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HEALTH ECONOMICS

International Comparisons of Manpower in Gastroenterology

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Health-care systems vary among countries and we were interested in how this might impact on gastroenterology manpower. We assessed the number of gastroenterologists in Canada and compared this with four countries where data were available over the Internet in either French or English. The number of gastroenterologists per 100,000 of the population was 3.9 in the United States, 3.48 in France, 2.1 in Australia, 1.83 in Canada, and 1.41 in the U.K. This variation in number of gastroenterologists was not reflected in the overall number of specialists per 100,000, which was similar in all five countries. Furthermore, the difference in gastroenterology manpower did not correlate with the amount of gross domestic product spent on health care. Countries with a low number of gastroenterologists per 100,000 all had a strong primary-care gatekeeper system, although this observation may be coincidental, as only five countries were studied. Canada had the most equitable distribution of gastroenterologists across the country with only modest differences among provinces. The United States had the most variation in the number of gastroenterologists per 100,000 of the population among states.

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INTRODUCTION

Health care is an important issue for all developed nations, but the optimum method of funding a health service is subject to lively debate (1). Some government regulation of health care is inevitable, but the degree with which this occurs varies from country to country. In the United States, there is a heavy reliance on private health insurance, whereas in the U.K. and Canada, the main source of health care is from a public system funded by taxation. Other countries have health-care systems that are a hybrid of public and private funding. The method of funding is just one example of how health care is approached differently in various countries. There are also differences in how clinicians are paid for their services, the degree to which the service is organized by central government, and how patients can access specialist services. Health care is expensive; so whatever system is employed, it is not possible to provide unlimited access to high-quality services to all of the population. Every industrial nation regards its health-care system with a mixture of pride and frustration. Systems that rely heavily on private health insurance have concerns about access of the poor to high-quality health care, whereas public health-care systems are often criticized for long waiting lists (2).

Although there are some differences among countries in certain health outcomes (3), there is no one system of health-care delivery that is generally superior to another. Different health-care systems may, however, have an impact on service provision, and we were interested in how gastroenterology manpower may vary among countries. There is no evidence on what the optimum number of gastroenterologists per 100,000 of the population should be, but we were interested in how this varied among countries and whether this was related to the type of health-care system used.

GASTROENTEROLOGY MANPOWER

We determined the number of gastroenterologists in Canada by identifying medical specialists from the 2002 Canadian Institute for Health Information (CIHI) database (4). There is no category for a gastroenterologist in the CIHI database; so we defined this as a specialist who performed at least 100 upper gastrointestinal (GI) endoscopies and/or colonoscopies each year. We compared the number of gastroenterologists in Canada with information on other international gastroenterology societies available from the World Gastroenterology Organization (5). We included data available over the Internet in either French or English and identified four other countries where gastroenterology manpower data were available: U.K., France, Australia, and the United States.

Gastroenterology manpower in the U.K. was determined from Health Authority records on practicing consultant gastroenterologists in each region (6). France identified

Table 1. Summary of Gastroenterology Manpower and Health-Care Spending in Five Countries in 2002/2003

Country	No. GI	GI/10^5*	Specialist /10^5	Expenditure/ Capita†	% GDP
United States	11,594	3.90	150	$5,711	15.2%
France	2,091	3.48	170	$3,048	10.4%
Australia	391	2.10	120	$2,876	9.2%
Canada	550	1.83	110	$2,998	9.9%
U.K.	826	1.41	150	$2,347	7.9%

*GI manpower estimated for 1999–2005 depending on the country.
†Expenditure/capita at purchasing price parity.
GI = gastroenterologist; GDP = gross domestic product.

gastroenterologists and hepatologists from a national database (Système National Inter-Régime) (7), whereas Australia used three databases (Royal Australasian College of Physicians, Medicare Databases, and Australian Institute of Health and Workforce survey) (8) to determine the number of gastroenterologists nationally. For the United States, we identified gastroenterologists from those who were certified in this specialty by the American Board of Internal Medicine (9). There were marked differences in gastroenterology manpower among countries, with the highest in the United States at 3.9 per 100,000 population and lowest in the U.K. at 1.4 per 100,000 (Table 1).

There were also differences in the distribution of gastroenterologists among countries. The United States had the biggest variation in gastroenterologists across the country. Alaska had only 1.37 gastroenterologists/100,000 population compared with 9.76/100,000 in Washington, DC (Fig. 1). France had the next biggest variation in absolute terms with 2.58/100,000 gastroenterologists in the Pays de la Loire region compared with 5.76/100,000 in Corsica. In relative terms, the variation in France is similar to the U.K. and Australia. In Australia, gastroenterology service provision varied between 3.1/100,000 in South Australia to 1.5/100,000 in Tasmania. In the U.K., North West London has 2.37/100,000 gastroenterologists compared with 0.89/100,000 in Leicestershire. Canada appeared to have the least variation in the distribution of gastroenterologists in either relative or absolute terms with Manitoba and Saskatchewan having 1.24 gastroenterologists/100,000 compared with 2.08/100,000 in Ontario (Fig. 2). Describing areas with the highest and lowest numbers of gastroenterologists per 100,000 is, however, a very crude method of describing distribution of GI manpower across the country, and this should be compared with more sophisticated spatial data analysis. Unfortunately there was insufficient detail to perform such analysis for many of the countries. Nevertheless, it does appear as if the United States has the most gastroenterologists/100,000 population but also has the most variation among states. It is also interesting that the greatest concentration of gastroenterologists is located in the same region as the federal government in three out of the five countries studied and this is also most marked in the United States (Fig. 1).

EXPLANATIONS FOR VARIATION IN GASTROENTEROLOGY MANPOWER AMONG COUNTRIES

There is a marked variation in the number of gastroenterologists among countries. This could be due to the different methods employed to define a gastroenterologist in the databases that were evaluated. For example, the Canadian definition would include most hepatologists but would exclude those that did not perform any endoscopy, while the French database included all hepatologists. This may account for some of the variation, but is unlikely to explain, for example, why the United States has nearly three times the concentration of gastroenterologists as the U.K. We evaluated the number of gastroenterologists in all countries studied rather than "full time equivalent" posts and the differences in manpower may reflect different numbers of part-time physicians. It is unlikely, however, that the United States and France have many more part-time gastroenterologists than Canada and the U.K. It is possible that in countries with low numbers of gastroenterologists, other specialties such as general surgery are taking on more gastroenterology workload, although again this is unlikely to explain such a marked difference in manpower among different countries. Indeed, the approach taken

Figure 1. U.S. distribution of gastroenterologists per 100,000 of the population.

Figure 2. Canadian distribution of gastroenterologists per 100,000 of the population.

in defining a Canadian gastroenterologist would also include some general internists that perform endoscopy and may, therefore, overestimate the number of gastroenterologists in Canada.

One explanation of international differences in gastroenterology manpower is that this simply reflects different investment in health and therefore the numbers of specialists employed in general among countries. This does not seem a likely explanation as Canada has only 1.83 gastroenterologists/100,000 compared with 3.48/100,000 in France and they have similar expenditures per capita and similar proportions of their gross domestic product are spent on health care (Table 1) (10). The number of specialists per 100,000 of the population is also remarkably constant across all the countries studied despite different levels of health-care spending (Table 1) (10).

The difference in gastroenterology manpower may, therefore, relate to other characteristics of the health-care system. These are summarized in Table 2. The French health-care system is characterized by a public/private mix in both financing and delivering health care. In France, 80% of the population is covered by the General National Health Insurance Scheme, which has contributions from taxation, private payers, and employers. Most of the remaining 20% (mainly agricultural workers and the self-employed) are covered by two other insurance programs. Patients have to pay the physician directly for any ambulatory care services provided and most of this is reimbursed by insurance. The patient is free to seek any specialist s/he chooses and there is no gatekeeper role by the family physician, which results in the dominance of a private office-based practice termed *la médecine libérale*. There have been attempts by the government to regulate access to specialist care and stop patients from seeking three or four different opinions for one problem. This has not met with public approval and often resulted in strike action by medical personnel to protect *la médecine libérale*. The United States has many parallels with the French system, but there is less regulation of insurance and a greater proportion of population without any insurance. Remuneration of the physician is varied in the United States with salaried physicians in the VA (which is the nation's largest health-care provider), fee-for-service (indemnity) plans, and for-profit and not-for-profit (*e.g.*, Kaiser Permanente) health maintenance organizations (HMOs). Primary care has a gatekeeper role in many HMOs, but with other plans the patient is free to seek specialist opinion directly, and overall primary care plays less of a gatekeeper role than in the U.K., Canada, and Australia.

The Australian system also has a large and vigorous private health-care system funded by private insurance but also has a public insurance system (Medicare) financed largely by taxation that provides health care for all citizens. The patient pays for services and has the majority (or all) of this reimbursed or can arrange for the insurance system to pay a check

Table 2. Characteristics of Health-Care Systems in Five Countries*

Country	Funding*	Central Organization*	Clinician Payment*	GP Gatekeeper
United States	Private	No	Fee for service	No†
France	Mixed	No	Fee for service	No
Australia	Mixed	No	Fee for service	Yes
Canada	Public	No	Fee for service	Yes
U.K.	Public	Yes	Salary	Yes

*All systems have some public and private funding, some salaried physicians, and some level of central organization. The table outlines the predominant system.
†Primary care has a gatekeeper role in some HMOs.

directly to the physician. The majority of health care in the U.K. is provided by a publicly funded national health service and is free at the point of use with most physicians being paid a salary rather than fee for service. Approximately 15% of the total health-care spending is provided by the private sector (10). The Canadian system is also publicly funded and free at the point of use with most physicians being paid a fee for service by the provincial government. Private health care for reimbursed services (*i.e.*, reimbursed services are those reimbursed by the provincial health plan) was not permitted in Canada, although the legality of this has been successfully challenged in Quebec. Australia, Canada, and the U.K. are all characterized by the primary-care physician having a strong gatekeeper role in allowing access to specialist services. In all three countries, it is difficult for a patient to see a gastroenterologist without a primary-care referral.

It is difficult to draw any firm conclusions about whether the health-care system has an influence on gastroenterology manpower with only five countries being studied. There appears to be no relation with the type of funding or how clinicians are reimbursed, although it remains possible that gastroenterology, like cardiology, is a lucrative specialty and may flourish more in a private system. It is also possible that this reflects differences in the proportion of the population with GI disorders among different countries, although this seems unlikely for the nations studied. It is interesting that the three countries with the lowest numbers of gastroenterologists per 100,000 of the population use a primary-care gatekeeper system. This may just be a coincidence but it is also possible that this association may reflect primary-care physicians taking on a greater burden of care for GI complaints when they have a gatekeeper system role. As the overall number of specialists is not dramatically different among countries, this is presumably not the case for some other specialist services. Whether this has any impact on the care patients with GI problems receive is beyond the scope of this article.

We have shown that there is a marked international variation in gastroenterology manpower. This is a comparison among selected Western countries, and other comparisons with developing nations are likely to be even more revealing. Information on the number of clinicians and the GDP spent on health care is freely available for most countries (10). Information on the number of gastroenterologists per capita is less easy to obtain and in the majority of countries has not been estimated. Gastroenterology societies in all countries should commission such an exercise so that broader international comparisons can be made. It will then be possible to create league tables among nations so that an informed debate can be held on what is the appropriate gastroenterology manpower for a health service to provide.

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