The Ecology of Medical Care[*]

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Current discussions about medical care appear largely concerned with two questions: Is the burgeoning harvest of new knowledge fostered by immense public investment in medical research being delivered effectively to the consumers? Is the available quantity, quality and distribution of contemporary medical care optimum in the opinion of the consumers? In addition, it may be asked: Whose responsibility is it to examine these questions and provide data upon which sound judgments and effective programs can be based?

The traditional indexes of the public's health, such as mortality and morbidity rates, are useful for defining patterns of ill-health and demographic characteristics of populations who experience specific diseases. They are of limited value in describing actions taken by individual patients and physicians about disease and other unclassified manifestations of ill-

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health. It is the collective impact of these actions that largely determines the demand for and utilization of medical-care resources. To assess the adequacy of the resources, it may be as important to ask questions about medical-care decisions, and to relate the data to clearly defined populations and health facilities, as it is to ask questions about mortality and morbidity for other purposes. In the context of medical care the patient may be a more relevant primary unit of observation than the disease, the visit or the admission. The natural history of the patient's medical care may be a more appropriate concern than the natural history of his disease. Similarly, data for short periods (weeks or months) may be more useful than data for longer periods (a year or more) for relating potential needs and demands to medical-care resources.

Little is known about the process by which persons, perceiving some disturbance in their sense of well-being or health, decide to seek help. Nor is much known about their sources of help,[1] or about the second and third stages of decision-making at which patients and their health advisors, whether physicians, pharmacists or faith healers, seek or advise help and consultations from other medical-care resources. The available data suggest that patients control the decision-making process with respect not only to seeking but also to accepting and using medical care to a substantial extent.[2,3] Each practitioner or administrator sees a biased sample of medical-care problems presented to him; rarely has any individual, specialty or institution a broad appreciation of the ecology of medical care that enables unique and frequently isolated contributions to be seen in relation to those of others and to the over-all needs of the community.[4]

The dimensions of these relations may be described quantitatively by estimation of the proportions of defined populations who, within the relatively short period of one month, are "sick," consult a physician, are referred by him to another physician, are hospitalized or are sent to a university medical center. Such information could be a helpful prelude to further studies of the pro-

cesses by which patients move from level to level up and down the hierarchy of medical-care resources, and of the best ways in which to relate these resources to one another.

Available Data

Reliable data that can be related to defined groups are available from several sources; although not strictly comparable, because of differences in time, place and criteria, they appear adequate for the present purpose and may reflect, not too inaccurately, the dimensions of certain medical-care problems. Only adults sixteen years of age and over (fifteen and over, for certain data) will be considered, first because the data lend themselves most readily to consideration of the adult population, and second because most decisions about children's medical care are customarily made by their parents or guardians. A month has been taken as the unit of time, since it is probably a more realistic period than a year for evaluating decisions affecting the prompt and adequate delivery of medical care. This short time has the additional advantage that surveys asking respondents to recall experiences during the previous month or two are apt to be less influenced by memory than those based on longer recall periods.

In a population of 1000 adults (sixteen years of age and over) with an age distribution comparable to those found currently in the United States and England, it would be important to know the number who consider themselves to have been "sick" or "ill" during a month. For the present purpose, "The Survey of Sickness"[5] reports useful data for a continuing representative population sample of England and Wales over a ten-year period. The "sickness rate," as defined in this survey, is "the number of people (sixteen years of age and over) per 100 interviewed reporting some illness or injury in a month regardless of when they began to be ill"; uncomplicated pregnancies are excluded, and the rate cannot exceed 100. It does not reflect the number of illnesses, injuries or diagnoses during a month, the extent of disability or incapacity or the patient's position on the gradient from "perfect" health to

terminal illness. It is a monthly "sick person" prevalence rate. It does reflect individual, subjective perception and definition of ill-health, the initial responses that lead to decisions affecting the qualitative and quantitative demand for and utilization of medical-care resources. Since potential "patients" themselves usually define this primary unit of illness for purposes of medical care, the findings from such a survey will differ from those based on screening procedures or medical examinations. Physicians, depending upon their education, experiences, interests, facilities and the cultures in which they work, may define "illness" differently from their patients or from those who never consult physicians. In a medical sense, there is probably under-reporting in the English sickness survey of occult congenital anomalies, of asymptomatic sequelae of chronic diseases and of latent, incipient or minimal illnesses of many kinds, particularly mental illnesses.

Data from this survey for a four-year period (1946–1947 to 1949–1950) show variations in the mean monthly sickness rates with age, sex and season between extremes of 51 and 89 per 100 adults (sixteen years of age and over), as shown in Table 1. The annual mean monthly rates are rather constant at about 68, suggesting that in a broad-based population survey, 68 adults out of every 100, in an average month, will experience at least one episode of ill-health or injury that they can recall at the end of that month.

This rate may be compared with those calculated from the reports of the Committee on the Costs of Medical Care.[6] In this study, based on a broad, representative sample of the white population of the United States in 1928–31, an illness is defined more rigidly than in the English survey, as "any symptom, disorder, or affection which persisted for one or more days or for which medical service was received or medicine purchased," and it includes "the results of both disease and injury." The data is influenced by the informant's (usually the housewife) concept of illness and her memory over periods of two to four months between the interviewer's visits. Annual rates for adults ill or injured one or more times per year vary between 41 and 65 per 100 adults (fifteen years

TABLE 1
MEAN MONTHLY SICKNESS RATES (PERSONS SICK PER MONTH), ACCORDING TO SEX, AGE AND QUARTER, PER 100 ADULTS (SIXTEEN YEARS OF AGE AND OLDER) INTERVIEWED JULY, 1946, TO JUNE, 1950*

	16–44 Years of Age		45–64 Years of Age		65 Years of Age & Over		All Ages (16 & Over)		
Year & Quarter (1946–1950)	Monthly Sickness Rates for Men	Monthly Sickness Rates for Women	Monthly Sickness Rates for Men	Monthly Sickness Rates for Women	Monthly Sickness Rates for Men	Monthly Sickness Rates for Women	Monthly Sickness Rates for Men	Monthly Sickness Rates for Women	Monthly Sickness Rates for All Persons (Annual Means)
1946 July–Sept.	54	64	65	80	76	85	60	72	
Oct.–Dec.	61	71	72	81	81	88	67	76	68
1947 Jan.–Mar.	60	68	68	78	79	86	65	73	
Apr.–June	52	61	61	76	76	86	58	69	
July–Sept.	51	59	62	74	73	84	57	67	
Oct.–Dec.	59	69	67	78	79	88	64	74	66
1948 Jan.–Mar.	55	65	67	75	79	85	62	71	
Apr.–June	52	62	61	74	73	83	58	69	
July–Sept.	51	62	62	76	75	84	58	70	
Oct.–Dec.	60	70	70	81	79	88	66	76	69
1949 Jan.–Mar.	62	73	70	81	82	89	67	78	
Apr.–June	56	67	66	79	78	87	62	73	
July–Sept.	51	63	64	76	74	85	58	71	
Oct.–Dec.	61	70	68	80	76	87	65	76	68
1950 Jan.–Mar.	60	69	70	79	79	88	66	75	
Apr.–June	55	66	66	77	80	88	62	73	
Mean monthly rates	56	66	66	78	77	81	62	73	68

* Adapted from Tables 2 & 3 of Logan & Brooke.[5]

TABLE 2

ANNUAL SICKNESS RATES (PERSONS SICK ONE OR MORE TIMES PER YEAR) FROM ALL CAUSES, ACCORDING TO SEX AND AGE, PER 100 ADULTS (FIFTEEN YEARS OF AGE AND OVER) AMONG 8758 CANVASSED WHITE FAMILIES (22,561 ADULTS) IN 18 STATES DURING TWELVE CONSECUTIVE MONTHS, 1928–31*

15–44 Yr. of Age		45–64 Yr. of Age		65 Yr. of Age & Over		All Ages (15 & Over)		
Annual Sickness Rates for Men	Annual Sickness Rates for Women	Annual Sickness Rates for Men	Annual Sickness Rates for Women	Annual Sickness Rates for Men	Annual Sickness Rates for Women	Annual Sickness Rates for Men	Annual Sickness Rates for Women	Annual Sickness Rates for All Persons
41	55	44	57	55	65	42	56	49

* Adapted from Table 4 of Collins.[6]

of age and over). Mean monthly sickness rates would probably be lower than the over-all annual rate of 49 (Table 2), but use of criteria for defining "sickness" comparable to those employed in the English survey would probably increase the rates materially.

From these two surveys, it seems reasonable to conclude that the mean monthly sickness rate is unlikely to be as low as 50 or to be more than 75 per 100 adults. During an average month, in a population of 1000 adults (sixteen years of age and over), bearing in mind contemporary preoccupation with health, one may esti-

TABLE 3

MEAN MONTHLY MEDICAL CONSULTATION RATES (PERSONS CONSULTING A PHYSICIAN), ACCORDING TO SEX AND AGE, PER 100 "SICK" ADULTS (SIXTEEN YEARS OF AGE AND OVER) WHO SUFFERED FROM ANY ILLNESS OR INJURY, 1947*

Mean No. of Medical Consultations/ Mo.	16–64 Yr. of Age		65 Yr. Age & Over		All Ages (16 & Over)
	Monthly Medical Consultation Rates for Men	Monthly Medical Consultation Rates for Women	Monthly Medical Consultation Rates for Men	Monthly Medical Consultation Rates for Women	Monthly Medical Consultation Rates for All Persons
0	77	78	72	73	77
1	9	9	12	12	10
2	5	5	7	6	5
3	3	2	2	2	2
4	3	3	5	4	3
5–9	2	2	1	2	2
10 or more	1	1	1	1	1
Mean	23	22	28	27	23

* Adapted from Stocks.[7]

mate that as many as 750 will experience what they recognize as injuries or illnesses.

From this population that experiences "sickness" in the course of a month, a proportion will consult physicians; a few who are not ill will do the same. The rate at which sick persons in the community consult physicians also is available from "The Survey of Sickness" in England and Wales.[7] Table 3 shows the mean numbers and rates of medical consultations per month in 1947 per 100 adults (sixteen years of age and over) who were "sick" as defined above. Only 23 per cent of all adults reporting at least one illness or injury during a month consulted a physician at least once; there are no differences in sex and slight differences in age. Expressed in relation to the base population of 100 adults, the mean monthly medical-consultation rate becomes $23/100 \times 75$, or 17 per 100 adults (sixteen years of age and over).

Data from the current United States National Health Survey[8] are also helpful in this regard, although the sampling period for the relevant published data covers only three months (July to September, 1957) in contrast to the English sickness survey, which covers one year and therefore reflects seasonal fluctuations. Monthly Medical-Consultation Rates calculated from the published data vary from 13 to 26, with an over-all monthly rate of 19 adult patients (fifteen years of age and over) consulting at least once per 100 adults (Table 4). In the English sickness survey,[5] the July-September quarter has lower mean monthly medical-consultation rates than the other quarters. In the United States National Health Survey data,[9] the physician visit rates per person during a two-year period tend to be lower in the July-September quarters than in the other three quarters for less than half the adult age-sex classifications reported.

The circumstances under which the English data were collected tend to diminish the under-reporting of persons consulting a physician each month, but the United States National Health Survey data could be more substantially biased in this respect. A preliminary study, comparing data from records of the Health Insurance Plan of Greater New York with those from the National

TABLE 4

MONTHLY MEDICAL CONSULTATION RATES (PERSONS CONSULTING A PHYSICIAN), ACCORDING TO SEX AND AGE, PER 100 ADULTS (FIFTEEN YEARS OF AGE AND OVER) WHO HAD VISITED A PHYSICIAN IN THE MONTH BEFORE INTERVIEW, JULY–SEPTEMBER, 1957*

15–44 Yr. of Age		45–64 Yr. of Age		65 Yr. of Age & Over		All Ages (15 & Over)		
Monthly Medical Consultation Rates for Men	Monthly Medical Consultation Rates for Women	Monthly Medical Consultation Rates for Men	Monthly Medical Consultation Rates for Women	Monthly Medical Consultation Rates for Men	Monthly Medical Consultation Rates for Women	Monthly Medical Consultation Rates for Men	Monthly Medical Consultation Rates for Women	Monthly Medical Consultation Rates for All Persons
13	26	14	21	21	26	14	23	19

* Adapted from Table 17, U.S. National Health Survey.[8]

Health Survey household interviews, suggests that the latter could under-report the number of persons consulting a physician during a two-week period by as much as a third.[10]

Considering the available data, as well as possible sources of bias, it seems reasonable to estimate the mean monthly medical-consultation rate at about 25 patients per 100 adult population. In an average month, in a population of 1000 adults (sixteen years of age and over) it may be expected that about 250 adults will consult a physician at least once. It is this population that is at risk of hospitalization, referral to another physician or referral to a university medical center.

The United States National Health Survey[11] has published annual rates based on household interviews for patients discharged from short-stay hospitals (including those with obstetric beds)—that is, those in which most patients stay for less than thirty days. From these annual rates, corrected both for under-reporting by respondents and to reflect patients hospitalized, rather than episodes of hospitalization, rates per 100 adults (fifteen years of age and over) may be estimated[12] (Table 5). Rates by age and sex groups vary between 0.35 and 1.06, with an over-all rate of 0.61. Younger women admitted for delivery or related problems are reflected in the 1.06 rate; there are no differences in the rates for men and women in the other broad age groups.

More accurate mean monthly rates can be calculated from data developed by Forsyth and Logan[13] for a defined population served by the Barrow and Furness Group of Hospitals in England, a group that includes among its 9 hospitals, 2 for the "chronic sick" and 4 with obstetric beds. The monthly hospitalization rates for adults (sixteen years of age and over) during a period of twelve months vary between 0.59 and 0.77 per 100 adults, with a mean monthly hospitalization rate based on the twelve-month period of 0.70 (Table 6).

Further data are available from three samples of New York City residents.[14] The "eight-week" hospitalization rate for all ages varies between 1.4 and 1.7 per 100 persons, and it can be estimated

TABLE 5

MONTHLY HOSPITALIZATION RATES (PERSONS REPORTING HOSPITALIZATION), ACCORDING TO SEX AND AGE, PER 100 ADULTS (FIFTEEN YEARS OF AGE AND OVER) IN "SHORT-STAY" HOSPITALS, 1957–58 AND 1959

Age Group	Annual Episodes of Hospitalization*	Correction Factor for Under-Reporting & to Reduce Episodes to Persons Hospitalized†	Persons Hospitalized/Yr.‡	Persons Hospitalized/Mo.§	Base Population*	Monthly Hospitalization Rates¶
15–44 yr. of age:						
Men	2,018	0.34	1,332	111	31,686	0.35
Women	6,751	0.34	4,456	371	35,064	1.06
45–64 yr. of age:						
Men	1,670	0.43	952	79	16,739	0.47
Women	1,743	0.43	993	83	17,731	0.47
65 yr. of age & over:						
Men	810	0.55	365	31	6,642	0.47
Women	944	0.54	435	36	7,871	0.46
All ages (15 & over):						
Men	4,498	0.41	2,649	221	55,067	0.40
Women	9,438	0.38	5,884	490	60,666	0.81
All persons	13,936	0.39	8,533	711	115,733	0.61

* Adapted from Table 1, U.S. National Health Survey.[11]

† Based on respondents' age-specific percentages for under-reporting of hospitalization episodes, Table 3, and calculated age-specific ratios of hospitalization episodes to patients hospitalized/yr., Table 1, U.S. National Health Survey.[12]

‡ Annual episodes—correction factor × annual episodes.

§ Persons hospitalized/yr. ÷ 12.

¶ Persons hospitalized/mo. ÷ base population × 100.

TABLE 6
MONTHLY HOSPITALIZATION RATES (PATIENTS RECOMMENDED FOR ADMISSION) PER 100 ADULTS (SIXTEEN YEARS OF AGE AND OVER) IN THE BARROW AND FURNESS GROUP OF HOSPITALS, 1957*

Month	Patients 16 Yr. of Age & Over Recommended for Hospitalization	
	Number	Rate
Jan.	595	0.66
Feb.	656	0.73
Mar.	656	0.73
Apr.	690	0.77
May	677	0.75
June	586	0.65
July	602	0.67
Aug.	567	0.63
Sept.	659	0.73
Oct.	675	0.75
Nov.	534	0.59
Dec.	646	0.72
Means	628	0.70

Population at risk (16 yr. of age & over) in area served by Barrow & Furness Group of Hospitals (1951 census), 89,400

* Adapted from Part II, Page 79, & Appendix III, Forsyth & Logan.[13]

that the monthly rate would be about 0.80 or less per 100 adults (Table 7).

Rates derived from the three studies cited are remarkably similar (0.61, 0.70 and 0.80), and allowing for possible under-reporting[10] in connection with the New York study, it appears that the mean monthly hospitalization rate is unlikely to exceed a level of about 0.90 per 100 adults (sixteen years of age and over). In a

TABLE 7
HOSPITALIZATION RATES (PERSONS HOSPITALIZED) PER 100 PERSONS (ALL AGES) FOR NEW YORK CITY, 1952*

Bases of Study	8-wk. Hospitalization Rates	Monthly Hospitalization Rates†
Health Insurance Plan Enrollees	1.4	0.70
New York City sample:		
Total	1.6	0.80
Insured	1.7	0.85
Uninsured	1.6	0.80

* Adapted from report by Committee for Special Research Project in Health Insurance Plan of Greater New York.[14]
† 8-wk. rates ÷ 2.

population of 1000 adults (sixteen years of age and over) it may be estimated that, in an average month, about 9 will be hospitalized.

Monthly prevalence rates for referral of patients from one physician to another are even more difficult to obtain. Many patients in the United States receive primary, continuing medical care from a specialist; some may visit several specialists concurrently. Frequently, patients "refer" themselves, and in general, patients appear to control the referral process about half the time.[3] In a stratified random sample of North Carolina general practitioners, 91 physicians (97 per cent return rate) recorded their patient visits for one week; these one-week samples were spread over the period July, 1953, to June, 1954.[15] The 91 general practitioners reported 11,765 visits of adult patients (sixteen years of age and over), or a mean of 129 adult patient visits per one-week sample. Since patient visits over a period of one week are likely to approximate closely patients seen, a mean of 250 adult patients seen per two-week period seems a reasonable estimate. In a second stratified random sample of the same population of North Carolina general practitioners, 93 physicians (87 per cent return rate) reported 460 adult patients (sixteen years of age and over) referred to other physicians (excluding university medical centers) during two-week sampling periods spread from August, 1957, to February, 1959.[16,17] The mean number of adult patients referred was 4.94, or about 5 patients referred per two-week period. The mean monthly patient-referral rate to other physicians for North Carolina general practitioners may be estimated as follows: $5/250 \times 100$, or 2 patients, are referred per 100 adult patients seen, and since other estimates suggest that, on the average, 250 adults per 1000 consult a physician at least once a month, approximately 5 adult patients are referred per 1000 adult population (sixteen years of age and over) per month.

Other published referral data[18–22] do not permit calculation of rates for short periods (such as a month) for patients referred, in contrast to rates for numbers of referrals. The risks of a given patient being referred to either another physician or a university medical center increase the longer he is under the care of a given

physician. Annual patient-referral rates, like annual patient-hospitalization rates, will be higher than monthly rates, but the latter probably more accurately reflect the decision-making process as it affects current utilization of medical-care resources.

The final court of appeal, both for investigation of obscure medical problems and for specialized treatments, and one of the central sources of new medical knowledge and personnel, is the university medical center or teaching hospital. The composition of the patient population seen in each medical center will depend on the ecology of medical care in the region in which it is located, the demographic characteristics of the community it serves, and its own acceptance and admission policies. There may be wide differences between adjacent medical centers, between regions and between countries, but since in theory, and frequently in practice, such centers constitute the apices of referral hierarchies, it should be helpful to estimate the over-all proportion of sick persons in the community referred to them by physicians. Where primary, continuing medical care (in contrast to episodic or consultant care) is provided by university hospitals to groups of patients, or where a large proportion of self-referred patients are accepted, the compositions of the patient populations seen may differ materially from those seen at centers accepting predominantly physician-referred patients.

From the two North Carolina studies, it is possible to estimate the referral rate of general practitioners to the three university medical centers serving that state and its population of over 4,000,000 persons. The 93 North Carolina general practitioners surveyed,[16,17] as discussed above, referred 96 adult patients (sixteen years of age and over) to the three university medical centers during two-week sampling periods in 1957–59, with a mean of about 1 patient per two-week period. The mean monthly university medical-center patient-referral rate of North Carolina general practitioners may be estimated as follows: $1/250 \times 100$, or 0.4 patients, are referred per 100 adult patients seen, and since other estimates suggest that, on the average, 250 adults consult a physician at least once a month,

approximately 1 adult patient is referred to a university medical center per 1000 adult population (sixteen years of age and over) per month.

"Hard" data on the "natural history of medical care" are in short supply. Studies such as those described only suggest the broad dimensions of relative utilization for several important medical-care resources. In summary, it appears that within an average month in Great Britain or the United States, for every 1000 adults (sixteen years of age and over) in the population, about 750 will experience what they recognize and recall as an episode of illness or injury. Two hundred and fifty of the 750 will consult a physician at least once during that month. Nine of the 250 will be hospitalized, 5 will be referred to another physician, and 1 will be sent to a university medical center within that month. Expressed in other terms, 0.75 of the adult population experience sickness each month, 0.25 consult a physician, 0.009 are hospitalized, 0.005 are referred to another physician, and 0.001 are referred to a university medical center. In an average month, 0.009/0.75, or 0.012, of the "sick" adults in the community, are seen on hospital wards, and 0.001/0.75, 0.004, are seen at university medical centers. These relations are shown in Figure 1.

Discussion

The relations reflected in the data presented are subject to wide variations. All the surveys referred to were conducted carefully, but the rates are only approximate. Precise sampling methods were used in all the studies, but sampling fluctuations should be considered before any confidence limits can be placed around these estimates. Sampling errors are probably small in comparison to other sources of discrepancy, and although these are discussed in connection with the original studies, no effort has been made to deal with them here. The characteristics of the populations at risk, the health resources available and the decisions made about health problems by individuals, physicians and community leaders all affect both the way in which health facilities and manpower are

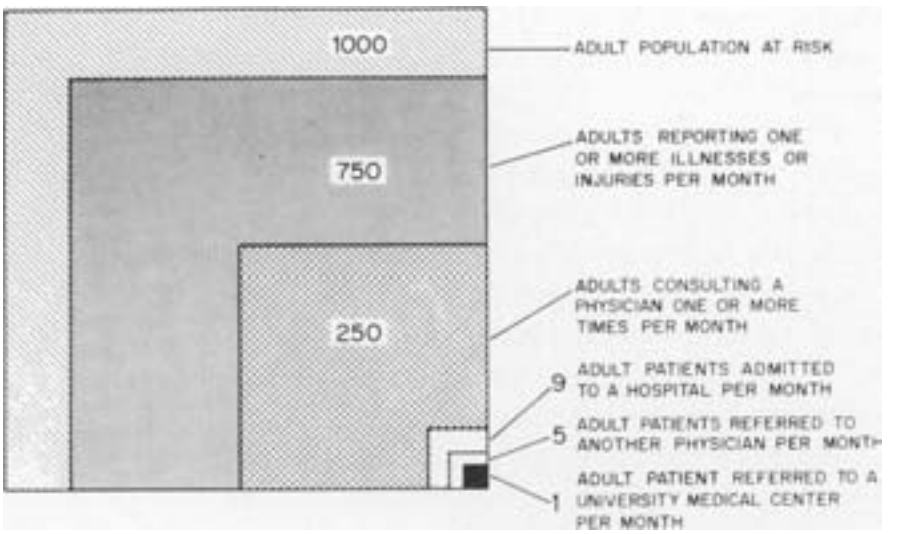

FIGURE 1. Monthly prevalence estimates of illness in the community and the roles of physicians, hospitals, and university medical centers in the provision of medical care (adults sixteen years of age and over).

deployed and the characteristics, quality and quantity of medical care available to a particular society, but the broad relations and the orders of magnitude of the differences depicted in Figure 1 probably reflect the patterns of medical care in the United States and Great Britain with reasonable accuracy.

Appreciation of these relations helps to bring the contributions made by advances in the medical sciences into better perspective in the over-all view of society's health. Medical science does not make its contributions in a vacuum, and the absolute value of these to society may be substantially modified by other factors that have received relatively little attention as yet and may impose critical limitations to the attainment of better health.

Medical-care research is concerned with the problems of assessing needs and of delivering medical care; more specifically, it is concerned with problems of implementing the advances achieved by medical science. Its concerns are not the characteristics, prevalence and mechanisms of disease, but the social, psychologic, cultural, economic, informational, adminis-

trative, and organizational factors that inhibit and facilitate access to and delivery of the best contemporary health care to individuals and communities. It is concerned with the identification and measurement of medical-care needs, demands and resources, and the evaluation of the qualitative and quantitative aspects of programs, personnel, services and facilities, and their utilization in the provision of preventive, diagnostic and therapeutic care and rehabilitation. It is as concerned with the health of those who do not use medical-care resources as with the health of those who do. In essence, it is concerned with medicine as a social institution.

Much more needs to be known about patients' thresholds for perceiving, acknowledging and describing their own disordered function and behavior. What factors govern the patients' assumption or rejection of the "sick" role, or the "patient" role? More needs to be known about patients' sources of help in understanding and coping with their health problems. How do patients select their physicians, and physicians their patients? Under what circumstances do physicians refer patients to other physicians and to medical centers? What kinds of patients, problems and diseases are seen at different health facilities? Do the "right" patients get to the "right" facilities at the "right" time? More specifically, do the 500 "sick" people per month who do not consult physicians enjoy better health than those who do? Are the 5 patients per 1000 referred each month those most in need of consultation? What factors determine which person in every thousand adults will be referred to a university medical center each month? Are these processes in the best interests of all patients? Are they best for medical education?

For many years, it was an unchallenged assumption that physicians always knew what was best for the people's health. Whatever the origins of this authoritarian assumption, it presumably was transmitted by the medical schools as part of the "image" of the physician. Serious questions can be raised about the nature of the average medical student's experience, and perhaps that of some of his clinical teachers, with the substan-

tive problems of health and disease in the community. In general, this experience must be both limited and unusually biased if, in a month, only 0.0013 of the "sick" adults (or even ten times this figure), or 0.004 of the patients (or even ten times this), in a community are referred to university medical centers. The size of the sample is of much less importance than the fact that, on the average, it is preselected twice. Under such circumstances, it would be difficult, if not impossible, for those at medical centers, without special efforts, to obtain valid impressions of the over-all health problems of the community. Medical, nursing and other students of the health professions cannot fail to receive unrealistic impressions of medicine's task in contemporary Western society, to say nothing of its task in developing countries.

The present arrangements for *delivering* medical care to the consumers in the United States (or any other Western country for that matter) owe relatively little to data, ideas or proposals developed in university medical centers. Over the years, individual physicians and groups have concerned themselves with the profession's social responsibilities, but with rare exceptions the substantive problems of medical care have not been a continuing concern of either schools of medicine or schools of public health. It is one of the purposes of this communication to suggest that it is now time for schools of medicine, schools of public health and teaching hospitals to address themselves to the urgent need for medical-care research and education. It is now time for the health professions, and particularly for faculty members with clinical interests, to join their colleagues from the other disciplines, and to accord to medical-care research and teaching the same priority they have accorded research in the fundamental mechanisms of pathologic processes. Investigation and teaching directed at improved understanding of the ecology of medical care and ways of favorably modifying it eventually should reduce the time lag between developments in the laboratory and delivery to the consumers of new knowledge accru-

ing from the vast sums of money that the latter are currently paying for disease-oriented research.

Summary and Conclusions

Data from medical-care studies in the United States and Great Britain suggest that in a population of 1000 adults (sixteen years of age and over), in an average month 750 will experience an episode of illness, 250 of these will consult a physician, 9 will be hospitalized, 5 will be referred to another physician, and 1 will be referred to a university medical center. The latter sees biased samples of 0.0013 of the "sick" adults and 0.004 of the patients in the community, from which students of the health professions must get an unrealistic concept of medicine's task in both Western and developing countries.

Medical-care research is defined, and the need for according it equal priority with research on disease mechanisms is discussed. Recognizing medicine as a social institution, in addition to disease as a cellular aberration, the objective of medical-care research is reduction of the time lag between advances in the laboratory and measurable improvement in the health of a society's members.

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