

THE LANCET

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Volume 344(8930)

22 October 1994

pp 1129-1133

Is primary care essential?

[Primary Care Tomorrow]

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Primary care is widely perceived to be the backbone of a rational health services system. But is this perception correct? Some see it as an anachronism in the present medical era, denying and delaying the specialist attention to which patients are entitled. When primary care physicians act as "gatekeepers" to specialist services, what is the effect on outcomes? How many general practitioners are needed in a primary-care-oriented system? In this paper I address these and other questions. Let me begin with definitions.

What is primary care?

The conference convened by the World Health Organization at Alma Ata in 1978¹ used 100 words to describe primary care; they included essential, practical, scientifically sound, socially acceptable, universally acceptable, affordable cost, central function and main focus of overall social and economic development, first-level contact, and first elements of a continuing health care process. Serious planning for primary care requires a conceptualisation that is easily and uniformly understood, implemented, and amenable to measurement.

Primary care is first-contact, continuous, comprehensive, and coordinated care provided to populations undifferentiated by gender, disease, or organ system. The elements of first contact, continuity, comprehensiveness, and coordination are included in most definitions proposed by professional organisations, agencies, and commissions [2-5]. When viewed from the perspective of populations as well as individual patients, a health system that seeks to achieve these four elements will be achieving what was envisaged in the Alma Ata Declaration.

Primary care is only one level of a health system, albeit a central one. Other essential levels of care include secondary care, tertiary care, and emergency care (especially for serious trauma). Secondary and tertiary care are distinguished by

their duration as well as by the relative uncommonness of problems that justify them. Secondary care is consultative, usually short-term in nature, for the purpose of helping primary-care physicians with their diagnostic or therapeutic dilemmas. Secondary care may be provided by informal consultations of secondary-care physicians with primary-care physicians, by regular visits of secondary-care physicians to primary-care facilities for the purpose of advising on management of patients with particular disorders (eg, diabetes), or by short-term referral of patients. Tertiary care, in contrast, is care for patients with disorders that are so unusual in the population that primary-care physicians could not be expected to see them frequently enough to maintain competence in dealing with them. When the disorder has a substantial impact on other aspects of a patient's health, the tertiary-care physician may have to assume long-term responsibility for most of the patient's care, consulting with the primary-care physician for problems and needs that primary-care physicians are better equipped to handle. All of these other levels of care require integration with primary care for the patient to receive clear and consistent advice.

Roles and functions of primary care and their measurement

All countries, faced with ever-increasing costs of health care, are experimenting with reorganisation [6]. To assess the extent to which a health system is adequately providing primary care, and the extent to which reorganisations are adversely or beneficially affecting the provision, we need some way of measuring the elements of primary care. An early attempt was made by a committee of the Institute of Medicine in the United States in 1978. This committee recognised that primary care is a practice environment rather than a set of services or a professional discipline, and it developed twenty-one questions to assess the achievement of accessibility (necessary for first-contact care), comprehensiveness (ability to handle problems in the population), coordination, continuity, and accountability [7].

In a subsequent approach to measurement I postulated that two characteristics are needed to assess each of the unique attributes of primary care—one that addresses a structural feature that provides the ability to achieve the attribute, and one that addresses the actual performance ("process") that succeeds in achieving the attribute [8]. Thus, first contact involves assessment of both accessibility of a provider or facility and the extent to which the population actually uses the services when a need for them is first perceived. Longitudinality (person-focused care over time) is assessed by the degree to which both provider and people in the population agree on their mutual association and also the extent to which individuals in the population relate to that provider over time for all but referred care. Comprehensiveness requires that the primary care provider offer a range of services broad enough to meet all common needs in the population, and assessment includes the extent to which the provider actually recognises these needs as they occur. Coordination requires an information system that contains all health-related information; and assessment again includes the extent and speed with which the information is recognised and brought to bear on patient care. In this approach to measurement,

accountability is considered a feature of all levels of a health system, and not unique to primary care.

These normative approaches to measurement are distinct from the more common (and less useful) measures involving assessment of characteristics that are merely descriptive ("empirical"). Primary care is often defined by the type of practitioner who delivers it. Most commonly, at least in Europe, this is the general practitioner. In the Americas, however, primary care is considered to include both general internists (for the care of adults) and general paediatricians (for the care of children), as well as family and general practitioners; thus when attempting measurement we cannot assume that these types of practitioners are equally skilled in providing primary care. In fact, one study showed systematic differences in the training experiences of general internists and paediatricians, according to whether the training programme was specifically directed at training in primary care or not [9]. A second approach to assessing primary care assumes that it is equivalent to a set of specific services—such as prevention, diagnostic and therapeutic services, health education and counselling, and minor surgery. Data from practices indicate that many if not most acknowledged specialists provide the same spectrum of services. For example, the practice of most ophthalmologists (at least in the United States) has a large element of prevention as well as diagnosis, treatment, follow-up, and minor surgery. Similarly, most cardiologists are engaged in health education and counselling as well as the more standard aspects of their care. Primary care is more usefully seen as an approach to providing care rather than a set of specific services, with its practitioners or facilities judged on the degree to which they implement this approach. This focus on measurement allows for different types of practitioners (including nurses as well as physicians) as well as for teams to compete for designation as "primary care practitioner", and for training programmes in primary care to emphasise those aspects of practice in which their graduates should excel.

How many primary care personnel are needed?

Opinions differ on the proportion of practitioners that are needed for the adequate provision of primary care. In Canada the proportion of primary care physicians is 50%; in the United Kingdom it is 70% [10]. If primary care means care for all but the most uncommon disorders in the population, the number of different types of practitioners should be determined by the distribution of disorders in the population and the frequency with which disorders need to be encountered for practitioners to maintain their competence in dealing with them. The epidemiological data to perform these calculations are generally lacking, but they may well emerge from more organised forms of practice and new information technologies. On present assumptions, between 75% and 85% of people in a general population require only primary-care services within a period of a year. The remaining proportion require referral to secondary care for short-term consultation (perhaps 10-12%) or to a tertiary care specialist for unusual problems (5-10%). These projections are amenable to empirical testing; the proportions will probably vary from place to

place and for populations with special health-care needs. When the data become available, it will be possible to calculate the appropriate proportions of primary-care practitioners and specialists, instead of relying on demand-oriented projections that reflect the current state of practice [11] rather than rational planning.

Is a primary care oriented health system better than one based on specialty care?

The phenomenon of medical practice variation, which exists across different health care systems [12] as well as within them [13], has been difficult to explain. One recent study, unique in its examination of the effect of a specialty-oriented health system, indicated that medical practice variations are heavily related to differences in direct access to specialists, at least in the case of cataract surgery rates [14]. Roos et al [15] had previously shown that both the appropriateness and the outcomes of tonsillectomy and adenoidectomy were better when patients had been referred to specialists by primary-care physicians than when they had been self-referred [15]. As early as 1945 Bakwin demonstrated the "threshold" effect-whereby medical experts judge a similar proportion of successive waves of referred patients to need intervention. This means that self-referred patients will have higher rates of unnecessary interventions than referred patients, so it is a plausible hypothesis that much of the variability in both hospital admission rates and surgery rates results from differences in primary care resources [16]. What is more surprising is that this important feature of health systems is seldom considered in research on medical practice variations.

It is not intuitively obvious, however, that better health will result when services are organised so that primary care forms the first level of care. With increasingly sophisticated populations, it might be that self-selection of the most appropriate type of specialist is more efficient and effective [17]. Comparisons of specialist care with generalist care indicate that specialists are more efficient for some diseases but by no means for all [18]. Furthermore, it is important to remember that much of primary-care practice is focused on problems that are not and may never be resolved to definitive diagnoses.

Recognition of the importance of primary care within US health services has lately resulted in a few studies in which primary care had been explicitly addressed. In each case, a primary-care orientation has proven more salient than other variables in analytic models.

For example, Shi's [19] analysis of 50 US states and the District of Columbia showed a consistent relation between the availability of primary-care physicians and health levels-as assessed by age-adjusted and standardised overall mortality, mortality associated with cancer and heart disease, neonatal mortality, and life expectancy-even after controlling for the effect of urban-rural differences, poverty rates, education, and lifestyle factors (smoking, seatbelt use, and obesity rate). This study confirmed the findings of an earlier and similar study that showed the ratio of

primary-care physicians to population ratios to be the only consistent predictor of age-specific mortality rates, even when considering such other characteristics as rurality, percent of female-headed households, education levels, minority status, and poverty rates [20]. The increase in effective care is coupled with a decrease in costs, as demonstrated by Welch et al, who found that expenditures for care among the elderly in the US (all of whom have health insurance under the federal Medicare programme) were lower in areas of the country with high ratios of primary-care physicians to population [21]. At clinical level, a case-control study showed that the most important determinant of uncontrolled hypertension, even above factors such as the presence of insurance, was the unavailability of a source of primary care [22]. And, as will be noted below, countries whose health systems are more oriented towards primary care achieve better health levels, higher satisfaction with health services among their populations, and lower costs of services overall. The distinction, in recent studies, between primary care resources and specialty care resources has made it possible to discern an important effect of medical care on health outcomes-in contrast to earlier work that showed no relation between the availability of physicians and health status.

The gatekeeping function

The mechanisms by which primary care, in contrast to specialty care, operates in improving health status are related at least in part to its "gatekeeper" role [23,24]. The first-contact feature of primary care implies that patients do not visit specialists without a recommendation from their primary-care practitioner. Since specialists are much greater users of tests and procedures, and since all such interventions have a finite risk of iatrogenic complications (as well as a cost-inflating effect), the interposition of primary care is protective for patients in reducing both unnecessary procedures and adverse events.

What of the converse effects of gatekeeping-the risk of undertreatment through failure to refer for indicated specialty care. These have been more difficult to demonstrate; indeed, there is little evidence for a systematic association between the gatekeeping function and poor outcomes, once confounding factors are taken into account [24].

In many areas (particularly in the United States), the first-contact aspect of primary care is regarded as a threat to free choice and therefore incompatible with a market (competitive) approach to the delivery of health services. A reasonable compromise might be to ensure free choice of primary-care source where there is a sufficient supply of primary-care personnel to permit choice; the development of trust in a freely chosen primary-care source might make it acceptable to have a more limited choice of specialists for referrals, particularly if there were an ongoing system of monitoring and surveillance of the quality of specialty (as well as primary) care across areas and across different medical care organisations and centres.

Primary care and health-an international view

At least among western industrialised nations, a primary-care orientation of a country's health service system is associated with lower costs of care, higher satisfaction of the population with its health services, better health levels, and lower medication use [Table 1](#).

	Primary care ranking	Outcome indicators				Average rank for "outcomes"
		Satisfaction	Expenditure per head	Health indicators	Medications per head	
United States	11.0	8.0	11.0	8.0	7.0	8.5
Australia	8.0	5.0	6.0	5.0	..	5.3
Belgium	9.0	..	4.0	11.0	6.0	7.0
Germany (West)	10.0	3.0	8.0	9.5	9.0	7.4
Canada	6.5	1.0	10.0	3.0	8.0	5.5
Denmark	3.0	..	3.0	6.5	1.0	3.5
Finland	3.0	..	5.0	6.5	..	5.8
Netherlands	3.0	2.0	7.0	2.0	3.0	3.5
Spain	5.0	7.0	2.0	4.0	5.0	4.3
Sweden	6.5	4.0	9.0	1.0	2.0	4.0
United Kingdom	1.0	6.0	2.0	9.5	4.0	5.4

Table 1. Ranks for primary care and "outcome" indicators

This conclusion emerged from a study in 11 countries during the mid-to-late 1980s [\[8\]](#), in which the primary-care orientation was characterised by a score derived from an average of scores on eleven different features of primary care. Five of these features were characteristics of the health system in general—universality of financial access to services and the extent to which it is guaranteed by a publicly accountable body; extent to which the country explicitly regulates the distribution of health-service resources to achieve or encourage equitable distribution; the assignment of a primary-care function to one particular type of physician rather than to more than one type or to a multiplicity of types; earnings of primary-care physicians relative to those of specialists; and the percentage of active physicians who are primary-care physicians. The remaining six characteristics reflected the extent to which primary-care practice explicitly attempts to achieve a higher level of performance for the specific features that define primary care and for two additional related ones. These six features are: first-contact care as assessed by the extent to which access to specialists is principally by referral from primary care; longitudinality as represented by the explicit assumption of responsibility to provide care to a defined panel of patients, irrespective of whether they have specific diagnosis or ailments limited to specific organ systems; comprehensiveness as represented by the breadth and uniformity of benefits for preventive care; coordination as assessed by the use of formal mechanisms for the transfer of information between primary-care physicians and specialists; family centredness as reflected by the explicit assumption of responsibility for care of families; and community orientation as assessed by the use of community or other epidemiological data in planning for and evaluating services. Information on these characteristics was derived from published data, supplemented by interviews with knowledgeable individuals in each of the countries.

Information on levels of satisfaction with health services was obtained from the nationally representative surveys of Blendon and colleagues [\[25,26\]](#) in which individuals were asked whether they believed their country's health system to

require only minor changes, fundamental changes to make it better, or a complete rebuilding.

Information on levels of health was obtained from reliable sources including the Organization for Economic Cooperation and Development [27], the World Health Organization [28], the US National Center for Health Statistics data bank (courtesy Robert Hartford and Sam Notzon), and the Centers for Disease Control [29]. Fourteen indicators were available in comparable form for each of the countries—namely, low birthweight ratio; neonatal mortality; postneonatal mortality; total infant mortality; life expectancy for males and females separately at ages 1, 20, 65, and 80; age-adjusted life expectancy; and years of potential life lost. (Information was also available on an additional five indicators but not for all of the countries, depending on the indicator. Findings, including these additional indicators where available, were consistent with those in which indicators from all of the countries were used; thus only the latter are included, so as to achieve uniformity of comparisons across all of the countries. For comparisons including all indicators, see ref 30.) Information on expenditures for care derive from the World Health Organization data bank and the Organization for Economic Cooperation and Development [31], and data concerning medication use from the calculations of Rublee and Schneider [32].

Countries were ranked according to their primary-care score, and these ranks were compared with "outcome" indicators including total health-care expenditures per head; the level of satisfaction as determined by subtracting the percentage reporting major changes from the percentage reporting only minor changes needed; expenditure per head for medications; and health levels as characterised by the number of the fourteen indicators in which the countries were in the top third of the distribution for all countries minus the number of indicators in the bottom third of the distribution. [Figure 1](#) plots the rank on the primary-care score against the average ranks for satisfaction, total costs, costs of medication, and health levels (when data were available). The average rank for the "outcome" indicators generally parallels the rank on the primary-care score, as does the rank for at least three of the four components of the combined outcome score (perhaps excluding satisfaction), suggesting that the primary-care orientation of a health system is associated with lower costs, less medication use, and better health levels. Of considerable interest are the differences among countries in the three groups shown in the [Table 1](#). The countries in the top group are market health systems, which are driven by demand [33]. The countries in the bottom group are those in which the supply is regulated according to perceived need for resources. Canada has characteristics of both, and is correspondingly intermediate.

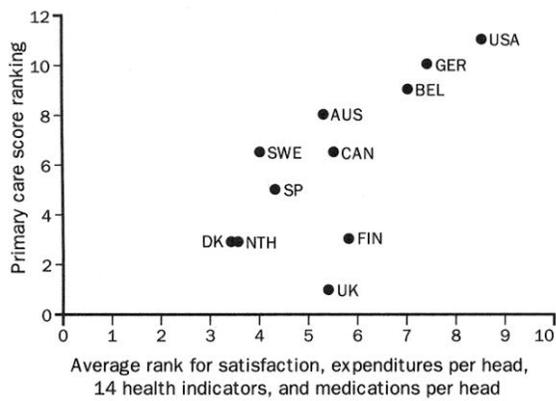


Figure 1. Primary-care score vs "outcome" indicators NB, rank 1 is best, rank 12 worst

The rankings on primary-care orientation are similar to the ranking of countries according to the disparity of wealth within the population [34]. That is, countries with more equitable distribution of wealth are, in general, countries that attempt to distribute health resources equitably and with a focus on primary-care services. They are also the countries best able to control total health-care costs [Figure 2](#), to satisfy their populations, and to achieve high levels of health [Figure 1](#).

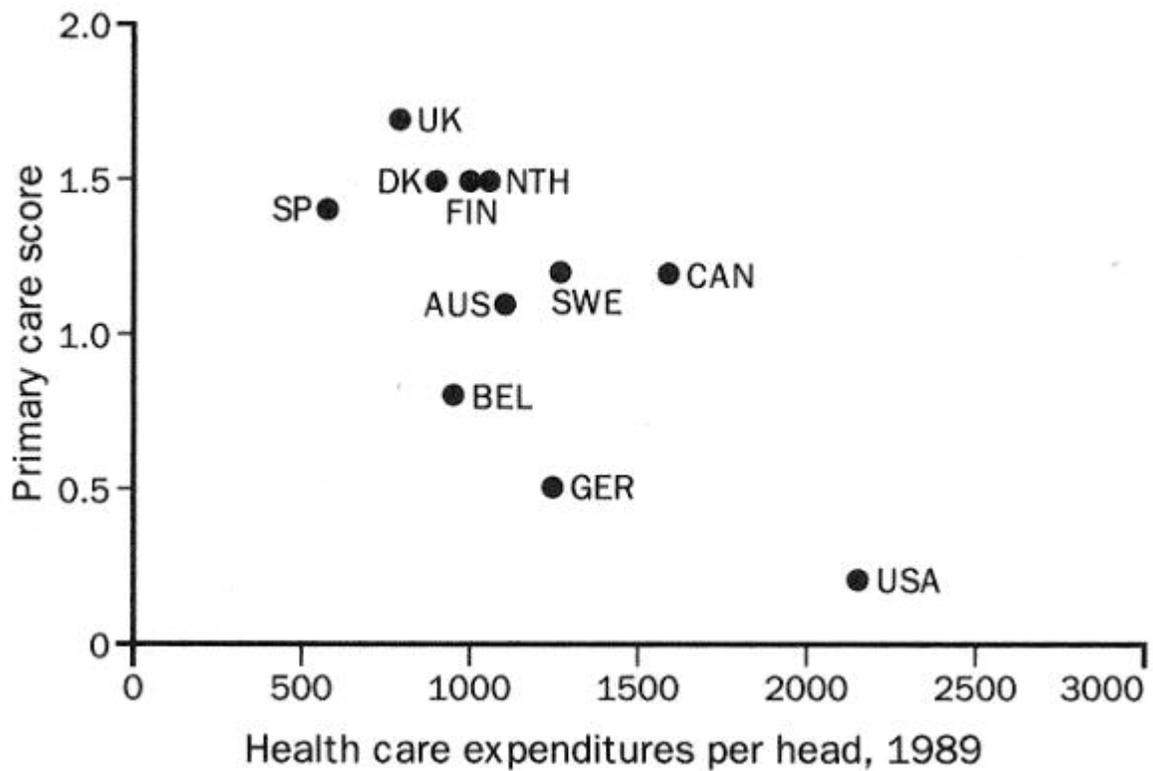


Figure 2. Primary-care score vs health-care expenditures

Improving the state of science and the art of primary care

The international comparisons presented in the previous section suggests that certain features of health systems, especially those concerned with a primary-care orientation, are conducive to better outcomes. There are, however, great voids in knowledge about the effect of other health-system features of care that are related to primary-care practice. The differences among countries in these characteristics are greater than the similarities [35]. Some of these differences may account for the less than perfect correlation between the primary-care score and outcomes, as noted on [Figure 1](#). Some countries rely chiefly on family physicians to deliver primary-care services whereas others rely on a combination of family physicians, internists, and paediatricians. In some countries, specialists are restricted to practice in hospitals, whereas in others specialists do most of their work in outpatient settings away from the hospital. In some countries (for example, Denmark), only certain specialists are restricted to hospital practice. Some countries allow direct access to certain specialists while generally requiring referral from a primary-care physician for access to other specialists. In some countries primary-care physicians admit patients to the hospital whereas in others hospital-based specialists must do so. There are also differences in the extent to which primary-care physicians assume responsibility for care when their patients are admitted to hospital. Modes of payment of physicians vary, some countries favouring fee-for-service, others capitation or salary; the system for paying primary-care physicians is not always the same as that for specialists, even within an individual country [36]. There are also differences in the extent to which cost-sharing is required in primary care; in general, countries with better regulated systems have less cost-sharing for primary care, although some are instituting small co-payments to discourage apparently excessive utilisation [37]. Some health systems organise their primary-care services in health centres rather than in individual offices. The effects of each of these characteristics and their effect in various combinations and permutations are unknown, although there is information on some of these characteristics individually from multi-site studies (eg, on the effect of co-payments, in the US-Rand Health Insurance Study) [38].

Can any conclusion be drawn about fee-for-service payments? A descriptive international comparison [39] suggested that in primary-care practice this method discourages longitudinal relationships with patients. Where fee-for-service predominates, referral rates are generally lower as are the number of encounters with patients per week. Fee-for-service reimbursement seems to be associated with a greater frequency of home visiting, possibly as a means of competing with specialists in systems where there is no gatekeeper. Fee-for-service also seems to be associated with longer consultations, but with less equitable distribution of physicians in the population. Gatekeeper arrangements did not generate public dissatisfaction and seemed to be associated with a community orientation of primary-care practice as well as total numbers of visits per head. However, gatekeeper systems are not necessarily cheap to run; the impact of gatekeepers cannot be divorced from the mode of financing.

Although the data in this paper provide strong evidence of the importance of a primary orientation in health services, there is room for speculation on the individual and combined effect of specific characteristics of primary care and on the impact of the reforms of the early 1990s. Subsequent papers in this series will expand on the challenges for the future in understanding, delivering, and improving primary care.

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