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When there is no doctor: Reasons for the disappearance of primary care physicians in the US during the early 21st century

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ABSTRACT

Primary care doctoring in the USA today (2007) bears little resemblance to what existed just 25 years ago. We focus on what is likely to unfold in the U.S. over the next several decades and suggest that by about 2025, primary care doctoring in the U.S. could be rare, possibly unrecognizable and even nonexistent.

Seven reasons for the probable disappearance of primary care doctoring are identified. The most important reason is medicine's loss of state sponsorship: the U.S. state has shifted from a pluralistic orientation to a New Right approach. With less state protection medicine has become even more attractive for private interests.

Six additional reasons include: (1) the epidemiologic transition (chronic diseases reduce doctors to a palliative role and monitoring of incurable conditions); (2) the overcrowded health care playing field (non-physician clinicians are supplanting primary care doctors); (3) the unintended consequences of clinical guidelines (the art of doctoring is reduced to formulaic tasks, easily codified and performed by non-physician clinicians); (4) the demise of the in-person examination (in-person examination is being replaced by impersonal testing); (5) primary care doctoring is becoming unattractive (physicians are dissatisfied, alienated and experiencing income declines. Applications by U.S. graduates to primary care programs continue to decline); (6) patients are not what they used to be (Internet access and Direct to Consumer advertising are changing the doctor–patient relationship).

By 2025, many everyday illnesses in the U.S. will be managed via the Internet or by non-physician clinicians working out of retail clinics. Some medical problems will still require a physician's attention, but this will be provided by specialists rather than by primary care doctors (general practitioners).

Introduction

Doctoring today bears little resemblance to the work of "the" profession just 25 years ago. The medical profession reached its zenith around the middle of the 20th century, the so-called "golden age of doctoring," when it was the dominant profession. Different reasons have been offered for this historic dominance (Carr-Saunders & Wilson, 1933; Freidson, 1970a, 1970b; Larson, 1977; Parsons, 1951; Torstendahl & Burrage, 1990; Turner, 1984) and these are the subject of continuing debate (Johnson, 1972; Krause, 1999; McKinlay, 1977; McKinlay & Arches, 1985; Parkin, 1974). The last quarter of the 20th century witnessed what was for Starr (1982) "the social transformation of medicine," and for others, "the end of the golden age of doctoring" (McKinlay & Marceau, 2002). Few anticipated the magnitude of the unfolding transformation and most appear surprised by the rapidity with which it occurred. The seismic changes in doctoring are reflected in popular

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TV programs—Marcus Welby MD began as a community-based solo practitioner, transitioned to hospital practice and is replaced today by shows like ER, House, and Grey's Anatomy. In the UK the autonomous personal practice of the 1960s, reflected in a program like Dr Finlay's Casebook, is now unrecognizable in programs like Green Wing.

Sociological analyses of modern doctoring focus on the present and/or the recent past—they either: (a) describe what is presently happening to medicine/doctoring (the demise of professionalism, corporatization, encroachments on clinical autonomy, the emergence of competing health workers, and the erosion of the doctor–patient relationship); or (b) they offer competing theoretical reasons for the dramatic changes that have already occurred (Hafferty & Light, 1995; Light, 1993; McKinlay & Marceau, 2002). This paper takes an entirely different approach: rather than focus on what has already occurred we speculate on the likely future of primary care doctoring in the U.S. by the year 2025 (Davis, Schoenbaum, & Audet, 2005; Frist, 2005). By that time we expect most primary care physicians in the U.S. will have disappeared from the medical care scene. Our goal is to explain why this will have occurred. Just as doctoring at the turn of the 20th century was unlike anything that existed just 25 years earlier, so too will medicine by 2025 bear little resemblance to what exists today. Indeed, the transformation during the next several decades could be more remarkable than what occurred over the past 25 years (Nettleton & Hanlon, 2006). This paper contemplates the unimaginable—a time, in the not too distant future, when there are few remaining primary care doctors. The reasons why this will happen are the subject of this paper.

The 21st century state has other interests

The State had a powerful role in the rise of medicine to its position of professional dominance during the 20th century (Alford, 1975). Government agencies served a legitimating function for physician activities, accorded physicians a monopolistic position and privileged status, and served as a guarantor of high physician income (through programs like Medicaid and Medicare). Through political and legal means the State advanced physician interests beyond almost all others and disposed of perceived threats to medicine's professional dominance (Alford, 1975; Freidson, 1970a).

Of the many factors that contributed to the emergence of "the golden age" of doctoring, the most influential was the highly supportive action taken by a generally partisan pluralist state as described above. *First*, during the early 20th century the legitimacy of the medical profession was established through *state licensing and regulations*—no other group of health care providers could legitimately perform certain tasks. If there were exceptions for particular groups, they had to work under the direct supervision of physicians. *Second*, during the middle of the 20th century *third-party reimbursement* enhanced the economic position of the medical profession—they solely determined and billed for what they considered appropriate treatment. Through programs like Medicaid and Medicare (which reimbursed a physician's costs) the State acted as both an underwriter and guarantor of professional profits. *Third*, with considerable support for medical education from government, the medical profession strengthened its position by *training new physicians* in numbers that eclipsed other medically related disciplines.

We have described how this all began to unravel around the turn of the century (McKinlay & Marceau, 2002). The medical profession thrived during the earlier era of the pluralist state: in the brutal game of medical politics, the supposedly neutral umpire repeatedly ruled in favor of the profession. While often viewed as an unchanging entity, a major shift is now occurring: the State is transitioning from a pluralist to an antileviathan New Right viewpoint. This New Right (Neoconservative) approach, distinguished by its laissez faire approach and antipathy towards state intervention in economic and social life, has produced a transparent shift in the primary allegiance of the U.S. state—from protecting the interests of the medical profession and doctoring to advancing private interests (Phillips, 2006). Around the turn of the century, President Clinton declared in a State of the Union address (Clinton, 23 January 1996), "the era of big government is over." Observers in other countries have heralded "the end of the nanny state" and "the decline of the well-fed state" (Pierson, 1994). This shift in the primary allegiance of the State is reflected in many areas of social policy and illustrated in attempts at health care reform (Skocpol, 1994).

Faced with both the rapidly aging populations and rising health care costs, many governments seek ways to shed their responsibility for health care costs (Krugman, 2007). Although the U.S. health care system is more privatized than any other country, nearly half of total health care spending still comes from government sources (Krugman & Wells, 2006). Much of this is accounted for by two large social insurance programs, Medicaid and Medicare. Medicaid (a program for the poor) is sliding into trouble, a process hastened by the erosion of employer-based insurance. Without a major restructuring of U.S. health care (unlikely in the present neoconservative climate and a rapidly increasing national debt) the Medicaid program with its weak political constituency (the poor) is likely to disappear by about 2025. In other words, any remaining primary care doctoring in the U.S. at that time will likely occur in the absence of any major government supported health program for the poor (high utilizers).

Medicare, a program for the elderly, may be able to withstand political and fiscal assaults for some time, mainly because of the political power of the constituency it covers (the so-called "gray lobby" who tend to vote in large numbers). But it is also vulnerable because of escalating costs, high levels of dissatisfaction among beneficiaries and suboptimal quality (Jencks et al., 2000; McGlynn et al., 2003).

So-called "entitlement programs", like social security, Medicare and Medicaid are considered major contributors to the fiscal crisis likely to confront the U.S. over the ensuing decades. Social security has been a favorite target for politicians (recent government attempts to privatize this program have been fiercely opposed and temporarily dropped). While the costs of social security are certainly rising due to the rapid aging of the population, it is (relatively speaking) not the major fiscal challenge. The real challenges, at least for the government, are the rapid rises in

the costs of Medicaid and Medicare. Many governments are seeking ways to shift responsibility for the public health onto the private sector, and by fostering the view that individuals are responsible for their own health (Crawford, 1977; Krugman, 2007).

The U.S. Government is already encouraging private insurers to offer attractive alternatives which undermine its own Medicare program: more than 7 million people already subscribe to private plans, out of a total Medicare population of 42.5 million (Freudenheim, 2006b; Gold, 2007). Enrollments in these private alternatives to Medicare—known as private fee-for-service—are expected to double or triple by 2009. The government is underwriting the profitability of these alternative programs by offering private insurers a subsidy of 11% per Medicare patient (about $7 billion annually). This $7 billion is actually $700 million more than the government would spend covering these Medicare patients itself! Some fear the U.S. government (in fiscal crisis and believing in individual responsibility) will eventually drop this subsidy, leaving only a private system that actually offers fewer benefits (Freudenheim, 2006b).

Our view is that the U.S. government over the next several decades will successfully shed most of its historic and hard-won responsibilities for the public health. Without the support of the State, doctoring will be even more susceptible to market forces (especially competition and the need for alternative and cheaper health workers) and increasingly responsible for the care of poor and elderly patients (without the present guarantee that expenses incurred will be paid from government coffers). The prohibitive costs of health care by 2025 will likely require cheaper alternative sources of health care labor be enlisted to meet the long-term chronic disease needs of the poor and the elderly at that time. Some doctors are already abandoning the present health care system (especially the lowest-paying managed care contracts with insurers) and establishing "boutique" practices: this arrangement promises easy access and more personalized "old-time doctoring" in return for a monthly or annual retainer fee (contracts with third parties are eliminated).

Doctoring and the epidemiologic transition

As societies develop economically, their patterns of morbidity and mortality also undergo considerable change. Earlier stages of economic development are characterized by high death rates, especially among the young and mainly due to acute infectious diseases. In more economically developed societies there is a greater risk of death among older individuals, mainly due to chronic degenerative diseases. This shift, from infectious to long-term chronic diseases, has been termed "the epidemiologic transition" (Olshansky & Ault, 1986; Omran, 1971). The mortality experience of populations can be divided into three general stages: (a) *the age of pestilence and famine* (which lasted for thousands of years and produced high mortality rates due to epidemics of contagious parasitic diseases; children were at high risk and life expectancy was from 20 to 40 years). (b) *The age of infectious diseases* (from the 18th through the early 20th century these diseases declined dramatically and life expectancy rose to about 50 years); and (c) *the age of chronic lifestyle related degenerative conditions* (diseases like CHD, cancer, diabetes and stroke became the major conditions as life expectancy increased to over 70 years).

Medicine's rise around the middle of the 20th century coincided with the tail end of the infectious disease era. While often given credit for the dramatic decline in the major infectious diseases during the early 20th century medicine probably only played a minor role (McKeown, 1976; McKinlay & McKinlay, 1977; Powles, 1973), although this is still debated (Bunker, 2001; Craig, Wright, Hanlon, & Galbraith, 2006; Cutler & Meara, 2001; Nolte & McKee, 2004). Government supported public health measures (improved standards of living, better food supplies and sanitation) adopted on a population level appear overwhelmingly responsible for the end of the infectious disease era (Bambra, Fox, & Scott-Samuel, 2005). The infectious diseases were characterized by two features: (a) they were relatively sudden in onset (a person could be healthy 1 day and literally at death's door the next); and (b) they were generally of short duration (a person either died or improved within the course of a few weeks). Chronic diseases have contrasting features: (a) they are often the culmination of life-long exposure (going back as far as the neonatal period); and (b) recent developments in medical care ensure that they have a long duration (sometimes several decades). Primary care is becoming evermore complex as increasing numbers present with multiple chronic conditions. Approximately 45% of the U.S. population now (2007) has a chronic medical condition and about half of these (60 million people) have multiple chronic conditions (Wu & Green, 2000). Within just 15 years (2020) an estimated 75 million Americans will have at least one chronic condition, some 4.6 million will have five or more (Wu & Green, 2000).

Instead of securing the position of primary care physicians, increasing number of patients with multiple chronic diseases further threatens their role. This decline is attributable to two main forces. A well-informed patient population can now obtain a proxy diagnosis on-line or through health risk appraisals. As a result, patients in the U.S. with chronic diseases (such as arthritis, diabetes, lung disease or heart disease) are often well-informed about their condition before seeking treatment and prefer to obtain their care directly from corresponding medical specialists (rheumatologists, endocrinologists, pulmonologists and cardiologists). Large numbers of women in the U.S. receive most of their medical care exclusively from a gynecologist (OB/GYN and pediatrics are now considered primary care). Primary care physicians, who used to be required for a diagnosis and subsequent treatment, are reduced to being gatekeepers to medical specialists, and after a referral may never see the patient again. Commenting on the decrease in medical residents choosing careers in general internal medicine, Clarke (2007) observes:

> "In this day of complex pharmacology and technology, perhaps patients will be best served by more specialists. An educated population may demand an à la carte

approach to care, with a cardiologist handling their hypertension, and an endocrinologist handling their diabetes, rather than relying on generalists" (Clarke, 2007, p. 4).

In cases where patients are followed by primary care physicians (vs. specialists) for follow up management of chronic diseases, physicians nowadays are essentially reduced to monitoring their course. Actions can be taken to slow natural progression, or limit untoward consequences but for most chronic diseases, it is not possible to actually effect a cure. Much of modern medicine involves periodic encounters with a physician to recalibrate the management of chronic diseases, but much of this periodic monitoring can be easily done by patients in their own homes. Modestly priced devices are available for self-monitoring of lung function, blood pressure, glucose levels, peak flow for asthma patients, blood clotting rates, and even rare genetic disorders (Becker, 2004; Heneghan et al., 2006; Mendenhall & Tsien, 2000). A highly trained and relatively expensive primary care physician may not be the most appropriate health worker to undertake this routine monitoring, especially given evidence that non-physician health workers can perform these functions equally effectively, but at considerably less cost (Ettner et al., 2006; Mundinger & Kane, 2000).

The overcrowded health care playing field

Physicians had the medical playing field to themselves for most of the 20th century but the number of non-physician clinicians has increased dramatically and they are becoming responsible for increasing amounts of the medical care that was previously provided almost exclusively by physicians (Cooper, Laud, & Dietrich, 1998; Cooper & Stoflet, 1996; Safriet, 1994; Starr, 1982). With increasing numbers and organizational support for their position, non-physician clinicians appear to be using the strategies described above that physicians used to secure their special status so successfully in earlier times (Cooper, Laud, & Dietrich, 1998).

Late 20th century changes in the organization and financing of U.S. health care (especially the emergence of profit-driven corporatized care) enhanced the labor market position of non-physician clinicians. For a profit-driven organization the growth of non-physician clinicians offers an opportunity to hire appropriate replacements for a physician. Lower costs and customer satisfaction are imperatives in the new, highly competitive medical marketplace.

The rapid increase in non-physician health workers is already creating intradisciplinary (between physicians) and interdisciplinary (between physician and non-physician clinicians) rivalries. There are reports of physician underemployment in the U.S. and even unemployment in the UK where, because of reported excess of around 10,000, junior doctors are being warned to expect unemployment (Ashwin, 2005). Discussion of the intrinsic threat to doctoring resulting from statistical oversupply often overlooks the even more significant surrounding threats to doctoring presented by the developments described in this paper.

Unintended consequences of clinical guidelines

Health care variations have been the subject of research for many decades, but interest increased rapidly during the 1980s and 1990s. Clinical or practice guidelines were considered one promising means of reducing worrisome socio-economic disparities (both in the receipt of health care and health status). Well-intentioned quality assurance specialists and professional organizations developed lists (guidelines) of minimally sufficient actions that ought to be taken by any competent medical practitioner when presented with any case. Administrators presumed that adherence to these guidelines by individual providers would produce some standardization of medical care and eventually reduce health care variations. Clinical guidelines may represent the ultimate in objectification: they presume a patient has a single illness (Brotherson's Law) whereas in everyday practice patients often present with multiple conditions (comorbidities). Some fear "…guidelines reinforced by financial or legal incentives might become coercive tools to change physicians' behaviors, curtail treatment choice, limit practitioners' autonomy, and further undermine public confidence" (Timmermans & Mauck, 2005, p. 28). Opponents of guidelines were easily characterized as "old-timers" who were resisting change, or "self-servers" who obstructed well-intentioned attempts to improve the quality of care. Physician resistance quickly dissipated when medical care organizations (who now employ the majority of physicians on a salaried basis) mandated usage and even tied this to evaluations of physicians' performance (salary increases) (Epstein, Lee, & Hammel, 2004; Rosenthal, Fernandopuile, Song, & Landon, 2004). Following the experience of other industries, clinical guidelines eventually spawned "pay for performance"—a process by which providers are reimbursed for their measurable adherence to guidelines adopted and usually promulgated by their employers (Dudley et al., 2000; Rosenthal, Frank, Li, & Epstein, 2005). A recent large evaluation of pay for performance shows the program produces no improvements in quality of care or outcomes in hospital treatment of myocardial infarction (Glickman et al., 2007).

Prior to the development of clinical guidelines, independent fee-for-service providers enjoyed considerable clinical autonomy and latitude (Freidson, 1970a, 1994). Physicians could pretty much manage a case in any way they deemed clinically appropriate. Clinical guidelines changed this dramatically by promulgating generally accepted "gold standards", against which a (usually bureaucratically employed and salaried) physicians' everyday performance could be evaluated and reimbursed ("pay for performance"). Physicians nowadays are rewarded less for eventual improvements in patient outcomes and some reduction in health care disparities than for the display of behavior which conforms with their employer's goals and procedures (guidelines).

Clinical guidelines created a formula by which any patient with a particular condition should be managed, thereby eliminating consideration of the peculiarities of a case and discouraging particularistic decision making (Charlton, 1997). With the development of formulaic care (guidelines) it becomes possible for any appropriately

trained health worker (and conceivably a computer) to deliver it. As long as what is done fulfills the requirements of the formula, then quality medical care is being delivered, irrespective of whether an individual or a computer actually delivers it. Given the priorities of all organizations (both for-profit and not-for-profit) a shift to equally effective but less expensive alternatives becomes an economic imperative in a competitive health care environment. It is paradoxical that providers, usually with the best of intentions (improving quality and reducing health care variations), have dramatically altered the nature of doctoring and created through guidelines the seeds of their own demise as an independent powerful autonomous profession.

Demise of physical exam

Obtaining a detailed medical history and conducting an in-person physical examination have been long considered indispensable components of everyday primary medical care. A physician performs between 160,000 and 300,000 interviews during a lifetime of practice (Lipkin, 1996). Some medical schools require students to take courses on "the interview" or "the medical encounter", which emphasize development of careful listening and empathic skills. Along with presentations of bodily complaints patients have coexisting and equally important socio-emotional needs. Addressing these needs was an essential task during the doctor–patient relationship. Elsewhere we describe changes in the structure and content of the doctor–patient relationship (Potter & McKinlay, 2005), which are reflected in the terms now being employed: *the* "doctor" has become *a* "provider", the "patient" a "client", and the "relationship" "an encounter".

Jauhar (2006) discusses "The demise of the Physical Exam" and the experience of many medical students during training who "were apt to regard the physical exam as an arcane curiosity—after all, who had the time to concentrate on proper technique when you had to round on 15 patients?" (p. 550). He further suggests, "successive generations of physicians-in-training are increasingly open in their disdain for the quaint methods of their predecessors" (p. 550).

Jauhar believes that patient testing technologies are the tail that wags the dog of current medical practice permitting *diagnosis at a distance*, and observes that nowadays some doctors don't even carry a stethoscope. Markel (2006, p. 551) contends the stethoscope best symbolizes the practice of medicine, "…it embodies the essence of doctoring: using science and technology in concert with the human skill of listening to determine what ails the patient." While the importance of listening to the patient has a long history, from the Ebers papyrus (ca 1500 BC) and the Hindu Vedas (ca 1500–1200 BC), to Hippocrates (ca 460–380 BC), Markel, a physician and medical historian, focuses on Rene Laennec's reputed invention of the stethoscope around 1820. Prior to the stethoscope, physicians would place an ear directly against a patient's chest, a practice Laennec found disgusting because of the poor hygiene of unwashed and lice-ridden patients during the infectious disease era. He fashioned a hollow tube, about a foot in length, out of ebony or cedar: introduction of this rudimentary listening technology may represent the beginning of the distancing of providers from patients. Markel (2006) suggests that the stethoscope began the process of physically separating physicians from their patients (albeit only by the length of a hollow tube), and with new noninvasive imaging and other remote technologies, distance has grown exponentially.

Health Risk Appraisals (HRAs) provide an illustration of the way in which patient-level information can be elicited at a distance and translated into an accurate diagnostic assessment. Originally developed to assist with primary prevention, HRAs are brief, usually self-administered questionnaires which permit on-line diagnosis of disease, and/or estimation of an individual's level of disease risk. Clinicians reasonably question the diagnostic and prognostic accuracy of HRAs: nothing can ever substitute for an in-person physical exam (Althof, Dean, Fitzpatrick, Heaton, & Rosen, 2005). The availability of large prospective epidemiologic databases permits development of increasingly sophisticated instruments which have a high degree of sensitivity and specificity (Driver et al., 2007). HRAs are now available in different forms for many different disease conditions (CHD, depression, diabetes, asthma, among many others) and are increasingly accessible on-line to assess perceived risk (www.diseaseriskindex.harvard.edu).

Faced with ever increasing health care costs, the problem of health care variations and physician error with its legal implications, the advantages of on-line self-diagnosis for the profit-driven owners of the health care system (increasingly the employers of physicians) are obvious. Compared with the in-person physical exam: (a) they are self-initiated and self-administered (potentially avoiding legal threats and even the need for a provider, or any human input); (b) with on-line availability they can be completed anywhere at anytime (obviating the need and delay often associated with an in-person physical exam); (c) they are a cheaper alternative than a physician consultation; and most importantly (d) they may elicit information in a more "objective" and standardized manner giving appropriate statistical weight to associated signs and symptoms. HRAs provide another illustration of the notion of unintended consequences: they were first developed as a means for the early identification of disease and those at-risk. By the year 2025, they could become an established part of everyday health care, largely supplanting the need for an in-person physical exam by an expensive physician (Althof, Dean, Fitzpatrick, Heaton, & Rosen, 2005). Many objections (both methodological and ethical) will be advanced to resist any clinical trial which compares these on-line programs with a traditional physician visit. The means for obtaining prescription medicines on-line with either no or only minimal involvement of a physician are already available. In the near future a virtual patient will be able to obtain a reliable diagnosis on-line, select the most appropriate treatment, and with a single key stroke transmit this information to an ATM-like drug dispensary (Script Center©) where, with proper electronic identification, they can receive their medications—all without any need for an in-person encounter with a physician. An increasing number of medications can now be obtained on-line, often dispatched from overseas outlets, without requiring

a prescription from a qualified provider. A major pharmaceutical company (Merck) has already introduced a program to send medications directly to a patient's home (merckhelps.com).

Patients are known to present with *both* bodily complaints *and* coexisting socio-emotional needs (e.g., fear, depression and anxiety) which it might be suggested cannot be attended to by or through a machine (telephone or computer). Their assessment and management are important and thought to require considerable professional training and experience in listening and history taking. The modern medical care production line requiring patient throughput and brief encounters is hardly conducive to proper management of such needs. Physicians are already providing (and being reimbursed for) increasing amounts of primary care offered by telephone or on-line. For example, Medfusion's Virtual Office Visit (Medfusion, 2006) is an on-line consultation offering physicians an opportunity to "see your patients on-line at a time and place convenient to you. Simply login to Medfusion's Secure Practice PortalTM where your patient visits will be waiting for you. Most providers can typically process over 15 on-line consults per hour dramatically increasing revenue-generating productivity" (http://medfusion.net/vov). Both the socio-emotional and physical needs of patients are also being attended to by the ever increasing number of non-physician providers who have been described above. In the U.S., telephone nurse triage is being conducted at many levels, initially to reduce after hours or emergency care visits (Belman et al., 2005; Kempe et al., 2003; Showstack, Lurie, Larson, Rothman, & Hassmiller, 2003).

Primary care is increasingly unattractive work

Surveys of doctors across countries with very different health care systems, consistently report high levels of dissatisfaction with the content of their work, and frustration with the ever-changing medical workplace (Mechanic, 2003). Numerous reports of physician discontent have appeared in major medical journals over the past decade at least (Bodenheimer, Lo, & Casalino, 1999; Grumbach, 1999; Kassirer, 1998; Mechanic, 2003; More & Showstack, 2003; Showstack, Lurie Larson, Rothman, & Hassmiller, 2003; Williams et al., 2002). Very dissatisfied physicians are over twice as likely to retire and over three times more likely to cut back on their hours than satisfied physicians (Landon, 2006).

Horton (2005) characterizes doctors today as "under siege". They are continuously berated with alleged shortcomings: they are not meeting standards (clinical guidelines); they order too many unnecessary and expensive tests and procedures (computerized monitoring of performance); they make too many medical errors (resulting in 80,000 deaths annually in the U.S.); they do not sufficiently respect patients (need for patient-centered care); other providers can do their jobs as well or even better than they can; they don't keep up to date using the latest technologies; they practice so as to avoid lawsuits (defensive medicine), and so forth. Horton (2005, p. 198) believes, "…the endemic demoralization of doctors today is creating a cold front of danger that threatens the public health." The underlying reasons for physician dissatisfaction (with both the content of medical work and the workplace) are not well understood and have received little serious study.

After adjustment for inflation, U.S. physician income from the practice of medicine dropped 5.0% from 1995 to 2003 (Tu & Ginsburg, 2006). The reduction of 10.2% in average real income among primary care doctors is considerable and greater than the 2.1% drop among medical specialists. This decline in U.S. physicians' income is in sharp contrast to the inflation adjusted 6.9% increase in wages and salaries among other professional, specialty and technical occupations, over the same period. After adjustment for practice overhead, the mean annual income for general internists today is about the same as it was a decade earlier and real mean income has fallen markedly as it fails to keep pace with inflation.

Prompted by a statutory formula triggered by federal deficits, U.S. physicians are facing annual across the board cuts in Medicare payments (Pear, 2006). This is likely to produce two short-term reactions from physicians: (a) empty threats that they will not participate in the Medicare program (the program now pays $61.5 billion to 875,000 doctors and other health workers annually and they are economically dependent on it); and (b) increases in the volume and intensity of the services they perform (which exacerbates the economic problem precipitating their reaction) (Pham, Devers, May, & Berenson, 2004).

Whether physicians actually leave the profession as a result of declining incomes is addressed in a study by Powell and Nakata (2001). Using data from nine different census divisions across 8 years (1986–1989 and 1994–1997), they conclude that a decline in net income results in some physician flight (usually into early retirement). They estimate that a $1.00 fall in hourly net income increases the population of inactive physicians by 1.46% after a period of only 2 years and that an earnings decline of $10.00 per patient hour motivates 11,000 physicians to retire early. Physician remuneration is only one contributor to work dissatisfaction—GPs in the UK evidence high levels of work dissatisfaction even though their pay has improved markedly in recent years. A recent survey commissioned by Hospital Doctor magazine of 1400 GPs in the UK found two-thirds believing that medicine was a bad career choice (Carvel, 2007) notwithstanding that British doctors are now the best paid in Europe (Klein, 2006).

Physician concern about the changing content of medical work (everyday doctoring), the workplace, and government intrusions appear to be as important as their dissatisfaction with declining incomes. Elsewhere we have described the corporatization of doctoring: independent solo practice was rendered economically untenable with physicians increasingly forced to become full-time, salaried, bureaucratic employees (McKinlay & Arches, 1985; McKinlay & Marceau, 2002; McKinlay & Stoeckle, 1988). In any bureaucratic setting, physicians are required to go along (with performance directives concerning speedup, throughput, efficiency and profitability) if they are going to get along (Harrison & Ahmed, 2002; More & Showstack, 2003; Sandy & Schroeder, 2003; St Peter, Reed, Kemper, & Blumenthal, 1999; Wachter & Goldman, 2002). Physicians' performance is increasingly judged, not

on some measure of the quality of care provided, but on physician adherence to organizational norms (the number of patients seen, length of the encounter, tests and procedures ordered, costs incurred, levels of client satisfaction, etc.). Management innovations (for example, the Toyota Production System) are being introduced to increase physician productivity and reduce medical errors (Raab, Andrew-JaJa, Condel, & Dabbs, 2006). Primary care physicians resent being used to curb the increase in medical care costs, especially when the real source of increases lies in the introduction of expensive new technologies (mainly used by specialists) (Alper, 2004).

Referrals to specialists often appear to go into a black hole, with little reciprocal feedback. Much valuable time is spent calling colleagues on behalf of the patients (for a specialist opinion and test results) and many calls are simply never returned. Alper (2004, p. 47) an obviously experienced primary care provider, observes "voicemail is a new kind of isolation that has had a special impact on primary care" and suggests, "Patients may be surprised to learn that it might be as hard for doctors to find some doctors as it is for them." He also comments on how the fragmentation of medical care, especially the transfer of care to hospitalists, results in the isolation of primary physicians. Hospitalists are a new, rapidly increasing group of generalist physicians who take over from the regular primary care provider when a patient is admitted to a hospital.

Numerous media reports suggest much routine primary care in the U.S. is moving from traditional medical settings (e.g., hospitals and health centers) and being offered by large retail stores and increasingly at the workplace (Freudenheim, 2006a). Retail chains like Wal-Mart, CVS, Kroger and Walgreen's are now offering walk-in clinics as an antidote to the expense and inconvenience of a full-service doctors' visit or use of an emergency room. As if selecting burgers, French fries and a milkshake, patients can select some component of care from a posted price list and can consult a nurse practitioner working in the retail store, whose own pharmacy can immediately fill any prescription written by the nurse (and in states where nurses do not have prescribing authority, the centers receive blanket authorization from a physician medical director). Thousand of these clinics are now opening across the United States with the encouragement of the insurance industry who believes it will save them money (Landro, 2006). Uwe Reinhart believes these clinics "can teach the rest of our health care system how primary health care could be done and brought to the public" (Freudenheim, 2006a, p. 18).

Given such developments—declining incomes, workplace alienation, reduction in status, adversarial relationships and an increasing sense of isolation—it is not surprising that U.S. physicians in training are steering away from primary care. There are proposals to eliminate primary care training programs under Title VII of the Public Health Service Act and provide no increase for the National Health Service Corps (NHSC), both of which help pay for the training of primary care doctors (Rovner, 2006). With their eye towards the future, medical students appear to sense what is likely to unfold (Newton & Grayson, 2003). Currently (2006) nearly 80% chose subspecialty or hospitalist careers—a 30% increase since 1998 (Bodenheimer, 2006). The percentage of third year U.S. medical students matching to primary care specialties (internal medicine, pediatrics and family medicine) peaked at 53.2% in 1998 and has fallen to 20% in 2005 (ACP, 2006; Newton & Grayson, 2003). Even among students going into primary care, many see themselves working only part time (Lambert & Holmboe, 2005). International medical graduates (IMGs) play an increasingly important role in the U.S. health care system and now comprise approximately 25% of all practicing doctors nationwide (Akl, Mustafa, Bdair, & Schünemann, 2007). Boulet, Norcini, Whelan, Hallock, and Seeling (2006) note that while some primary care functions are being met by nurse practitioners and physician assistants it appears IMGs are filling gaps left vacant because of changes in U.S. medical students' career preferences. Some IMGs who are not U.S. citizens or permanent residents may be entering primary care to increase their odds of being able to remain in the U.S. because of a societal need for their services (Salsberg & Nolan, 2000).

Career choice in the U.S. is changing over time: subspecialties remain a preference; hospitalists are increasing while General Internal Medicine continues to decline (Bodenheimer, 2006; Garibaldi, Popkave, & Bylsma, 2005). There is no doubt that a combination of factors is reducing the attractiveness of primary care as a future career in medicine. The choice of specialty appears to also be influenced by physician mentors and positive role models. Students appear to select a field of study because they desire to emulate someone they particularly respect or admire. Primary physicians on the front line often appear as negative role models—they understandably complain to any sympathetic ear that they are underpaid, harassed, overworked, overscheduled and lack necessary administrative support. The seriousness of the situation is suggested in the title of a report from the American College of Physicians—"The Impending Collapse of Primary Care Medicine and Its Implications for the State of the Nation's Health Care (ACP, 2006)." In a recent article entitled "Primary Care: Will it Survive?" (Bodenheimer, 2006) warns that urgent action is required to save primary care before the levees break. The AAMC in the U.S. has called for a 30% increase in first year U.S. medical school enrollment by 2015, and some 12 new medical schools are planned (Harris, 2007). With the notable exception of Starfield's work (Macinko, Starfield, & Shi, 2007; Shi & Starfield, 2001) there are few counterbalancing positive reports on the vital importance of primary care both for the health care system and the health of the population (Grumbach & Bodenheimer, 2002).

We obviously view the future of primary care as somewhat worrisome. Others, however, have a more optimistic vision. Jones and Green (2006), for example, discuss shifting constructions of professional identity in the UK in the context of debates about reflexive modernization. Using data from 20 "early career GPs" (14 women and 6 men) they discern a contrasting orientation to primary care work, a "new general practice", which explicitly rejects many of the values of traditional rhetorical accounts (such as vocation). They speculate that a shift from 'vocational' professionalism could even improve service quality and potentially improve relationships with clients (p. 927).

Rise of a new breed of patients

Towards the end of the 20th century there was a perceptible shift in the balance of power in the doctor–patient relationship. Sensing that changes were occurring, Reeder and Berkanovic (1973) first employed the term "consumer" to describe a patient and reflected on the changing professional–client relationship. Haug (1973) discussed "the revolt of the client" and "the obsolescence of the concept of professionalism". Lazare et al. (1975) also recognized profound changes were occurring and substituted the term "customer" for "patient" when discussing the changing doctor–patient encounter. Freidson (1973) thought changes in the financing of medical care were producing a "new demanding patient"—their prepayment of medical insurance premiums was perceived to provide certain entitlements. McKinlay (1973) detected a change in the ethos of trust underlying the encounter: from credat emptor ("let the taker trust") to caveat emptor ("let the buyer beware"). Mechanic (1996) also argued that organizational changes in medical care were producing an erosion of trust.

The literature on health care seeking used to emphasize the importance of the "lay referral system"—a potential patient's surrounding social network of family and friends who are informally consulted about worrisome symptoms and who shape the nature and timing of utilization behavior (Freidson, 1960). With the arrival of the Internet an increasingly sophisticated electronic referral system is now available for consultation by many patients traveling on the electronic highway to some type of medical help (Nettleton, 2004; Nettleton & Hanlon, 2006). Information easily obtained on the Internet is now shaping utilization behavior—what should be presented, when, where, to whom, and with what expectation. Hardey (1999) suggests the Internet "is an inherently interactive environment that transcends established national boundaries, regulations, and distinctions between professions and expertise" (p. 820).

There is potential for the new knowledge-empowered patient to arrive at the doctor's office having been activated by Direct to Consumer (DTC) advertising: often diffuse symptoms are portrayed on television and Internet advertisements and viewers are urged to "ask your doctor". Patients used to present with various signs and symptoms and ask for help ("the doctor knows best"). Nowadays, watching TV and after checking on the Internet one might conjecture that they will inform a doctor of their malady and request a specific medication. The competitive environment in medicine today may mean that many requests will be actually complied with: if not, the patient can often seek help from another provider. One study reported that 30% of patients in the U.S. consulting a physician make a specific request for a medication they have seen in the media (Brodie, 2001). Remarkably, some 44% get their DTC-activated request granted by a physician (some 13% of the public overall). We have already discussed the way primary care doctors are being reduced to a "gate-keeping" role, simply a referral agent to specialists at particular facilities who have been already identified prior to a patient's consultation with their primary care provider (Alper, 2004).

Nowadays, access to knowledge concerning health is readily available to many patients; they can easily get on-line and consult electronic health books, chat with others about their own experiences, self-diagnose, evaluate different treatment options and their costs, select a particular medical facility (after assessing their comparative performance). Patients who frequently use the Internet for health are likely to suggest specific illnesses they may be suffering from (36%) and are even more likely to request a specific treatment (45%) (Harris Interactive Inc., 2001) and even do a background check on a potential provider (where they went to medical school, what they specialized in, how long they have been in practice, their performance relative to other providers, and whether they have had malpractice judgments against them). The "medical check-up" used to involve a patient being assessed by a knowledgeable provider. Nowadays, the check-up also entails an electronic assessment of the physician by a knowledgeable patient.

Patients not only go on-line to look up illnesses or assess physicians, they are also looking outside the traditional allopathic approach to maintain or improve health. Surveys of U.S. adults have reported on the magnitude and ever increasing use of complementary and alternative medicine (CAM) providers: from approximately 33% in 1990 to over 42% in 1997 (Eisenberg et al., 1998), and 62% in 2002 (NCCAM, 2007a, 2007b). Similar rapid increases have been reported for other countries (Cant & Sharma, 1999; Coulter & Willis, 2004; MacLennan, Wilson, & Taylor, 1996; Murray & Shepherd, 1993). Eisenberg and his colleagues (1998) estimate that out-of-pocket payments for CAM in the U.S. (approximately $12 billion annually) now exceed out-of-pocket payments for hospital services. Most CAM patients also consult traditional (allopathic) physicians, either before or concurrent with use of CAM providers (Barnes, Powell-Griner, McFann, & Nahin, 2004; Eisenberg et al., 1998; Ni, Simile, & Hardy, 2002; Paramore, 1997; Wolsko, Eisenberg, Davis, & Phillips, 2004). Few patients appear to use CAM providers as their exclusive source of primary care. More importantly, most CAM patients do not disclose their use of CAM providers to their primary care physicians (Eisenberg et al., 1998; Graham et al., 2005; NCCAM, 2007a, 2007b). The increasing use of CAM appears to reflect some change in the perception of traditional allopathic medicine and possibly some change in the position of the doctor in U.S. culture. The utilization behavior of CAM patients seems to reflect divided loyalties—whereas "Doctor knows best" was once the prevailing view, nowadays for increasing numbers, CAM providers (acupuncturists, chiropractors, naturopaths, spiritual healers, massage therapists, etc.) offer an alternative means of help (Lee, Charn, Chew, & Ng, 2004; Shumay, Maskarinec, Kakai, Gotay, & Cancer Research Center of Hawaii, 2001). Some commentators view the rise of CAM as reflecting cultural changes in U.S. society (e.g., disaffection with reductionist medicine, loss of confidence in the effectiveness of the biomedical approach and the popularity of a more holistic view of health, and the emergence of introspective means of achieving health potential) (D'Crus & Wilkinson, 2005; McCaffrey, Pugh, & O'Connor, 2007). One might also propose that traditional biomedicine overlooks the importance of environmental, nutritional and lifestyle

contributions to health (D'Crus & Wilkinson, 2005; McCaffrey et al., 2007). Coulter and Willis (2004) believe part of the explanation for the rise of CAM lies in demographic and epidemiologic trends (the aging of western populations and the associated increase in chronic diseases).

Summary and implications

Doctoring today (2007/2008) bears little resemblance to what existed just 25 years ago. Medicine's rise to dominance during the mid-20th century and its precipitate decline by the 21st century are described elsewhere (McKinlay & Marceau, 2002). This paper shifts the focus from unresolvable theoretical debates over what has already occurred to what is likely to unfold over the next several decades and provides various reasons for it. Given the transformation of doctoring now occurring, it would be foolhardy to think that the new digital age of doctoring will be only a minor variation on earlier primary care practice in the U.S.: we suggest that by about 2025, primary care doctoring could be extremely rare and possibly unrecognizable.

What will primary care in the U.S. look like by about 2025? Faced with the trends already discussed, the U.S. Government will have divested itself of responsibility for personal medical care services, leaving this to private interests (supported by an ethos of personal responsibility). At that time and with little effective resistance, unrestrained private interests will increasingly impose their logic on all medical care activities (e.g., rationality, competition, concentration, cheaper labor costs and productivity) in order to maximize profitability. Well-intentioned providers and researchers will facilitate this process by continuing to support innovations designed to improve the quality of medical care while remaining largely oblivious to their unintended consequences. The majority of routine health problems now consuming much of a doctor's valuable time will be managed through digital means or by non-physician clinicians. A randomized trial will eventually demonstrate that primary care doctoring can be effectively, efficiently and safely performed on-line, providing post hoc justification for already well-established digital practice. Doubtless, these trial results will be vigorously contested by professional groups as methodologically flawed and unethical, even though the alternative is medical deprivation. Some medical problems will obviously still require personal attention, but these will be attended to by either salaried non-physician providers (working out of retail clinics or at work sites) or by salaried physician specialists. The few primary care doctors who remain in the U.S. will be outside mainstream medicine, working in particular areas (like inner cities or remote rural settings), or providing concierge or boutique care to wealthy patients.

While we use the term "primary care" throughout this paper, it is questionable whether it is an appropriate descriptor for the situation that is likely to evolve in the U.S. over ensuing decades. There are many definitions of "primary care" (Stoeckle, 2006), but the term usually connotes a *first-step* in the process of help-seeking for care *provided personally*, in a *coordinated fashion*, and *continuously* over time. The scenario we have outlined for the future suggests that this descriptor will not apply to conditions on the ground: (1) primary care doctors will be replaced by a computer or a non-physician clinician as the point of first contact with U.S. medical care; (2) digitally provided medical care will never approach the level of personal service common during the golden age of doctoring; (3) continuity of care is already becoming a rarity in the U.S. and nowadays seldom discussed; (4) general medicine is already being replaced by specialized practice (to which patients have access without the approval of physician gatekeepers). In other words, the ideal of primary care doctoring will be increasingly at odds with the reality of digitally provided or specialized medicine. What used to be termed "primary care" will be conducted digitally, or be delivered by non-physician providers, or specialists. And the obsolescence of the current definition of primary care doctoring in the health care marketplace of the future will be reflected in the dismissal of the term "primary care" as a misnomer.

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