
Approach to Diagnosis by Primary Care Clinicians and Specialists: Is There a Difference?

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The Institute of Medicine's Committee on the Future of Primary Care has provided a definition of primary care that suggests that there are significant differences in problem-solving approaches between the patient-focused family physician and the disease-focused specialist. Family physicians address personal health care needs in the context of a sustained partnership with patients, their families, and the community. Since the problems they see are usually early and undifferentiated, family physicians also deal with greater diagnostic uncertainty. Specialists, whose focus is on disease, organ systems, or investigative procedures, see illnesses at a more advanced stage and generally do not deal with problems beyond the realm of their discipline. They usually do not sustain a partnership with patients, and have a shorter problem list from which to develop a hypothesis and a greater time frame in which to substantiate it.

Faced with the same patient problems as specialists, family physicians order fewer tests and procedures, yet produce identical outcomes. Mutual respect for these fundamental differences will lead to improved health care efficiency and effectiveness. In countries where family physicians rather than specialists provide first access to the health care system, health care costs are lower, a phenomenon that may be explained by family physicians' use of simple interventions in solving medical problems. Greater patient satisfaction is also found in systems where family physicians are first-contact providers.

Key words. Primary health care; family physicians; specialties, medical; diagnosis; treatment outcome.
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The definition of primary care as developed by the Institute of Medicine's Committee on the Future of Primary Care provides an excellent starting point for discussion about how the primary care clinician's approach to problem-solving may differ from that of the specialist: "Primary care is the provision of integrated accessible health care services by clinicians who are accountable for addressing a large majority of personal health care needs, developing a sustained partnership with patients and practicing in the context of family and the community."¹

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The specialist, whose focus is a disease, organ system, or investigative procedure, should provide integrated accessible health care services but cannot address a large majority of the patient's health care needs. Nor is the specialist likely to maintain a sustained partnership with patients, or to practice within the context of family and community. While physicians whose practices focus on a particular age group or sex, that is, primary care pediatricians, obstetricians, and internists, are likely to provide integrated, accessible health care and to maintain sustained relationships with patients, they are less likely than family physicians to practice in the context of family and community.

A literature search from 1965 to the present using the key words "decision-making," "specialists," "family physician," "primary care," and "diagnosis" reveals fewer than 15 papers that address the question of differences in diagnostic approach by primary care physicians and specialists.

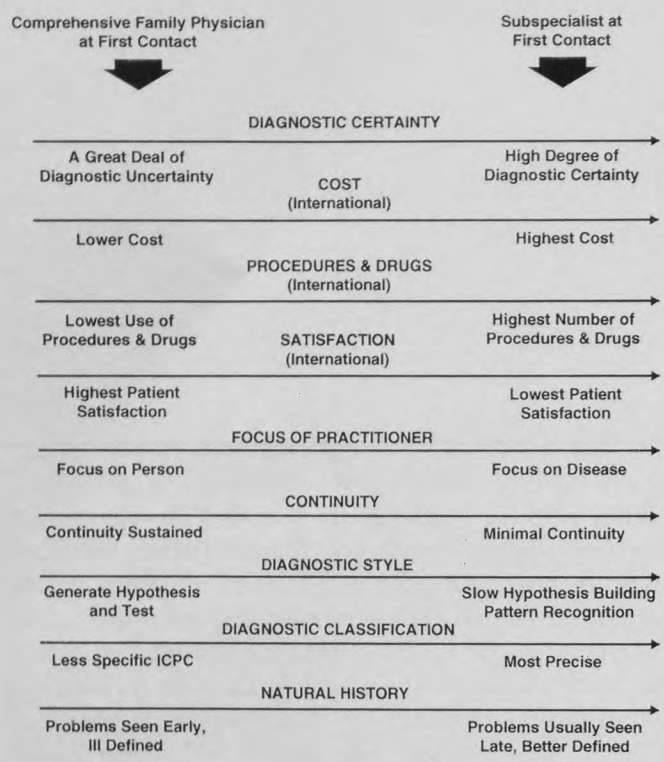


Figure 1. The continuum of a first point of contact with the health care system.

This paper supports the hypothesis that there are fundamental differences between family physicians and specialists in their approach to diagnosis and clinical problem-solving, and identifies significant differences that, if ignored, may lead to many avoidable misunderstandings, and even conflict (Figure 1).

Differences in Approach to Diagnosis

Differences in Philosophy

Consultants focus on organ systems, disease, or investigative technology that defines the boundaries of their work. The primary care specialist uses age or sex to limit the scope of practice. The family physician focuses on the patient as an individual within the context of family and community, often becomes familiar with individuals during periods of good health, and, over time, provides diagnosis when illness occurs.² Because of this variance in approach, gastroenterologists and family physicians will offer different responses to simple questions. Asked about his or her experience with acute hepatitis, for example, the gastroenterologist may discuss the clinical aspects of the last few cases, while the family physician will discuss how Mr Jones coped with an infectious disease within his family of five.

The 19th-century anthropologist Korzybski³ aptly describes the difference between these two approaches through his metaphor of the map and the terrain. The map provides an abstract knowledge of specific geographical characteristics of an area. Living in the area described by the map provides an intimate knowledge of its appearance, sound, and smell, as well as changes brought on by the weather condition, time of day, and season.

To apply this metaphor to the long-term partnership between primary care clinician and patient, both are “living in the terrain,” whereas specialist-patient relationships are more akin to “map reading.” Despite seeming more palatable, “living in the terrain” is not without problems. The complex interplay between clinical, social, and emotional problems simultaneously experienced by individuals makes compression of a patient’s problems into diagnostic classifications systems, such as ICD-10 or the DSM-IV, difficult, if not impossible.

Family physicians favor the reason-for-encounter classification, in which the patient identifies the reason for the visit and leaves the diagnosis to be determined sometime during the episode of illness.⁴ Interested in understanding the person, the family physician deals with an average of 3.5 problems within the confines of the average visit of 10 to 15 minutes. On the other hand, the specialist focuses on a single organ system or disease and specifically excludes problems outside the specialty.⁵

During the past decade, new understanding from psychopharmacologic and psychoimmunologic experiments demonstrates that the so-called medical model, which separates problems of the mind from those affecting the body, is no longer defensible. It can be likened to McWhinney’s⁶ geological fault line metaphor, in which surgical and medical specialists are on one side and psychiatry is isolated on the other. In this model, family physicians function at a location where the fault divide does not exist, because only they focus on people with undifferentiated problems of both mind and body (Figure 2). The primary care focus on the majority of personal health care needs and the sustained partnership that develops over the years blur any division between the two.

Theories of Problem-solving and Differences Between Family Physicians and Specialists

The breadth of problems encountered by a specialist as compared with a family physician is substantial. Primary care health problems are undifferentiated, encompassing all known human problems. Most extremely rare problems first present in a family physician’s office.

Combining health problems with the unique and idiosyncratic experience of each individual patient is, as Stein has articulated, “as if medicine is created anew with

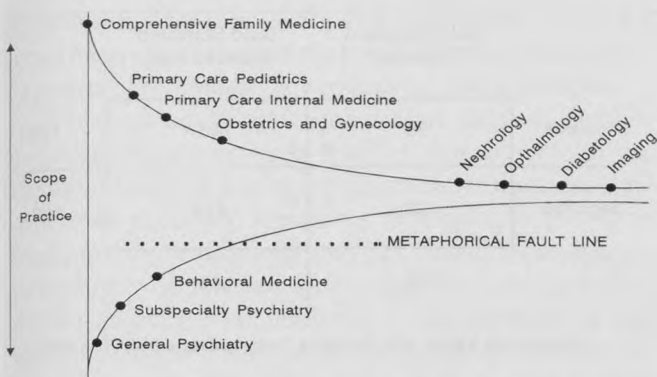


Figure 2. The continuum of difference in diagnostic approach from family physician to specialist.

each patient encounter.”⁷ Consultant specialists function with a clearly defined focus, and usually do not deal with problems outside the limits defined by their discipline. More than 20 years ago, Elstein and others⁸ described a theoretical model used by physicians for problem-solving. The hypothesis was that it was impossible for the generalist physician to operate by considering every possible diagnosis during each patient encounter. Elstein and co-workers argued that the clues acquired from previous knowledge of the patient, combined with current appearance and the response to questions, resulted in early closure of an open-ended system around several hypotheses that were rank-ordered by criteria such as prevalence, seriousness, treatability, and even novelty or the physician’s professional interest in the hypothesized condition. After narrowing the possible diagnoses into two or three working hypotheses, the clinician either builds support for one or more hypotheses, or refutes the first hypothesis and builds support for the next.

The subspecialist has a much shorter list of problems from which to draw an hypothesis, and usually has more time to substantiate the hypothesis. Because there is no interference arising from personally knowing the patient, the specialist is more comfortable using an algorithmic approach to diagnosis than is a family physician.

A second theory developed by Schmidt and Norman⁹ proposes that physicians solve clinical problems using pattern recognition. The initial few seconds of information gathering triggers a mental profile of a similar problem that the physician has previously encountered. Recognition of the previous problem prompts the physician to test how the new problem parallels the previous one. Specialists, by virtue of seeing only referred cases, typically have a much greater experience with rare problems in their specialty than would family physicians.

Knowledge about patients and their individual contexts obscures the sharpness of any pattern, making it more difficult for the family physician to recognize. Al-

though pattern recognition for the 5 or 10 most common problems may be easy and useful for the primary care clinician, patterns of infrequent problems can be obscure.

Differences in Diagnostic Style

Family physicians see problems early in their natural history, when signs and symptoms are vague and not easily identifiable with a disease or an organ system. For example, people suffering from symptoms of anxiety are seen in family practice at the rate of 3 to 4 per 100 visits, whereas patients with signs and symptoms meeting the DSM-IV criteria for anxiety disorders are seen in primary care at a rate of less than 1 in 1000 visits.¹⁰

Anxiety symptoms often impair function and reduce the patient’s quality of life even though they do not meet criteria for the DSM-IV diagnosis.¹¹ Undifferentiated anxiety problems are often resolved by personal reassurance and short-term anxiolytic therapy, illustrating Barbara Starfield’s observation that “much primary care practice is focused on problems that are not, and may never be, resolved to definite diagnosis.”¹²

Between 40% and 50% of poorly defined problems arise from stresses in an individual’s family or environment, and discussion, support, and reassurance are often the preferred therapies.¹ This practice style explains why family physicians are less precise about diagnosis and tend to use fewer tests and procedures than specialists do. The only trial found in the literature to address differences in diagnostic approach between family physicians and Canadian general internists reported that when a family physician and a general internist were confronted with the same simulated patient problems, the family physician ordered fewer tests and offered a less precise diagnosis than did the specialist, even though the outcome of the process was identical.¹³ Family physicians’ resolution of medical problems using simple interventions may in part explain the lower health care costs in countries where general practitioners or family physicians serve as the gateway to health care as compared with countries where entry is through specialists.¹⁴

Therapeutic interventions based on a classification system that is designed for research purposes, such as the DSM-IV, are unlikely to be appropriate for persons with less severe anxiety that does not meet the specific diagnostic criteria. Regardless, any individual whose anxiety symptoms impair function or reduce his or her quality of life deserves therapy.

The diagnostic and therapeutic dilemma created by problems that do not meet diagnostic criteria are common in family practice. Such dilemmas occur much less often among specialists, to whom patients are usually referred because of the severity of the problem. The lack of

	Gold Standard Diseased		Gold Standard Disease Free			Gold Standard Diseased		Gold Standard Disease Free		
Positive	400	a	b	50	450	80	a	b	90	170
Negative	100	c	d	450	550	20	c	d	810	830
	500			500		100			900	
Predictive Value of a Positive Test: $a/a+b = 400/450 = 89\%$						Predictive Value of a Positive Test: $a/a+b = 80/170 = 47\%$				
Good Test						Poor Test				

Figure 3. Prevalence of 50% abnormal blood glucose levels found in elderly patients referred for obesity (left), and prevalence of 10% abnormal blood glucose levels found in elderly patients in primary care (right).

precision in primary care diagnosis may partially explain Elstein's frustration at being unable to find a homogeneous approach to diagnosis that could be used by all physicians and would provide a valid model for evaluating competence.¹⁵

Differences in Diagnostic Strategy

Family physicians are often pressured into a style requiring broad assessment of the patient's function because of two inherent characteristics of primary care: every medical problem known to man presents in primary care, and most problems present early in their natural history. The logical first step in this process is to assess how significant the current problem is to the individual being treated.

Next, the physician notes any change in weight or appearance and detects more specific symptoms through a functional inquiry. If there remains a lack of differentiation, the physician tends to use nonspecific investigations, as described by Barondess.¹⁶ The use of the erythrocyte sedimentation rate (ESR), which determines the presence or absence of an inflammatory process in the body, is one example of this process. Most specialists find the ESR to be of little value as a diagnostic test in referred patients. For family physicians, however, the ESR is important in confirming a suspicion that no active inflammatory process is present. A low ESR rules out most possibilities, suggesting that early depression likely accounts for the "fatigue." Primary care clinicians' ability to feel comfortable with uncertainty may be attributable to personality differences between primary care physicians and their specialist colleagues.

Differences Associated with the Prevalence of Disease

Tests to discriminate between those with or without a disease are influenced by the prevalence of the disease, and

the pretest likelihood of the diagnosis being accomplished by the tests.

Lamberts et al¹⁷ have shown that most episodes of illness have a prevalence in primary care practice of less than 1:100, more often 1:1000 or 1:10,000 persons per year. General internists find a similar frequency of common problems.¹⁸ The impact of disease prevalence on the predictive value of a test is a common source of misunderstanding with respect to differences in the value of tests in family practice as compared with specialist practice. Figure 3 illustrates the positive predictive value of a test for abnormal blood glucose levels when the disease prevalence is 50%, as found in a group of elderly patients referred to an endocrinologist for obesity. The positive predictive value of this test changes when the prevalence of abnormal blood glucose levels is only 10%, as found in an elderly primary care population.¹⁹

Much debate surrounds the use of screening tests in primary care. Most conditions screened for in primary care, eg, colorectal and cervical cancer, are rare. Tests with apparently minor weaknesses in false-positive or false-negative rates become exaggerated when hundreds or thousands of tests are carried out to detect one abnormality. The result is that screening tests that are useful in a referral setting are overwhelmed by minor test weaknesses that are exaggerated by the low prevalence in the primary care setting.²⁰

Although relatively few primary care physicians are trained as clinical epidemiologists, experience makes them intrinsically aware of the concepts related to the effect of prevalence on diagnostic tests. Family physicians have been described as practitioners who gamble by playing the prevalence odds, whereas specialists, less concerned with prevalence, focus more on whether the diagnostic criteria for a disease are met.

In working with undifferentiated problems, the primary care clinician has the advantage of monitoring new

symptoms or signs over weeks or even months, which, if a disease progresses, increases the predictive value of the test as the pretest likelihood of the presence of disease increases.

The ongoing dialogue with patient and family within the sustained partnership is another characteristic of the longitudinal style of reaching a diagnosis. If there are concerns about signs and symptoms developing over a long period, making a diagnosis may necessitate more specific investigations or referral. Monitoring the evolution of a problem requires great sensitivity to the concerns of the individual and the ability to communicate openly with the patient. When a person followed for weeks or months with an evolving set of symptoms is referred to a specialist, the pressure is on the consultant to rapidly arrive at a diagnosis. This context creates a higher demand for investigative technology, with an expectation on the part of both the patient and the referring physician that the consultant will rapidly make a diagnosis and develop a management plan.

Although it is apparent that the context in which the family physician functions is very different from that of the consultant, this difference is often ignored.

The Impact of Differences in Approach to Diagnosis by Family Physicians and Specialists

Impact on the Consumer

Given the differences in approach to diagnosis and the lack of precision in dealing with undifferentiated problems at an early stage in their natural history, one can argue that the differences between primary care physicians and specialists may be best addressed by allowing an increasingly sophisticated population to self-refer.²¹ There is evidence that the approach of family physicians as the first contact in managing the health of a population confers improved health status, lower overall cost, and higher levels of patient satisfaction with the health care system.¹⁰ There is also evidence that self-referral to specialists promotes a higher level of procedure and investigation, a finding that is partially explained by the difference between the primary care physician and the specialist in approach to diagnosis.^{22,23}

In Western industrialized countries, the more the primary health care delivery system is developed, the greater the level of satisfaction, the better the health status of the population, and the lower the use of medication and the cost of health care.²⁴

Emerging patterns of practice conspire to reduce the opportunities for long-term physician-patient relationships to develop. The growth of episodic care and health

maintenance organizations and the movement of the practice population or the physician from one place or company to another, accompanied by a rationalization of hospital services and growth of managed care, tend to reduce the likelihood of long-term continuity.

Impact on Medical Education

Traditional medical undergraduate curricula attempt to cram into medical students as much information about every specialty or subspecialty as possible. The focus tends to be on learning about disease entities with little attention paid to prevalence. Problems of mind and body are usually dealt with separately. Clinical exposure is by blocks of time spent with each specialty, typically using for education patients who are hospitalized in a tertiary care, specialty, or subspecialty service.

As we approach the end of the 20th century, hospital stays are being either reduced or eliminated, making hospitalized patients less relevant to medical students. Continuity experiences with patients followed for weeks or months by students are the exception, and focusing on the patient and his or her context is rare and often not valued by the educational system. Educators would argue that the "new wave" curriculum that incorporates problem-based learning addresses problems that have been identified in traditional curricula.

Medical educators also argue that curriculum changes that relate content more closely to common and important problems found in the community result in more patient-focused education.¹⁰ Although these observations may be valid, the extensive use of complex "paper problems" incorporating rare diseases and their complications distracts students from the patient as a person and reinforces the focus on disease.

Shapiro and Talbot²⁵ describe an alternative approach to education using patient-centered concepts that more effectively differentiate the diagnostic approach of primary care physicians from that of specialists. Using a patient with a health problem rather than a theoretical paper problem creates a dramatically different context for problem-solving. The map-reading metaphor is appropriate to students dealing with paper problems, whereas "living in the terrain" is appropriate to questioning a patient for 30 to 45 minutes as the introduction to the problem. After a patient has been used as an introduction to a problem, students' discussions always evolve to an assessment of how Mrs Gray might function after cellular changes occur in the epithelium lining in her knee. Such discussions rarely occur when students are solving problems on paper.

In postgraduate education, the only effective way a young physician can begin to understand what it is like to experience the terrain rather than read a map is to follow

people over time, learning about their lives and the context in which their problems occur. Without this experience, the young physician will always be a map reader. Postgraduate trainees must work with role models who are effectively fulfilling the Institute of Medicine's definition of primary care; trainees must also gain an understanding of themselves and their reactions to patients in their individual contexts. The differences that have been identified between diagnostic problem-solving approaches used by family physicians and approaches used by specialists should have an impact on the approach to research problems in family practice.

Impact on the Family Physician

One of the most fulfilling aspects of successful family practice is physicians' growth in understanding and knowledge of the people they provide care for in the context of family and community. This point is beautifully illustrated in Berger and Mohr's book *A Fortunate Man*.²⁶

As the physician learns more about an individual in the context of family and community, the approach to diagnosis drifts away from the specialty focus on diagnostic criteria and takes into account the individual's value systems. Take, for example, the 90-year-old patient with signs and symptoms of colonic cancer who does not wish to undergo investigation or surgery. The family physician will likely honor the request rather than arguing that extensive investigations are necessary for an accurate diagnosis. This approach may alienate long-established family physicians from the mainstream of medicine, with its increasing emphasis on diagnosis and intervention.

A mature primary care clinician who fulfills the Institute of Medicine's definition of sustained partnership in the context of family and community will find that the values of the patient override the values of current diagnostic medicine, education, and practice. It may be important to point out that the "context of the family" in this introduction is not in the classic family therapy concept, but part of the process of care.^{27,28}

Conclusions

There is some evidence to support the hypothesis that the primary care clinician's approach to diagnostic problem-solving is unique. There is unfortunately little in our academic health care system today that promotes a better understanding of the differences between the diagnostic approaches of primary care clinicians and those of specialists.

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