SECTION

I

Practice Operations and Functions

CHAPTER

1

International Physician and Health System Practice: Can U.S. Reform Efforts Learn from Other Nations?

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The National Library of Medicine defines medical group practice[1] as: "Any group of three or more full-time physicians organized in a legally recognized entity for the provision of healthcare services, sharing space, equipment, personnel and records for both patient care and business management, and who have a predetermined arrangement for the distribution of income." Medical group practice—which also may refer to collaborative medical work by physicians—is grounded in the social and economic, as well as the preventive and curative practices of physicians. The physician's role as a healer has had many different facets since prehistory. From shaman to herbalist to surgeon to specialist, the role of the physician has been intertwined with social, economic, scientific, and technological change.

Throughout most of Western history—albeit, with some notable exceptions—physicians have had solo practices. However, beginning in the eighteenth century and accelerating rapidly in the nineteenth and twentieth centuries, several forces radically changed not only what physicians were capable of accomplishing, but also how and where their services could be accomplished in the United States and in Europe.

This chapter examines changes in the physician's role and traces the emergence of medical group practice in the United States and other industrialized nations. It is divided into three sections:

- Section one reviews the history of Western medicine, starting with Egypt; traces the origin of medical group practice up to the twentieth century; and concludes by noting the institutional forces influencing physician practices.
- Section two focuses on the modern development of medical group practice in the United States, notes the influence of healthcare financing on group practices, explores the impact of the Patient Protection and Affordable Care Act of 2010, and documents the benefits that medical group practices provide to physicians.
- Section three contrasts the financial access, cost, and quality of healthcare in the U.S. health system with those of 11 other countries, examines the growth of medical groups within these other countries, analyzes the systems of medical malpractice liability used by seven of these countries and the

United States, and concludes with a set of recommendations for improving health reforms in the United States.

Origins of Medical Group Practice

The Western notion of medical group practice has its origins in the ancient medical practices of the Egyptians (circa 2600–450 BC) and the Greeks and Romans (circa 600 BC–476 AD). Although the Egyptian and Greco-Roman frameworks for medical practice overlapped, separately these frameworks endured for 2,000 years each; together, they spanned nearly 3,500 years. The modern practice of medicine is the result of a paradigmatic shift in scientific thinking[2] that started with the Muslims (circa 750–1100 AD) and continued through the Industrial Revolution (circa 1760–1900 AD). Because ancient medicine is far removed from modern practice, the following sections delve into the Egyptian and Greco-Roman medical practices, and then briefly highlight the shifts in paradigmatic thinking about medicine that have implications for medical group practice from the fifth through the nineteenth centuries. Table 1-1 provides an overview.

Egyptian Medical Practices

Within the Western tradition, the earliest known physicians engaging in group practice served in the court and temples of the Egyptian pharaohs.[3] For the Egyptians, religious and medical practices were separate but intertwined, with three types of physicians: priests, magicians (*sau*), and professionals (*swnw*). As with the prehistoric practice of shamanism, religion and medicine were the purview of physician-priests.[4] Most notable among these physician-priests were those who worshiped the lion-goddess Sekhmet, the punisher of sinners; of slightly less note were those who worshiped Serqet, the goddess of breath who is identified with the scorpion.[5]

For illnesses without observable causes—such as infectious diseases—only magic, invoked through incantations or prayers by the priest- or magician-physicians (*sau*), could placate angry gods or confront and drive away demons and cure disease.[5-8] For these and other mystifying diseases, Egyptians believed that medicine used alone would only relieve suffering, but—when paired with magic—medicine allowed the patient to recover strength and vitality.[9]

Medical Practices, Physicians, and Specialization

Nonetheless, the medicine practiced during the 2,000 years of Egyptian reign included an impressive pharmacology, a rudimentary knowledge of human anatomy and the circulatory system, and a sophisticated approach to treating trauma-related injuries. Contributing to general health were beliefs and practices of personal hygiene and public cleanliness. The knowledge about medical practices was regarded as sacred and was codified in scrolls, which were available in scriptoriums called *Peri-Anhk* or Houses of Life. Religious beliefs that the body was the vessel for the afterlife prohibited physicians from dissecting and gaining a sophisticated understanding of human anatomy and physiology.[5-8]

Interestingly, the Egyptians employed physicians, at public expense, to care for the workers building the pyramids, as well as those working the mines and quarries. There also is some evidence to suggest that workers were allowed sick leave and were awarded pensions for physically incapacitating on-the-job injuries. Although evidence of medical practices in the military are scant, it is known that physicians accompanied and treated wounded soldiers and that standards of physical hygiene, including shaving facial hair and trimming hair, were enforced.[7]

Most medical doctors were the professional physicians (*swnw*), who could be either male or female. According to records from the Old Kingdom and First Intermediate Period (circa 2686–2040 BC), the professional physicians were organized hierarchically, with the *swnw* supervised by overseers of physicians (*imy-r swnw*).[5-8] Moreover, several authorities argue that the overseers reported to chief physicians, who were led by master physicians.[6-8] At the apex of the hierarchy were the inspectors of physicians who were subject to the Overseer of the Physicians of Upper and Lower Egypt.[5-8] Importantly, although some *swnws* were scribes—able to write and, thus, read medical texts—most were not. Given the extensive medical knowledge of the Egyptians, and the limited literacy of the physicians, this was probably a factor driving medical specialization.[5,6]

Implications for Medical Group Practice

The written and archeological evidence from the Old Kingdom (circa 2600 BC) through the Late Period (circa 600 BC) reveals that physicians became highly specialized. Physicians specialized in treating ailments of the eye, teeth, mouth, or stomach. They also specialized in women's health, including pregnancy testing, childbirth, and contraception.[5-8] With each physician specializing in the treatment of different body parts and illnesses, the physicians for the court of the pharaoh formed a *de facto* multispecialty group.[3] The major force that influenced physician practices during this period was the demand for organized labor for public projects like the pyramids.

Table 1-1 Historical Influences on the Formation of Medical Group Practice in Western Culture

Historical Period	Circa	Description	Physician Practice	Key Influences
Egyptian	2600–450 BC	The Egyptians were the first to organize medical groups, both to serve the courts of the pharaohs and to serve the general population. Medicine was specialized around illnesses and symptoms affecting each part of the body. Significantly, medical, religious, and magical practices were all drawn upon to treat illnesses. Multispecialist groups were formed because of medical specialization and the need to treat injured and sick workers for public projects, such as the pyramids, as well as to treat military-related traumas. Medical texts on scrolls were preserved in *Peri-Anhk* (Houses of Life) at Memphis and other cities. The Houses of Life served as scriptoriums, precursors to the libraries developed by the Greeks.	Multispecialty and solo practices	Organized labor for public projects; magical and sacred beliefs about disease
Greco-Roman	600 BC–476 AD (Western Roman Empire) 300–1000 AD (Eastern Empire)	The Greeks rationalized medicine, separating it from magical and religious practices. Their framework of the four humors allowed doctors and patients to have a shared understanding of why illnesses occurred and encouraged a systematic approach to treating illnesses. This framework encouraged physicians to be generalists and to work as solo practitioners. The Romans adopted and extended Greek medical practices. Roman innovations during its Imperial period included creating a medical staff and establishing hospitals for the military; providing public physicians for citizens in cities; and building public baths, aqueducts, and sewers. For both the Greeks and Romans, religious temples also were medical practice arenas and precursors of medical schools.	Mostly solo practices	Military hospitals and government policies establishing public health as a priority; humoral framework of disease
Islamic Empire	600–1100 AD	The followers of Mohammed not only created a new empire stretching from Spain to Northern Africa to Persia, but also helped develop the modern notion of the hospital as a place to operate on and treat the sick, regardless of class or wealth. Translating and drawing upon Greek and Roman books on medicine, Arab scientists and scholars advanced the knowledge of chemistry, as well as human anatomy and the circulation system. They also introduced the practice of inoculation to combat smallpox and other contagious diseases.	Mostly solo practices	Religious beliefs; scientific advancement and public hospitals; humoral framework of disease
Medieval and Renaissance (Western Europe)	500–1600 AD	With the support of the Roman Catholic Church, medical schools thrived during the late Middle Ages; the licensing of physicians was introduced, along with professional training and practice restrictions. During the Renaissance, Greco-Roman and Muslim medical practices were rediscovered and extended. The humoral theory of disease was challenged, as an accurate understanding of human anatomy and new understandings of circulation and chemistry were developed. Groups of physicians delivered healthcare for the military, taught and practiced in medical schools, and provided care in almshouses, dispensaries, and hospitals.	Mostly solo practices	Religious beliefs; schools of medicine and hospitals; humoral framework of disease
Enlightenment and Industrialization (Europe and North America)	1600–1900 AD	The germ theory of disease gradually became dominant, supplanting the humoral framework, as modern understandings of circulation and respiration were developed and infectious micro-organisms were discovered. New technologies (e.g., microscopes, vaccines, stethoscopes, antiseptics, radiology) added complexity to the practice of medicine. The new technologies stimulated specialization and the growth of multi- and single-specialty medical group practices, as well as hospitals.	Emergence of single- and multispecialty practices	Scientific and technological advancements; germ theory of disease

Greco-Roman Medical Practices

In contrast to the Egyptians, the Greeks emphasized the microcosm–macrocosm connection, the relationship between the healthy human body and the harmonies of nature. This philosophy can be traced to Empedocles (circa 450 BC), who

> . . . regarded the four elements, fire, air, earth and water, as "the roots of all things," and this became the corner stone in the humoral pathology of Hippocrates. As in the Macrocosm—the world at large[—]there were four elements, fire, air, earth, and water, so in the Microcosm—the world of man's body—there were four humours (elements), viz., blood, phlegm, yellow bile (or choler) and black bile (or melancholy), and they corresponded to the four qualities of matter, heat, cold, dryness and moisture. For more than two thousand years these views prevailed.[9]

Hippocratic Medicine

Egyptian medicine, as well as the philosophy of Ionia (western Asia Minor) and mainland Greece, influenced Hippocrates, who was born on the Greek island of Kos (circa 460 BC) into an aristocratic family, which was renowned for its medical knowledge. Hippocrates learned, practiced, and taught medicine in Kos, but he also traveled widely throughout northern Greece (Macedonia, Thrace) and died in Thessaly.[10] Hippocratic medicine is distinct from Egyptian and other ancient approaches to medicine because of its appeal to reason and observation, rather than to rituals and supernatural forces. For example, despite the basic stability of the four humors—the bodily fluids of blood, phlegm, yellow bile, and black bile—Hippocrates argued that people were affected by climatic and, especially, seasonal changes: "phlegm, cold and moist, prevails in winter; blood, warm and moist in spring; yellow bile, warm and dry in summer; and black bile, cold and dry, in autumn."[10] Hence, a person was healthy when the four humors were in equilibrium; illness caused the humors to become unbalanced, but climatic and seasonal changes also affected this balance. The role of the doctor was to apprehend both the type (diagnosis) and the probable outcome (prognosis) of the disease. Physicians should counter the imbalance in the humors of the ill person, allowing the power of nature to cure the disease.

Hippocratic medicine was also known for being patient-centered; the compendium of writings ascribed to Hippocrates and his disciples underscore the importance of careful observation, the writing of comprehensive medical histories, the provision of comfort to dying as well as recovering patients, and the injunction to do no harm to patients.[10,11] The significance of Hippocratic medicine is four-fold, in that it:

- Created a lofty role for the selfless physician—which has survived as a contemporary model for professional identity and behavior[12]
- Taught that the understanding of sickness was inseparable from the understanding of nature[13]
- Began the Greek tradition of teaching medical knowledge to nonfamily members, laying the foundation for modern medical schools[14]
- Enabled physicians to be trained in all aspects of medicine, reinforcing the notion of the solo, general practitioner

Alexandrian Medicine

Hippocratic medicine had its shortcomings because it lacked a clear understanding of the internal workings of the human body. The framework of the four humors was a speculative way to link external signs of health with the internal workings of the body. It would take numerous scientific contributions from Aristotle (circa 384–322 BC) to Galen (circa 129–216 AD), as well as major changes in ancient society, to arrive at a more developed understanding of human anatomy, pathology, and physiology.[13,14]

Importantly, many of the ancient advances in human anatomy and physiology are traced to the Greek studies of medicine in Alexandria, Egypt. The city was established by Alexander the Great in 332 BC, and was ruled by his foremost general, Ptolemy, and his descendants until the death of Cleopatra IV in 30 BC. Under both Ptolemaic and Roman rule, the library in Alexandria was the leading center for knowledge in the ancient world. About 300 BC, Ptolemy I established a university and school of medicine.[15] Studies of human anatomy and physiology briefly flourished in Alexandria as both dissection and vivisection of criminals was allowed.[13]

During this period (circa 300–250 BC), Herophilus and Erasistratus made notable discoveries and contributions to medical knowledge. An adherent to the humoral framework of Hippocrates, Herophilus studied the brain (which he regarded as the site of intelligence) and the spinal cord; both he and Erasistratus distinguished between motor and sensory nerves. Herophilus also investigated the eye, the alimentary canal (he is credited with naming the duodenum), the reproductive organs, and the arteries and veins. Erasistratus also contributed to the study of anatomy, accurately describing the four

chambers of the heart and other aspects of the vascular and nervous system. Moreover, combining pneumatic theory with corpuscular theory, Erasistratus attempted to explain processes such as respiration, nutrition, digestion, and growth.[13,14]

Galenic Medicine

Galen, a central figure in medicine during the second century AD in the Roman Empire, would make the four humors the dominant framework for medicine until the Renaissance. Born in Pergamon (129 AD), a major Greek city in Asia Minor, Galen emerged as the leading medical authority in Rome during the reign of Marcus Aurelius (161–180 AD). Following his father's death and with his newly inherited wealth, Galen continued his medical education in Smyrna, Corinth, and Alexandria. He then spent several years (157–161 AD) in a prominent position as the chief physician for the gladiators in Pergamon before practicing his art in Rome (162–166 AD). His surgical, diagnostic, and therapeutic abilities were so extraordinary that when he briefly returned to his native Pergamon in 166 AD to avoid the plague, he was invited by the Emperor Marcus Aurelius to join him on his campaign against the Germanic tribes. Galen continued to practice in Rome until he died around 216 AD.[16]

Building on the work of Hippocrates, Plato, and Aristotle, as well as Herophilus and Erasistratus, Galen expanded the framework of the four humors, linking human temperament to the framework illustrated in Table 1-2.

Unlike Hippocrates, Galen argued that humoral imbalances can be located in specific organs (i.e., heart, gallbladder, liver, and head), as well as in the body as a whole.[16,17] Galen loosely linked these points of the body to Plato's notion of the tripartite soul: head (reason), heart (emotion or spiritedness), and liver and gallbladder (desire). As Boylan points out,

> [T]he sort of just balance of the soul that Plato argues for in the *Republic* is also the ground of natural health. When one part of the soul/body is out of balance, then the individual becomes ill. The physician's job is to assist the patient in maintaining balance. If a person is too full of uncontrollable emotion or spiritedness, for example, then he is suffering from too much blood. The obvious answer is to engage in bloodletting (guaranteed to calm a person down).[16]

Moreover, drawing from Aristotle, Galen helped to systemize humoral theory further by linking the treatment of illnesses to the theory of contraries, categorizing various mixtures to account for the properties of drugs: "Drugs were supposed to counteract the disposition of the body. Thus, if a patient were suffering from cold and wet (upper respiratory infection), then the appropriate drug would be one that is hot and dry (such as certain molds and fungi—perhaps hinting at the potential of penicillin)."[16]

Galen not only excelled as a practitioner, but also as a critical empiricist and as a synthesizer of all existing medical knowledge. He experimented with live animals to study their nervous, circulatory, and muscular systems, and provided public demonstrations of his dissections of apes, goats, pigs, sheep, and other animals. Galen's body of writing included at least 300 titles, of which 150 survive on topics ranging from anatomy to physiology to surgery to philosophy.[17] Moreover, as a court physician (*archiatri sancti palatii*) for the Emperor Marcus Aurelius, Galen surmounted the stratification of society during Roman times, elevating the role of physician to what some consider its highest point.[18]

Physicians, Court and Public Practices, Military Medicine, and Public Health

Unlike the Greeks, the early Romans did not practice rational medicine, but relied on folk remedies passed down from father to son and, following Etruscan practices, on appeals to various deities. Like the Egyptians, the Romans believed that illnesses were caused by divine intervention. As the Greek city-states crumbled between 200 BC and 146 BC, the ruling Roman class began to

Table 1-2 Galen's Expanded Framework of the Four Humors[13,16]

Elements	Seasons	Life Cycle	Humors	Quality	Temperament
Air	Spring	Childhood (morning)	Blood (heart)	Warm and moist	Sanguine (serene, unruffled)
Fire	Summer	Youth (noon)	Yellow bile (gallbladder)	Warm and dry	Choleric (bold, exuberant)
Earth	Autumn	Adulthood (afternoon)	Black bile (liver)	Cold and dry	Melancholic (stubborn, insolent)
Water	Winter	Old age (evening)	Phlegm (head)	Cold and moist	Phlegmatic (idle, foolish)

adopt many Greek practices, including the use of professional physicians. Some Greek physicians traveled to Rome to seek employment as free men; however, many physicians were purchased as slaves by wealthy Romans, who saved medical fees by having these slave doctors attend to the health of their families.[15,19]

Between the second and first century BC, the Roman Empire became a world power, encompassing numerous cultures and religions. Understandably, with the influx of foreigners in Rome—and because anyone could declare him- or herself a healer—the practice of medicine was in low repute and dominated by charlatans who claimed specialties in one or another disease. Roman decrees and laws would gradually change the status of physicians, starting with Julius Caesar's granting of citizenship to all professional physicians practicing in Rome, circa 50 BC,[20] and culminating in Hadrian's decree in 133 AD granting immunity from taxes and military service to public physicians.[19]

Beginning around 100 BC, the Romans established hospitals (*valetudinaria*) to treat their sick and injured soldiers, along with corps of field medics and hospital-based physicians. The care of soldiers was important because the power of Rome was based on the integrity of the legions. Both military and gladiator-based medical practices led to advanced surgical techniques, including the treatment of head fractures, limb amputations, suturing, ligatures, and cauterization. Diet and exercise also were emphasized, with soldiers undergoing intense training and receiving ample rations, including hardtack for sustained marches.[15,21]

Moreover, in matters of public health, the Romans surpassed both the Egyptians and the Greeks. For example, the city of Rome had an unrivaled fresh water supply, gymnasiums, public baths, domestic sanitation, and adequate disposal of sewage. The Romans placed cities and military fortifications carefully, avoiding or draining swampy areas while also assuring easy access to water.[15]

Implications for Medical Group Practice

On one hand, the widespread specialization found in Egyptian medicine diminished in Greco-Roman times as literacy, libraries, and a liberal education of physicians was supported. On the other hand, Greco-Roman medicine surpassed Egyptian medicine in its practices in surgery, pharmacology, ophthalmology, and internal medicine.[22,23] Following Hippocrates, Greco-Roman medicine focused on the patient's diet, exercise, and environment.

The most reputable physicians, such as Galen, were broadly educated and trained in all aspects of medicine. As opposed to Egyptian practice, the sophisticated forms of Greco-Roman medicine encouraged physicians to enter solo practice to serve the wealthy ruling class and to aspire to serve the Emperor and his subordinates as *archiatri sancti palatii*. The imperial funding of public or municipal physicians (*archiatri populaires*) recognized the need for greater access to medical care among the poor and working citizens of Rome and its provinces. Because these public practices were also a training ground for those studying medicine, a loose form of group practice was encouraged. Significantly, the empire also promoted a more structured group medical practice in military hospitals, along with the training of field medics and other mid-level providers.

From Islamic to Renaissance Medical Practices

The fall of the Western Roman Empire in 476 AD not only devastated Rome, but also shattered the institutions supporting public health and medicine throughout most of Western Europe. The immediate effect was the deterioration of medical knowledge and the corruption of practice, particularly in public health and the training of physicians; however, the long-term impact was mitigated by the libraries and institutions sustained by the Byzantine Empire and the Islamic Empire. Foremost among these was the library and university at Alexandria, which remained a storehouse and institution for medical knowledge and training. The growth of the Roman Catholic Church also contributed to the preservation of medical knowledge and its practical extension. The most remarkable attribute of this historical period was the seeds for a revolution in scientific and medical thinking that started with the Islamic Empire, grew during the late Middle Ages, and blossomed during the Renaissance.

Islamic Medical Practice

Fortunately for western medicine, the followers of Mohammed not only created a new empire stretching from Spain to North Africa to Persia, but also respected and embraced the study of medicine. Significantly, the Greco-Roman knowledge that was retained in the impressive libraries of the former Roman Empire, especially in Alexandria, came under the control of the caliphs of the newly founded Islamic Empire.

Through the process of translating into Arabic the Greek and Latin books on medicine and science, including Galen's extensive work, scholars and physicians advanced the knowledge of chemistry, as well as human anatomy, the circulation system, physiology, and biology. As their cultural and historical assumptions were questioned, these Islamic scholars and physicians responded

by re-examining their own understandings of illness and health in light of the Greco-Roman theories and descriptions. Not surprisingly, this hermeneutic process often led to the discovery of errors and mistakes, as well as new insights into the causes, forms, and treatment of disease. Most significantly, Muslim and Christian scholars within the Islamic Empire contributed by systematically organizing, commenting upon, and extending the classical texts of Hippocrates, Aristotle, Galen, and others to create encyclopedias of medicine (e.g., Rhaze's *Liber Continens* and Avicenna's *Canon of Medicine*), as well as introductory texts and manuals on subjects ranging from ophthalmology to surgery to pharmacology. Moreover, Muslim and Christian religious and cultural beliefs developed the modern notion of the hospital as a place to operate on and treat the sick, regardless of class or wealth.[24,25]

Much of this remarkable scholarship and practice made its way into Western medicine through translations provided by Constantine the African, an eleventh-century Christian born in North Africa who immigrated to Italy, and by Gerard of Cremona, a Spaniard living in Toledo during the twelfth century who is credited with over 68 translated works. The Crusades and trade with the Islamic and Byzantine empires also disseminated medical knowledge and practice throughout Western Europe.[24,25]

Medieval Medical Practice

The practice of medicine in Western Europe during the Latin Middle Ages represented a fusion of classical, Christian, and folk or empiric medicine with the classical medicine becoming ascendant starting in the eleventh century. With the support of the Roman Catholic Church, medical schools thrived during the late Middle Ages; moreover, the licensing of physicians was introduced, along with professional training and practice restrictions.[26]

The Roman Catholic Church dominated many aspects of people's lives, dictating what to believe and how to live. Significantly, following Saint Augustine, the Church taught that disease was a punishment for sin, and that life was a burdened journey to be tolerated until death led to the bliss of an afterlife. These beliefs and Church dogma initially hindered medical research and development. However, the Church, through its religious orders, did preserve and translate into Latin the many extant medical works in Greek and Arabic; mandate charity care for the poor and sick, encouraging the development of hospices and hospitals; and, during the late Middle Ages, secularize medical studies and practice, separating them from religion.[25]

The institution that would most profoundly influence modern medical knowledge and training was the university. The earliest and most prominent was the Salerno medical school in Italy (circa 1010). During that time, Constantine of Africa translated the major medical works of the Islamic Empire into Latin. These translations, as well as those of others, not only increased the number of people who read the works of Aristotle, Galen, and Avicenna, but also established Greco-Roman works as a canon of readings for medical students, the so-called "scholastic" medicine.[14] Many medical schools followed after Salerno: Montpellier and Paris in France and Bologna in Northern Italy. Many of the ideas that were generated at Montpellier are techniques that we still use today; in turn, clinical teaching and discussions were started at Bologna, as was the serious study of anatomy.[26]

Nonetheless, academic medicine was, as in Galen's day, not generally available to the lower classes and the poor. Academically qualified physicians often catered to the rich, and midwives, surgeons, barbers, and apothecaries provided their services to common folk.[26,27] Especially during the late Middle Ages, the Church assumed the task of caring for the sick and the dying, establishing hospices for the latter and hospitals for the treatment and recovery of the former. Particularly in urban settings, some of these hospitals were loosely affiliated with universities as a base for clinical training and staffed by salaried physicians and surgeons, a pattern that would accelerate during the Renaissance.[25,26]

Renaissance Medical Practices

The Renaissance, from the fourteenth through the sixteenth centuries, rekindled knowledge generation in Western Europe through the careful examination of Greek and Roman art, science, and philosophy. Technical advances helped to spread both ancient and new knowledge; for example, Gutenberg's printing press made books more quickly and cheaply and thus expanded their distribution among the population. Within medicine, both technical and scientific advances occurred as original Greek and Roman texts were re-examined. The humoral theory of disease was challenged as an accurate understanding of human anatomy, and new understandings of chemistry were developed, along with improved surgical techniques. At this same time, groups of physicians delivered healthcare for the military, taught and practiced in medical schools, and provided care in almshouses, dispensaries, and hospitals.

Both trade and craft guilds grew as the urban population increased in Western Europe during the Late Medieval period. The craft guilds for physicians, apothecaries, barbers, and surgeons, which were based on stabilizing the provision of crafts in towns and cities,

helped to restrict entrance into a craft, institutionalized the master–apprentice relationship, and ensured both the quality of the services and the pricing for those services.[28] The transition from craft first occurred when English physicians successfully created a new form of protectionism by seeking and gaining professional licensure and self-regulation through the Royal College of Physicians in the early sixteenth century.[29] Licensure is now requisite for almost all healthcare professionals in Western nations, but this innovation marked an important step in creating the notion of a profession.

We would be remiss if we did not highlight the contribution of a number of key figures involved in medicine during the Renaissance. Among the most controversial of these pathfinders was Paracelsus (1493–1541), a Swiss-German physician, alchemist, philosopher, and astrologer. As a professor at the University of Basel, he publicly denounced Galen and Avicenna's ideas and burnt their works in 1528. Less than a year later, he was forced to flee for his life. Ironically, his background as a physician-surgeon treating soldiers during the many wars in Northern and Western Europe provided him with the same type of practical experience that Galen had treating gladiators in Pergamon. His textbook on surgery, *Dergrossen Wundartzney* (*Great Surgery Book*), published in 1536, brought him renewed fame and led to his treatment of the rich and powerful. However, his most remarkable contribution was to introduce, based on his medical practice and empirical observations, the scientific study of chemistry to the field of medicine.[30]

Another product of the Renaissance was the famous French surgeon Ambroise Paré (1510–1590), who rediscovered and further developed surgical techniques, while also establishing the professional role of the surgeon as an equal to academically trained physicians. Trained as a barber-surgeon at the Hôtel-Dieu (1533–1537) in Paris, where he learned anatomy and surgery, Paré was employed as an army surgeon in 1537. From this lowly regarded position, he became so well known for his skill and innovation that he became the royal surgeon for four successive French monarchs (Henry II, Francis II, Charles IX, and Henry III). A conservative physician who employed surgery as a last recourse, Paré was always in search of ways to humanely treat patients. For example, instead of dressing gunshot wounds with boiling hot oil—the standard practice—he found that a dressing of egg yolk, rose oil, and turpentine was more humane and effective. He is credited with reintroducing the use of ligatures, the tying of large arteries, thus replacing the standard procedure of cauterization. Paré also introduced the use of artificial teeth, eyes, and limbs, and developed alternative surgical techniques for hernias that avoided the standard practice of castration.[31,32]

Andreas Vesalius of Brussels (1514–1564) produced Europe's most detailed and best-illustrated atlas of the human body at the age of 28 in 1543, with a revised edition in 1555. *On the Fabric of the Human Body* quickly became what the *Oxford Medical Companion* calls "probably the most influential of all medical works." His work undermined the reliance of anatomists on ancient books, especially the works of Galen, by showing that Galen based his human anatomy on animals such as the Barbary ape instead of human cadavers. For Vesalius and those who came after him, the human body, directly observed, was the only reliable source.[31] The work of Andreas Vesalius spurred others, and soon medical books were being published at a rapid pace. The French physician Jacques Dubois, better known as Jacobus Sylvius, named many blood vessels and muscles. He was the former instructor of Vesalius, but his work was not published until 1556.

While the science of medicine spread, the new understandings about the human body occurred because of changes in social mores. For example, in 1744, Albinus from Leyden, the most illustrious anatomist of his time, published, with ample comments, the long-lost anatomical *Tables of Eustachius*. Engraved on copper plates in 1552, these tables illustrated the results of the dissections of Eustachius. Albinus considered this work to be vastly superior to that of Vesalius. Significantly, the rivalry between the famous and flamboyant Vesalius and the almost unknown Eustachius marked the official acceptance of the dissection of the human body as a legitimate research and teaching method.[33]

Implications for Medical Group Practice

After the fall of the Roman Empire, scholars and physicians in the Islamic Empire continued to make scientific advances and established the hospital as a place to treat the sick regardless of social class. Throughout the Middle Ages, physicians continued solo practices as academically trained generalists connected to hospitals or universities affiliated with the Roman Catholic Church, although by the late Middle Ages, medicine became increasingly more secularized. While the Renaissance transformed medicine with the new discipline of therapeutic chemistry, revitalized the techniques for and outcomes from surgery, and elevated the study of anatomy, it also accelerated medical sociological trends already evident during the late medieval period. The most important of these trends for group medical care included the further development of schools of medicine and the use of teaching hospitals, as well as

the waxing and waning of craft guilds for physicians, apothecaries, barbers, and surgeons. The major forces that influenced physician practices during this turbulent historical period were the developments of hospitals, medical schools, and universities. At the same time, the practice of medicine took on increased stature as an art and a profession.

Enlightenment and Industrialization

With the questioning of the humoral theory of Hippocrates and Galen, the Renaissance in Western Europe began a paradigm shift in medicine that reached fulfillment during the Industrial Revolution. The rapid pace of scientific discoveries during the next 300 years made the germ theory of disease dominant, supplanting the humoral framework, as modern understandings of circulation and respiration were developed and infectious microorganisms were discovered. New technologies (e.g., microscopes, vaccines, stethoscopes, anesthetics, antiseptics, and radiology) added complexity to the practice of medicine. Most importantly for our purposes, the new technologies stimulated specialization and the growth of multi- and single-specialty medical group practices, as well as hospitals.[15,34]

During the eighteenth and nineteenth centuries, medical care grew in sophistication, and specialization began to occur in many parts of Europe and North America, especially in major cities. However, most physicians remained generalists, practicing alone in small cities, towns, and hamlets. They faced competition from those practicing folk medicine, ranging from midwives to bone-setters to herbalists to apothecaries.[35,36] However, an important aspect of the profession for physicians was not only their academic training, but also their participation in experimental medicine and its discourse.[37] These distinctions would be used both in Europe and in the United States to further distinguish medical practice from its competitors, and further elevate the profession in terms of its legal and economic status.[29]

The industrialization of Western Europe and North America created major sociological changes that transformed the practice of medicine. The shift of populations from agrarian communities to urban centers created new markets and opportunities for physicians to specialize. At the same time, the concentration of people in cities spurred the growth of hospitals, dispensaries, and public health services.[34] These changes in health service organization were accompanied by major political and sociological changes: the elimination of slavery, the unionization of labor, and the voting rights of women and people of color.[38]

In the late nineteenth century, protection against the cost of sickness became a political issue in industrialized nations. Germany was the first country to establish a national system of compulsory sickness insurance that helped those who were wage earners in certain industries and trades. Besides medical attendance, it provided a cash benefit to make up wages while a worker was on sick leave. As an alternative approach to this issue, both in the United States and in Western Europe, health insurance companies were established in the nineteenth century, offering insurance against specific diseases and disabilities caused by sickness or accident. Both social and private health insurance encouraged the growth of medical groups.

Organized labor, advancements in science and technology, the emergence of qualified medical schools, and the dearth of hospitals in the late nineteenth century hastened the growth of medical group practice in rapidly industrializing nations. On one hand, advances in science and technology encouraged physicians to specialize and to work together in single-specialty clinics. On the other hand, the emergence of accredited medical schools, along with the requisite clinical training of interns and residents, produced *de facto* multispecialty medical practices. Medical schools such as Johns Hopkins University inspired the Mayo Clinic and other early multispecialty group practices. Moreover, these group practices filled a niche in small cities, towns, and rural areas of the nation that lacked the hospitals and solo practitioners of large urban areas.[34,39]

Conclusions about the Origins of Medical Group Practice

Figure 1-1 illustrates the variety of forces that influenced Western physician practices since around 2600 BC. Starting at six o'clock in Figure 1-1, these forces included

- *Hospitals* as workshops for physician practice and as curative places for the specialized treatments of diseases
- *Government policy* toward solo vs. group practice
- *Scientific and technological advancements* in medicine
- *Organized labor* and its medical needs
- *The military* and its medical needs
- *Medical paradigm* shifts
- *Schools of medicine*, which influenced professional standards
- *Managed care*, which influenced medical practice cost efficiency and quality

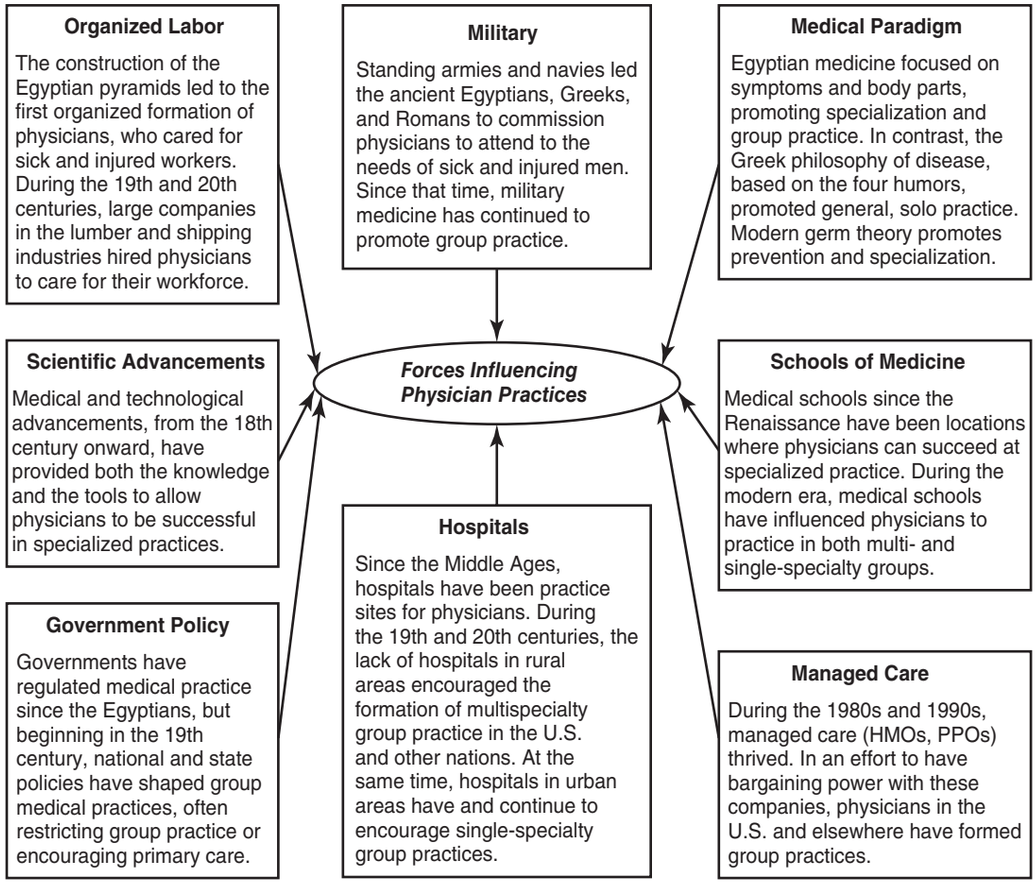

Figure 1-1 Institutional forces influencing physician practices.

In the next section, we will discuss medical group practice in the United States during the twentieth and twenty-first centuries.

Medical Group Practice in the United States

Our goal in this section is to analyze the contemporary conception of medical group practice in the United States. We begin with a historical account of groups of physicians practicing together. Next, we discuss how the financing of healthcare, whether market or government driven, has influenced groups of physicians to practice together in the United States. We then explore the potential impact of the Patient Protection and Affordable Care Act (PPACA) of 2010, and end this section by documenting the benefits that medical group practices provide to physicians.

The Development of Medical Group Practice in the United States

Despite the growth of single- and multispecialty group practices during the nineteenth century, most physicians in the United States were still engaged in competitive, solo practices as generalists. During the early twentieth century, a variety of forces influenced physicians to organize (see Figure 1-1), and group practice began to flourish in the United States under various forms. By 1932, the American Medical Association (AMA) recognized around 300 medical practice groups, with most groups averaging five to six physicians.[40] Four arenas for group practices took hold in the early twentieth century: the dispensary, the academic medical center, the industrial medical program, and the private medical clinic.[3] Each type of organization will be discussed briefly as it developed in the United States.

The Dispensary

The dispensary is the oldest of these four practice grounds for physician groups, with the first founded in Paris in

1630 by a wealthy Protestant physician and 20 of his colleagues—all of whom agreed to provide free services for poor, sick people. As originally conceived, the dispensary was a large, multispecialty group of healthcare practitioners, which, unlike hospitals, focused on ambulatory care. By 1900 there were around 100 dispensaries in large U.S. cities. Although U.S. dispensaries flourished until around 1920, they began to decline primarily because of the establishment of short-term, general hospitals (which increasingly functioned less as custodial homes and more as sites of medical treatment) and of public health clinics, with their focus on personal hygiene and health education.[3]

The concept of the dispensary has not died in the United States, however. The successors to these institutions are the federally qualified community health centers (CHCs) and rural health clinics that were established in the 1970s and 1980s as safety-net providers of primary care. Salaried physicians who focus on primary care (family practice, pediatrics, dentistry, and ophthalmology) typically staff these community health centers. Interdisciplinary teams of nurse practitioners, social workers, health educators, and others provide staffing to assist and extend physicians. As in the tradition of the dispensary, high quality care for the poor and needy is the focus.[41-44] The number of federally qualified CHCs increased from 750 centers in 2001 to 1,200 centers in 2007. In 2008, CHCs served a total of 17 million patients, 38.25% of whom were uninsured; this percentage represents approximately 14% of all uninsured Americans. In addition, another 5.3 million patients (or 35% of all the patients treated) were insured under Medicaid.[41] The 2009 American Recovery and Reinvestment Act (ARRA) committed $2 billion to federally qualified CHCs; the 2010 fiscal year federal budget was $2.19 billion. The 2011 fiscal year budget for federally qualified CHCs initially was to be the same as for 2010, but given the concerns over the federal budget deficit, the U.S. Congress funded the program at $600 million less than in 2010.

Academic Medical Centers

The first academic medical center in the United States was founded at Johns Hopkins University in Baltimore and spawned the establishment of similar practice groups around the country during the early twentieth century.[40,45,46] The spread of the Hopkins model of medical specialties (e.g., pediatrics, urology, etc.) solidified the notion of a multispecialty group practice.[47] Currently, more than 100 academic medical centers in the United States provide both medical school instruction and highly specialized care in ambulatory clinics and teaching hospitals.[52] Reports predict that the United States will face a shortfall of between 20,000 and 46,000 doctors by 2025, renewing policy makers' interest both in the training of MDs and DOs and in changing medical school curricula, especially to increase the number of primary care physicians.[53]

Industrial Medical Programs

Industrial medical programs can trace their roots to the nineteenth-century lumber, mining, and railroad industries, all of which employed people in remote parts of North America. Both to create an incentive to work for these companies and to ensure that employees were productive workers, owners offered prepaid medical plans to prospective employees and hired physicians and other healthcare providers to deliver that care. Expanding this type of prepaid medicine to the public, however, was opposed by many local and state medical associations, in both urban and rural areas.[34]

Nonetheless, Donald E. Ross, MD, and H. Clifford Loos, MD, founded the first prepaid group practice in Los Angeles in 1929. The physician group existed for about 2 years, seeing municipal workers for a monthly price, before they were barred from the Los Angeles County Medical Society because of a strong resistance to prepaid medicine.[48] Also in 1929, Michael Shadid, MD, established a prepaid medical plan and a cooperative hospital for farmers in Elk City, Oklahoma (see http://www.gprmc-ok.com/about/index.html). Although many local citizens supported Shadid, the physician–hospital cooperative was not accepted by most of the medical community. Despite these early setbacks and limited acceptance by most physicians, prepaid medical group practices continued to grow in various parts of the United States. These and other prepaid medical plans from the first half of the twentieth century provided the impetus for health maintenance organizations (HMOs),[49] and most recently, accountable care organizations (ACOs). Both HMOs and ACOs will be discussed in more length in subsequent sections.

Private Medical Clinics

The first private medical clinic in the United States was established by Charles and William Mayo and had seven or eight staff members by 1900; it became a multispecialty practice early in its history with the addition of laboratory and x-ray specialists.[50,51] By 1929, the Mayo Clinic had grown to 895 staff members, 386 of whom were physicians.[40] Many of the physicians who trained at the Mayo Clinic used the same model to establish multispecialty group practices in other parts of the United States, and the number of private medical groups grew rapidly during

the twentieth century, both in rural areas where there were few hospitals and in urban areas where specialty practices flourished.

Medical Group Growth in the United States: 1965–2009

There were 4,289 medical groups in the United States by 1965. Boosted by funding from the newly established Medicare and Medicaid programs, the number of both single and multispecialty medical group practices would increase at an almost constant rate during the next 15 years, to 10,762 in 1980. Between 1980 and 1984, moreover, medical groups grew to 15,485 (a growth rate of 43.8%).[52] This rapid growth in medical group practice formation was especially influenced by changes in the funding of Medicare, with its introduction of diagnostic-related groups (DRGs) and prospective payments for hospitals. Under this payment system, many hospitals suffered major reductions in Medicare payments, whereas ambulatory surgical centers and other ambulatory services provided by medical groups benefited.

By 1996, 70.9% of medical groups in the United States were single-specialty, 22.4% were multispecialty, and only 6.8% were family or general practice groups. Specialty medical practice encompassed medical (allergy, cardiovascular diseases, dermatology, gastroenterology, internal medicine, pediatrics, and pulmonary disease); surgical (general, neurological, obstetrics and gynecology, ophthalmology, orthopedics, otolaryngology, plastic, and urology); and other specialties (anesthesiology, diagnostic radiology, emergency medicine, neurology, pathology, psychiatry, and radiology). Depending on the type of group practice, the median size ranged from four to eight members, similar to the size of groups in the 1930s. Multispecialty groups with primary care physicians were generally the largest (mean of 27.2, median of 8 physicians).[52] These trends have continued into the twenty-first century, with the top five specialty practices in 2003 being internal medicine, pediatrics, family practice, general surgery, and obstetrics/gynecology.[53]

The Medical Group Management Association (MGMA) reported that in 1996 there were 19,820 groups (with about 32.2% of active physicians practicing in groups, based on AMA data). In 2003, the MGMA reported a slight decrease in the number of medical groups, 19,747, with about 30.2% of active physicians practicing in groups. However, by 2008, there were 39,944 groups, with about 75% of active physicians practicing in groups.[55,56] The latest available information from the AMA shows that in 2010, 77.4% of active physicians practiced in groups, with 45.7% in physician-owned medical groups, 26.2% in academic or hospital-owned medical groups, and 5.5% in urgent care centers, skilled nursing facilities, or ambulatory surgical centers.[54]

Interestingly, between 1996 and 2003, large groups with over 100 physicians increased their market presence, from 218 (1.1% of all medical groups) and 28.7% of the physicians practicing in 1996,[52] to 241 (1.2% of all medical groups) and 29.5% of the physicians practicing in 2003.[53] However, the most remarkable trend has been the rapid growth in the number of small to medium-sized group practices, from 19,506 in 2003 to 39,203 in 2008 (a growth rate of 200.9%).[53,55]

During the first decade of the twenty-first century, three interesting trends were evident. First, many medical groups purchased by financially stressed integrated health delivery systems during the early and mid-1990s were divested and transformed into smaller, stand-alone group and individual medical practices. Second, financially successful integrated delivery systems, including those directed by large medical groups—such as the Cleveland Clinic, Marshfield Clinic, and other large and dominant groups—actively purchased individual and small group practices, with this trend peaking around 2003. Third, physicians have been actively joining medical groups since 2003, typically as employees of either hospital-based health systems and networks, retail health clinics, or single-specialty groups.[54] Taken together, these three trends illustrate that there has been steady growth in exceptionally large medical groups in the United States from 1996 to 2003, with a tremendous surge in the overall number of medical group practices and the percentage of physicians practicing in them since 2003. The reasons for this remarkable growth in medical group practice in the United States are multiple and are intertwined with the influence of public and private funding.

In the following two parts of this section, we first explore how the financing of healthcare in the United States has influenced the growth of medical groups. We then examine the enactment of the 2010 Patient Protection and Affordable Care Act (PPACA) of 2010 and its current and potential impact on medical group practice.

The Influence of Financing on Medical Group Practice in the United States

To understand how the financing of healthcare services has affected medical group practice, we discuss the two major ways in which physicians are paid, note the perverse economic incentives associated with each, and point out the ways in which medical groups respond to each type of payment system. We then place these two

models in historical perspective, tracing their growth patterns. Following this discussion, we point out how two initiatives associated with the PPACA of 2010 create a middle ground between fee-for-service and prepaid health plans.

Fee-for-Service Reimbursements

Most physicians in the United States receive fees for the health services they provide from Medicare (Part B, ambulatory services), Medicaid (the federal–state health insurance entitlement program), and employer-based health insurance plans. Currently, most employer-based health plans are set up as preferred provider organizations (PPOs), and physicians within these PPO networks discount their fees in exchange for a more certain volume of patients.

The economic incentives associated with fee-for-service payments are straightforward: Physicians receive more fees by providing more services of greater intensity to patients. Unfortunately, perverse incentives are associated with this production-based model for healthcare. Physicians may benefit, for example, by ordering unnecessary ancillary services or opting for surgical interventions (which garner higher fees) rather than other therapies that may be less risky but offer similar benefits. At best, patients who are subjected to additional ancillary services receive some marginal value of assurance regarding a correct diagnosis and/or course of treatment. At worst, patients who undergo surgery rather than alternative therapies potentially face the risks of complications or even death from surgery-related infections and medical errors. In other words, without quality controls in place, the production-based model encourages overutilization of services with marginal to negative benefit to the patient.

Under a fee-for-service model, medical groups in the United States benefit by owning and/or operating ancillary services and organizing around single-specialty services. Single-specialty groups are attractive because of their operational economies of scale and the market-based power (and pricing advantage) they often can generate relative to multispecialty groups and/or hospitals. This is especially true of surgical and other intensive specialties, which may also compete directly and/or partner with hospitals for patients.

Prepaid Health Plans

As an alternative, some employer-based health plans, as well as a subset of Medicare (Part C) and several state-administered Medicaid programs, operate on a prepaid basis. These health maintenance organizations (HMOs) pay physicians a per capita rate for the patients that they agree to serve. A prepaid model also has perverse incentives associated with it for physicians, but they are the opposite of those associated with a fee-for-service model. Physicians potentially may benefit by delaying or forgoing patient visits and exams, not ordering some ancillary services to confirm diagnoses, or substituting low-cost drugs and other therapies in place of high-cost drugs and/or surgery. Again, without quality controls in place, the incentive to underutilize health services may harm patients by delaying needed therapies or surgery, increasing the likelihood of poorer patient outcomes, including death.

Under a prepaid model, medical groups benefit by organizing as multispecialties. Although ancillary services may be owned and operated by the prepaid medical group, these services become a cost, rather than revenue centers. Large multispecialty groups with a substantial number of primary physicians are favored under a capitated payment model because of their economies of scope, as well as scale. The primary care physicians within the group often act as gatekeepers to more expensive specialists, and the specialists receiving patient referrals from within the group are incentivized to minimize tests and services, including hospitalization. In addition, the larger the multispecialty medical group, the greater its market-based power and leverage to determine capitation rates.

The Historical Perspective

As previously highlighted, fee-for-service and prepaid models of payment have coexisted in the United States for decades. For most of the twentieth century, fee-for-service was the predominant U.S. payment model. With the growth in healthcare services spurred by Medicare from the mid-1960s through the 1970s, concerns about overutilization prompted both Medicare and insurance companies to introduce utilization review, preauthorization for services, and other measures to reduce costs. Although these forms of managed care are now standard features of most health plans, these controls did little to reduce the inflation in medical care costs. Employers, therefore, began seeking more aggressive efforts to control healthcare costs during the 1980s and 1990s. As a result, the prepaid model of HMOs became more favored by large employers during the 1980s; by the mid-1990s HMOs were also favored by most small and mid-sized firms.

The growth of HMOs was, in part, a market-based reaction to President Clinton's proposed healthcare reforms (1992–1993). Another reaction to those proposed reforms and to the prepaid model embodied in HMOs was the growth of integrated health delivery systems (IDSs), which were best able to provide all the health services

needed for HMO beneficiaries. In turn, both HMOs and IDSs prompted the growth of large, multispecialty medical groups.

Although HMOs had initial success in reversing the growth in healthcare costs, much of this was due to a one-time reduction in the cost of physician and hospital services. At the same time as health costs began to inflate again in the late 1990s, there was a backlash from many employees who resented the delays and other limitations to health services that HMOs imposed. Employers, in response to their employees' complaints, settled on preferred provider organizations (PPOs) as a less constrained way to provide healthcare benefits. Thus, fee-for-service again became the more dominant payment model during the first decade of the twenty-first century, accelerating the growth of single-specialty medical groups, along with the proliferation of ancillary services within these and other medical groups.

Most recently, however, hospital-based and/or hospital-managed medical groups have seen explosive growth.[54] We believe this trend was triggered both by the policy discussions leading up to the PPACA of 2010 and its aftermath. Patient-centered medical homes (PCMHs) and accountable care organizations (ACOs) are two of the innovative initiatives authorized by the PPACA. On one hand, the Patient-Centered Medical Home initiative seeks to counter the fragmentation of care and overutilization of services under a fee-for-service model for Medicare patients suffering from high-cost, chronic illnesses. On the other hand, the Accountable Care Organization initiative seeks to create shared cost savings by encouraging greater integration of health services delivery among medical groups and hospitals, along with rehabilitative services, home healthcare, and nursing homes. Taken together, these two initiatives attempt to make the fee-for-service model under Medicare more quality-focused, constraining overutilization of services. The following discussion examines the current and potential impact of both ACOs and PCMHs.

Accountable Care Organizations and Patient-Centered Medical Homes

Although the primary purpose of the Patient Protection and Accountable Care Act of 2010 is to expand health insurance coverage, the PPACA also authorizes several experiments to curb healthcare cost increases by reforming healthcare delivery and insurance systems in the United States.[56] As stated in section 3022 of the PPACA, the transformation of the care delivery system is among the priorities of the healthcare reform.[57] To achieve this transformation, the Centers for Medicare and Medicaid Services (CMS) are charged with implementing ACOs and PCMHs no later than January 1, 2012. Although the two models differ in their focus, they have the same common goal: to offer high quality healthcare for the American people at reduced cost.

The Accountable Care Organization

The term *accountable care organization* conveys the idea that healthcare professionals should coordinate (*organize*) their patient activities and be responsible (*accountable*) for both the appropriateness of their services and the outcomes they produce. The term was coined in 2006 during an exchange between Elliot Fisher (Dartmouth Institute for Health Policy and Clinical Practice) and Glenn Hackbarth (Chairman of the Medicare Payment Advisory Commission).[58] Since then, the notion of ACOs has captured the attention of healthcare practitioners, policy makers, and third-party payers.[59]

Many pilot programs in different states influenced the 2011 draft ruling on ACOs. For instance, in Vermont, various professional associations and state agencies (the state hospital association, the state medical society, the business community, the Vermont Department of Health, and the Vermont Department of Banking, Insurance, Securities, and Health Care Administration) assisted the legislature, three community hospitals and one tertiary hospital, and the state's three largest insurance companies in developing a pilot program in 2008. This pilot is intended to be among the first in the country to implement an ACO in 2011.

The results of this pilot program, according to a Commonwealth Fund report released in May 2010, show that ACOs require several factors for success. First, ACOs are not self-sufficient in that there is a need to strengthen the delivery of primary care at the community level to reduce their costs. Second, it is important to create voluntary connections among a network of primary providers with ACOs. Third, ACOs will not yield enough revenues to sustain their performance without a sufficient number of beneficiaries. At least 60% to 70% of the beneficiaries must be included in a shared savings strategy from all the third-party payers, both public and private. In a rural state, such as Vermont, with a small number of beneficiaries, a shared savings strategy will benefit primarily the consolidated third-party payers. Without strong coordination and governance, shared savings among the ACO partners will be minimal. Fourth, ACOs must have certain key resources, including the ability to manage the full care delivery continuum, robust health information technology for

managing financial and clinical outcomes, and the leadership to implement the required changes within clinical and administrative processes to achieve high quality care within a reduced cost structure.[60]

The 429-page draft ruling for ACOs was released on March 31, 2011, by the CMS (for a summary, see http://www.commonwealthfund.org/Content/Publications/Other/2011/Proposed-Rules-for-ACOs.aspx). This ruling allows medical groups to participate as ACOs if they meet the following requirements as set forth in section 3022 of the PPACA[57]:

- They voluntarily accept to deliver the full continuum of care for at least 5,000 Medicare fee-for-service beneficiaries for a period of no less than 3 years. Note: Because these beneficiaries have the legal right to seek care from any Medicare-accepting provider, an ACO cannot restrict its assigned beneficiaries from seeking care from non-ACO member physicians and hospitals.
- They have a tax identification number and are legal entities under applicable state law, allowing them to receive and distribute shared savings; repay shared losses; and establish, report upon, and ensure compliance with requirements under the Shared Savings Program.
- They have a governing body with adequate authority to execute the ACO requirements; this body must be composed of at least 75% providers and include Medicare beneficiary and community stakeholder representation. Note: Nonproviders such as management companies and health plans, whose financial and managerial support might be critical for success, could be included.
- They have a leadership and management structure that includes:
  - An executive responsible for managing the ACO who is appointed by and accountable to the governing board
  - A senior-level medical director (board-certified physician) responsible for clinical management and oversight
  - Meaningful commitment by the ACO providers to clinical integration
  - A quality assurance and process improvement program with oversight from a physician-directed committee
  - An information technology infrastructure for collecting and evaluating clinical care services, including patient care experience and other quality and utilization measures
- They submit a plan for (1) promoting evidence-based medicine; (2) promoting patient engagement; (3) reporting internally on quality and cost metrics; and (4) coordinating care, especially for high-risk individuals.
- They submit a compliance plan showing how they will meet applicable legal requirements.

Lastly, the Center for Medicare and Medicaid Innovation (see http://www.innovations.cms.gov/initiatives), an agency that was established within the CMS in 2010, will evaluate the performance of ACOs in providing high quality care and reducing the cost of care.

Since the draft ruling was released, many commentators and critics have voiced their hopes and concerns about this new initiative.[61-64] Most critics of the ACO draft ruling have concerns about the short-term difficulties of both organizing physicians to share cost savings with hospitals and establishing shared governance structures with physicians. The other major concern is the level of financial risk that ACOs will have to assume if they expend more on care services than anticipated based on the proposed risk-adjusted, 3-year expenditure baseline for their assigned beneficiaries. Currently, ACOs would have to repay all reimbursed expenditures above 2% of the baseline, either from year one (track 2, with a 60% cost-sharing benefit and a 10% cap) or by year three (track 1, with a 50% maximum cost-sharing benefit and a 7.5% cap).

These are reasonable criticisms, especially if one considers which of the current types of healthcare organizations are prepared and eligible to become ACOs. The PPACA specifies that ACOs can be composed of (1) professionals in group practice arrangements, (2) networks of individual practices, (3) joint venture arrangements between hospitals and professionals, and (4) hospitals employing professionals. CMS proposes to expand ACO eligibility by including a subset of critical access hospitals. Drawing on these specifications, Shortell and his colleagues have speculated that ACOs could take the following organizational forms:

- Integrated health delivery systems (IDSs)
- Multispecialty group practices (MSGPs)
- Physician–hospital organizations (PHOs)
- Independent practice associations (IPAs)
- Virtual physician organizations (VPOs)

As detailed in the following sections, vertically integrated IDSs and MSGPs are the most viable forms for ACOs, with PHOs, IPAs, and VPOs as alternative organizational forms for ACOs, but with distinct shortcomings that will need to be overcome for them to succeed.[65,66]

Integrated health delivery systems (IDSs) take advantage of both vertical and horizontal integration to achieve efficient and high quality healthcare outcomes. Typically, IDSs have been formed through mergers of single- or multispecialty groups, and will include at least one hospital and possess their own health plan. IDSs may rely on physicians as employees and contract with other medical practice groups to deliver healthcare. Examples of medical group practices that are considered IDSs are the Dean Health System, the Geisinger Health System, and Marshfield Clinic. Most IDSs have the capacity to redesign their care processes, achieve economies of scale, implement electronic health records, incorporate knowledge management, develop strong teamwork, coordinate care among specialties, and be accountable for their performance. A key feature of IDSs is their flexibility to share and distribute cost-saving monies.[65,66] Based on this assessment, IDSs are most likely to qualify as ACOs, and most capable of assuming a high level of risk (i.e., track 2).

Multispecialty group practices (MSGPs) typically are less vertically integrated than IDSs, but they usually own or partner with a hospital in order to provide coordinated clinical care. Among the best examples of MSGPs are Mayo Clinic and the HealthCare Partners Medical Group. Unlike IDSs, which own their own health plan, MSGPs usually contract with health plans. Nonetheless, their governance structure enables them to share cost savings with physicians and hospitals.[65,66] Because MSGPs have developed strong leadership and coordinated mechanisms to provide care, they are well qualified to become ACOs and to assume a high level of risk (i.e., track 2).

Physician–hospital organizations (PHOs) strengthen the joint ownership and common interest of physicians and hospitals. Many PHOs were initially created in the late 1980s and early 1990s to leverage contract negotiations with health plans. To qualify to be ACOs, PHOs need to develop coordinated systems of clinical care among their members, ensure that common (or compatible) electronic health records are used, and have a platform and mechanism for sharing financial information. Without these additional steps, PHOs cannot achieve cost savings and meet ACO criteria.[65,66] Because of these shortcomings, PHOs and their associated medical group members may have difficulty qualifying as ACOs. Nonetheless, because of the resources of their hospital partners, PHOs probably have the capabilities to overcome such obstacles and to assume a low level of risk (i.e., track 1).

Independent practice associations (IPAs) originated as an organizational form and governance mechanism for independent medical groups and individual physicians to collectively contract with health plans. Some IPAs serve as quasi-multispecialty medical groups, implementing electronic health records and quality improvement and process redesign, while also partnering with hospitals. An outstanding example is Hill Physicians Medical Group. Medical group practice IPAs could qualify to be ACOs if they capitalize on their partnerships with hospitals, ensure the use of compatible electronic health records, and establish ways to share cost savings.[65,66] IPAs face many of the same shortcomings as PHOs and will have to negotiate agreements with their hospital partners in order to qualify as ACOs; like PHOs, IPAs could assume low levels of risk (i.e., track 1).

Virtual physician organizations (VPOs) typically are physician networks composed of small medical groups and individual physicians and are located mainly in rural areas.[65,66] They have the advantage of potentially partnering with rural health centers and/or federally qualified health centers under the proposed ruling for ACOs, making them eligible for a higher percentage of shared savings. As with IPAs, VPOs would need to capitalize on their partnerships with hospitals—especially critical access hospitals—to establish ways to share cost savings and to ensure the use of compatible electronic health records. Additionally, VPOs would probably need some financial subsidies from these and other partners to create and sustain the management and health information technology infrastructure for an ACO. Given these constraints, VPOs could, at best, assume low risk (i.e., track 1).

Under the proposed regulations, large, multispecialty medical groups and integrated delivery systems are most likely to qualify as ACOs, and to benefit from the Shared Savings Program. Single-specialty, nonprimary care medical groups often are members of either PHOs or, more likely, IPAs. As we have discussed, they face significant organizational and financial challenges to participate as a member of an ACO: They are less likely to become members of an ACO and typically will benefit less from such membership.

In contrast, primary care providers who are members of a single-specialty medical group will benefit from ACO membership. To manage the full continuum of healthcare costs effectively, ACOs require a strong network of primary care delivery.[67] Primary care physicians are in short supply,[68] and they are essential for generating cost savings through improving the care management of chronically ill Medicare recipients. Indeed, primary care physicians are essential for patient-centered medical homes, the other innovation in healthcare delivery mandated by the PPACA.

Patient-Centered Medical Homes

The Council on Pediatrics Practice introduced the term *medical home* in 1967 as a way to improve the delivery of care to children with special healthcare needs. The idea was that a medical home would be the place to centralize the medical records for these children.[69] This idea was debated, elaborated on, and expanded on during the next 40 years to include coordinating primary care, with a focus on the health of a local community. This expanded notion of a medical home was formally recognized in 2007, when four physicians associations—the American Academy of Family Physicians (AAFP), American College of Physicians (ACP), American Osteopathic Association (AOA), and American Academy of Pediatrics (AAP)—established seven Joint Principles of the Patient-Centered Medical Home. These principles are summarized as follows (see http://www.medicalhomeinfo.org/Joint%20Statement.pdf):

1. Each patient has a *personal physician*, with a continuous relationship and focus on comprehensive care.
2. The medical practice is *physician-directed*, involving a team of care providers dedicated to the ongoing care of patients.
3. There is a *whole-person orientation* toward patients, taking into account their entire set of healthcare needs and arranging care with other health professionals.
4. *Care is coordinated and/or integrated* across the continuum of care and the patient's community via registries, information technology, health information exchanges, and the like.
5. *Quality and safety* are ensured through care planning processes, evidence-based medicine, performance measurement, mutual decision making, and the like.
6. *Enhanced access* to care is facilitated via open scheduling, expanded hours, and other forms of enhanced patient communication.
7. *Payment models* recognize the value added by a medical home.

The enabling of PCMHs is implied by the PPACA's requirements for ACOs, and is strengthened in the proposed regulations by the provisions for an increased cost-sharing percentage if ACOs partner with rural health centers and/or federally qualified health centers. Moreover, the Center for Medicare and Medicaid Innovation has launched a demonstration project focusing on medical homes within FQHCs (see http://innovations.cms.gov/areas-of-focus/seamless-and-coordinated-care-models/fqhc/) and is assisting states in developing Medicaid Health Home Plans, an option mandated by the PPACA.

Concluding Comments on Medical Group Practice in the United States

As noted earlier, large multispecialty medical groups potentially will benefit from ACOs, whereas non–primary care single-specialty groups will be much less likely to benefit. Hence, we believe further consolidation will take place among healthcare delivery organizations—including medical groups—as they seek to pool financial resources, take advantage of managerial and clinical expertise, and mitigate risks. Consolidation implies that multispecialty groups will continue to grow. We base this belief on research that demonstrates that physicians in medical groups vs. solo practice typically

- Increase their negotiating power with insurers[70]
- Improve the efficiency of their operations[71]
- Minimize the cost of their services[72]
- Improve their service quality[73]
- Increase their negotiating power with hospitals[74]
- Improve their quality of lifestyle[74]

Lastly, given the emphasis on primary care by the PPACA, single-specialty primary care groups should be sought-after partners for ACOs, and primary care physicians should see an increase in their current status and incomes. As the next section underscores, this emphasis on primary care providers to coordinate care is in line with the experiences of many other industrialized countries.

Medical Group Practice in 11 Other Nations

This section has four purposes: first, to contrast the financial access, cost, and quality of healthcare in the United States with that in 11 other countries; second, to examine the growth of medical groups in these other countries; third, to analyze how the United States and 7 of these countries deal with medical malpractice; and fourth, to provide recommendations for improving health reforms in the United States. We begin by comparing 12 national healthcare systems: Argentina, Brazil, Canada, Germany, Greece, Indonesia, Mexico, the Netherlands, Sweden, Turkey, the United Kingdom, and the United States. This is a diverse set of nations, representing a range of low-, middle-, and high-income nations, with gross national income per capita in 2010 ranging from

$4,200 (Indonesia) to $47,200 (United States) in U.S. dollars adjusted for purchasing parity (see https://www.cia.gov/library/publications/the-world-factbook/index.html). Whatever the level of per capita income, national healthcare systems can be characterized and evaluated in terms of who may be treated, for how much money, and with what expected outcome. Every healthcare system must deal with the tradeoff among issues of financial access, cost, and quality.

In the first part of this section, we focus on two factors that influence these issues: (1) financing, that is, how monies are mobilized and allocated for the provision of healthcare; and (2) how health services are organized, that is, who provides services and the relative weights placed on the provision of primary and tertiary care. We seek to answer the question, "How and to whom is healthcare provided, and with what effect?" The next part provides a brief review of the organization and financing within each national health system, focusing on three prototypes for achieving universal access. (For more detailed explanations of each country's health system, see Appendix A at the end of this chapter.) The final part provides a set of lessons learned from comparing these 12 national health systems, which will help inform the ongoing debate about the PPACA and possible paths for reforming healthcare in the United States.

The Financing, Organization of, and Outcomes from the Provision of Healthcare

Table 1-3 compares 12 national health systems on simple measures of financial access to, cost of, and quality of healthcare. The left-hand column lists each country according to its quality and cost performance. Within our 12-country comparison, Sweden anchors the high end, and Indonesia anchors the low end.

Financial Access to Healthcare

The access column in Table 1-3 incorporates information about how each nation organizes and finances its healthcare system. The assessments of access are based primarily on financial access because it is the most amenable to policy interventions and comparative data are most readily available on this aspect of access. National healthcare systems display three distinct configurations for ensuring universal access: (1) a government-owned, national health service (Sweden and the United Kingdom); (2) a national, compulsory social or private insurance (Canada); or (3) a mixture of compulsory social and private insurance (Germany and the Netherlands, respectively). Interestingly, both Greece and Turkey combine a national health service with a mixture of compulsory social and private health insurance. Under the PPACA, the United States seeks near-universal financial access by (1) mandating private health insurance for those without employer-based coverage, and (2) expanding coverage under Medicaid to those with low incomes. The intent of the reforms is to gain near-universal coverage through a mixture of social insurance and compulsory private insurance, a combination of the approaches most similar to the recent health reforms implemented by the Netherlands and Germany.

Financing can be broken out into two aspects: the direct versus indirect provision of health services by various national governments.[75] Direct financing of health services occurs if the main health insurer or government—whether national, regional, or local—owns healthcare facilities and employs healthcare professionals, as in Greece, Sweden, and the United Kingdom. Indirect financing, in contrast, occurs if the main insurer or government contracts for the provision of various health services. For example, the provincial and regional governments in Canada, the sickness funds in Germany, and the insurance companies in the Netherlands contract with providers for health services. Indirect financing is also the primary mechanism used in the United States.

Costs of Healthcare

The percentage of gross domestic product (GDP) devoted to healthcare expenditures provides a convenient and meaningful ratio for comparing healthcare costs (see Table 1-3). Due, in part, to lower transaction costs,[76] the direct financing of healthcare in Sweden and the United Kingdom averages 9.6% of the GDP, and is less costly than the indirect financing in Canada, Germany, and the Netherlands, which averages 11% of the GDP. Figure 1-2 expands on this point and shows both the level of GDP and the international dollars (adjusted for purchasing power parity) per capita devoted to healthcare by each of the 12 nations in 2009. Taking into account the dollars per capita for healthcare is important, because less wealthy nations have to spend a greater percentage of their GDP in order to achieve comparable levels of funding. Nonetheless, the United States clearly spent much more on healthcare than any other country in 2009 (16.2% GDP; $7,410 per capita). Indeed, even when taking into account the influence of per capita GDP on health expenditures (i.e., wealthy nations typically spend more on health than poor nations), the United States spends far more than other nations of comparable wealth (i.e., Canada, Germany, the Netherlands, Sweden, and the United Kingdom). This holds true even when taking into account the increased demand for health services from

Table 1-3 Comparisons Among 12 Nations on the Financial Access, Cost, and Quality of Healthcare

Country *Listed by Quality and Cost Results*	Financial Access *Degree and Form of Insurance Coverage*	Cost (2009) *Percentage of GDP for Healthcare*	Quality (2007) *Healthy Adjusted Life Expectancy (HALE) at Birth*
Sweden	Universal access via a devolved national health service with supplementary, private insurance	9.9% 0.5% Δ avg.	74 years 4.75 Δ avg.
Netherlands	Universal access within a compulsory system of private insurance with supplementary, private insurance and government subsidies	10.8% 1.4% Δ avg.	73 years 3.75 Δ avg.
Canada	Universal access within a devolved, single-payer system with supplementary, private insurance	10.9% 1.5% Δ avg.	73 years 3.75 Δ avg.
Germany	Universal access within a compulsory system of social insurance and substitutive, private insurance	11.3% 1.9% Δ avg.	73 years 3.75 Δ avg.
United Kingdom	Universal access via a devolved national health service with supplementary, private insurance	9.3% –0.1% Δ avg.	72 years 2.75 Δ avg.
Greece	Universal rights and variable access within a system of national health services (ESY), social insurance, and private insurance	10.6% 1.1% Δ avg.	72 years 2.75 Δ avg.
United States	Variable access within a system of employment-based voluntary insurance, social insurance, and public programs and services	16.2% 6.7% Δ avg.	70 years 0.75 Δ avg.
Mexico	Universal rights but variable access within a system of employment-based social insurance, public health services, and private insurance	6.5% –2.9% Δ avg.	67 years (2.25) Δ avg.
Argentina	Variable access within a multipayer system of employment-based social insurance, private insurance, and public health services	9.5% 0.1% Δ avg.	67 years (2.25) Δ avg.
Turkey	Universal access within a single-payer system that includes both publicly and privately owned health services	6.7% –2.7% Δ avg.	66 years (3.25) Δ avg.
Brazil	Universal rights but variable access within a system of national and contracted services, along with substitutive, private insurance	9.0% –0.4% Δ avg.	64 years (5.25) Δ avg.
Indonesia	Variable access within a system of employment-based social insurance and private insurance, with public health services	2.4% –7.0% Δ avg.	60 years (9.25) Δ avg.
12 Country Average		9.4% avg.	69.25 avg.

Source: World Health Organization. Global Health Observatory Data Repository. Accessed July 17, 2011, at http://apps.who.int/ghodata/#.

an aging population within the United States, and is due, in part, to the prices for services.[77]

Quality of Healthcare

Although the total cost of healthcare is a focus of many reform efforts in high-income countries, the current U.S. efforts to establish ACOs focuses on obtaining greater value for the money spent. Ideally one would like to compare national healthcare systems on the basis of clinical outcomes and quality of life. The right-hand column in Table 1-3 shows quality, based on a population measure of health-adjusted life expectancy (HALE); this is probably the single best proxy available for assessing health outcomes across the 12 countries in the comparisons.

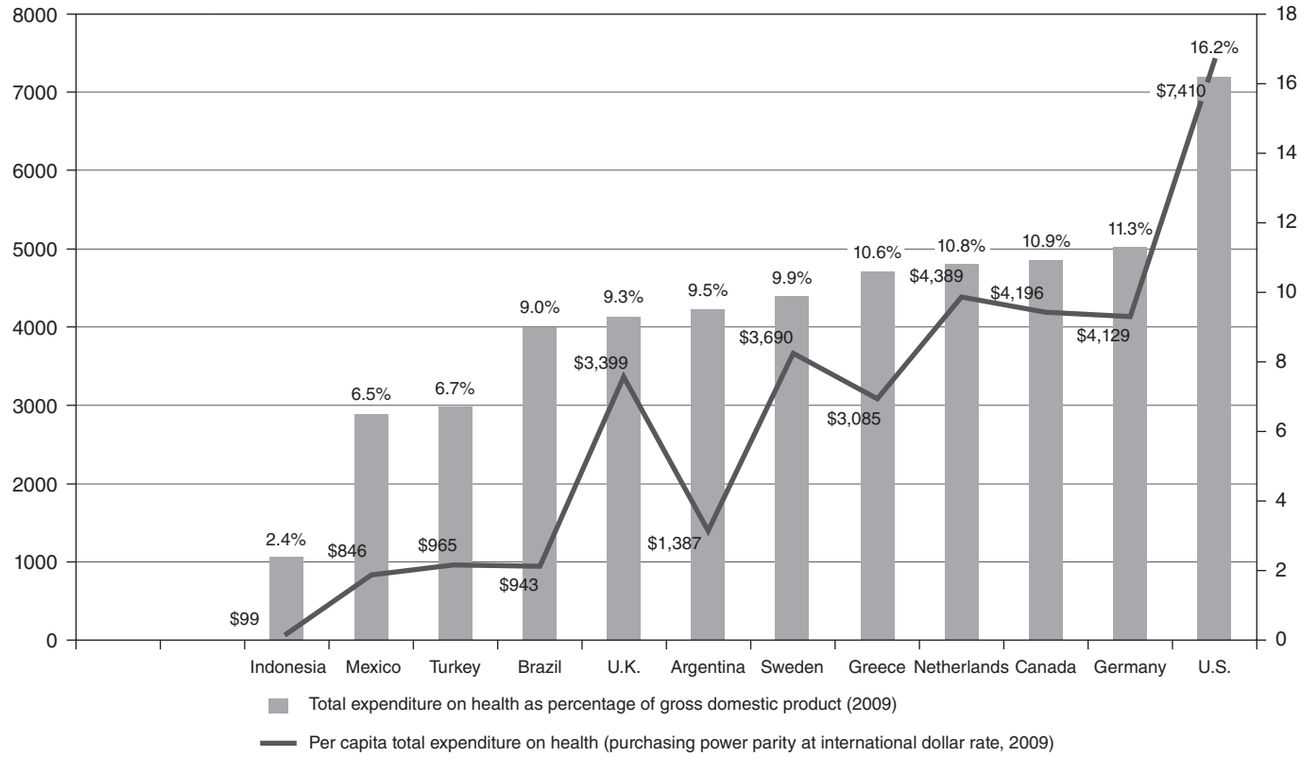

Figure 1-2 Comparisons among 12 nations on the percentage of gross domestic product and per capita spending on healthcare in 2009.
Source: Data from World Health Organization. Global Health Observatory Data Repository. Accessed July 17, 2011, at http://apps.who.int/ghodata/#.

HALE estimates the average number of years that a person can expect to live in "full health" by taking into account years lived in less than full health due to disease and/or injury. For example, the average HALE for the six high-income countries with universal financial access is 72.8 years; in contrast, the average HALE for both genders in the United States is 70 years, and the average HALE for the five middle- and low-income countries is 64.8 years.

Figure 1-3 shows how the United States fares in comparisons across the 12 countries on two measures of HALE when compared to two preventable healthcare outcomes—infant mortality and maternal mortality at birth. The health quality outcome index in Figure 1-3 subtracts the sum of the standardized scores for preventable deaths (infant and maternal) from the sum of the standardized scores for female HALE and male HALE. Although this is a crude measure of amenable healthcare quality, it does take into account both healthy life expectancy and the provision of maternal and infant care. Based on this outcome index, the United States is ranked seventh out of the 12 national health systems under comparison, the same point as the U.S. ranking in Table 1-3. All of the countries with higher rankings provide universal financial access to their citizens. Interestingly, the health quality outcome index also suggests changes to the rankings listed in Table 1-3, with Germany and Greece moving up in the rankings by two and three places, respectively, and the United Kingdom, Canada, and the Netherlands falling in the rankings by one, two, and two places, respectively. These changes undoubtedly reflect the addition of infant and maternal mortality in the health outcome index. Taken together, infant and maternal mortality is an important proxy for health system quality because most birth-related deaths are preventable, assuming diet, living conditions, and healthcare provision are adequate. Significantly, that set of presumptions may be questionable not only in low- and middle-income countries with large inequities in family income such as Brazil (Gini Index: 56.7) and Mexico (Gini Index: 48.2), but also in the United States, which has had increasing inequities in family income distribution (Gini Index: 45.0).

A Framework for Understanding Health System Constraints

Under the PPACA of 2010, the United States is attempting to obtain better value for the amount of money it spends on healthcare. Given that countries such as Sweden, Germany, Greece, and the Netherlands obtain

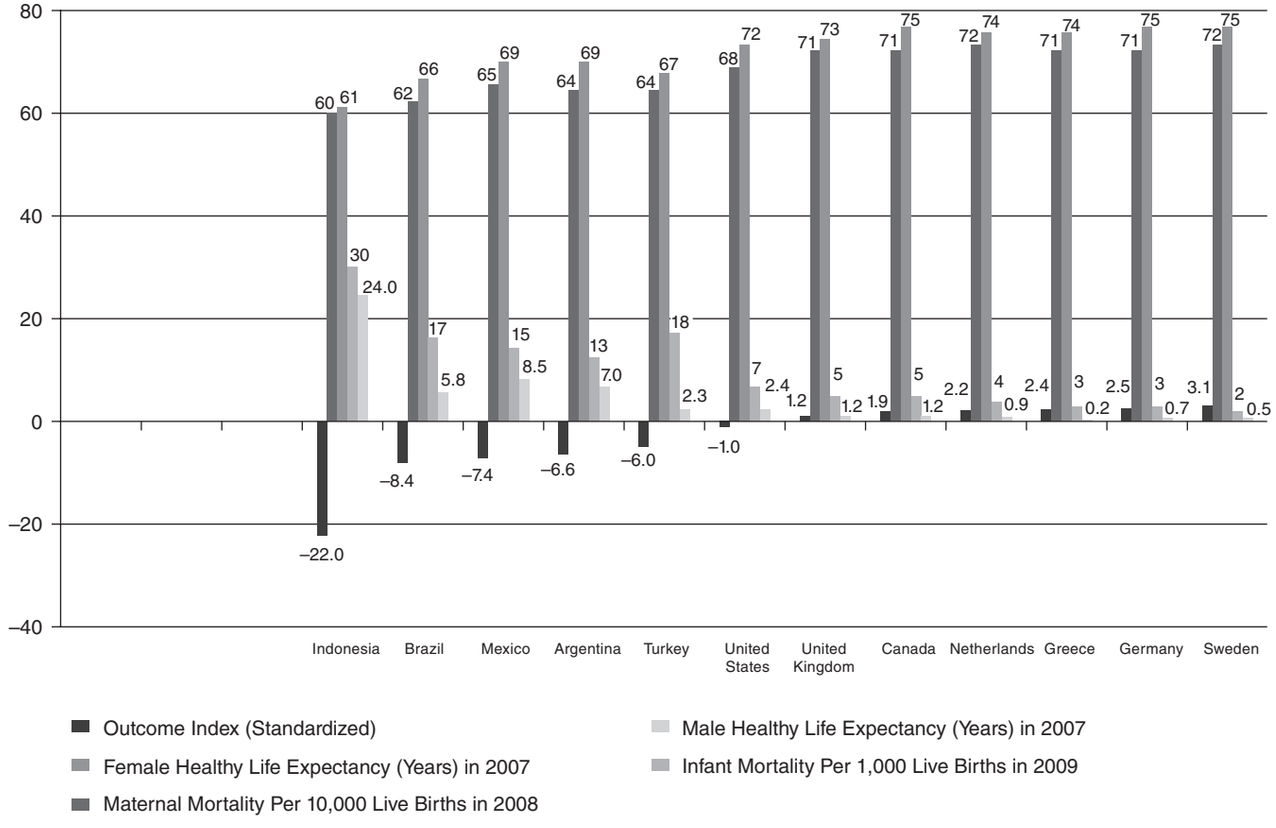

Figure 1-3 Comparisons among 12 nations on four healthcare outcome measures, ordered by standardized outcome index.
Source: Data from World Health Organization. Global Health Observatory Data Repository. Accessed July 17, 2011, at http://apps.who.int/ghodata/#.

better healthcare outcomes (see Figure 1-3) and spend less than the United States (see Figure 1-2), we should be able to learn some lessons by examining their healthcare systems, as well as the systems in Canada and the United Kingdom that obtain better cost–benefit ratios than the United States. At the same time, it would be wise to look at those middle- and low-income nations that also are addressing healthcare financial access, cost, and quality issues, particularly Indonesia, Mexico, and Turkey, which are all undergoing major healthcare reforms.

At the national level, both the allocation of healthcare resources and the funding sources for healthcare establish constraints on health system efficiency and effectiveness. Three health resource indicators, along with a health outcome indicator, help illuminate the diverse ways in which healthcare is organized. Figure 1-4 displays the density of hospital beds, nurses and midwifes, and physicians in each of the 12 countries, ordered by the total (combined) density of these three resources. The country with the highest combined density of these three resources is Germany, whereas Indonesia has the lowest density. The outcome index reported in Figure 1-4 is the same standardized health outcome displayed in Figure 1-3. Typically, a country's health outcomes index improves with increases in the allocation of health resources. However, this relationship is not a one-to-one correlation. For example, the four countries with established, high-performing primary care networks—Canada, the Netherlands, Sweden, and the United Kingdom—display a greater reliance on nursing and midwifery in relationship to both physicians and hospitals than do most other countries. Usually, this configuration of resources is more efficient than other configurations, as illustrated by Figure 1-5, which orders the 12 countries by health resources efficiency. The health resources efficiency index divides the total health resource density (hospital beds, nursing and midwifery, and physicians) within a country by the GNP each country devotes to healthcare. It provides a way to compare the value—in health resources—that each country acquires given the monies each country deploys

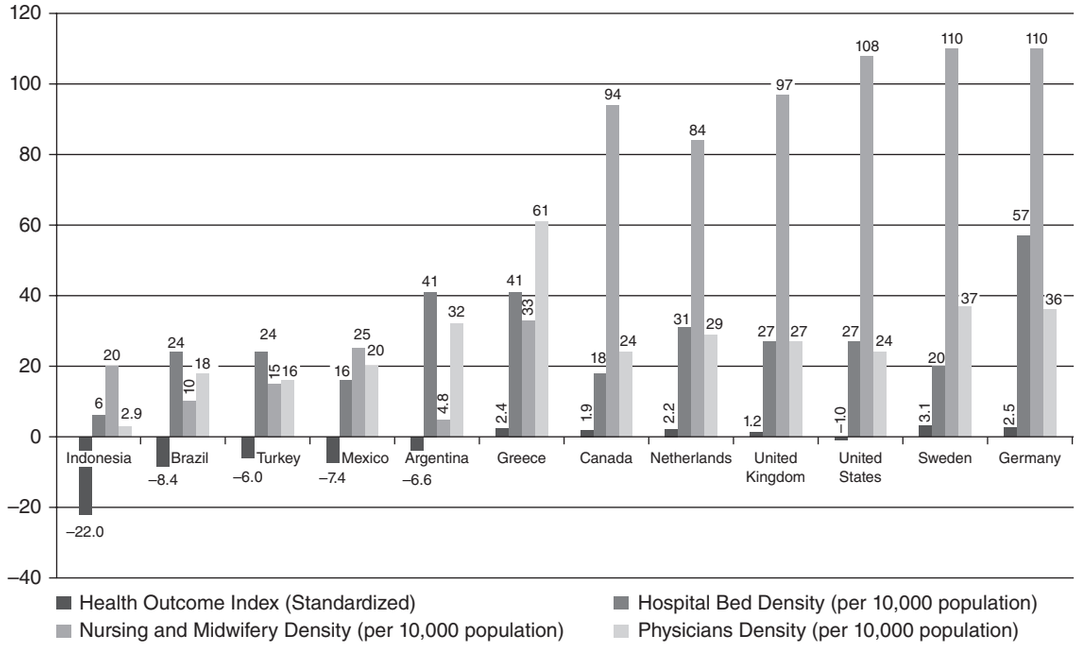

Figure 1-4 Comparisons among 12 nations on density of hospital beds, nursing and midwifery, and physicians, ordered by combined density.
Source: Data from Organisation for Economic Co-operation and Development. OECD Health Data 2011. Accessed July 17, 2011, at http://www.oecd.org/health/healthdata; and World Health Organization. Global Health Observatory Data Repository. Accessed July 17, 2011, at http://apps.who.int/ghodata/#

on healthcare. Based on this efficiency index, Germany, Sweden, and the United Kingdom obtain the most health resources for the monies they expend, followed by the Netherlands, Greece, Canada, and, remarkably, Indonesia. Brazil, in contrast, obtains the least amount of health resources for its monies. Interestingly, the United States' efficiency index is similar to that of Mexico, and only slightly better than the health resources efficiencies achieved by Turkey and Argentina.

Although a country may expend its monies efficiently on healthcare resources, it may not garner much value from those resources. Figure 1-6 displays a healthcare effectiveness/health resources efficiency index, which divides the standardized health outcome index by

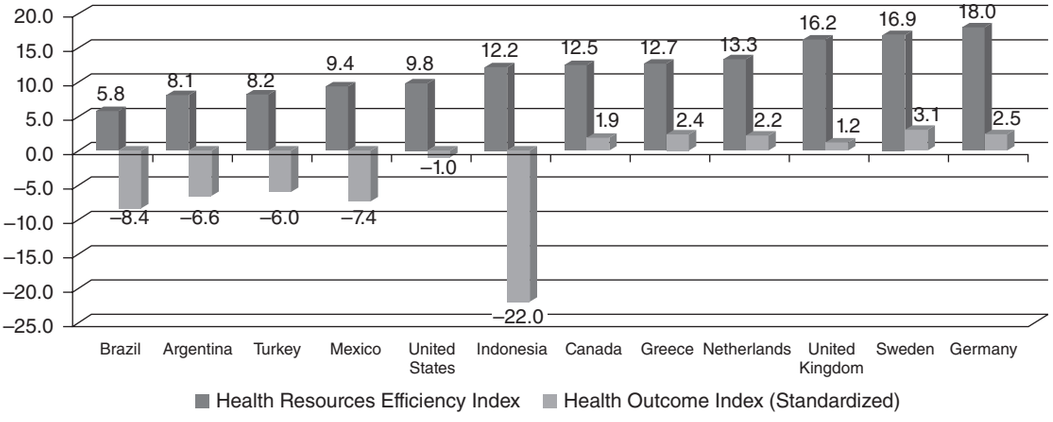

Figure 1-5 Comparisons among 12 nations on health resources efficiency and health outcomes, ordered by health resources efficiency index.
Source: Data from Organisation for Economic Co-operation and Development. OECD Health Data 2011. Accessed July 17, 2011. at http://www.oecd.org/health/healthdata; and World Health Organization. Global Health Observatory Data Repository. Accessed July 17, 2011, at http://apps.who.int/ghodata/#.

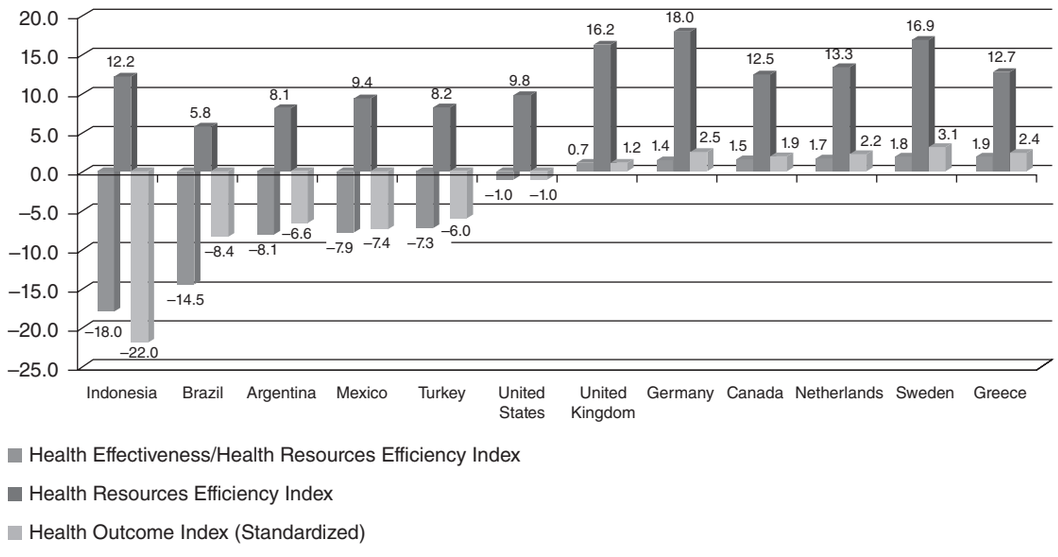

Figure 1-6 Comparisons among 12 nations on health resources efficiency and health outcomes, ordered by health effectiveness/health resources efficiency index.

Source: Data from Organisation for Economic Co-operation and Development. OECD Health Data 2011. Accessed July 17, 2011, at http://www.oecd.org/health/healthdata; and World Health Organization. Global Health Observatory Data Repository. Accessed July 17, 2011, at http://apps.who.int/ghodata/#.

the health resources efficiency index. The effectiveness/efficiency index provides a way to view how well each country achieves health outcomes relative to the health resources and monies it expends on healthcare. Based on this utilitarian viewpoint, Figure 1-6 shows that Greece, Sweden, and the Netherlands, respectively, achieve the best rankings, whereas Indonesia and Brazil achieve the lowest rankings. The United States' ranking (seventh) is the lowest among the high-income countries in this comparison, but is higher than any of the lower income countries.

Figure 1-7 compares the sources of revenue for health expenditures in each of the 12 national health systems. Taking into consideration the organization of these national health systems, these sources of revenue for health expenditures help explain both the flexibility and constraints facing each country. The three countries at the top (United Kingdom, Sweden, and Canada) and the two countries at the bottom (Germany and the Netherlands) of the figure offer universal financial access. The United Kingdom, Sweden, and Canada rely primarily on taxation; in contrast, Germany achieves universal financial access through compulsory social insurance and private insurance. The Netherlands achieves universal financial access via both compulsory private insurance and social health insurance. On one hand, financial access to healthcare within these national health systems does not come without rationing and limiting access to secondary and, especially, tertiary healthcare.[78] On the other hand, mixing sources of funding and types of financing often leads not only to high costs, but also to limited financial access and poor quality outcomes.

Shared Concerns and Bases for Comparisons

The comparisons of the United States with these 11 countries raise a number of issues. Do these countries face the same social, economic, and demographic problems as the United States? On one hand, the industrialized countries we have examined to this point share many similarities with the United States; on the other hand, many of the middle- and low-income countries face greater social, economic, and demographic problems.

As Table 1-4 illustrates, one major demographic characteristic of the United States is its large population—ranging from 34.2 times the size of Sweden to 1.3 times the size of Indonesia. However, both Indonesia and Brazil have populations nearing the size of the United States. Another major characteristic of the United States is its per capita income; it is the highest in this comparison group, but is typically grouped with other high-income nations such as Canada, Germany, Greece, the Netherlands, Sweden, and the United Kingdom. Others in this comparison have moderate per capita incomes, except Indonesia. Both the United States and Canada

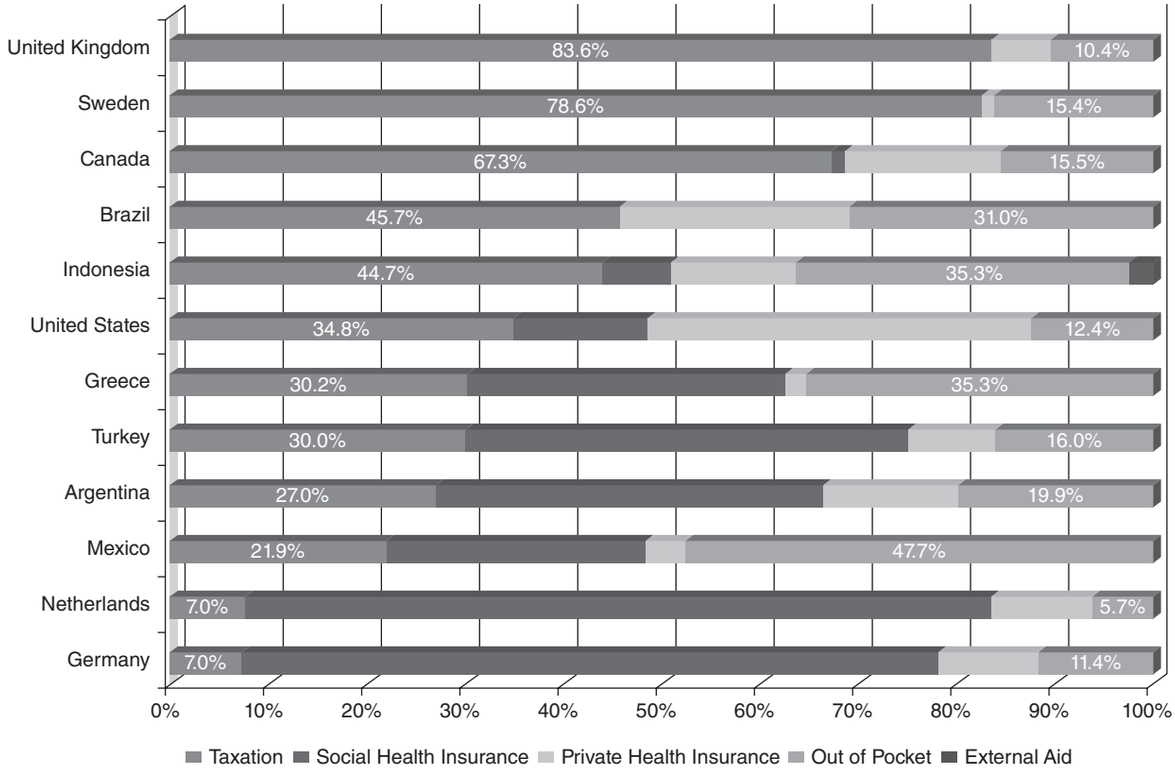

Figure 1-7 Comparisons among 12 nations on sources of revenue for health expenditures, ordered by reliance on taxation (2009).
Source: Data from World Health Organization. Global Health Observatory Data Repository. Accessed July 17, 2011, at http://apps.who.int/ghodata/#.

Table 1-4 Demographic, Economic, and Social Comparisons Among 12 Nations, Ordered by GDP Per Capita

	GDP Per Capita (Purchasing Power Parity U.S. dollars, 2010 est.)	Distribution of Family Income (Gini Index)	Land Area (square km)	Population (2011; in 1000s)	Population Density (square km)	Growth Rate (2011)	International Ranking by Population (2011)
Indonesia	$4,200	37.0	1,811,569	245,613	135.6	1.1	4
Brazil	$10,800	56.7	8,459,417	203,430	24.0	1.1	5
Turkey	$12,300	41.0	769,632	78,786	102.3	1.2	17
Mexico	$13,900	48.2	1,943,945	113,724	58.5	1.1	11
Argentina	$14,700	41.4	2,736,690	41,770	15.3	1.0	32
Greece	$29,600	33.0	130,647	10,760	82.3	0.1	76
United Kingdom	$34,800	34.0	241,930	62,698	259.2	0.6	22
Germany	$35,700	27.0	348,672	81,472	233.7	–0.2	16
Sweden	$39,100	23.0	410,335	9,089	22.1	0.2	90
Canada	$39,400	32.1	9,093,507	34,031	3.7	0.8	37
Netherlands	$40,300	30.9	33,893	16,654	491.4	0.5	60
United States	$47,200	45.0	9,161,966	311,051	34.0	0.9	3

Source: U.S. Bureau of the Census. 2011. International Data Base. Accessed July 17, 2011 at http://www.census.gov/population/international/data/idb/country.php; and Central Intelligence Agency. 2011. The World Factbook. Accessed July 17, 2011 at https://www.cia.gov/library/publications/the-world-factbook/index.html.

have moderate population growth rates, whereas all of the European countries have low growth rates, and the middle- and low-income countries high growth rates. Importantly, the high population growth rates in the middle- and low-income countries place special demands on their healthcare systems for prenatal, maternal, and childcare services, which are best met by primary care networks of providers. In addition, most of these countries have lower unemployment rates than the United States (9.7%), with only Greece (12%) and Turkey (12.4%) having higher rates in 2010 (see https://www.cia.gov/library/publications/the-world-factbook/index.html). Arguably, of the 11 other countries we have reviewed, the German and Dutch healthcare systems are the most comparable to the U.S. system. However, lessons can also be drawn from the United Kingdom's and Sweden's National Health Service and Canada's single-payer models, albeit with careful attention to the fundamental differences with the U.S. system.

Significantly, Canada, Germany, the Netherlands, Sweden, and the United Kingdom have been implementing various elements of managed competition in order to increase providers' efficiency when delivering healthcare, thus balancing the macro-management of financing healthcare practiced in each country with a quasi-market mechanism for micromanaging expenditures.[79] Healthcare systems like those in the United Kingdom and Sweden provide universal access to healthcare by relying primarily on taxes to fund the direct provision of care, but each country must ration health services in order to control costs. On one hand, the United Kingdom's network of primary care providers serve as gatekeepers, implicitly rationing by limiting access to specialists and hospitals, thus controlling costs. On the other hand, the already decentralized Swedish National Health Service uses explicit rationing, along with local control and coordination of services, to maintain high quality care, contain costs, and uphold universal access to basic health services. Rationing, of course, shifts the costs of elective health services to consumers, increasing out-of-pocket expenses.

An alternative to this prototype is Canada's tax-funded, indirect provision of care. The decentralized Canadian healthcare system achieves universal access, high quality, and moderate costs through implicit (e.g., primary care gatekeeping) and explicit (e.g., technology assessment) rationing of services. Like the Swedes, the Canadians have focused on coordinating care services, but also have been rationing by shifting elective service costs to consumers, increasing out-of-pocket and supplementary private insurance expenditures.

Both the German and Dutch models of compulsory health insurance provide universal access and achieve high quality, albeit through different combinations of public (social health insurance) and private insurance. Both have adopted certain U.S. managed care techniques and have introduced different forms of managed competition between insurers and providers to increase efficiency. Moreover, to counter the risk avoidance and resulting inequitable financial access inherent within any system relying on multiple social and private health insurance funds, both the Dutch and the Germans have introduced risk equalization schemes for insurers.

Implications for Medical Group Practice

In each of the high-income countries—indeed, in most developed countries—medical groups are becoming more common and, in many cases, larger.[80] This general trend seems to be accentuated in single-payer national health systems, which rely on primary care gatekeeping. For example, approximately 75% of the general practitioners (GPs) in Canada were in group practices in 2000,[81] as were 53% of the GPs in the United Kingdom during 2002.[82] Moreover, the trend of GPs being members of group practices is on the rise. In countries where the healthcare system is financed through taxation, the number of GPs who are members of a group practice is the highest, with 98% in Sweden and 92% in the United Kingdom. In Canada, the number of GPs who are members of medical groups also is high, with 90% in Quebec and 60% in Ontario. On the other hand, countries that have mixtures of compulsory social and private insurances, such as Germany, have the lowest rate of GPs as members of group practice, about 30%.[83]

Germany, the Netherlands, Sweden, and the United Kingdom are focused on becoming more coordinated healthcare systems, utilizing mechanisms similar to the U.S. notions of medical homes and accountable care organizations. These innovations have come about in part due to aging populations that experience more chronic illnesses, and in part to contain or reduce healthcare expenditures. For instance in Germany, a pilot program, *Gesundes Kinzigtal*, created a substantial efficiency gain through a shared savings contract with Gesundes Kinzigtal GmbH cooperating with a physician network and two healthcare insurers.[6] In 2007, similar programs were launched in Sweden to improve the coordination of care. As in the United States, coordinated care, health information technology, and patient-centeredness have been shown to achieve better health outcomes for treating patients within chronic care.

Lessons for the U.S. Healthcare System: Whither the PPACA of 2010?

The PPACA of 2010 is being challenged in U.S. courts, is the focus of congressional attempts to defund its provisions, and has been variously opposed and supported by numerous interest groups in the United States. Is it a reform that should be supported? If so, what provisions should be changed, if any, especially in light of the interests of single- and multispecialty interest groups in the United States?

Should We Allow Individual Health Insurance to Be Compulsory?

The U.S. healthcare system has been unique among high-income countries in relying on voluntary, employer-based health insurance for most of its population. The PPACA requires individuals to buy health insurance if they are not covered by employer-based health insurance and are not eligible for either Medicare or Medicaid. Opponents of this aspect of the legislation are currently challenging its legitimacy through the federal courts, claiming it violates the U.S. Constitution.

Regardless of the merits of such a challenge, mandating individual health insurance is a sound and pragmatic policy. On one hand, it reduces the burden placed on employers to provide health insurance as a benefit. Because this burden is voluntarily assumed, employers in the United States have been covering fewer employees and their dependents each year since 2007. On the other hand, such policies have been successfully enacted in both the Netherlands[84] (also see Appendix A) and Switzerland.[85] However, the PPACA penalizes employers, especially large employers, who withdraw health insurance coverage as an employee benefit. The rationale for this policy is to slow the exit from the employer-based health insurance coverage, making for a more orderly transition to individual-based health insurance. If the intention is to shift to individual insurance as the major means for financing health coverage, the United States should learn from the Dutch, who did not allow health insurance purchased through employers to continue, but required employers to pay to their employees a portion of that former benefit in salary.[86]

Indeed, if anything, the individual insurance mandate does not go far enough and should include long-term care coverage. Such is the case in Switzerland (mandated private insurance) and in Germany and the Netherlands (mandated social health insurance).[87] By mandating the purchase of long-term care insurance, both the federal and state governments would eliminate most of the public costs currently associated with Medicaid.[88] In turn, a long-term care insurance mandate would drastically lessen the fiscal burden of extending Medicaid coverage for all low-income, employable adults, making this aspect of the PPACA much more feasible in the United States.

In terms of mandating insurance coverage, the PPACA has at least two other deficiencies that should be addressed. A compulsory individual insurance model has several prerequisites, including (1) a basic set of services that every insurer must cover, (2) guaranteed issue to anyone seeking coverage from an insurer, (3) a fixed premium from the insurer for all those insured under the basic coverage, and (4) a post hoc risk equalization scheme. The PPACA allows a range of premiums (3 to 1 ratio based on age; 1.5 to 1 ratio based on other factors) for the same basic coverage and does not include a post hoc risk equalization scheme. This fourth element, especially, is necessary because it deters health insurers from making premiums unaffordable to high-risk individuals. On one hand, an insurer with sicker enrollees would have those costs offset by the risk equalization fund at the end of each year; on the other hand, an insurer with healthier enrollees would forgo a portion of the premium set aside in the risk equalization fund. The four elements, taken together, allow private insurance companies to offer basic insurance packages to anyone, without assuming untoward risk.

Should We Experiment with Patient-Centered Medical Homes?

Countries that have established integrated primary care services have had remarkable improvements in their population's health status. Brazil, Indonesia, and Turkey are exemplars of this trend in moderate- and low-income countries. Variations of this model are also deployed in Canada, Germany, the Netherlands, and the United Kingdom. Because the focus is on preventive and primary care services that enhance wellness within families and across generations, integrated primary care is more than a gatekeeping model for controlling access to high-cost, tertiary care. Within high-income countries with rapidly aging populations, various models of integrated primary care address the problems of chronic diseases and help to coordinate the continuum of care. The after-hours primary care collaboratives in the Netherlands, in conjunction with a national health information system, are one innovative way to address concerns about continuous, 24-hour access to care. The patient-centered medical home model in the United States provides a similar way to approach these concerns while reaping

the benefits inherent in providing preventive and primary care to everyone.

To establish medical homes, the United States must address myriad shortcomings in its current system, including funding for such services, the maldistribution of primary care physicians relative to specialists, and the shortage of nurses. The PPACA provides some limited mechanisms for funding medical home services via ACOs, and does attempt to address the shortage of primary care providers. For example, the PPACA authorizes increases in both Medicaid and Medicare funding for primary care physicians, establishes the Community-based Collaborative Care Network Program for underserved and underinsured populations, expands the training and incentives for medical students choosing primary care as a specialty, and expands the training programs and funding for nurses. However, these provisions may be undermined easily if the U.S. Congress continues to underfund these initiatives, as it has the program for federally qualified community health centers.

We believe the United States needs to establish a special payment system within Medicare for patient-centered medical homes. Currently, physicians are not rewarded adequately for integrated preventative and primary care services that maintain the wellness, manage the chronic conditions, and coordinate the secondary and tertiary care of Medicare recipients. The United States could base such a payment system for primary care providers on the United Kingdom's system of GP payments, which uses a mix of capitation fees, fixed allowances for practice costs, bonus payments linked to quality processes and outcomes, and specific fees for enhanced services (such as coordination of care). Alternatively, the United States should look at the physician payment incentives that have been implemented in Ontario, Canada, for primary care physicians. Like those in the United States, Canadian physicians are paid primarily on a fee-for-service basis, so this initiative bears close examination.[89]

What About Accountable Care Organizations and Value-Based Purchasing?

Aligning the incentives for healthcare providers with the desired outcomes for patients, communities, and regional and national populations has been a major challenge for Canada, Germany, the Netherlands, Sweden, Turkey, and the United Kingdom. Each of these countries has and is experimenting with various forms of performance-based payment systems for hospitals and physicians, as well as other healthcare providers. For example, the United States should look carefully at the regional experiments in Germany to provide patient-centered, integrated care to improve the population health.[90]

As discussed previously, the PPACA authorizes CMS to establish ACOs, which can share cost savings with both the Medicare and Medicaid programs. The draft ruling clearly favors large multispecialty groups and, especially, integrated delivery systems that employ physicians. If implemented, such a policy will accelerate the growth of not only integrated health systems and large multispecialty groups, but also hospital-owned single-specialty groups. However, many medical associations oppose this corporatization of physician practice. They believe, moreover, that any long-term mechanism for sharing savings clearly will entail some sort of bundled payment for both hospital and physician services. Indeed, several of the commentators on the draft ruling urge CMS to propose an alternative to the fee-for-service model for physicians that would allow smaller medical groups to invest in cost-sharing mechanisms with hospitals, but without downside risks.[61,62] Currently, under Medicare's prospective payment system, hospitals are rewarded for being efficient; however, Medicare's fee-for-service system for physicians rewards them for providing services, not improving patient outcomes. The conundrum is to develop a system that will reward both efficiency and effectiveness. Given their experiments with bundled payments, CMS should look to the Germans[90] and the Dutch[91] for insights on how best to align incentives for physicians and hospitals.

Putting the Teeth Back into Evidence-Based, Comparative Health Assessments

Closely linked with the need to adopt an integrated preventative and primary care model is the need to improve healthcare by using evidence-based medicine and evidence-based management practices. Different countries are using various approaches, ranging from comparative effectiveness research for drugs (e.g., Germany and the United Kingdom) to establishing evidence-based guidelines for treating various diseases (e.g., the Netherlands and Canada) to safety registries for medical devices (e.g., Sweden).

Within the United States, evidence-based medicine is well recognized, and many guidelines have been developed by the Agency for Healthcare Research and Quality (AHRQ), but there remain significant delays in the adoption of best medical practices among physicians, hospitals, and other healthcare providers. The PPACA established the Patient-Centered Outcomes Research Institute (PCORI), but terminated the Federal Coordinating Council for Comparative Effectiveness Research (FCCCER). Although the PCORI is mandated to promote stakeholder engagement and to identify and conduct research that compares the clinical effectiveness of medical treatments, it lacks

any authority to restrict the proliferation of healthcare technology, a major driver of costs in the United States. Although a comparative effectiveness (or health technology assessment) agency with such authority would certainly be controversial, it would be a proven way to limit the continuous health inflation that has plagued the United States.[92] Moreover, just as the FCCCER was terminated, part of PCORI's funding, along with its mandate, should be transferred to the AHRQ, because it is already engaged in conducting comparative effectiveness research.

Reducing Defensive Medicine by Reforming the Medical Liability System

A recent study by researchers from Harvard University estimates that the medical liability system cost the United States about $55.6 billion in 2008, with about $45.6 billion attributable to the costs of defensive medicine.[93] However, a major limitation of this study is the way it estimates indemnity and self-insured payments costs. Using a different methodology that does not rely on A.M. Best data, Towers Watson estimates that the tort system of medical malpractice liability cost the United States about $30 billion in payments (including administrative, indemnity insurance, and self-insured costs) and awards (including out-of-court settlements) in 2009. These expenses were increasing at an annual rate of 10% each year between 1975 and 2004, but have only increased by 0.5% per year since 2005.[94] Significantly, the Towers Watson figures do not include the costs attributable to defensive medicine, suggesting that the annual costs of the medical liability system in the United States may be closer to $75 billion.

The tort systems of medical liability in most other countries provide various ways to restrict the frivolous lawsuits that plague the United States. Tort systems are used for two reasons: (1) to compensate victims of medical errors, and (2) to deter the commission of such errors. However, most tort systems of medical liability are very expensive and time-consuming ways to compensate victims.[95] Tort systems also do little to deter medical errors, many of which are system-based rather than individual-generated.[96] Moreover, tort systems tend to encourage the practice of defensive medicine, even in countries such as the United Kingdom.[97] In contrast, a no-fault compensation system addresses the needs of victims in a cost-effective manner and eliminates the perverse incentives supporting defensive medicine. Allowing patients to pursue additional recourse for noneconomic and/or punitive damages provides a safeguard for the dereliction of provider duties to the welfare of the patient (see Appendix B later in this chapter).

Although most countries also use a tort system of medical liability to compensate patients and to deter malpractice by physicians and other healthcare professionals, a few countries have adopted no-fault compensation systems, and still others have hybrids of these two systems. The costs associated with tort systems of medical liability increased in all countries between 2001 and 2005, as medical malpractice insurance companies around the world faced large losses from claims. These losses led several insurers to withdraw from the market, making access to insurance more limited and making premiums more expensive for most providers. Nonetheless, these increases varied depending on the ways countries funded medical malpractice insurance and the policy limitations they placed on their tort systems. During this same time, no-fault compensation systems saw little increase in their overall costs.[97]

The costs associated with defensive medicine (i.e., the costs of additional medical services for patients ordered primarily for the purpose of minimizing physicians' liability risks) are driven by physician perceptions about risk.[93] Such perceptions are fueled by the U.S. tort system of medical liability, with all its uncertainties and inequities involving jury-based decisions regarding a plaintiff's economic and noneconomic compensation for alleged injuries. At the same time, the perceived risks of medical liability severely hamper the reporting of medical errors, undermining quality improvement efforts that would help mitigate medical liability.[98] Hence, we recommend that the United States look beyond caps on noneconomic compensation as a way to contain medical malpractice liability, and investigate hybrid systems of no-fault compensation that permit patients to sue for additional damages, as is done in the Swedish system. To reduce the lack of provider accountability inherent in the Swedish model, we also recommend making no-fault medical liability insurance compulsory for healthcare providers (both physicians and hospitals). Given the experience of countries such as Sweden and the Netherlands, we believe that such a change would significantly reduce the practice of defensive medicine and reduce liability-related costs, more so than simply reforming the existing tort system in the United States.[99]

In closing, the U.S. healthcare system can benefit from looking at the successes and failures in other systems. We believe that the polarizing discussions around the PPACA have been insular and caught up in ideology. For the most part, those within the debate have missed the opportunity to gain perspective and insight from other healthcare systems. We hope that policy makers and all healthcare stakeholders will begin to take a look around the world in order to improve the financing, organizing, and delivery of healthcare in the United States, and to take advantage of innovative medical group practices.

Appendix A: Financing and Organization of 12 Health Systems

We organize this appendix around three health system prototypes, based on their primary means of financing and organizing healthcare. The United Kingdom and Sweden exemplify the tax-funded, direct provision of health services prototype. Each of these countries has achieved universal access, relatively low costs, and moderate- to high-quality outcomes with their national health services. Canada's system of compulsory national insurance exemplifies a tax-funded prototype with indirect provision of health services. This system has achieved universal access, with moderate- to high-quality outcomes. The compulsory insurance prototype is exemplified by the German and Dutch systems, which indirectly provide health services funded by mandatory social and private insurance; these prototypes have achieved universal access and moderate to high quality, albeit with slightly higher costs. Lastly, we discuss those countries pursuing mixed models of these three prototypes, including Argentina, Brazil, Greece, Indonesia, Mexico, Turkey, and the United States.

Tax-Funded Models for Direct Provision of Health Services

Although both Sweden and the United Kingdom make use of National Health Services that provide universal access to healthcare to all of their citizens, they differ in the degree to which those services are decentralized and locally controlled. Nonetheless, each country recently has engaged in reforms to control expenses, reduce waiting times for specialized services, ensure the quality of care, and develop national health information networks.

The United Kingdom's National Health Service

All residents of the United Kingdom (England, Wales, Scotland, and Northern Ireland, as well as the island states of Guernsey, Isle of Man, and Jersey) are covered under the National Health Service, which is funded through national taxes. Within England, the Department of Health (DH) is in overall charge of the NHS, with a cabinet minister reporting as secretary of state for health to the prime minister. The department controls England's 10 Strategic Health Authorities (SHAs), which oversee all NHS activities in England. In turn, each SHA is responsible for the strategic supervision of all the NHS trusts in its area. The devolved NHS administrations of Northern Ireland (Health and Social Care [HSC][100]), Scotland (NHS Scotland[101]), and Wales (NHS Wales[102]) plan, organize, and manage their services separately.[103] In other words, as purchasers and providers of healthcare, the government entities for England, Northern Ireland, Scotland, and Wales retain the responsibility for health legislation and general policy. Healthcare expenditure planning takes place within each government's general public expenditure planning process. NHS funding for the following year is established during this process.

In 2009, taxes raised by the national government accounted for 83.6% of total expenditures on healthcare. Out-of-pocket payments included payment for nonprescription medications, ophthalmic and dental services, and private healthcare (although the latter may be covered through private health insurance). In 2009, out-of-pocket expenditures accounted for 10.4% of total healthcare expenditures. Both for-profit and nonprofit companies provide private health insurance, which accounted for about 6.0% of total health expenditures in 2009.[104]

Comprehensive health services are provided by the NHS, ranging from preventive to primary to acute to rehabilitative care. Within the NHS England, these services include inpatient and outpatient hospital care, physician services, inpatient and outpatient drugs, dental care, and mental healthcare. Citizens may choose a general practitioner within their locale, as well as have a choice for specialist care. All hospital and specialist services are supplied without charge to the patient; however, user charges occur for outpatient drugs, dentistry, and ophthalmology. These charges are regulated, depending on treatment, and may be waived (e.g., sight test) or subsidized based on income and other criteria.[105]

The following discussion of health system structuring, including hospitals and physicians, focuses only on the NHS in England, which provides services to the largest population segment in the United Kingdom. Secondary and tertiary care services are overseen by 175 acute trusts, which manage hospitals. There are also 60 mental health trusts and 12 ambulance trusts.[103] Primary care trusts (PCTs) not only organize and provide primary care services via general practitioners, dentists, opticians, and pharmacists, but also commission hospital and other specialist services for local populations. Currently, the 152 PCTs in England control about 80% of the total NHS budget.[103,106] Foundation trusts (FT) were first established in April 2004, and they have greater financial and operational oversight than do other acute trusts and mental health trusts within the NHS. The 117 FTs, including 33 mental health trusts, are subject

to NHS performance inspection, but are independently regulated by Monitor (see http://www.monitor-nhsft.gov.uk/) rather than the by the SHAs.[107] Another recent innovation is care trusts, which provide both health and social services; there are currently eight pilot care trusts. Taken together, there are 235 acute trusts, specialist trusts, and foundation trusts.[103]

Hospitals

The 1,600 NHS hospitals and specialty centers are managed by the 235 NHS and foundation trusts noted earlier. Secondary and tertiary care services are provided in these locations; a subset of hospitals offer emergency care services, and specialty hospitals and centers offer mental health services.[103] In 2009, there were 2.7 acute care hospital beds per 1,000 people.[108]

Physicians

The British Medical Association negotiates with the Department of Health to determine the NHS payment systems for both general practitioners (GPs—primary care physicians) and consultants (physician specialists). The NHS has a well-developed primary care system made up of GPs, mid-level providers (e.g., midwives and practice nurses), and other healthcare professionals. This system will become more pronounced given the proposed reforms to the NHS if the Health and Social Care Bill 2011 is approved by Parliament. As currently proposed, the reforms will have GPs directing patients to specialist care and controlling most of the monies associated with those expenditures (see http://www.dh.gov.uk/en/Publicationsandstatistics/Legislation/Actsandbills/HealthandSocialCareBill2011/index.htm).

General practitioners may be independent contractors or salaried employees. However, most GPs are independent, self-employed professionals within partnership-based group medical practices. Whether as a member of a group medical practice, as a solo practitioner, or as a salaried employee, the GP provides preventive and primary care, acts as a gatekeeper to specialized care, and receives payments from a PCT. These payments include a mix of capitation fees, fixed allowances for practice costs, fees linked to quality processes and outcomes, and specific fees for enhanced services and the dispensing of drugs. Acute trusts and foundation trusts employ consultants on either a full-time (~40 hours) or part-time basis and pay them on a set salary scale based on seniority, with additional payments for extended services and clinical skills. As has been the tradition, both full-time and part-time consultants may supplement their salary by treating private patients.[109]

Sweden's National Health Service

The National Health Service covers all Swedish citizens, as well as immigrants and foreign residents. Although a basic package of care services is not set, the NHS typically provides preventive care, public healthcare, prescription drugs, inpatient and outpatient care, dental care, long-term care and rehabilitation, and mental healthcare services.[110] The NHS has three levels of organization: national (Ministry of Health and Social Affairs, National Board of Health and Welfare, as well as other regulatory agencies), regional (Swedish Association of Local Authorities and Regions), and local (20 county councils, the island of Gotland, and 200 municipalities). At the national level, the government sets forth principles and policies either through laws and regulation or through negotiation. The National Board of Health and Welfare typically represents the central government in negotiations with the Swedish Association of Local Authorities and Regions.[111] It also acts as the supervisory and advisory agency for health and social services, as well as the licensing agency for all healthcare personnel. On one hand, county councils have authority over primary and inpatient care, including public health and preventive care. On the other hand, the municipalities determine the housing, social support, and healthcare for the elderly and disabled.[110]

Patients are able to choose their principal healthcare provider. Choices may also be made concerning outpatient facilities and health centers in the county council. A referral may be necessary for care outside the individual's county council.[110] Income taxes are levied on residents with rates determined by county councils and municipalities. The average collective rate of taxation of local income is around 30%. Healthcare accounts for about 85% of total county expenditures.

In 2009, national, county, and municipal taxes accounted for 78.6% of total expenditures on healthcare. Out-of-pocket expenditures accounted for 15.4% of total healthcare expenditures. Dental and pharmaceutical copayments, as well as supplemental charges for private physicians, are the major costs associated with out-of-pocket expenses. Private health insurance accounted for about 1.2% of total health expenditures in 2009.[104]

Hospitals

Sweden has 73 hospitals. Specialty care is provided by 65 district/county hospitals; 60 of these hospitals provide 24-hour emergency care and are owned by county councils. Both secondary and tertiary care are provided by eight regional, academic medical hospitals.[111]

Physicians

Over 90% of physicians belong to the Swedish Medical Association (SMA), a union and professional organization for medical practitioners. The SMA negotiates general employment conditions (e.g., salaries, benefits, working hours) for its members through collective agreements, primarily with county councils.[112] In 2004, a total of 26,400 licensed physicians were employed in Sweden, with 21,900 employed within the NHS. Most physicians are specialists employed in hospitals (12,500, plus 5,000 licensed residents). The 4,400 general practitioners within the NHS serve as family doctors, but not as gatekeepers, and are employed by the county councils. Physicians employed within the NHS typically are paid a salary if they are specialists; general practitioners may be remunerated prospectively via capitation. Physicians in private practice (2000 in 2004) may set their own fee-for-service rates, but must adhere to county and national guidelines if they are to be reimbursed by the NHS and must have a contract with the county council. Otherwise these private practice physicians must use the regulated fee schedule or receive payment directly from the patient.[113,114] Basic care—preventive, primary, and public health—is provided at 1,000 public health centers. In addition to physicians, patients may receive care from district nurses and other mid-level providers.[111]

Tax-Funded Model for Indirect Provision of Health Services

Although Canada shares with Sweden and the United Kingdom a single-payer model of funding health services, it differs in that health providers are not employed by the state, and the federal or provincial governments typically do not own healthcare facilities. Ten provinces and three territories administer the Canadian system of Medicare, with the federal government recently instituting reforms to ensure equitable funding for, and access to, health services.

The Canadian Healthcare System

Canada indirectly provides health services through a tax-funded public system, which is accessible by all Canadians.[115] Citizens receive coverage for ambulatory services, inpatient services, prescription medications, physician services, community health services, disease prevention programs, and health protection programs. Home care is covered at varying levels.[116] Although the provincial and territorial governments oversee the provision of health services in their jurisdictions, the federal government is directly in charge of the healthcare services for the following groups: Royal Canadian Mounted Police, veterans, members of the armed forces, inmates in federal jails, Inuits, and status Indians (registered members of the First Nation).

Federal, territorial, provincial, and municipal governments share the costs of healthcare. In 2009, taxes accounted for 67.3% of total expenditures on healthcare. Supplementary private insurance accounted for 15.8% of total health expenditures, and out-of-pocket payments for 15.5%; these sources were used primarily for drugs and dental care. Social security accounted for the remaining 1.4% of public expenditures on health in 2009.[104]

Hospitals

Canadians were served by 535 general hospitals[117] (with about 1.8 acute care hospital beds per 1,000 people) in 2009.[108] Most hospitals are nonprofit, autonomous entities that provide inpatient and ambulatory services, diagnostic testing, and other services. Hospitals are staffed with physicians, registered nurses, licensed practical nurses, registered psychiatric nurses, aides, and various other healthcare professionals. In many hospitals, the staff works to provide patient care through a primary care team.

Physicians

In 2009, there were about 2.4 physicians per 1,000 people in Canada.[108] About half of all physicians are general practitioners, who act as gatekeepers for secondary and tertiary health services.[118,119] Most GPs and specialists are paid on a fee-for-service basis; their fee schedules vary based on provincial and territorial governments' negotiations with regional medical associations. Some GPs, such as community clinic physicians, and a few specialists, such as hospitalists, are salaried. Recently, some provinces have been shifting towards a mixed payment method for both GPs and specialists, combining fee-for-service with a salary or capitation component.[120]

For example, the provincial government of Ontario revised its physician services agreement with the Ontario Medical Association. This agreement not only increases base payments to physicians, but also incentivizes physicians to enroll unattached patients, to work collaboratively with other healthcare providers to coordinate patient care, to increase on-call coverage, to reduce avoidable emergency department admissions, to manage diabetic patient care, to increase psychiatric care services, and to enhance interdisciplinary care service for the frail elderly.[89]

Compulsory Insurance Model for Indirect Provision of Health Services

Both Germany and the Netherlands rely on compulsory health insurance that is used to purchase health services from various health providers. Recent legislation in both countries has reformed how and by whom health insurance is purchased. On one hand, the Dutch have implemented an individual mandate for private health insurance; on the other hand, the Germans have made access to health insurance both a right and a requirement within an employment-based insurance system. Significantly, as part of these reforms, both countries have also implemented risk equalization schemes to incentivize health insurers to compete on the basis of health quality and efficiency, while ensuring equitable and affordable access to a basic package of health services for all.

The German Healthcare System

Every German is eligible to participate in the statutory, social insurance system. Individuals above a determined income level have the right to obtain private health insurance. Because of the 2007 reforms, every individual must obtain either statutory or private health insurance.[121] In 2009, social health insurance accounted for 68.7% of health expenditures, and private health insurance accounted for 9.8%. Government taxes covered 7%, with out-of-pocket costs accounting for the remaining 11.4% of health expenditures.[104]

The chief system for financing healthcare is through contributions toward statutory, social health insurance funds (SHIs), which included about 220 funds in 2009.[122] The unemployed, the homeless, and immigrants are covered through a special sickness fund financed through general revenues. The benefits covered include health screening and prevention, nonphysician care, ambulatory medical services, inpatient care, home nursing care, dental care, and some types of rehabilitation. Copayments exist for pharmaceuticals, nonphysician care, dental treatments, ambulance transportation, and initial hospitalization or rehabilitation. Nonetheless, these charges are limited or exempted for those with low incomes or chronic illnesses, or who are under 18 years.[123]

The Federal Ministry for Health and the parliament are in charge of healthcare at the national level. Decision-making authority is shared between the federal government and the 16 *Lander* (states). One of their most significant roles is to oversee the sickness funds and voluntary insurance companies, assuring a level playing field for competition. Because sickness funds vary in their income and expenditures depending on their pools of insured people, a compensation scheme operates to equalize these differences, requiring transfers of income from low cost sickness funds to sickness funds with high expenditures based on age, gender, and disability. Beginning in 2009, the risk equalization scheme also takes into account the morbidity of the insured population using 106 morbidity groups based on 80 diseases. The intent of this reform is to prevent risk selection by sickness funds, to improve care for patients with chronic or catastrophic illnesses, and to provide a level playing field in which sickness funds can compete based on quality and efficiency.[124]

Hospitals

In 2009, Germany had about 2,200 general hospitals[122] and about 5.7 acute care hospital beds per 1,000 people.[108] Private for-profit hospitals accounted for around 20% of the total, with nonprofit, private hospitals accounting for more than 40%.[125] However, all of these hospitals contract with the social insurance funds. Sources for hospital funding include operating costs from the sickness funds and investment costs from the *Lander*. The 1992 Health Care Structure Act and subsequent pieces of legislation introduced an inpatient prospective payment system. Representatives of the sickness funds negotiate with individual hospitals over prospective payment rates.

Physicians

In 2009, Germany had about 300,000 doctors[122] and about 3.6 physicians per 1,000 people.[108] Most GPs and specialists are self-employed and paid based on fee-for-service with budget ceilings. For services to patients covered by SHIs, the fee-for-service reimbursement is subject to some controls. SHIs and regional physicians' associations negotiate the total amount to be distributed to physicians under the fee-for-service payments. SHIs make the payment to regional physicians' associations for all their affiliate physicians, and physicians' associations distribute the payments among affiliated physicians based on the Uniform Value Scale and other additional rules. This fixed fee schedule includes performance bonuses for high quality care. For services to private patients, physicians are paid on a fee-for-service basis by private health insurance and receive out-of-pocket payments. Some GPs and specialists are salaried employees and work in hospitals. Both salaried GPs and specialists can also treat and bill private patients based on the fee schedule for privately insured patients.[120]

The Dutch Healthcare System

All citizens are covered under the *Algemene Wet Bijzondere Ziektekosten* (Exceptional Medical Expenses Act, or AWBZ), which provides funding for long-term, disability, and chronic psychiatric care. In 2006, the ZVW reforms

were passed, which altered the structure of the sickness funds and private insurance for acute and primary care. Under the new financing scheme, individuals are no longer automatically enrolled in a health insurance plan. Rather, they are required by law to enroll in a plan of their choosing. This reform attempts to shift the Dutch system from supply- to demand-driven care. To attract members, insurance companies can offer competitive premiums for the basic benefits mandated by the government; many companies also offer extra, voluntary benefit packages for services not covered under the base package. Regulation of the system is provided for in the ZVW and is performed by two entities, the Health Care Insurance Board (CVZ) and the Health Insurance Monitoring Board (CTZ). When the Health Market Regulation Act was passed in July 2006, the CTZ merged with the Health Care Tariffs Board to form the Netherlands Health Care Authority (NZa).[126]

Hospitals

In 2009, there were 3.1 acute hospitals beds per 1,000 people.[108] For-profit and not-for-profit hospitals may be either privately or publicly owned. In 2006, the Dutch government passed legislation (*Wet Toelating Zorinstellingen* [WTZi]) that deregulates planning for hospitals and other providers, allowing them more autonomy for building and capacity decisions. However, the high-tech hospitals associated with academic medical centers remain centrally regulated.[86]

Physicians

In 2009, there were about 2.9 physicians per 1,000 people.[108] Less than a third of all physicians are general practitioners who provide preventive and primary care and serve as gatekeepers for secondary and tertiary care services. GPs may be paid via a combination of capitation and fee-for-service, with performance bonuses for preventive care services and managing chronic diseases. Most specialists are self-employed and paid on a fee-for-service basis. However, specialists working in university or municipality hospitals and physicians in training are paid salaries. They supplement their incomes by working at night or during the weekend.[120] With the reforms of the health insurance system, selective contracting with health providers has also started to occur, along with changes in the physician payment system.[127]

Mixed Models for Provision of Health Services

With the exception of Greece, all of the national health systems that follow mixed models for the funding and provision of health services have not yet achieved universal access to health insurance. Those nations include Argentina, Brazil, Indonesia, Mexico, Turkey, and the United States. Many of these countries have declared healthcare as a right, but rely on both public and private systems of care. The most common mix is one of social health insurance combined with tax-funded, direct and indirect provision of care. Regardless of the funding mix, all of these countries are attempting to reform healthcare to expand insurance coverage and access to care. We briefly review each national healthcare system, beginning with Argentina and ending with the United States.

The Argentine Healthcare System

The Argentine health system combines tax-funded, direct provision of health services through compulsory social and private health insurance with indirect provision of services. Around 10% of the population purchases private, substitutive health insurance. Treatment services, especially inpatient care, are emphasized. Other coverage available includes transplants, dental care, services for hemophiliacs, dialysis for chronic patients, and psychological care, but these are covered with variability among different social health insurance plans (*Obras Sociales*). Employees gained some freedom to choose among insurance plans in 1997. The reforms that have introduced managed care also have increased the burden of copayments (20–30%) by those covered by *Obras Sociales*.[128]

During 2009, private expenditures accounted for 33.6% of the total expenditure on health, of which 59.4% was out-of-pocket.[104] *Obras Sociales* accounted for 39.4% of health expenditures; taxation accounted for the remaining 27%.[129] Despite the creation of a National Health Services Superintendency under the Ministry of Health and Social Action,[130,131] the federal government does not play a central role in regulating healthcare. Rather, that regulation is the result of contracts among payers, intermediaries, and direct providers.[132]

Hospitals

In 2009, there were about 4.1 hospital beds per 1,000 people.[104] Beginning in the 1990s, attempts were made to decentralize public hospitals; 20 hospitals and some specialized centers or social programs became the responsibility of provinces. Several public hospitals were created as self-managed entities. Public hospitals receive funding from their jurisdiction and insurance like *Obras Sociales*, as well as from private insurance and out-of-pocket payments; however, they have suffered from poor reimbursements from these third-party payers.[132]

Physicians

In 2009, there were about 3.2 physicians per 1,000 people.[104] General practitioners in private practice work

on a per-capita basis, and private specialists or physicians providing ambulatory services are paid on either a fee-for-service or per-capita basis. Public physicians are paid salaries.[133]

The Brazilian Healthcare System

Brazil relies on both a public and a private subsystem, and covers about 75% of the population through the public health sector. The public health system relies on taxes to provide or contract for health services. In 2009, about 23.3% of the population had private health insurance.[104]

The Ministry of Health is responsible for regulating standards of care. The public system provides most primary and secondary care, as well as emergency services. There are several types of private, supplementary health insurance with varying types of coverage. However, most affluent Brazilians opt for substitutive private health insurance, either provided through employment or directly purchased. Employer-managed health plans provide services for employees of large public or private organizations and offer a wide variety of services, including dental care. Both group medical companies and medical cooperatives cover substitutive services based on prepaid arrangements.[134]

Taxes at the federal, state, and municipal levels accounted for 45.7% of total health expenditures in 2009. Private expenditures on health accounted for 54.3% of total health expenditures in 2009, of which out-of-pocket expenditures accounted for 31% of all healthcare expenditures.

Hospitals

In 2009, there were 2.4 hospital beds per 1,000 Brazilians.[104] Inpatient care occurs mostly within private hospitals with reimbursement from public funds. In contrast, most outpatient care occurs in public institutions. In 2002, public hospitals accounted for only 31% of all hospital beds in Brazil. Most secondary and tertiary care is located in the most affluent and populated regions of Brazil. The federal government uses a prospective payment mechanism to reimburse both public and private hospitals. Each state receives funds based on quotas and is subject to financial caps.[135]

Physicians

In 2009, there were about 1.8 physicians per 1,000 people.[104] General practitioners do not play a gate-keeping role; specialist care is emphasized. Starting in 1998, financing of ambulatory services began to be distributed on a per-capita basis to municipalities. Health insurance companies incorporate both reimbursement and delivery of services within health provider networks, similar to preferred provider organizations in the United States. The number of doctors has increased dramatically over the past 30 years, with the number in private practice growing most rapidly.[136]

The Greek Healthcare System

The Greek healthcare system is a combination of tax-funded, direct provision (Εθνικό Σύστημα Υγείας [ESY], the national health service) and social insurance-funded, indirect provision of care. All citizens have access to physician services, outpatient and inpatient care, health promotion and disease prevention, prescription drugs, and dental care. However, variations in coverage still exist based on the social insurance fund. Most social insurance covers lost income due to illness or maternity; however, the largest four social insurers cover nearly every possible healthcare service or product, short of cosmetic surgery. Long-term care is covered almost exclusively by private funds and is relatively rare. Copayments for pharmaceuticals are 25%; out-of-pocket payments for private physicians, outpatient, and inpatient services vary.[137]

State and national taxes fund ESY. In 2009, taxation accounted for 30.2% of total health expenditures. National and employer-sponsored funds accounted for 32.4% of the health expenditures in 2009.[104] Private funding in the form of both insurance and out-of-pocket money funded the remaining 37.4% of the healthcare system in 2009, growing from 2.9% (GDP) in 1980 to 5% (GDP) in 2004.[138] As of 2009, out-of-pocket payments accounted for 35.3% of total health expenditures, and private insurance accounted for 2.1% of total expenditures.[104]

Hospitals

Private and public hospitals provide about 4.1 beds per 1,000 people.[108] Public hospitals are financed primarily by tax revenue, with the addition of social insurance funds and user fees. As of 2000, there were 139 public and 218 private facilities.[137]

Physicians

In 2009, there were about 6.1 physicians per 1,000 people.[108] General practitioners are supposed to serve a gatekeeping function by referring patients to specialized primary or other secondary care; however, that has not been the case. Relatively few physicians choose general practice.[139]

The Indonesian Healthcare System

The Republic of Indonesia's health system is a complex mix of private expenditures; tax-funded, direct provision of services; compulsory social insurance; and voluntary

private insurance. In 2009, public expenditure on health accounted for 51.8% of total health expenditures, of which, 13.7% of expenditures were raised from social security payroll deductions and 1.8% from external sources. Out-of-pocket expenditures accounted for 5.3% of all healthcare expenditures; private health insurance accounted for only 12.9% of total health expenditures.[104]

Government employees, the military, Indonesians employed in the formal sector, and the poor are covered under the Indonesian social insurance programs (*PT Askes, PT Jamsostek*). Private insurance covers a small percentage of the population. Public hospitals and outpatient facilities provide services for those without social or private insurance, estimated at 70% of the population. Both public and private facilities provide primary through tertiary services. Those covered by *PT Askes* receive services mainly in public facilities. Preventive and primary care are emphasized in public services. Patients pay user charges in public facilities.

Civil servants, civil service pensioners, the armed forces, and their families and survivors receive services from *PT Askes*, which is funded through payroll contributions of 2% and an additional 0.5% from the government. *PT Jamsostek* is a semicompulsory system for employees of firms with more than 10 employees and is also financed through payroll deductions of 3–6%, paid entirely by the employer. To address the substantial increase in the underserved and poor, the government instituted an additional program called the National Social Security System, or *Sistem Jaminan Sosial Nasional*. Launched in 2005, this program covers around 60 million people. It is administered following managed care principles, and receives a monetary contribution from the government.[140]

Hospitals

In 2005, Indonesia had 1,268 hospitals, 642 government and 626 nongovernmental. Of these hospitals, 995 were general hospitals and 273 were specialty hospitals.[141] In 2009, there were about 6 hospital beds per 10,000 people.[104] Policy analysts argue that the high level and unpredictability of user fees deters utilization of hospitals. Private hospitals (both for-profit and not-for-profit), which represent about half of all hospital facilities, are the dominant provider of inpatient care.[142]

Physicians

In 2006, there were 44,564 general practitioners and 12,374 physician specialists, supported by 308,306 nurses and 79,152 midwives. In 2009, there were 2.9 physicians per 1,000 people.[104] Because of the many rural villages throughout the nation's archipelago, Indonesia relies on 7,669 health centers to provide primary and some secondary care. These include district health centers (2,077 with beds) that provide a wide range of medical, preventative, and obstetrical services. One or more physicians, with nurse support, staff these centers. Subdistrict health centers (5,592 without beds) provide limited medical services and are staffed by either a physician or a nurse. Transportation vehicles (all-terrain vehicles and/or motor boats) are available in most rural subcenters. Preventive and primary care is provided by integrated health centers; these are managed by the community, and provide maternal and child health, diarrheal control, family planning, nutritional development, and immunization services at the village level.[141,142]

The Mexican Healthcare System

Until recently, Mexico relied on a three-fold method of insuring and providing health services: (1) a national health subsystem (Ministry of Health and IMSS-Solidarity); (2) a set of compulsory employment-based social insurance subsystems (IMSS and ISSSTE), which covered approximately 50% of the population in 2000; and (3) a private health insurance market. Although about 50% of people were covered by social health insurance in 2000,[143] estimates of who had access to at least basic health services ranged between 70% and 90%.[144,145]

To address the needs of the uninsured, the Mexican health system recently underwent a massive reform, which allowed for the formation of the System of Social Protection in Health (SSPH). The reform focused on the 50 million uninsured Mexicans that had not been able to access healthcare services through the compulsory social health insurance programs that previously were in place. The SSPH program is funded largely by federal taxes, as well as contributions from municipal governments. Families also pay a small premium; however, the poorest 20% of families are exempt from the payment. The insurance component of the plan covers all individuals that are not covered by social security because they are self-employed, unemployed, or out of the workforce.[146,147] The System of Popular Social Security (SISSP), another form of social insurance, was implemented in 2006 to reduce the number of marginalized individuals in Mexico. In addition to providing housing and retirement benefits, the SISSP offers health services to the nation's poorest population.[148]

In 2009, out-of-pocket expenditures accounted for 47.7% and private insurance 4.0% of all healthcare expenditures. Taxes at the federal, provincial, and municipal levels accounted for 21.9% of healthcare expenditures. Depending on employment, social health insurance is financed through either bipartite employer and employee

contributions or tripartite contributions that include federal funds; social health insurance accounted for 26.4% of total health expenditures in 2009.[104]

Hospitals

In 2009, there were 1.6 hospital beds per 1,000 people.[108] In 2006, Mexico had over 4,000 hospitals and 77,705 beds; however, only 1,047 hospitals were in the public sector. Nonetheless, the public sector accounts for most hospital beds. Also, whether privately or publicly owned, 86.8% are general hospitals, and most provide emergency and secondary care services.[148]

Physicians

Mexico had 2 physicians per 1,000 people in 2009, with most providing primary care.[108] In 2002, 45% of all physicians were specialists. Around 27% of physicians work only in private practice, where they are paid on a fee-for-service or per-capita basis; the remaining 73% are in public practice. Most physicians in public practice receive salaries, which they may supplement through private practice.[148]

The Turkish Healthcare System

Until recently, Turkey's health system was a combination of tax-funded, direct provision and social insurance–funded, indirect provision of care. This system provided financial coverage to about 85% of the population through some kind of public or private health insurance. In 2003, most people were covered through one of three forms of social health insurance: (1) the Social Insurance Organization (SSK; 46.3% of the population); (2) the Social Insurance Agency of Merchants, Artisans and Self-employed (Bag-Kur; 22.3% of the population); or (3) the Government Employees Retirement Fund (GERF; 15.4% of the population). Less than 1% of the population was covered by private insurance. Those without formal social or private health insurance were issued a Green Card, providing them with access to preventive, primary, and emergency care in the healthcare facilities managed by the Ministry of Health. However, as in Greece, informal, cash payments also existed, with most of it going toward physician services. Since 2003, Turkey has been implementing a Health Transformation Program (HTP) with the goal of establishing a national health service. The HTP objectives include improving governance, efficiency, user and provider satisfaction, and long-term fiscal sustainability.[149]

In 2005, all healthcare facilities that were part of the SSK were transferred to the Ministry of Health.[150] This change was one key element of the eight-fold plan underlying the HTP.[149] Other significant changes to the health system have included: (1) The integration of the social security and health insurance institutions (SSK, Bag-Kur, and GERF) under one institution, the SSI; (2) unification of benefits and management systems (e.g., databases, claims, utilization review) across the different social health insurance plans; (3) movement away from fee-for-service and toward prospective-payment systems that include pay-for-performance incentives; (4) deployment of an integrated primary care system in about a third of the provinces; (5) increased hospital autonomy over resource allocations, coupled with greater accountability to the Ministry of Health; and (6) establishment of a single-payer system for all public patients via the 2008 Social Security and Universal Health Insurance Act.[149]

Taxes paid for 34.5% of total health expenditures in 2009. Out-of-pocket payments, including user charges, accounted for 20% of total health expenditures. Social insurance funded by employer and employee contributions accounted for about 37% of all healthcare expenditures. Private insurance accounted for 8.5% of all health expenditures in 2009.[104]

Hospitals

There were about 2.4 beds per 1,000 people in 2009.[108] The Ministry of Health owns and operates 850 hospitals, and 350 are privately owned. Certificate of need legislation restricts the growth of the private sector and reduces duplication of services with publicly owned hospitals. Payment mechanisms for both public and private hospitals are in flux; the Australian DRG prospective payment system has been piloted in 47 public hospitals. It is likely that a combination of prospective payments and global budgets will be used to control the costs of public hospitals.[149]

Physicians

Turkey had about 1.6 physicians per 1,000 people in 2009.[108] There are a relatively high proportion of specialists compared to general practitioners. Most physicians are paid salaries, and hospital-based specialists also are eligible for performance-based bonuses, which are adjusted to encourage full-time status. There is and has been concern about the current number of physicians being able to meet the demand in Turkey. To overcome this shortage, the Ministry of Health has opened new medical schools and implemented a family medicine–based integrated primary care initiative. Much of primary care has been the responsibility of midwives and nurses, but the integrated primary care initiative has increased the supply of family medicine physicians, both through rigorous training and an innovative payment system. Family physicians in the integrated primary care system initiative receive capitation payments, with incentive bonuses for preventive care services.[149]

The U.S. Healthcare System

The current U.S. health system comprises a voluntary, employer-based private insurance subsystem, social health insurance for the elderly, and tax-funded, direct and indirect provision of care. Health expenditures in 2009 were funded through a combination of taxation (34.8%), social health insurance (13.8%), private health insurance (39%), and out-of-pocket payments (12.4%).[104] Benefit packages vary with the type of insurance, but typically include inpatient and outpatient hospital care and physician services. Many private plans also include preventive services, dental care, and prescription drug coverage. User charges vary by type of insurance, but typically include outpatient and prescription drug copayments, as well as deductibles for hospitalization.

The federal government is the single largest healthcare insurer and purchaser. Medicare covers health services for the elderly, the disabled, and those with end-stage renal disease. Administered by the Centers for Medicare and Medicaid Services (CMS), Medicare covered 14.3% of the population in 2009. The program is financed through a combination of payroll taxes, general federal revenues, and premiums. Medicaid, a joint federal–state health benefit program, covers targeted groups of the poor (e.g., pregnant women, families with children, and the disabled). Medicaid is administered by the states, which operate within broad federal guidelines overseen by the CMS. It covered 14.1% of the population in 2009. The program is financed by federal tax revenues, which match tax revenues raised by each state. The ratio of matching federal funds varies for each state depending on its per capita income. The Children's Health Insurance Program (CHIP) is a state–federal health benefit program targeting poor children. CHIP is jointly financed by the CMS and the states and is administered by the states (see http://www.cms.gov/NationalCHIPPolicy/).

Private insurance is provided by not-for-profit and for-profit health insurance companies, and is regulated by state insurance commissioners. Individuals can purchase private health insurance, although most people receive employer-based insurance. Many large employers self-fund health benefits for their employees, using insurance companies as third-party administrators. Private insurance covered 66.7% of the total population, with 58.5% of the population receiving employment-based insurance in 2009. Private insurance, including that provided by employers, accounted for 39% of total health expenditures in 2009.[151]

Hospitals

In 2009, there were about 2.7 hospital beds per 1,000 people.[108] In 2007, the United States had 4897 community hospitals, of which 2,913 were not-for-profit, 873 were for-profit, and 1,111 were public (owned by state or local governments). In contrast, in 2007 the federal government operated only 213 hospitals (serving veterans, active members of the armed services, and native Americans). Hospitals typically are parts of organized delivery systems, with most U.S. community hospitals being a member of an integrated delivery system (n = 2,730) and/or a network (n = 1,472) in 2007.[152] For-profit, not-for-profit, and public hospitals are paid through a combination of methods: per diem charges, case rates, capitation, and prospective payments based on DRGs (diagnostic-related groups).

Physicians

In 2009, there were about 2.4 physicians per 1,000 people.[108] General practitioners usually have no formal gatekeeper function, except within some health maintenance organizations. Although the majority of physicians are in private practice, increasingly physicians are being employed by medical group practices, hospitals, health maintenance organizations, or organized delivery systems. They are paid through a combination of methods: charges, discounted fees paid by private health plans, capitation contracts with private plans or public programs, and direct patient fees.

Appendix B: Medical Malpractice Liability in Eight Health Systems

This appendix examines an important feature of health systems, how they handle the problems arising from medical malpractice. Medical liability systems differ in terms of the types of compensation they provide for the patients who are the victims of malpractice, as well as how such patients or their families may seek redress for damages. Such compensation may be economic (typically reimbursements for the costs of ongoing care, loss of wages, etc.), noneconomic (typically for pain and suffering), or punitive (typically to punish the provider and to deter others). Depending on the system of medical liability, patients who believe they are victims of medical malpractice may seek recourse through a tort entered into a court of law, through a no-fault compensation scheme, or some combination of these two systems. In the country vignettes that follow, we highlight the types of systems for medical liability,

whether insurance is compulsory, the main features of the medical malpractice liability market, and any relevant government funding. Because our main source is a 2006 report from the Organisation for Economic Co-operation and Development on medical malpractice,[97] we cover a subset of the countries discussed in Appendix A: Canada, Germany, Greece, the Netherlands, Sweden, Turkey, the United Kingdom, and the United States.

Canada's Medical Liability System

Canada has a tort system that relies on proven error, and provides awards for economic and noneconomic damages. Liability is joint and several, with no caps. Punitive damages may be sought, but are seldom awarded. Insurance for physicians is compulsory in five provinces. In 2005, premiums of $310 million (Canadian) were collected by the Canadian Medical Protective Association (CMPA), which covers 95% of practicing physicians. Trends show claims declining on average. The CMPA fully funds the medical liability for physicians.

Germany's Medical Liability System

Like Canada, Germany also employs a tort system that relies on proven error, and provides awards for economic and noneconomic damages. Liability is joint and several, and insurance is compulsory for physicians, as well as for medical professionals in hospitals and other healthcare facilities. In 2002, there were 250 million Euros of claims, with large losses for certain specialties. Trends show claims are increasing for hospitals and other facilities. Fifty companies provide medical malpractice insurance.

Greece's Medical Liability System

Greece also has a tort system that relies on proven error, and it provides awards for not only economic and noneconomic damages, but also punitive damages. There are caps for GPs of $30,000 per claim and for hospitals of $90,000 per year. Insurance is voluntary. Trends show rapid increases in claims, and about 25% of providers cannot obtain coverage. Reinsurance is also difficult to obtain.

Netherland's Medical Liability System

As with the other countries discussed so far, the Netherlands employs a tort system that relies on proven error. It differs in that it has compulsory no-fault compensation for clinical trials; otherwise, insurance is voluntary. Both tort and no-fault systems provide awards for economic and noneconomic damages. The total premium (all providers) paid in 2005 was about 33 million Euros. Claims are capped for both physicians (1.25 million Euros/claim; 2.5 million Euros/year) and hospitals (2.5 million Euros/claim; 6 million Euros/year).

Sweden's Medical Liability System

Unlike the other countries discussed so far, Sweden employs a no-fault compensation system, with joint and several liabilities. Both economic and noneconomic damages are awarded, but there is low compensation for pain and suffering. Insurance is compulsory for all healthcare providers, and is available from several mutual companies. Patients have a right to sue for additional compensation based on the Patient Torts Act of 1997, which is capped at $730,000 per claim. There are about 10,000 claims per year, with approximately 35–40% compensated. Surgical and orthopedic specialists typically incur more claims than other specialties. There has been no increase in claims.

Turkey's Medical Liability System

Turkey employs a tort system that includes not only proven, but also presumed and no error. It awards both economic and noneconomic damages. Liability is joint and several. Compulsory insurance was introduced in July 2010 for all physicians. Prior to this requirement, four companies provided insurance. Leading up to the introduction of compulsory insurance, there was an increase in claims and in premiums.

The United Kingdom's Medical Liability System

The United Kingdom employs a tort system that requires breach of duty and causation to be established. It awards not only economic and noneconomic, but also punitive damages. Liability is determined on a case-by-case basis, and may be joint and several. Between 2001 and 2005, the awards for damages averaged about £500 million per year, with a 10% increase per year. The number of awards also increased by about 5% per year. Physicians employed by the NHS are covered by the state; three medical organizations provide insurance for non-NHS physicians.

The United States' Medical Liability System

The United States employs a tort system that relies on proven and presumed error. It awards economic, noneconomic, and punitive damages. Depending on state law, liability may be joint, or joint and several. Insurance is compulsory for physicians in most states. Some states have established Patient Compensation Funds, serving as an insurer of last resort. Virginia and Florida have no-fault compensation systems for birth-related neurological injuries.

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