

GAO

Report to the Chairman, Committee on
Government Operations, House of
Representatives

May 1994

PRIMARY CARE PHYSICIANS

Managing Supply in Canada, Germany, Sweden, and the United Kingdom



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Health, Education, and
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May 18, 1994

The Honorable John Conyers, Jr.
Chairman, Committee on Government Operations
House of Representatives

Dear Mr. Chairman:

As policymakers discuss how to reform the U.S. health care system, several leading proposals call for increased emphasis on managed care. Under these proposed plans, the health delivery system would require a greater dependence on primary care physicians than currently exists. Today in the United States specialist physicians outnumber primary care physicians, while many areas of the country have a scarcity of both. Some health policy analysts believe this mix and supply of physicians could inhibit implementation of proposed health care reforms.

In response to your concern about the proportions of primary care and specialist physicians in the United States, we examined the methods used by other countries to manage their physician supply and specialty distribution. We also identified strategies used by these countries to encourage physicians to practice medicine in medically underserved areas. Appendixes I through IV present our findings in depth. Appendix V discusses medical training in the countries reviewed.

Our review covered Canada, Germany, Sweden, and the United Kingdom. These countries are similarly industrialized nations, and all have instituted universal care coverage yet spend a lower percentage of their gross domestic product on health care than the United States does. Two of the countries have health delivery systems that expressly manage health services through primary care physicians. (Our review's scope and methodology are discussed in depth in app. VI.)

Background

The health care systems of Canada, Germany, Sweden, and the United Kingdom differ from the United States with respect to the roles of government, the organization and delivery of health care services, and financing. Canada and the United Kingdom established primary care as the cornerstone of their health care delivery systems; more recently Germany and Sweden have implemented reforms to place greater emphasis on primary care.

The proportions of physicians per capita and the definitions of primary care physicians differ among the four countries reviewed and from the United States.¹ As of 1990, the number of practicing physicians per 100,000 inhabitants ranged from 140 in the United Kingdom to 310 in Germany compared with 230 in the United States. In Germany,² as in the United States, family physicians, general practitioners, general internists, and general pediatricians are considered primary care physicians.³ In Canada, the United Kingdom, and Sweden, only general and family practitioners are considered primary care physicians. All other physicians are considered specialists. As few as 18 percent of Sweden's doctors are primary care physicians, and as many as 58 percent are primary care physicians in the United Kingdom. These figures compare with about 34 percent primary care physicians in the United States but should be considered in light of the differences across nations in definitions of primary care and specialist physicians.

Countries Use Health Policies and Other Strategies to Manage Physician Resources

The four countries reviewed attempt to manage their physician resources as one of many methods to contain health care costs. Since physicians determine the majority of resources spent in the health care system, country officials believe that an oversupply of physicians is a factor contributing to increased health care costs and so try to limit the total physician supply. They also believe that basic health services can be provided at a lower cost by primary care physicians than by specialists and therefore strive to maintain a sufficient number of physicians practicing in primary care.

The public financing of medical education has afforded the governments some influence in managing physician resources, specifically in Canada, Sweden, and the United Kingdom. Government intervention in the health care system has also resulted in the development of a stronger role for primary care physicians. In Canada and the United Kingdom, the national health care systems have long mandated a central role for primary care physicians in the delivery and use of health care services. In Germany and Sweden, mandates aimed at enhancing the primary care physician's role

¹Throughout the report we use the term "primary care physicians" for physicians who "specialize" in primary care and who deliver primary care services; we use the term "specialists" for physicians specializing in other types of medicine.

²Until 1993, Germany included only general practitioners as primary care physicians.

³In some cases in the United States, obstetricians/gynecologists are also considered primary care physicians. In addition, in the United States, Germany, and Sweden, other specialists may provide some primary care services to their patients although they are not considered primary care physicians.

are very recent. In general, the countries reviewed use both regulatory and incentive-based strategies to influence physician supply, mix, and geographic distribution.

Strategies Include Controls on Physician Supply and Mix

Regulatory Strategies

Unlike the United States, the countries reviewed have national targets or goals for supply and mix of physicians. Typically, however, desired ratios of primary care to specialist physicians are based on existing or historical proportions rather than on scientific formulas, and in some countries these ratios are implicit rather than explicitly specified. To achieve supply and mix goals, the countries' regulatory strategies include managing

- medical school enrollment,
- specialist training slots, and
- physician employment opportunities.

Several countries manage physician supply through restrictions on medical education. For example, government officials in Canada, Sweden, and the United Kingdom determine the number of students that can enroll in medical school. In these countries, where medical education is publicly financed, government involvement in these decisions is not considered unusual. In Germany, however, where medical education is also publicly financed, the German Supreme Court declared enrollment limits unconstitutional.

School Enrollment and Training Limits

Countries also use restrictions on education to manage physician mix. Since the early 1970s, Canada and Sweden have limited the types of residency training slots. In Canada, primary care and specialist physician residency training slots are apportioned according to goals that have been negotiated between government officials and educators. In Sweden, regional governments in consultation with health officials determine the distribution of residency slots. Both countries have adjusted the mix of residency positions over time. Recently, concerned about the declining supply of specialists, two Canadian provinces are considering raising the number of residency positions for specialists. In contrast, Sweden is

concerned about the supply of primary care physicians and is considering increasing the proportion of slots allocated to primary care.

Employment Limits

Some countries' limits on employment opportunities affect physician supply and distribution. Under recent health care reform in Germany, physician associations have helped develop physician-to-population ratios and have closed employment to physicians in regions that exceed these ratios. German officials expect physicians to challenge the constitutionality of this employment restriction strategy. In the United Kingdom, the government manages employment opportunities for specialists indirectly. The National Health Service funds all specialist positions in hospitals. Since there are many more trained specialists than there are funded positions, these trained specialists are considered trainees until a position becomes available.

Incentive-Based Strategies

The countries also use incentive-based strategies to manage physician resources to promote primary care physicians. These strategies include

- modifying physician fee schedules to narrow income disparities between specialist and primary care physicians,
- reducing fees paid to specialists for services to patients not referred by a primary care physician,
- raising the out-of-pocket costs of patients who seek care from specialists before consulting a primary care physician, and
- increasing the professional autonomy of primary care physicians.

Fee Modifications

Specialists in Germany earn on average 42 percent more than primary care physicians, and health officials believe this potential for greater income influences medical students to choose specialty positions over primary care. To increase the proportion of primary care physicians, Germany is in the process of modifying physician fee schedules to reduce the income disparity. In the other countries reviewed, officials told us that they believe income differentials are not large enough to encourage physicians to train longer to become specialists.

In Canada, the government reinforces the importance of the primary care physician in part by discouraging specialists from providing care without a referral. Specialists providing services without a referral from a primary care physician receive a lower reimbursement for services than they would otherwise. Typically, patients visit primary care physicians to obtain a referral for specialist care. A somewhat similar strategy fostering

the use of primary care employed by Sweden and the United Kingdom creates financial disincentives for patients who seek care from specialists without a primary care physician's referral. Under Sweden's new health reform legislation, for example, patients seeking care directly from a specialist will pay more out of pocket than if they were referred by a primary care physician.

Physician Autonomy

Sweden is also attempting to provide its primary care physicians, who are largely salaried government employees, greater autonomy from government bureaucracy. Regional governments are expected to implement reforms⁴ that will entail hiring primary care physicians as contractors and provide for the physician's greater independence in making certain business decisions.

Countries Try to Manage Physician Resources in Underserved Areas

Three of the countries reviewed have confronted the problem of ensuring an adequate supply of physicians in rural areas. As in the United States, major barriers to attracting physicians to rural areas include the dearth of social conveniences and medical technology as well as isolation from a medical community. Canada, Sweden, and the United Kingdom have tried several approaches to encourage primary care physicians to practice in rural areas:

- limiting the number of physicians practicing in overserved areas,
- financial incentives, and
- assigning medical student trainees to work in rural areas.

Canada and Sweden are applying similar measures to attract certain specialists to underserved areas.

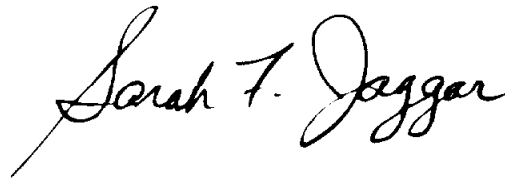
We submitted sections of a draft of this report to health care officials in each of the study countries to review for accuracy. We have incorporated their comments where appropriate.

As agreed with your office, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days after its issue date. At that time we will send copies to interested congressional committees and will make copies available to others upon request.

⁴Rising health care costs, lack of patient choice of physicians, and low productivity among physicians, prompted significant health care reforms. In May 1993, the Swedish Parliament introduced a Family Doctor System designed to increase the number of primary care physicians.

Please contact me on (202) 512-7119 if you or your staff have any questions. Major contributors to this report are listed in appendix VII.

Sincerely yours,

A handwritten signature in black ink that reads "Sarah F. Jaggar". The signature is written in a cursive style with a long, sweeping underline that extends to the left.

Sarah F. Jaggar
Director, Health Financing and
Policy Issues

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Abbreviations

NHS National Health Service

Managing Physician Resources in Canada

Within Canada's national health insurance program, the 10 provinces, serving as single public payers, use various strategies to manage the supply, specialty mix, and geographic distribution of physicians. To contain aggregate physician supply, the Canadian provinces reduce medical school enrollment and limit the number of foreign medical school graduates who can practice in the province. To control physician mix—specifically, to maintain equal proportions of primary care and specialist physicians—provinces distribute residency positions by specialty. To address physician supply needs in rural areas, some Canadian provinces use training and financial incentives.

Strategies to Address Canada's Total Physician Supply

Many Canadian health care experts believe that the country has an oversupply of physicians and that this oversupply has contributed to Canada's rising health care costs. A 1991 government-commissioned study of medical resources reported that the growth rate in physician numbers, which has outpaced the nation's population growth, has resulted in a greater number of services provided per patient and greater costs but not a commensurate improvement in the health of Canada's population.¹

Efforts to contain the growth of physician supply have been in effect since the 1980s when Canadian provinces began reducing medical school enrollment. For the 1993 academic year, provinces cut first-year medical school enrollment by an average of 8 percent, with further reductions planned for 1994. In addition, the provinces intend to trim the number of first-year residency positions by lowering the number of foreign medical school graduates allowed in Canadian residency programs. Also, since the 1980s, Quebec has limited the number of foreign medical school graduates allowed to practice in the province.

Strategies to Manage Physician Mix

In Canada, family and general practitioners are considered primary care physicians. Patients typically obtain the referral of their primary care physician to seek specialist care. The primary care physician's central role, serving as the patient's first point of contact, sustains the demand for primary care services and enhances the professional status of family and general practitioners. More Canadian medical students apply for postgraduate training in primary care than there are training slots available.

¹Barer, Morris L. and Greg L. Stoddart, "Toward Integrated Medical Resource Policies for Canada," prepared for the Federal/Provincial/Territorial Conference of Deputy Ministers of Health, June 1991. The study recommended that the provinces eliminate any growth in physician supply in excess of the population growth rate.

Appendix I
Managing Physician Resources in Canada

The government has established financial disincentives that discourage specialists from providing care without a referral and reinforce the centrality of the primary care physicians' role. Specifically, the government uses a fee schedule that reimburses specialists at a higher rate when the patients they see were referred to them by a primary care physician.² Otherwise, specialists receive a fee equal to that paid to primary care physicians.

Overall, Canada has equal proportions of primary care and specialist physicians and strives to maintain this balance. The primary care to specialist physician ratio was not derived from an assessment of health care needs but has existed since the implementation of Canada's current health care system in 1971. At that time, the number of primary care physicians roughly equaled the number of specialists, and this ratio appeared suited to support a new health care delivery system in which family physicians would continue to serve as the first point of contact. In addition, medical schools have controlled residency slots as a way to maintain a balanced physician mix, and provincial governments' funding of medical schools has indirectly demonstrated government endorsement of this policy. Medical schools offer roughly half of all training opportunities in family medicine. Table I.1 shows that, of the total number of certified physicians, 53 percent are primary care physicians and the rest are specialists.

Table I.1: Number of Primary Care and Specialist Physicians in Canada as of 1990

Physician type	Number	Percent
Primary care physicians	27,334	53
General internists	2,429	4
General pediatricians	1,487	3
All other specialists	20,591	40
Total physicians	51,841	100

Note: These figures do not include physicians in training.

Source: Department of Health and Welfare, Canada.

Despite efforts to control residency slots, the percentage of primary care physicians has gradually risen, largely a result of a higher number of retirements among specialists. Some provinces—government officials and medical school deans—have recently begun meeting to determine what mix of residency slots will maintain a roughly one-to-one ratio of primary

²Specialists can also receive referrals from other specialists. This is common for procedures such as diagnostic tests and surgery.

care physicians to specialists. In Quebec, government and medical school officials have recently decided to reduce the percentage of primary care slots because they believe there is a shortage of specialists.

Strategies to Build Physician Supply in Rural Areas

According to Canadian health care officials, primary care physicians are well distributed throughout Canada's rural areas as a result of programs designed to attract primary care physicians to these areas. A 1992 Canadian Medical Association study reported that the percentage of the nation's family physicians practicing in rural areas (20 percent) compared favorably with the percentage of Canadians living in those areas (25 percent). In contrast, the study found that only about 5 percent of specialists practiced in these areas.

Our review examined in particular Ontario's and Quebec's efforts to increase their rural areas' supply of physicians. The efforts of these provinces have been in place for as long as 15 to 25 years and consist of training students in rural areas as well as financial incentives.

To foster the practice of primary care medicine in rural areas, Ontario and Quebec medical schools have offered both students and primary care residents training opportunities in these areas. In addition, the provinces have offered a variety of financial incentives directed at students and practicing physicians. Medical students are eligible for educational grants in exchange for service in a rural area after they become physicians. Ontario provides an annual tax-free grant of about \$8,100 for up to 4 years to primary care physicians who establish practices in rural areas. To physicians who locate in rural areas, Quebec pays 120 percent of the fee schedule; all other physicians receive 70 percent of the fee schedule for the first 3 years of practice.

More recently Ontario and Quebec have taken action to contend with the shortage of specialists in rural areas. As of August 1993, Ontario tentatively agreed to provide a guaranteed income and other benefits to certain specialists—internists, general surgeons, obstetricians, gynecologists, psychiatrists, and anesthesiologists (commonly called general specialists)—who agree to practice in rural areas. In July 1994, Quebec medical schools will require all general specialty residents to complete a minimum 3-month rotation in a rural area.

Managing Physician Resources in Germany

Germany's key strategies for managing physician resources were established in 1993 health reform legislation and remain somewhat controversial.¹ The government determined that Germany has an oversupply of physicians, and in particular, a disproportionate number of specialists. To address these resource problems, the new legislation calls for (1) ceilings on physician posts to control overall numbers of physicians and (2) reforming the physician reimbursement system to reduce the income disparity between primary care and specialist physicians.

Strategy to Control Germany's Overall Physician Supply

The German Medical Association and the Federal Association of Sickness Fund² Physicians as well as the Federal Ministry of Health contend that Germany currently has an oversupply of physicians. Within the last 30 years, the physician supply in former West Germany grew approximately 170 percent while the population grew about 16 percent. By 1991, former West Germany had about 202,000 physicians, or roughly 315 physicians per 100,000 inhabitants. The government asserts that the increased number of physicians contributes to the growth in services rendered and ultimately to health care costs. In response, the government established a goal to limit office-based physician employment levels.³

Germany's 1993 health care reform law requires the federal associations of sickness funds and sickness fund physicians to restrict physician employment by limiting the number of physicians that can practice within a designated geographic area. In 1993 the sickness funds and the Federal Association of Sickness Fund Physicians negotiated physician-to-population ratios for 12 specialties on the basis of the present distribution of specialties across Germany's planning zones.⁴ Because the ratios derive from a standard that is static—existing supply—rather than dynamic—the zone population's health care needs—the physicians

¹The German Health Care Structure Reform Act of 1993, adopted in December 1992, mandated structural reforms affecting various sectors of the health care system. Details of Germany's 1993 health care reforms are presented in *1993 German Health Reforms: New Cost Control Initiatives* (GAO/HRD-93-103, July 1993).

²Sickness funds are Germany's quasi-public health insurers.

³The physician distribution plan applies only to office-based physicians who treat sickness fund patients, or about 40 percent of Germany's total physicians. It does not apply to physicians treating private patients (those not insured by sickness funds), hospital-based physicians, or to physicians in other areas such as public health.

⁴Germany is divided into 565 planning zones. Each zone is designated according to 1 of 10 population density categories. Each specialty has its own physician-to-population ratio for each population density category. The Federal Association of Sickness Fund Physicians has proposed basing the ratios on physician supply as of December 31, 1990.

acknowledge that the ratios could be too rigid for adequate health care planning. The associations have until 1999 to finalize these ratios.

The regional sickness fund physician associations monitor their respective region's physician supply and are responsible for closing the region to new physicians once a planning zone exceeds its ceiling by 10 percent. The strict enforcement of physician-to-population ratios could mean that, in regions with an excess physician supply, new openings for physicians could occur only as a result of population growth or as physicians leave practice.⁵ As of August 1993, most large cities such as Hamburg and Munich were closed to all new physicians. Depending on the specialty, between 49 and 72 percent of all the planning regions were closed to new physicians.

The limits on employment choices of newly licensed physicians are expected to be challenged in court. The Marburger Bund, a labor union that represents hospital staff and postgraduate residents, contends that the law is unconstitutional since it restricts the freedom of physicians to practice medicine where they choose. In addition, health care officials interviewed said that limiting employment is not as effective a supply control as limiting numbers of medical students⁶ because the current approach could result in the government's educating students in medicine and then denying them the opportunity to practice medicine in Germany.

Strategies to Manage Germany's Physician Mix

Until recently, only Germany's general practitioners were considered primary care physicians. All other physicians, including pediatricians and internists, were considered specialists. Of the total number of Germany's physicians, about 40 percent are primary care and specialist physicians that practice in office settings. The rest are specialists that largely practice in hospitals. Unlike physician practices in the United States, office-based physicians generally do not treat patients in the hospital, and few hospital-based physicians see patients outside the hospital.⁷

Among office-based physicians, the ratio of primary care physicians to specialists has declined over the past 30 years. Some health care experts believe that the growing number of specialist physicians has contributed

⁵Attrition could be accelerated by the new requirement of mandatory retirement of physicians by age 68.

⁶Government regulation of medical school enrollment has been declared unconstitutional.

⁷The exceptions include primarily heads of departments, who are allowed to have private practices in the hospital.

Appendix II
Managing Physician Resources in Germany

to an increase in costs, because specialists rely more on costly diagnostic and treatment procedures than primary care physicians do. In addition, the oversupply of specialists has resulted in specialists providing primary care.

Germany's 1993 health reform legislation calls for attaining, for office-based physicians, what physician association officials interpret as a goal of 60 percent primary care physicians. This goal—with the implicit goal of 40 percent specialists—was based on historical guidelines widely accepted among health care experts rather than on a scientific formula.⁸ Since this goal applies to only office-based physicians, this strategy could result in primary care physicians comprising 24 percent of all physicians.

To help achieve physician mix goals, the 1993 health reform legislation requires the sickness funds and member physicians to develop a new reimbursement schedule for office-based physicians. The proposed fee schedule would decrease fees for technical services provided by specialist physicians. It would also recognize the time that primary care physicians spend consulting with patients. Currently, physicians have a set office visit fee that does not account for the time actually spent.

According to German officials, the income differential between office-based primary care and specialist physicians, which averages 42 percent, has contributed to the higher number of specialists in Germany. The income differential is attributed to higher reimbursements for technical services compared with office visit services. Specialist physicians tend to use more diagnostic tests than primary care physicians do and thus benefit more financially from the current reimbursement system. German government officials told us that this potential for greater income discourages physicians from practicing as primary care physicians. The proposed fee revisions are intended to stabilize the incomes of primary care physicians while reducing the incomes of specialists. Another proposed fee schedule change would also stipulate that only physicians designated as primary care physicians would receive reimbursements for certain primary care procedures.

As an additional emphasis on primary care, the reform legislation calls for expanding the definition of primary care physician to include general internists and general pediatricians. By the end of 1995, these physicians must choose whether they want to be classed as primary care physicians

⁸Although Germany's health care reform law does not specifically require an increase in the number of primary care physicians, the physician associations told us the intent of the law is to increase the ratio of primary care physicians to specialists.

Appendix II
Managing Physician Resources in Germany

or remain specialists. Health care officials estimate that most general internists and general pediatricians will want to be reclassified as primary care physicians. Assuming that most general internists and pediatricians choose to be included as primary care physicians, about 52 percent of Germany's office-based physicians could be classed as primary care physicians under the new definition. (See table II.1.)

Table II.1: Estimated Physician Mix Using New Primary Care Designation

Numbers in percent		
Physician type	Hospital- and office-based physicians	Office-based physicians only
Primary care physicians		
General practitioners	15	37
General internists	4	11
General pediatricians	2	4
All other specialists	79	48
Total	100	100

Note: Estimates were calculated based on 1991 data.

Source: Kassenärztliche Vereinigung Hessen.

Some health care observers consider the emphasis on encouraging the growth of primary care physician numbers a step toward preparing the German delivery system for managed care; that is, sickness funds may eventually require member patients to obtain referrals from primary care physicians for specialized care. Currently patients have unrestricted access to primary care physicians and specialists that practice in office settings. Referrals are required to see hospital-based specialists. The sickness funds that can reduce expenditures by using a referral system may be able to attract or retain members through lower contribution rates.⁹ Instituting managed care, however, is likely to meet with strong resistance from people accustomed to choosing their own physicians and having ready access to most specialists.

⁹Instead of insurance premiums, Germans typically pay the sickness funds a percentage of their wages for health insurance.

Managing Physician Resources in Sweden

Sweden's key strategies for managing physician resources involve long-standing policies aimed at controlling physician supply and recent efforts to emphasize primary care. To control the total number of physicians, the government restricts medical school enrollment. To enhance the role and ultimately the supply of primary care physicians, 1993 health reform legislation in general provides for (1) centralizing the primary care physician's role in the delivery of health services and (2) providing greater autonomy to currently salaried primary care practitioners. Sweden also has efforts under way to attract primary care physicians to remote rural areas.

Strategy to Control Sweden's Overall Physician Supply

Historically, the government has managed Sweden's aggregate physician supply by controlling medical school enrollment. Each year the Parliament determines the number of entry slots on the basis of medical school capacity and estimated future physician supply needs. The Ministry of Education in consultation with medical educators allocates the slots among the medical schools. Health care officials use approximately 13-year time frames—the time needed to train a physician—for projecting future physician supply needs. Officials told us that predictions of needs for the long term are difficult to make accurately, but they believe their process is an effective mechanism for managing physician supply.

Strategies to Increase the Number of Primary Care Physicians

In Sweden, primary care and specialist physicians are salaried government employees. Only general or family practitioners are considered to be primary care physicians. All others—including pediatricians and internists—are considered specialists.

Of the total number of Sweden's physicians, about 18 percent are primary care physicians who work in clinic-like primary care centers. The rest are specialists, who work primarily in hospitals. Unlike typical physician practices in the United States, physicians practicing in primary care centers do not treat patients in the hospital, and specialists generally do not see patients outside the hospital.

Over the past 40 years, the government encouraged the delivery of care in hospital settings in several ways. It invested heavily in building and improving hospital facilities and kept the hospitals fully staffed. Until January 1992, it also allocated physician training slots throughout the country to control physician specialty mix. The combination of these

Appendix III
Managing Physician Resources in Sweden

efforts created more job opportunities for specialists than for primary care physicians.

Primary care physicians have had limited autonomy practicing in health centers. In many cases, for example, nurses schedule the physicians' time and physicians have little say about the length of patient visits. Health care officials estimate that about half of the physicians who initially train in primary care retrain to become specialists because of their dissatisfaction with the level of control they exert over their practice environment.

Past government efforts to boost the practice of specialty medicine as well as dissatisfaction among primary care physicians has led to a relatively low ratio of primary care to specialist physicians, as shown in table III.1.

Table III.1: Number of Primary Care and Specialist Physicians as of 1991

Physician type	Number	Percent^a
Primary care physicians (family and general practitioners)	3,909	18
General internists	2,629	12
General pediatricians	1,234	6
All other specialists	14,234	65
Total physicians	22,006	100

Note: These figures do not include physicians in training.

^aNumbers do not add to 100 percent because of rounding.

Source: National Board of Health and Welfare.

Rising health care costs, patients' lack of choice of physician, and low productivity among health care staff were some of the factors that prompted Sweden's significant health care reforms.¹ In May 1993, the Swedish Parliament introduced a Family Doctor System designed to contain costs by expanding the role of primary care physicians. The reform legislation calls for attaining 1 primary care physician per 2,000 inhabitants, compared with the current 1 per 3,400 inhabitants.

Swedish health care officials developed this goal by examining the appropriateness of their current primary care physician-to-inhabitant ratio and also by examining other countries' ratios. Sweden plans to increase the number of primary care physicians through a combination of strategies

¹While health care spending in Sweden—as a percentage of gross domestic product—declined during the 1980s, health care spending in absolute terms has increased.

aimed at (1) inducing the demand for primary care through financial incentives to patients and (2) providing primary care physicians greater professional autonomy.

To induce the demand for primary care, the new legislation requires all citizens to register with a primary care physician of their choice. It also creates a financial incentive for patients to consult with primary care physicians before seeking specialist care; without a referral, patients' out-of-pocket costs will be greater than when referred by a primary care physician.² Sweden expects that these incentives will create more job opportunities for primary care physicians.

To enhance the primary care physician's professional autonomy, the legislation directs regional governments to implement market-oriented reforms designed to give primary care physicians greater independence in determining how to deliver services. Specifically, these reforms call for primary care physicians, who are currently salaried county council employees, to become individual contractors. The legislation proposes using capitation to pay about 70 percent of the physician-contractor's income, fee-for-service to pay 20 percent, and patients' out-of-pocket charges to pay the rest.³ Physicians would be allowed to organize their practices to reduce the bureaucracy found in some primary care centers.

Despite the financial risk that physicians will incur under the new reimbursement arrangement, the government anticipates that the changes will enhance the primary care career and result in a concomitant increase in the number of primary care physicians. One regional government has already begun a program to retrain specialists who want to become primary care physicians. The retraining is expected to take 3 to 4 years, after which physicians will be certified by the National Board of Health and Welfare as qualified to practice primary care.

Recent concerns about funding constraints are motivating regional government officials to consider a more regulatory measure—limiting the number of specialist training positions—to increase the number of primary care physician trainees. Some health care officials believe that regional governments will move forward with this action if the recent

²Until the enactment of this legislation, patients were free to seek specialist care without a referral.

³Capitation is a fixed annual fee paid to the physician for each person who has signed on with the physician. The capitation payment is intended to cover all general diagnosis and treatment associated with primary care. Fee-for-service reimbursement covers procedures which are so time consuming and costly that the capitation payment does not cover their cost.

incentive-based strategies are not successful in expanding the primary care physicians ranks.

Strategies to Address Physician Supply Problems in Underserved Areas

As in other industrialized countries, physicians do not want to work in remote locations because of limited teaching and research opportunities, fewer opportunities for continuing education and consulting with colleagues, and a lack of employment opportunities for spouses. For many, such posts mean isolation from family and friends. Strategies to increase physician supply in Sweden's remote rural areas of the north have included medical school training in rural areas, financial incentives, and central government control of physician distribution. Of these, health officials believe that medical school training was the most significant in helping to lower the percentage of rural primary care vacancies from 16 percent in 1985 to 12 percent in 1991. Officials also reported the need to continually monitor rural area residents' access to primary care.

In the 1960s, Sweden built a medical school in the north so that students, especially those from the rural northern areas, could be exposed to the practice of medicine in rural settings. Although no data were available for our review, medical school officials believe the targeted enrollment and rural training efforts have succeeded in increasing the number of primary care physicians in rural areas.

The northern county councils have used economic incentives such as higher salaries and repayment of educational loans to attract physicians to rural areas. According to Swedish health care officials, these incentives have had only a limited effect in attracting primary care physicians to rural areas. Very high marginal tax rates diminish the financial benefit of higher physician salaries.

The government's attempt to control distribution centrally was not effective in supplying underserved areas, largely because the policy could not be enforced in practice. From the early 1970s until 1992, the government allocated physician training positions throughout the country. Regional officials, however, controlled hiring authority and the payment of trainee salaries. Thus, when urban health authorities were dissatisfied with the number of trainees allocated to their areas, they ignored the quotas and hired more trainees than specified in the central government allotment. Because there was a fixed number of physician trainees available, and rural areas could not successfully compete with the urban areas, the rural areas could not fill their trainee allotment. By 1992, the

Appendix III
Managing Physician Resources in Sweden

government discontinued its central distribution policy and shifted resource planning to the regional level.

Managing Physician Resources in the United Kingdom

The United Kingdom manages its physician resources through the medical education system and policies of the government's National Health Service (NHS). NHS provides health care to virtually all of the population. It owns and operates hospitals and contracts with physicians for ambulatory services.¹ Limits on medical school enrollment control the total supply of physicians. NHS policies encourage the use of primary care services and limit specialist employment, thereby affecting specialty mix. NHS also controls employment opportunities and uses financial incentives to influence primary care physicians' distribution.

Management of U.K. Physician Supply

A government-sponsored physician manpower committee recently projected a shortage of physicians in the United Kingdom over the next 10 to 20 years and recommended increasing medical school enrollment by about 6 percent to counteract the shortage. In 1990, the United Kingdom had roughly 140 physicians per 100,000 inhabitants, compared with 230 per 100,000 inhabitants in the United States.

Historically, the United Kingdom has managed its aggregate physician supply by controlling medical school enrollment. The Departments of Health and Education establish an annual ceiling for total medical school enrollment on the basis of medical school capacity and projections of physician supply needs. The Departments of Education and Science allocate slots among the medical schools. On the whole, government officials believe this process is a somewhat effective mechanism for managing physician supply, despite the difficulty of making long-term estimates (based on a minimum 9-year physician training period) of future physician supply needs.

Management of Primary Care Demand

In the United Kingdom, only general practitioners are considered primary care physicians. All others, including pediatricians and internists, are considered specialists. In 1990, the United Kingdom had about 57,000 physicians,² of which about 58 percent were primary care physicians. Primary care physicians work in office settings and are private contractors with NHS. Specialists work in hospitals and are salaried employees of NHS.

¹Primary care physicians are paid a combination of capitation and fee-for-service payments. As of 1991, about 54 percent of a primary care physician's income came from capitation payments and 46 percent from fee-for-service and bonus payments.

²This figure does not include physicians in training.

Health experts we interviewed said that primary care physicians historically have had a central role in the U.K. health care system because they are the first points of contact for patients. Citizens must register with a primary care physician and patients must obtain this physician's referral to seek specialist care. Health care officials also told us that the referral function, which limits direct access to specialists, is a key to controlling health care costs because primary care physicians use fewer expensive diagnostic tests than specialists do.

In addition, recent legislation has strengthened primary care physicians' influence over the provision of specialist care. As of April 1991, primary care physicians in a group practice with at least 7,000 patients can choose to become what is referred to as a fundholding practice. These practices receive annual budgets from NHS to purchase outpatient hospital services³ such as elective surgery and diagnostic tests. The purchasing power of the fundholding practices has the effect of making hospital specialists more responsive to primary care physicians and their patients' needs because the hospitals are now dependent on the fundholding practices for a portion of their income. In addition, the fundholding practices have an incentive to purchase services with the best value because they can reinvest any funds remaining at the end of the year back into the practice. The fundholding practice can use the excess funds to hire additional staff but may not keep the funds as net income.

Management of Physician Mix

The government does not attempt to achieve a specific ratio between specialist and primary care physicians. (Table IV.1 shows the proportion of physician types.) Instead it emphasizes the sufficiency of physician supply on the basis of population needs. The government is satisfied with the current supply of primary care physicians, whereas physician organizations, such as the Conference of Medical Royal Colleges, contend that the number of specialist positions should be increased by up to 60 percent.

³Funds are also used to purchase community health care services and pharmaceuticals and to hire nonphysician staff. Primary care practices that are not fundholding practices continue to refer patients to hospital specialists, but the hospital does not receive funding from the primary care practice. As of March 1993, about 25 percent of all patients were cared for by a fundholding practice.

**Appendix IV
Managing Physician Resources in the United
Kingdom**

Table IV.1: Number of Primary Care and Specialist Physicians in the United Kingdom as of 1990

Physician type	Number	Percent
Primary care physicians (general practitioners)	32,970	58
General internists	6,900	12
General pediatricians	848	2
All other specialists	16,205	28
Total physicians	56,923	100

Note: These figures do not include physicians in training.

Source: Medical Manpower Standing Advisory Committee.

The government has not intentionally kept the proportion of U.K. specialists low. Rather, the ratio of primary care to specialist physicians is in large measure the result of government funding constraints, which limit the ability of hospitals to hire certified specialists. Hospitals determine the number of specialist positions they can sustain on the basis of NHS funding of their total budgets. According to various physician organizations, this funding is insufficient to hire all the specialists needed to meet the population's health care needs.

The question of specialist supply is less straightforward than the absolute numbers or ratios suggest. As noted in the table, the specialist physician numbers do not include specialist trainees. The omission is significant because specialist trainees, like resident physicians in the United States, work in hospitals. Unlike the U.S. system, however, postgraduate specialist trainees can work only in hospitals, and residents do not lose their trainee status until appointed to a certified specialist post. With limited certified specialist positions available, a trainee can spend roughly 7 years in postgraduate training and continue to wait an average of 5 years for an appointment to a certified specialist post. During this time, trainees work in hospitals performing duties similar to those of specialists but are classified and paid as trainees. Table IV.2 shows that the proportion of specialists would increase to 47 percent of all physicians if senior residents (called "senior registrars") were counted in the specialist ranks.

**Appendix IV
Managing Physician Resources in the United
Kingdom**

**Table IV.2: Estimated Proportions of
Primary Care and Specialist
Physicians in the United Kingdom
When Including Senior Residents as of
1990**

Physician type	Number	Percent
Primary care physicians	32,970	53
Senior residents in specialty training	5,058	8
Specialist physicians	23,953	39
Total physicians	61,981	100

Source: Medical Manpower Standing Advisory Committee.

Management of Physician Supply in Medically Underserved Areas

Since 1948, the government has strived to minimize the extent of underserved areas by requiring primary care physicians to obtain approval before setting up practice in a particular area. In addition, primary care physicians receive financial incentives to practice in areas designated as medically underserved. According to health care experts, primary care physicians are generally well distributed across the United Kingdom.

Primary care physicians serving NHS patients must apply to the government's Medical Practices Committee before establishing a practice or joining an existing group practice.⁴ The Committee bases its decisions on a variety of factors such as existing physician-to-patient ratios,⁵ population demographics, and primary care physician practice demographics. In most cases, the Committee readily approves a primary care physician's request to practice in areas designated as underserved,⁶ but in other areas physicians must clearly demonstrate the area's need.

In 1948 when the Committee was established, more than 50 percent of the population of England and Wales lived in underserved areas, with one primary care physician for every 3,500 patients. Since then, the number of underserved areas has declined significantly as a result of the Committee's distribution policy. As of September 1992, less than 4 percent of the areas in England and Wales were designated as underserved.

⁴The Medical Practices Committee has jurisdiction over England and Wales. There is a separate Medical Practices Committee for Scotland.

⁵Physician-to-patient ratio is defined as the average number of registered patients per primary care physician. Because NHS serves virtually the entire population, physician-to-patient ratios are similar to physician-to-population ratios.

⁶The Medical Practices Committee classifies practice areas into four categories: designated, with average list sizes exceeding 2,500 patients per physician; open, with average list sizes between 2,101 and 2,500 patients; intermediate, with average list sizes between 1,701 and 2,100 patients; and restricted, with average list sizes less than 1,700 patients per physician. The Committee considers designated and open areas as medically underserved.

Appendix IV
Managing Physician Resources in the United Kingdom

According to NHS officials, NHS does not have difficulty attracting physicians to rural areas, in part because some physicians consider the rural areas as attractive locations to live and work and also because NHS offers them financial incentives. For example, NHS guarantees primary care physicians who locate in rural areas an income of at least 80 percent of the average net income for primary care physicians. This salary is paid to physicians practicing in areas where, under the normal remuneration arrangements, the net income of the practice would be insufficient to attract or retain a primary care physician. Also, NHS compensates primary care physicians for the increased time spent traveling when caring for patients in sparsely populated areas. NHS also compensates primary care physicians who practice in urban areas designated as socially deprived for the extra workload generated by patients living in these areas.⁷

⁷NHS characterizes deprivation by seven factors: unemployment, number of elderly living alone, overcrowding, children under age 5, single-parent households, ethnic minorities, and extent of transient populations.

Medical Education Systems of Canada, Germany, Sweden, the United Kingdom, and the United States

Undergraduate Medical Education Varies but All Countries Expose Students to Primary Care

Undergraduate medical education in Canada is similar to that of the United States, while the systems in Germany, Sweden, and the United Kingdom have some commonalities. Most Canadian and U.S. schools require students to complete undergraduate university studies before entering; thus, the average medical student is 21 years old when studies are begun. In both countries, medical schools offer 4 years of academic study leading to the M.D. degree. Germany, Sweden, and the United Kingdom combine some university studies with medical education. Thus, students typically start at 18 or 20 years of age and remain in medical school 1 to 2 years longer.

In all four study countries, undergraduate medical education consists of training in both preclinical (basic sciences) and clinical sciences. Except for Sweden, preclinical training takes 2 years. Swedish students receive an additional 6 months of preclinical studies.

Departments of family medicine are found in all medical schools in Canada and Sweden. Departments of general practice are found in the United Kingdom. These departments serve as the focal point of general primary care training. In Germany, general medicine departments are found in only 3 of 26 medical schools. In some U.S. medical schools, family medicine departments provide primary care training. In addition, primary care training is also offered in the departments of internal medicine and pediatrics in U.S. medical schools.

Undergraduate medical school tuition is paid with public funds in all four countries visited. Consequently, students in these countries do not accrue levels of education-related debt as high as those of U.S. students. The average medical school debt at graduation is close to \$56,000 for U.S. students. Levels of debt in the other countries range from a low of about \$3,100 in the United Kingdom to about \$16,100 in Canada. Table V.1 provides selected characteristics of undergraduate medical education in each country.

**Appendix V
Medical Education Systems of Canada,
Germany, Sweden, the United Kingdom, and
the United States**

Table V.1: Selected Characteristics of Undergraduate Medical Education in the United States, Canada, Germany, Sweden, and the United Kingdom

Characteristic	United States	Canada	Germany	Sweden	United Kingdom
Number of medical schools	126 ^a	16	26	6	28
Total number of students enrolled yearly	17,000	7,000	12,000	850	4,000
Required undergraduate university degree	Yes	Yes	No	No	No
Average years of medical school education	4	4	6	5-1/2	5
Primary care department	Family Medicine	Family Medicine	General Medicine	Family Medicine	General Practice
Payment source of medical school tuition	Private/public	Public	Public	Public	Public

^aData do not include osteopathic schools of medicine.

Three Countries Require Practical Training Before Beginning Postgraduate Studies

Prior to beginning postgraduate studies,¹ Germany, Sweden, and the United Kingdom require medical school graduates to complete 12 to 21 months of “practical” training or practice as a physician. Canadian and U.S. students do not have such a requirement.

Practical training experiences can take place in a hospital or nonhospital setting. In Germany, most students train in the hospital since opportunities in nonhospital settings are limited. Students in Sweden are required to spend at least one-third of their practical training in a primary care center while the hospital is the sole training site in the United Kingdom. After completing practical training and taking an exam, physicians receive a medical license except in the United Kingdom, where students are not required to pass a licensing exam.

Postgraduate Medical Education Differs Among the Four Countries

With the exception of Canada, postgraduate training programs in the countries we visited differ from those in the United States in their structure. Table V.2 summarizes these differences.

Training programs in Canada closely resemble those in the United States. In both countries, training requirements are set by program accreditation bodies. Programs are responsible for providing residents with the necessary training experiences—known as rotations—to fulfill these

¹In the United States, postgraduate training is referred to as residency training.

**Appendix V
 Medical Education Systems of Canada,
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 the United States**

requirements. These experiences are usually associated with a specific hospital.

In Germany, the German Medical Association sets out the training requirements for each specialty discipline but does not provide structured programs to meet the needed training experiences. Instead, residents are responsible for applying to hospital departments that offer the rotations required in their discipline. Often, residents must seek rotations in more than one hospital, and frequently they encounter difficulties in sequencing their training experiences. Postgraduate trainers issue residents a certificate once a rotation is completed. Certificates from required rotations must be submitted as part of the specialty certification process.

Table V.2: Selected Characteristics of Postgraduate Medical Education in the United States, Canada, Germany, Sweden, and the United Kingdom

Characteristic	United States	Canada	Germany	Sweden	United Kingdom
Required practical training	None	None	18 months	21 months	12 months
Formal residency program	Yes	Yes	No	Yes	No
Years of primary care postgraduate studies	3-4	2	3	5-1/2	3
Months of postgraduate training spent in a nonhospital setting	4	9	6	30	12
Years of specialty postgraduate studies	4-7	4-7	4-6	5-1/2	7
Financing of postgraduate training	Public and private insurance, and other public support	Provincial governments	Hospitals, physician organizations	Regional governments	National Health Service

Postgraduate training in Sweden resembles an apprenticeship. In January 1992, the National Board of Health and Welfare changed training from a rigid predetermined schedule of rotations to a more goal-oriented program. Residents are now paired with a mentor in the specialty of interest. The mentor develops an individualized training program and assists the resident in gaining the skills and experiences necessary to practice in the specialty. The mentor also decides when the resident is ready to take the exam necessary for certification.

Postgraduate training in the United Kingdom is a two-step process. All residents begin with general professional training in a hospital, lasting 3 years for specialist trainees and 2 years for general practice trainees.

Following general professional training, specialist trainees must pass an exam to proceed to hospital specialty training, which lasts about 4 years. Approximately 70 percent fail this exam. General practice trainees complete their training with 1 year in an office-based practice under the supervision of a general practitioner. Like the German postgraduate training system, the United Kingdom does not have structured programs that coordinate or provide residents with required rotations or training experiences. Rather, residents must apply for each required hospital rotation. Residents studying general practice have the option of having an advisor arrange their postgraduate training. About 60 percent of the students have such an advisor.

Length of Primary Care Program and Training Outside the Hospital Varies Among Countries

The length of primary care training across the countries ranges from 2 to 5-1/2 years. All four countries reviewed, as well as the United States, require residents to spend a portion of this time training in nonhospital-based settings; however, the duration of training varies from country to country.

Family medicine training in Canada, for example, takes 2 years. Nine months of this period must be completed in a nonhospital setting. In the United States, family medicine—which most resembles Canadian family medicine—involves 3 to 4 years of training. U.S. programs differ in the amount of time required to train in nonhospital settings.

General medicine training in Germany takes 3 years to complete. Six months of this period are spent in a nonhospital-based setting. In Sweden, general medicine residents are required to train for 5-1/2 years. Thirty months of this time are spent in a nonhospital-based setting. Like Germany, general practice training in the United Kingdom takes 3 years to complete. Residents spend 2 of these years in a hospital post. The remaining year must be spent outside the hospital in a general practice.

Length of Specialty Training Similar in Countries Visited

In all the countries visited, the duration of specialty training varies according to the specialty area. On average, however, countries report that specialty training ranges from 4 to 7 years. In Sweden, specialty training is generally completed in 5-1/2 years.

In the United Kingdom, students generally finish specialty training within 7 years. The first 3 years are spent training in hospital posts. During this time the trainees must pass an exam to become members of the physician

Appendix V
Medical Education Systems of Canada,
Germany, Sweden, the United Kingdom, and
the United States

organization for their desired specialty. Successful completion of this exam entitles them to continue their training, which consists of approximately 4 more years training in hospital posts. However, even after completing their required training, residents must remain as trainees until a hospital specialist post is obtained. Since hospital specialist posts are limited throughout the National Health Service, residents must often continue as trainees an average 5 years beyond their 7 years of specialty training.

Public Funds Support Postgraduate Training in Three Countries

Postgraduate training in Canada, Sweden, and the United Kingdom is supported by public funds. Canadian provincial governments, Swedish regional governments, and the National Health Service in the United Kingdom provide the financing for all postgraduate training. Financing of postgraduate training in Germany differs by training site. Hospitals pay for practical training and specialty training that take place in the hospital setting. General medicine residents trained outside the hospital are paid primarily by the physicians who train them. These physicians must cover their training costs with patient service revenues received from the sickness funds. About half of the state-level sickness fund physicians associations provide partial funding for residents' salaries. For example, one program we reviewed paid two-thirds of the resident's salary and the physician paid the remaining one-third.

In the United States, postgraduate medical education is funded primarily through revenues generated by hospital patient care services. Private payers contribute to the financing of training through the payment of higher hospital charges. While not explicitly stated, these charges are adjusted, in most cases, to include costs related to training. In addition, the federal government currently compensates teaching hospitals for about 30 percent of postgraduate training direct costs.

Objectives, Scope, and Methodology

Concerned about the ratio of primary care to specialist physicians in the United States, the Chairman of the House Committee on Government Operations asked us to examine the methods other countries use to manage their physician supply and specialty distribution. Where applicable, the Chairman also asked us to identify strategies these countries use to encourage primary care physicians to practice in medically underserved areas.

Specifically, we sought to determine how countries

- manage total physician supply,
- manage the ratio of primary care to specialist physicians, and
- encourage physicians to locate in underserved areas.

Our review covered Canada, Germany, Sweden, and the United Kingdom. We selected these countries because they are similarly industrialized nations and all have instituted universal care coverage, yet they spend a lower percentage of their gross domestic product on health care than the United States does. In addition, we focused our analysis on countries with a mixture of strategies to control access to specialized care. Two of the countries have systems that rely on primary care physicians to manage care and refer patients to a specialist when necessary, while the remaining countries allow self-referral to physicians. In addition, three of these countries have medically underserved areas.

In each country, we interviewed health care officials at various government levels, representatives of medical associations, medical school and graduate medical school administrators, faculty, students, individual physicians, and various health care experts. In addition, we reviewed available literature on the characteristics of the health care system in each country. Descriptions of legislation and judicial determinations are based solely on personal interviews and reviews of available documents; we did not independently verify their accuracy.

We analyzed physician workforce data, but due to variations among the countries regarding the methods used to collect physician data, exact comparisons among the countries are imprecise. We conducted our review from November 1992 through December 1993 in accordance with generally accepted government auditing standards.

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