistics in Illinois—1964*, Illinois Department of Public Health, Springfield.

The actual number of white and non-white infant deaths for the Illinois counties in the area were obtained from *Vital Statistics in Illinois—1964*. The white and non-white neonatal death rates for Cook County were then applied to the white and non-white births in Lake County, Indiana, to obtain the number of neonatal deaths in that area. Cause of death in infancy was available only on a statewide basis in *Vital Statistics in Illinois*; these causes of death were converted to percentages and applied to the total number of infant deaths in the Chicago metropolitan area.

3. **Morbidity**—Unlike the data which have been discussed up until now, morbidity data were not available specifically for the Chicago metro-

politan area. Instead national rates, almost all of them obtained from the *Vital and Health Statistics Series* of the National Center for Health Statistics, Public Health Service, U.S. Department of Health, Education, and Welfare, were applied to population data for the Chicago metropolitan area. Several problems were involved in this application:

a. **Population used**—The last full census of the area was in 1960; for 1965, the Chicago Regional Office of the U.S. Bureau of the Census provided estimates of the absolute increase in population in the area but did not consider it valid to estimate the increase (or decrease) in the various age groups.

b. The Chicago metropolitan area considered as a standard metropolitan statistical area (SMSA) by the Bureau of the Census excludes Lake County, Indiana. The Bureau of the Census also has a Chicago-Northwestern Indiana Standard Consolidated Area which includes Lake County, Indiana, but it includes Porter County, Indiana, in addition. The difference in population between these two areas was about 600,000, or less than ten per cent of the total population.

Because an overview of the general picture of morbidity in the area is required, rather than specific detailed figures, it was considered acceptable to use the 1960 population and to apply the rates to the Chicago SMSA. The rates were adjusted for the age and sex differences between the U.S. and the metropolitan area population and in some cases for the white/non-white difference as well. The totals were adjusted upward by 10 per cent to at least partially compensate for the population growth between 1960 and 1965 and for the omission of Lake County, Indiana. Specific details on each aspect of morbidity follow:

Accidents—From Series B, Number 37, *Persons Injured by Detailed Type and Class of Accident*, United States, July, 1959–June, 1961. Data obtained by household interview.

Acute conditions—From Series 10, Number 26, *Acute Conditions—Incidence and Associated Disability*, United States, July, 1964–June, 1965. Data obtained by household interview.

Arthritis and rheumatism—From Series B, Number 20, *Arthritis and Rheumatism*, United States, July, 1957–June, 1959. Data obtained by household interview.

Cancer—The National Center for Health Statistics has never published prevalence rates for this disease. The prevalence and incidence of cancer were obtained using national rates for 1965 obtained from an article entitled "Cancer on the Rise," from *Medical World News*, December 1, 1967. This provided an incidence for cancer of 21,600 and a prevalence of 29,189 cases. The percentage breakdown for cancer by site was obtained from Morris Fishbein, ed., *The New Illustrated Medical and Health Encyclo-*

TABLE A-1
NEWLY DIAGNOSED CASES OF CANCER IN THE CHICAGO
METROPOLITAN AREA BY SITE, 1965

SITE	MEN		WOMEN		TOTAL	
	Number of New Cases	Per Cent of Total	Number of New Cases	Per Cent of Total	Number of New Cases	Per Cent of Total
Digestive system.....	5,860	52%	4,290	40%	10,150	46%
Genital system.....	1,350	12	2,690	25	4,040	18
Breast.....			1,930	18	1,930	9
Respiratory system.....	1,350	12	320	3	1,670	8
Urinary tract.....	680	6	320	3	1,000	5
Mouth.....	560	5	110	1	670	3
Skin.....	340	3	210	2	550	2
All other.....	1,130	10	860	8	1,990	9
TOTAL ^a	11,270	100%	10,730	100%	22,000	100%

Source: Derived from "Where Cancer Strikes," *op. cit.*

^a The incidence of cancer in men is about five per cent higher than in women overall. This adjustment has been made here.

TABLE A-2
NUMBER OF DEATHS FROM CANCER IN THE CHICAGO
METROPOLITAN AREA BY SITE, 1964

SITE	MEN		WOMEN		TOTAL	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
Lung.....	1,490	23%	280	5%	1,770	15%
Colon.....	580	9	720	13	1,300	11
Breast.....			1,050	19	1,050	9
Stomach.....	520	8	330	6	850	7
Pancreas.....	390	6	280	5	670	5
Prostate.....	650	10			650	5
Lymph system ^a	320	5	280	5	600	5
Uterus.....			600	11	600	5
Blood ^b	320	5	220	4	540	5
Rectum.....	260	4	170	3	430	4
Bladder and urethra..	260	4	100	2	360	3
Ovary.....			330	6	330	3
Liver.....	130	2	170	3	300	3
Buccal cavity and pharynx.....	200	3	50	1	250	2
All others.....	1,360	21	940	17	2,300	18
TOTAL ^c	6,480	100%	5,520	100%	12,000	100%

Source: "The Magnitude of the Cancer Problem," in *Heart Disease, Cancer and Stroke*, *op. cit.*

^a Lymphomas.

^b Leukemias.

^c Cancer deaths for men are 54 per cent of the total and for women 46 per cent. This differential is reflected here.

pedia, Vol. 3, "Where Cancer Strikes," p. 313, for the incidence of cancer and *A National Program to Conquer Heart Disease, Cancer and Stroke*, The President's Commission on Heart Disease, Cancer, and Stroke, Vol. 2, February, 1965, p. 119, for cancer deaths. Tables A-1 and A-2 give number of new cases and number of deaths by site for the Chicago metropolitan area, including Lake County, Indiana. Note that the two sources yield data which are not entirely reconcilable.

Chronic respiratory conditions—From Series B, Number 12, *Chronic Respiratory Conditions*, United States, July, 1957–June, 1958. Data obtained by household interview.

Crippled—From Series B, Number 27, *Distribution and Use of Hearing Aids, Wheel Chairs, Braces, and Artificial Limbs*, United States, July, 1958–June, 1959. Data obtained by household interview.

Dental disease—From Series 11, Number 7, *Selected Dental Findings in Adults by Age, Race, and Sex*, United States, 1960–1962. Data obtained by actual examination.

Diabetes—From Series B, Number 21, *Diabetes*, United States, July, 1957–June, 1959. Data obtained by household interview.

Heart disease—From Series 11, Number 10, *Coronary Heart Disease in Adults*, United States, 1960–1962. Data obtained by actual medical examination.

Hernias—From Series B, Number 25, *Hernias*, United States, July, 1957–June, 1959. Data obtained by household interview.

Hypertension—From Series 11, Number 5, *Blood Pressure of Adults by Race and Area*, United States, 1960–1962, and Series 11, Number 13, *Hypertension and Hypertensive Heart Disease in Adults*, United States, 1960–1962. Data obtained by actual medical examination. This condition was adjusted by race as well as by age and sex.

Peptic ulcers—From Series B, Number 17, *Peptic Ulcers*, United States, July, 1957–June, 1959. Data obtained by household interview.

Syphilis—From Series 11, Number 9, *Findings on the Serologic Test for Syphilis in Adults*, United States, 1960–1962. Data obtained by actual medical examination. This condition was adjusted by race as well as by age and sex.

Tuberculosis—Like cancer, tuberculosis is a disease which has not yet been covered by any publication of the National Center for Health Statistics. However, data specific to the Chicago metropolitan area, or at least to the City of Chicago and the remainder of Cook County, are available in *TB, Chicago and Cook County, 1966*, The Tuberculosis Institute of Chicago and Cook County, Chicago, November, 1967.

These data include actual figures for the City of Chicago and the remainder of Cook County. They show a 1966 rate of 55 per 100,000 population for newly reported cases of tuberculosis and 7 for deaths from tuberculosis for the City of Chicago and a rate of 13 for the remainder of Cook County with a death rate of 1. The City of Chicago rate was applied

to the population of Lake County, Indiana, and the Cook County outside of Chicago rate to the other Illinois counties to give the results for incidence shown in the table. Prevalence data related to incidence appear to be available only on a national basis. The data used here were taken from *The Arden House Conference on Tuberculosis*, U.S. Department of Health, Education, and Welfare. Total active cases were reported there at 2.2 times as frequent as new cases; total inactive cases were reported as 2.7 times as great as the number of active cases.

Table A-3 shows the results of these statistical manipulations, which lead to an estimate of total prevalence of tuberculosis in the metropolitan area:

TABLE A-3
INCIDENCE AND PREVALENCE OF TUBERCULOSIS IN THE
CHICAGO METROPOLITAN AREA, 1966

Part of Area	Number of New Cases (Incidence)	Total Active Cases	Total Inactive Cases	Total Number of Cases (Prevalence)	Number of Deaths
City of Chicago.....	1,977*	4,349	11,742	16,091	244*
Remainder of Cook County	234*	515	1,391	1,906	20*
Other Illinois Counties....	156	343	926	1,269	12
Lake County, Indiana....	303	667	1,801	2,468	39
TOTAL.....	2,670	5,874	15,860	21,734	315

Source: *TB, Chicago and Cook County, 1966*, The Tuberculosis Institute of Chicago and Cook County, Chicago, November, 1967, and *The Arden House Conference on Tuberculosis*, U.S. Department of Health, Education, and Welfare.

* Actual figures; all others are projected.

Visual and hearing impairments—From Series B, Number 35, *Selected Impairments by Etiology and Activity Limitation*, United States, July, 1959–June, 1961. Data reported in household interviews.

B. Facilities

1. General Hospital Beds—The number of general hospitals and beds was obtained by actual hand count from the directories of the American Hospital Association for 1946 and 1966 for the six Illinois counties within the metropolitan area and for Lake County, Indiana. This is essentially all of the general hospital beds in existence in the area at these times. The directories are not restricted to A.H.A. members. Any hospitals with other than general service (except children's and maternity hospitals) and any general hospitals with lengths of stay longer than 30 days (this provision excludes the Veterans' Administration hospitals) were not included in the

counts. The population figures on which the bed ratios are based were obtained as follows:

1945—the midpoint between the census of 1940 and the census of 1950 for the City of Chicago and for each county in the area

1965—unpublished estimates obtained from the Chicago office of the Bureau of the Census, based on the 1960 population in the City of Chicago and in each county in the area

Ownership of each general hospital was obtained partially from the coding in the A.H.A. directories and partially from names of hospital and administrator. In doubtful cases, the hospital's annual report was referred to.

2. Specialized Hospital Beds—Trends were not obtained over the 20 year period for other than general hospitals in the area because of the lack of a complete listing in the American Hospital Association directories and because, in this category, the directories list unlicensed institutions which are actually nursing homes. Instead, the number of mental hospitals and the number of beds for 1966 were obtained from the Illinois Department of Mental Health Licensing Directory for that year, supplemented by the 1966 American Hospital Association Directory for mental hospitals in Lake County, Indiana. Information on unlicensed facilities in the mental health field was obtained from a special Illinois Department of Mental Health listing. Other long-term care facilities licensed as hospitals were obtained from the annual directory published by the Illinois Department of Public Health, entitled, *Hospitals and Approved Schools of Nursing in Illinois—1966*.

3. Nursing Homes—Nursing homes, homes for the aged, and shelter care homes (which are primarily for the care of provisionally released mental patients) were obtained by direct count from the Illinois Department of Public Health directory for such institutions: *Directory of Licensed Homes*, Illinois Department of Public Health, July, 1966. This category is the only one among institutions which excludes Lake County in Indiana. Perhaps 1,280 more nursing home beds and an additional 500 beds in homes for the aged would be added by including this county, using a figure of 2.3 nursing home beds per 1,000 population and 1.0 beds in homes for the aged and applying these to the 556,000 estimated 1965 population for Lake County, Indiana. With the inclusion of Lake County, the grand total for beds of this sort in the area approaches 25,000.

C. Personnel

1. Physicians—The number of physicians in the area was obtained from *Distribution of Physicians in the U.S., 1963*, a publication of the American Medical Association which breaks down M.D.'s by geographi-

cal area, type of practice, and specialty. In this publication, the Chicago metropolitan area excludes Lake County, Indiana. About 400 physicians practice in Lake County, but it was impossible to distribute them for the purposes of the tables. In addition, approximately 800 physicians working in the area for the Federal Government are not counted in the area total but are tabulated under a separate section on all federally employed physicians. Making these two adjustments adds about 1,200 physicians to the total to give 11,310 physicians at work in the area in 1963.

2. Osteopaths—A count of osteopaths was obtained from the *Yellow Pages* using the same method as for chiropractors and naprapaths (see page 117). Although licensure is mandatory for this group, it was not considered practical or necessary to check this list against the licensure directory for two reasons: in Illinois, osteopaths are included in the list of M.D.'s—a list of truly formidable proportions—and a study done in California showed that the proportion of osteopaths who are inactive is comparable to that of M.D.'s, about three per cent. The only other osteopaths missed by not doing the cross checking were those who might be full-time faculty members of the Chicago Osteopathic College and who did not have a business telephone listing. This group is more than cancelled out by the number of osteopaths listed as licensed in Illinois but currently in the armed forces or practicing in another state who would have been counted as licensed but not practicing if the licensure list had been employed.

3. Registered Nurses—The information on registered nurses working in the area by field of employment was obtained from licensure data supplied by the Illinois Department of Registration and Education and obtained by them from a licensure renewal card returned by each nurse. These data were available for the six Illinois counties only. Applying the total number of nurses at work in the Illinois counties (19,666) to the estimated 1965 population of these counties (6.7 million) gives a rate of 294 R.N.'s per 100,000 population. Applying this rate to the 1965 estimated population of Lake County, Indiana (556,000), gives 1,646 additional R.N.'s working in that county. The total number of R.N.'s at work in the entire Chicago metropolitan area, therefore, is estimated to be 21,312.

4. Other Health Personnel—A count of salaried health professionals working in Illinois hospitals was obtained from an American Hospital Association publication, *Manpower Resources in Hospitals—1966*, which was based upon a nationwide mail questionnaire survey. Questionnaires were returned in Illinois representing 72 per cent of the hospital beds in the state; the A.H.A. prorated the data to arrive at a count which would obtain if there had been 100 per cent return. In constructing the table, personnel were allotted to the Chicago metropolitan area on a population

basis (since the area was 70 per cent of the population in the state, 70 per cent of the personnel were allotted). This table understates the number of personnel working in each category in hospitals in the area for two reasons: (1) the larger, more complex hospitals in the state tend to concentrate in the Chicago metropolitan area and are more likely to employ these salaried professionals; and (2) Lake County, Indiana, is excluded. The first problem cannot be adequately compensated for. The second can be overcome by adding an additional eight per cent to each figure to include Lake County, Indiana. A more serious problem, though, is that in some categories a considerable portion of the salaried health professionals work outside of the hospital system. No valid figures could be obtained for them. Probably it is worthwhile to add the eight per cent for Lake County, Indiana, to the following groups who work almost entirely within the hospital setting:

Medical record librarians—	297 plus 23 equals 320
Occupational therapists —	214 plus 17 equals 231
Physical therapists —	976 plus 78 equals 1,054

If licensed practical nurses are assumed to have the same distribution of place of employment as registered nurses (68 per cent in hospitals), the total L.P.N.'s working in the area would be 6,769 plus 542 equals 7,311. Not enough is known about the other salaried health professionals to hazard a guess.

5. Dentists—The total number of dentists in the area was obtained from an American Dental Association publication, *Distribution of Dentists in the United States by State, Region, District, and County—1965*, by adding the number of dentists in Lake County, Indiana, to the total for the Chicago district. Type of practice was then counted by hand from the Geographic section of the Directory for every dentist who was coded as other than in private practice. Specialty of every dentist who was not a general practitioner was obtained in a similar manner from the Type of Practice section. A weakness of the Dental Association directory is that the 92 dental interns and residents are not coded for the specialty they are studying as are the medical residents. In the case of the dentists, this group represents nearly a fourth of all specialists. The Dental Association Directory also differs from the Medical Association Directory in that federally employed dentists are distributed by city of employment and thus are included in the data while federally employed M.D.'s are not. The number of federally employed dentists is quite small, however.

6. Other Services and Personnel—An unduplicated count of these was obtained from the *Yellow Pages* using the method to be discussed under *Other Practitioners*. Exceptions to this method were the data on drug-

stores, which were obtained from the Retail Druggists' Association, and the data on blood banks which were hand counted from individual summaries in *Directory of Blood Banking and Transfusion Facilities and Services*, American Medical Association, Chicago, 1965.

While the count of ambulance services was obtained from the *Yellow Pages*, the description of the workings of the private and public ambulance systems was obtained from articles in the *Chicago Sun-Times* dated June 6, 1966, and August 18, 1966.

7. Educational Data on Health Manpower—These were collected from a variety of sources:

Registered nurses and licensed practical nurses—the Illinois Department of Registration and Education

Christian Science practitioners—no formal education required

Medical technologists and X-ray technologists—these are the only two health field groups where any of the Illinois educational institutions are located outside of the Chicago metropolitan area. Since the data are available only on a state level, they have been prorated, with 70 per cent of the totals being allotted to the Chicago metropolitan area. This is probably an understatement.

All other practitioners and personnel—actual data contained in *Health Resources Statistics—1965*, U.S. Department of Health, Education, and Welfare, Public Health Service, National Center for Health Statistics, Washington, D.C., Publication Number 1509.

Lake County, Indiana, is excluded from all educational data. This is not a problem for most of the educational programs which are relatively scarce; they operate no schools in Lake County. This does make a difference, however, for the programs listed in Table A-4, for which adjustments based on the average enrollment in Illinois schools have been made.

TABLE A-4
GRADUATIONS FROM EDUCATIONAL PROGRAMS IN THE HEALTH FIELD,
INCLUDING LAKE COUNTY, INDIANA, 1965

Type of School	Number in Lake County, Indiana	Number of Additional Graduates	Total Number of Graduates in Area
Medical technology (ASCP).....	2	10	124
Registered nursing (RN).....	5	170	1,680
Licensed practical nursing (LPN).....	1	84	924
X-ray technology (ARRT).....	3	12	159

Source: Projected from Illinois data, as discussed above.

8. Other Practitioners—This group includes naprapaths, chiropractors, and Christian Science practitioners. Many of the data were obtained from the *Yellow Pages* of the seven county area, with the name of each fringe practitioner checked by hand to eliminate duplication. The following sets of *Yellow Pages*, comprising an exhaustive list for 1966, were obtained from the Illinois Bell Telephone Company:

Arlington Heights	La Grange
Aurora	Lake Forest
Barrington	Lemont
Bartlett	Libertyville
Bensenville	Marengo
Blue Island	Maywood
Cary	McHenry
Chicago City	Naperville
North Suburban	Oak Park
South Suburban	Orland Park
West Suburban	Riverdale
Chicago Heights	River Grove
Cicero	Skokie
Crete	Summit
Crystal Lake	Tinley Park
Deerfield	Waukegan
Downers Grove	Wheeling
Elgin	Wilmington
Elmhurst	Winnetka
Evanston	Woodstock
Evergreen Park	Yorkville
Geneva	Zion
Glen Ellyn	Lake County, Indiana
Glenview	Crown Point
Harvard	East Chicago
Harvey	Gary
Highland Park	Hammond
Hinsdale	Highland
Homewood	Lowell
Joliet	Whiting

Naprapaths and chiropractors—Since there is no mandatory licensure in Illinois for naprapaths, a search was made for office listings in all of the telephone books listed above. The phone books were cross checked to eliminate duplications. Chiropractors were counted in an identical manner. In addition, since this group has mandatory licensure, the complete licensure list for Illinois was obtained from the Illinois Department of

Registration and Education and was checked against the list from the *Yellow Pages* so that counts could be made of chiropractors licensed but not practicing and practicing but not licensed. Indiana does not have a mandatory licensure law, so this was not done for the 21 Indiana chiropractors who did not have an Illinois license.

Christian Science Practitioners—A count of these practitioners was obtained from the *Yellow Pages* using the same method as for naprapaths and chiropractors. Although there is no licensure for this group, there is a directory of accredited practitioners published each month as part of *The Christian Science Journal*. The listing from the *Yellow Pages* was checked against the September, 1966, copy of the *Journal* to produce a count of practitioners who are practicing without being accredited and accredited without having an office listing in the *Yellow Pages*.

D. Public Medical Care

The general description of the facilities and services available to medically indigent patients was obtained primarily from three sources:

- (1) A 1966 interview with Dr. George Lull, Director of the Cook County Department of Public Aid.
- (2) *Preliminary Report on Patterns of Medical and Health Care in Poverty Areas of Chicago and Proposed Health Programs for the Medically Indigent*, Chicago Board of Health Medical Care Report, November, 1965 (re-issued in printed form, September, 1966).
- (3) *Profiles of Forty Fields of Human Care Service in Chicago*, Part 2, The Welfare Council of Metropolitan Chicago, June, 1967.

E. Use

1. General Hospitals—The number of general hospital admissions by diagnosis was estimated for the area as follows: hospital admissions per 1,000 population for the country as a whole were obtained from *Vital and Health Statistics*, National Center for Health Statistics, Public Health Service, U.S. Department of Health, Education, and Welfare, Series 10, Number 30, *Hospital Discharges and Length of Stay: Short Stay Hospitals*, United States, July, 1963—June, 1964. These rates were applied to the estimated 1965 population of the Chicago metropolitan area including Lake County, Indiana, for each age, sex, and race category. The total number of hospital admissions in the area adjusted by these three factors was 952,167 in 1965.

The national percentage distribution of diagnoses was then applied to this total to give the distribution of diagnoses for the Chicago metropolitan area. This percentage distribution was adjusted by sex but *not* by race

or age. Since the Chicago metropolitan area contains a larger number of Negroes than the country as a whole and since Negroes have a higher admission rate for deliveries and a lower admission rate for almost all other causes, the projection by diagnosis would be expected to understate the admissions for deliveries and overstate the admissions due to other causes, particularly less serious conditions. In the case of deliveries, this is exactly what happened. Obstetrical care, the largest single reason for admission, is understated in the projection by six per cent. (In 1964, 155,507 live babies were born. Including 2,469 stillbirths, there were a total of 157,976 babies delivered. About 2,000 of these babies were a twin or triplet, reducing the total number of deliveries to 156,000. Three thousand deliveries took place outside of the hospital, reducing the actual number of hospital deliveries to 153,000. The projection, unadjusted for race, shows 145,000 deliveries.)

2. Physician Visits—Data from *Vital and Health Statistics*, National Center for Health Statistics, Public Health Service, U.S. Department of Health, Education, and Welfare, Series 10, Number 18, *Volume of Physician Visits by Place of Visit and Type of Service*, United States, July, 1963—June, 1964. Data adjusted for age and sex and based on the 1960 population of the Chicago Standard Metropolitan Statistical Area which excludes Lake County, Indiana.

3. Clinic Visits—The data provided in *Profiles of Forty Fields of Human Care Services in Chicago*, Part 2, Welfare Council of Metropolitan Chicago, Chicago, June, 1967, were used to develop the final figures shown in this section. When data were complete, they were used as shown. When only some of the health care agencies reported, the average number of visits for the reporting agencies was computed and this average was attributed to the non-reporting agencies. It should be noted that the data presented in this section are mainly for the *City of Chicago*. While the close-to-Chicago suburbs are fairly well represented, the suburban counties farther from Chicago are not represented at all. This omission is not as crucial as it may first appear, since the programs discussed under this section do not exist by and large outside of the city. A more important omission is that of Lake County, Indiana, which contains the City of Gary and its similar programs. Data on City of Gary programs were unavailable.

4. Emergency Room Care—The data were obtained by an Illinois Hospital Association questionnaire survey of all general hospitals in the Chicago metropolitan area for the year 1964. There was 100 per cent return on the questionnaires although some hospitals provided guesses only. Lake County, Indiana, was not included in the area surveyed. Based

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on a City of Chicago rate of 186 emergency room visits per 1,000 population, Lake County, Indiana, would add 103,416 additional emergency room visits.

5. Dental Visits—Data from *Vital and Health Statistics*, National Center for Health Statistics, Public Health Service, U.S. Department of Health, Education, and Welfare, Series 10, Number 23, *Volume of Dental Visits*, United States, July, 1963—June, 1964. Data adjusted for age and sex and based on the 1960 population of the Chicago Standard Metropolitan Statistical Area which excludes Lake County, Indiana.

6. Mental Hospitals—The actual number of admissions to psychiatric facilities in the area and their average daily census were obtained as follows:

State mental hospitals—a private communication from the Illinois Department of Mental Health which went through its files and counted patients by their home addresses rather than by the location of the state mental hospital they were admitted to. This was necessary due to the concentration of state mental hospital beds outside of the Chicago metropolitan area.

Private mental hospitals—admissions are double the number of admissions from July to December, 1965, as reported in *Statistics*, Illinois Department of Mental Health, July–December, 1965. The average daily census is the actual figure for the entire year. Unlicensed mental hospitals or “rest farms” are included in these figures.

Psychiatric units in general hospitals—same as private mental hospitals. Of the 12,266 admissions listed, the publicly owned Cook County Mental Health Clinics accounted for 5,394 and private psychiatric clinics for the remaining 6,872.

State schools for the mentally retarded—the three largest state facilities for the mentally retarded are located outside of the Chicago metropolitan area, yet draw a substantial number of their admissions from the area. The Illinois Department of Mental Health went through its files and counted patients admitted in 1965 who were residents of the Chicago metropolitan area. No data were forthcoming on the proportion of the average daily census which Chicago residents comprised. In order to obtain the best available estimate of these data, admissions of residents of the Chicago metropolitan area were taken as a per cent of total admissions as reported in the *American Hospital Association Guide Issue*, August 1, 1966.

The results were that 75 per cent of the admissions to Dixon State School and 30 per cent of the admissions to Lincoln State School were

from the Chicago metropolitan area. Total admissions for the newest and smallest of the facilities, the Warren G. Murray Children's Center, were not obtainable from the *A.H.A. Guide Issue*. Since Lincoln State School is in the same general area of the state, the 30 per cent admission figure was used for the Children's Center also. In addition to the three down-state schools, the Illinois State Pediatric Institute is located in Chicago. Of its 20 admissions in 1965, 80 per cent were from the Chicago metropolitan area.

The per cent of admissions for Chicago area residents for each institution was then applied to the total average daily census as reported by the *A.H.A. Guide Issue*, producing the following table:

TABLE A-5
CHICAGO AREA RESIDENTS IN STATE SCHOOLS FOR
THE MENTALLY RETARDED, 1965

Institution	Admissions	Average Daily Census
Dixon.....	174	3,558
Lincoln.....	67	1,394
Warren G. Murray.....	118	194
Pediatric Institute.....	16	172
TOTAL.....	375	5,318

Source: *Hospitals, J.A.H.A.*, Aug. 1, 1966.

Private schools for the mentally retarded—same as private hospitals.

It should be remembered that all of the above data on mental hospitals are for hospitals in the Illinois counties of the metropolitan area and do not include Lake County, Indiana, which is under an entirely different jurisdiction. The addition of Lake County, Indiana, to the data would mean an across the board increase of roughly eight per cent. The total number of mental hospital admissions would become 31,371, assuming 2,324 admissions for Lake County residents. It is probably not safe, however, to assume that the breakdown between state mental hospitals, private mental hospitals, and psychiatric units in general hospitals is the same as that prevailing in Illinois.

F. Expenditures

1. Private Expenditures for Direct Patient Care—Per capita consumer expenditure for medical care in the Chicago metropolitan area in 1960

was obtained from *Consumer Expenditures and Income*, Bureau of Labor Statistics Report Number 237-55, U.S. Government Printing Office, December, 1963. This was the latest source showing Chicago data. Although based upon a sample of only 400 families, the figure obtained seemed to be reasonable when compared with large scale national surveys.

The per capita Chicago area figure obtained above was then distributed among the components of medical care on the basis of nationwide per cents obtained from the *Social Security Bulletin*, Vol. 30, No. 2, February, 1967. This same publication was used to compute the percentage increase between 1960 and 1965 for each component of medical care on a nationwide basis and these percentage increases were applied to the consumer expenditure for each component in the Chicago metropolitan area in 1960 to obtain the 1965 expenditures.

The results were then adjusted by reducing them 3.5 per cent to allow for the area residents on relief in 1965, who presumably had no private expenditures and who were omitted from the Chicago sample on which these estimates are based. The final results showed an overall per capita expenditure of \$162.

This overall per capita expenditure was then distributed by age and sex according to percentages computed from Table 1, *Vital and Health Statistics*, Series 10, Number 27, *Personal Health Expenditures, Per Capita Annual Expenses*, United States, 1962.

The per capita consumer expenditures by age and sex were then applied to the 1965 estimated population of the area by age and sex to give the total consumer expenditure of \$1.175 billion. Total public expenditure and total private non-consumer expenditure were obtained by calculating their relationship to total consumer expenditures derived from national data in Table 1, *Social Security Bulletin*, Vol. 30, No. 2, February, 1967. This was done separately for each component of health care and these components were summed to give the total. Total expenditures for public health care, private-non-consumer health care expenditures, and consumer health care expenditures were then summed to give the grand total of \$1.7 billion.

2. Governmental Expenditures—The following sources and methods were used in obtaining governmental expenditures in the Chicago metropolitan area:

Cook County

Department of Public Aid—the total of \$63 million was arrived at as follows:

Categorical Assistance	
Nursing homes	\$ 9.0 million
Hospitals	13.0 million
Physicians	2.5 million
Drugs	3.5 million
All other	6.0 million
TOTAL	\$35.0 million
General Assistance	
Reimbursement to Cook County Hospital for patients who met public aid standards but were not on relief	7.5 million
Medicaid	18.0 million
GRAND TOTAL	\$62.5 million

The sources are: *Categorical assistance*—summary of expenditures for fiscal year 1964–1965 as released by Division of Research and Statistics, Illinois Department of Public Aid, November, 1965. *General assistance*—data available from the Department of Public Aid were for the entire state of Illinois only. A total of \$3.5 million was spent on medical care for general assistance recipients throughout the state. Since 57 per cent of these recipients are residents of the Chicago metropolitan area, \$2 million was taken as their share of the expenditures. *Reimbursement to Cook County Hospital*—estimation for fiscal year 1964–1965 made by Department of Public Aid. *Medicaid*—\$9 million was spent by the Department of Public Aid in the first six months Medicaid went into effect; they expect expenditures to be fairly level, so \$18 million was allowed for one year.

Cook County Hospital—Data obtained from the *Annual Appropriation Bill of Cook County for the Fiscal Year 1966*, Board of Commissioners, Cook County, pages 169 and 189. Page 169 gives the expenses of Cook County School of Nursing which pays the salaries of most of the professional personnel at County Hospital. Page 189 gives the expenses for the remainder of the hospital. An estimate of allowable expenses paid from other county accounts raises the \$30 million figure shown here to \$38 million (*Interim Report on Health and Hospital Services*, Citizen's Committee on Cook County Government, Dec. 1967, p. 47). The Department of Public Aid reimbursement for its clients (\$7.5 million) was then subtracted out, since it has already been counted under Public Aid. This drops the Cook County Hospital expenses back down to \$30 mil-

lion. No attempt has been made to reduce this figure by the small amount of non-public reimbursement.

Oak Forest Hospital—Data obtained from the *Annual Appropriation Bill of Cook County for the Fiscal Year 1966*, Board of Commissioners, Cook County, page 204.

Chicago Board of Health Clinics—Data obtained from *City of Chicago Annual Appropriation Ordinance for the Year 1966*, page 180, section on Board of Health Services (\$2.1 million); page 182, section on Venereal Disease Control (\$0.2 million); pages 187–188, section on Mental Health Clinics (a total of \$0.5 million); page 189, District Health Centers (\$0.3 million); and page 347, maintenance on Board of Health Clinics (\$0.1 million). In addition to this total of \$3.2 million in direct expenditures for patient care, \$0.7 million was allowed for laboratory services provided the public as shown on page 187.

Chicago Board of Health Home Nursing Services—Data obtained from *Profiles of Forty Fields of Human Care Service in Chicago*, Part 2, Welfare Council of Metropolitan Chicago, June, 1967.

Cook County Health Department—Data for the health departments outside of Chicago taken from Citizen's Committee on Cook County Government, *op. cit.* Almost all of the revenue shown as offsetting expenses comes from federal funds.

Other Illinois Counties

Departments of public aid and all other county programs—Total medical expenditures for the categorical assistance sections of the other county departments of public aid ran \$1.8 million for the fiscal year 1965, as shown in summary of expenditures for fiscal year 1964–1965 as released by the Division of Research and Statistics, Illinois Department of Public Aid, November, 1965. This same amount was allowed for other, non-categorical public aid expenditures, using the same relationship as was found in Cook County. The remaining \$6 million was arbitrarily allowed for all other public medical care expenditures including board of health clinics and the operation of Lake County General Hospital, Waukegan, Illinois.

Lake County, Indiana

Department of Public Welfare—Total expenditures for medical care for categorical assistance recipients except those in the Aid to the Blind Category (AB) ran \$2.3 million in fiscal year 1966 according to correspondence with the Indiana Department of Public Welfare. Allowing for

AB and for general assistance and also for other public aid expenditures raises this total to \$4 million. A like amount was allotted for all other public medical care expenditures. There is no public hospital in Lake County, Indiana.

State of Illinois

University of Illinois Research and Educational Hospital—Data from individual listing of hospitals, *Hospitals, Journal of the American Hospital Association*, August 1, 1966, Part 2. Reimbursement by the minority of paying patients has not been subtracted.

Illinois Eye and Ear Infirmary—Same as University of Illinois Research and Educational Hospital.

Division of Services for Crippled Children—This is a program set up for a special category of medically indigent with financial requirements considerably more lenient than those under Medicaid. The defective child is the only family member eligible for financial assistance and the assistance is limited to the crippling condition, i.e., it does not pay for the child's general medical care. This program is much more active outside of the Chicago metropolitan area, the assumption of the Division being that medically indigent crippled children in Chicago have access to enough free specialized clinics to make this program less necessary.

According to private correspondence with the Division, 4,727 children in the Chicago metropolitan area were provided direct services in 1965 with a total cost of \$1.17 million.

Mental Hospital System—The number of patient days for residents of the Chicago metropolitan area who were patients in the State of Illinois mental hospital system during 1965 was multiplied by the cost per patient day as shown for state mental hospitals in the *American Hospital Association Guide Issue*, August 1, 1966. The development of the number of patient days for state mental hospital patients is described in this Appendix, pages 120–121.

State Schools for the Mentally Retarded—The same method as described under mental hospital system was used.

Tuberculosis Hospitals—Actually, not all of the tuberculosis hospitals are under state control (the Municipal Tuberculosis Sanitarium is run by the City of Chicago, for example, and the Suburban Cook County Tuberculosis Sanitarium, Hinsdale, is run by Cook County) but they are all lumped together because of the method used in figuring total patient days. These could not be derived from the *A.H.A. Guide Issue* because

the mix of Chicago metropolitan area residents vs. non-residents is not known, a situation analogous to that of the state mental hospital system. Instead, the average daily census of Illinois tuberculosis hospitals in 1961 was found in Table 12, *Areawide Planning of Facilities for Tuberculosis Services*, U.S. Department of Health, Education, and Welfare, Publication No. 930, B-4, December, 1963. The number for Illinois as a whole was set at 2,520 average daily census. Since about three-quarters of all cases of tuberculosis occurring in Illinois are diagnosed in residents of the Chicago metropolitan area, the average daily census for residents in these public TB hospitals is about 1,880. This is somewhat lower than the average daily census which would obtain if the rule of thumb is used that one-half of all active cases of tuberculosis are hospitalized at any given time, which gives an average daily census of 2,900 for the Chicago metropolitan area. This difference is due to the following omissions from the lower figure:

- (1) federal patients, who are charged against the Veterans' Administration
- (2) patients in private hospitals, who are charged against public aid or who are not paid for by any governmental unit
- (3) residents of Lake County, Indiana, who are charged against the State of Indiana

Assuming an average daily census of 1,880 in state and local governmental tuberculosis hospitals gives a total of 686,200 patient days, at a cost of \$22.74 per day, as shown in the *American Hospital Association Guide Issue*, August 1, 1966. This gives a grand total of \$15,599,640.

State of Indiana

Mental Hospital System—Since Lake County, Indiana, comprises eight per cent of the population of the metropolitan area, the patient days found for residents of the Illinois counties were taken to represent 92 per cent of all state mental hospital patient days for the area. The patient days for Indiana residents in the metropolitan area were then found. These patient days (540,000) were multiplied by the Illinois cost per patient day to find the cost to the State of Indiana.

State Schools for the Mentally Retarded—Same as state mental hospitals.

Federal Government

Veterans' Administration Hospitals—Data from *Administrator of Veterans' Affairs, Annual Report*, 1965, Superintendent of Documents, U.S.

Government Printing Office, Washington, D.C., 1965. The \$40 million quoted includes 60 per cent medically indigent patients and 40 per cent service connected disabilities.

3. *Payment for Hospital Care*—These data were obtained from the Hospital Planning Council for Metropolitan Chicago which, in February, 1965, did a questionnaire study of every patient discharged from every general hospital in the Chicago metropolitan area. Source of payment of the hospital bill was one of many questions asked. The data in the table were tabulated by hand in order to omit the Veterans' Administration hospitals and certain specialty hospitals. About three-quarters of the discharges at Cook County Hospital were assigned to "Other and Unknown" pending investigation for eligibility for "medical only" public aid. About three-quarters of these cases were expected to meet requirements on the basis of past experience and were therefore assigned to the public aid category. The remaining cases were assigned to "Self Pay." It should be remembered that this category indicates liability for payment, not that the patient necessarily ever paid the bill.

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