

OECD Health Working Papers No. 21

The Supply of Physician Services in OECD Countries

Steven Simoens,

Jeremy Hurst

https://dx.doi.org/10.1787/608402211700

OECD

DELSA/HEA/WD/HWP(2006)1

OECD OCDE

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Steven Simoens and Jeremy Hurst

21

OECD HEALTH WORKING PAPERS

Unclassified **DELSA/HEA/WD/HWP(2006)1**

Organisation de Coopération et de Développement Economiques
Organisation for Economic Co-operation and Development

16-Jan-2006

English text only

DIRECTORATE FOR EMPLOYMENT, LABOUR AND SOCIAL AFFAIRS
GROUP ON HEALTH

DELSA/HEA/WD/HWP(2006)1
Unclassified

Health Working Papers

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THE SUPPLY OF PHYSICIAN SERVICES IN OECD COUNTRIES

STEVEN SIMOENS AND JEREMY HURST

JT00196948

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ACKNOWLEDGEMENTS

The authors would like to express their gratitude to Stephane Jacobzone and Antonio Giuffrida who set up and were involved in the initial stages of the work programme leading to this report, to Karinne Logez who provided statistical assistance, and to Géry Coomans who provided projections of the age structure of the physician workforce. They are also grateful to the experts from participating countries who responded to questionnaires on policies and data, which provided much of the information contained in this paper. These experts attended two meetings of an Expert Group and provided guidance and feedback at various stages of the project. They include: Julian Evans, Hertha Rack, Dirk Moens, Robert Shearer, Jakob Preisler, Raimo Jämsén, Pascale Breuil, Thomas Hofmann, Lycurgos Liaropoulos, Kieran Feely, Masato Kumaki, Cho Sung-Hyun, Mariana Barraza-Llorens, Piet De Bekker, Gillian Anne Durham, Erling Steen, José Martins, Rosa Mataix, Ingalill Lutz, Yves Eggli, Keith Derbyshire, Marilyn Biviano and other national participants. The authors are indebted to Peter Scherer for his invaluable comments on the paper. Readers should note that prior to the finalisation of this paper, Mr. Simoens left the OECD.

SUMMARY

1. The delivery of an appropriate quantity and quality of health care in an efficient way requires, among other things, matching the supply with the demand for the services of physicians, over time. Such matching has led to very different levels of physicians per million population across OECD countries – because of variations, among other things, in: morbidity and mortality, health expenditure as a share of GDP and the design of health systems. In addition, there are signs that a higher density of physicians is found in countries which have left the supply of physicians mainly to the market whereas lower density is found in countries which have planned the intake to medical schools centrally over many years.

2. Shortages of physicians have now appeared in a number of OECD countries. It seems likely that these shortages could worsen in some countries over the next two decades, as a result of rising demand for, and falling supply of, physicians, unless countermeasures are taken quickly. The countermeasures may involve recruiting into medicine a higher proportion of dwindling cohorts of young people which is likely, in turn, to require raising the relative pay of physicians and/or improving their conditions of service.

3. Countries have at their disposal a variety of additional policy instruments to influence the supply of physicians including education and training policies, migration policies and policies affecting retention and retirement.

4. A number of countries are now raising their intake to medical schools, or discussing raising it.

5. Immigration of doctors can ease physician shortages in countries where numbers are lacking but it raises difficult questions about international equity when there are net, long-term flows of physicians from poorer countries with low average health status to richer countries with high health status. As a result, many OECD countries aim for self-sufficiency in physician supply.

6. Against expectations of a wave of retirement of physicians in many OECD countries, several countries are trying to tempt physicians into delaying their retirement by making retirement arrangements more flexible and staying longer in practice more rewarding, financially.

7. Most OECD countries experience inequities in the geographical distribution of their physician workforce. To tackle this difficulty, a mix of educational policies, regulatory policies and financial policies has been used with some success in a number of countries.

8. Against increasing trends towards specialisation, some countries are trying to raise the relative attractiveness of careers in primary care. There is some evidence to suggest that giving students experience of primary care practice and appointing primary-care role models to academic positions, can influence students' choices towards a career in primary care.

9. The services delivered by physicians depend on their productivity as well as on their numbers. There is good evidence that activity-related methods of payment will raise the activity rates of physicians, but this is also likely to raise costs and little is known about the effect that raised activity has on quality of care. There is growing interest in devising payment systems for physicians which reward the quality of care directly – where that is feasible.

RESUME

10. Pour qu'un système de santé puisse assurer de façon efficace un niveau de soins satisfaisant, en quantité comme en qualité, il faut, entre autres choses, que l'offre et la demande de médecins parviennent à s'équilibrer. De ce point de vue, et si l'on en juge d'après le nombre de médecins par million d'habitants, les pays de l'OCDE affichent une grande diversité, pour des raisons qui tiennent notamment à des différences dans les taux de morbidité et de mortalité, les dépenses de santé en proportion du PIB et la conception des systèmes de santé. En outre, il semble que la densité médicale soit plus élevée dans les pays qui ont pour l'essentiel laissé au marché le soin de réguler l'offre de médecins, et moins élevée dans ceux où l'accès aux études de médecine a longtemps été encadré à l'échelon national.

11. Un certain nombre de pays de l'OCDE connaissent d'ores et déjà des pénuries de médecins et si l'on extrapole les tendances récentes (à partir de données un peu incertaines), il apparaît que ces carences pourraient s'aggraver dans certains d'entre eux au cours des vingt prochaines années si rien n'est fait entretemps pour remédier au problème d'une offre qui se raréfie alors que la demande va croissant. L'une des solutions serait d'attirer vers la médecine une plus forte proportion des cohortes de jeunes, elles-mêmes en diminution, mais sans doute faudrait-il pour cela que les médecins puissent voir s'améliorer leur niveau relatif de rémunération ou leurs conditions d'exercice.

12. Les pays ont à leur disposition toute une série d'autres leviers pour agir sur la démographie médicale, en particulier dans le domaine de l'enseignement et de la formation, des migrations, de la retraite et du maintien en activité.

13. Un certain nombre de pays ont déjà pris des mesures pour augmenter les effectifs d'étudiants en médecine, ou envisagent une action dans ce domaine.

14. Le recrutement de médecins à l'étranger peut aider à résorber la pénurie dans les pays déficitaires, mais il pose un douloureux problème d'équité à l'échelle internationale s'il doit en résulter à la longue un exode des médecins des pays pauvres, où l'état de santé des populations est médiocre, vers les pays riches, où la situation sanitaire est satisfaisante. C'est pourquoi beaucoup de pays de l'OCDE ont pour objectif de former un nombre suffisant de médecins pour répondre à leurs besoins.

15. Pour anticiper la vague de départs à la retraite que va connaître la profession médicale dans de nombreux pays de l'OCDE, plusieurs d'entre eux s'efforcent d'inciter les médecins à rester plus longtemps en activité en assouplissant les dispositifs de retraite et en offrant une contrepartie financière au maintien en exercice.

16. La plupart des pays de l'OCDE se heurtent à un problème de répartition géographique inégalitaire de leur effectif de médecins. Pour surmonter cette difficulté, un certain nombre d'entre eux ont choisi d'associer, avec un certain succès, un ensemble de réformes du système de formation, de mesures réglementaires et d'aides financières.

17. Contre la tendance croissante à la spécialisation, on note aussi des efforts pour revaloriser la médecine de soins primaires. Un certain nombre d'indices tendent à prouver qu'en permettant aux étudiants d'acquérir une expérience dans ce domaine et en leur donnant pour modèles des praticiens généralistes

nommés à des postes universitaires, on peut orienter les choix de carrière des jeunes médecins en faveur des soins primaires.

18. Les services rendus par les médecins dépendent non seulement de leur nombre, mais aussi de leur productivité. Il y a de bonnes raisons de penser que le paiement à l'activité est un moyen d'accroître la productivité des médecins, mais c'est aussi un système qui risque de faire monter les coûts, et l'on ne sait pas grand-chose par ailleurs de l'effet que peut avoir la multiplication des actes sur la qualité des soins. La conception de modes de tarification des actes médicaux qui rémunèrent directement la qualité des services, lorsque c'est possible, fait donc aujourd'hui l'objet d'un intérêt de plus en plus grand.

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1 INTRODUCTION

19. OECD countries face a number of challenges in matching the supply to the demand for the services of physicians. These include making the right decisions on the numbers and training of new entrants, on the retention and retirement of the existing stock of physicians, and on migration policies for physicians. It also requires policies to ensure that there is the right specialty mix and geographical distribution of physicians. It will require appropriate decisions on terms and conditions of service and on methods of remuneration – not only to ensure that the right number of individuals is attracted to work in medicine but also to ensure that those who are attracted are motivated to be as productive as possible.

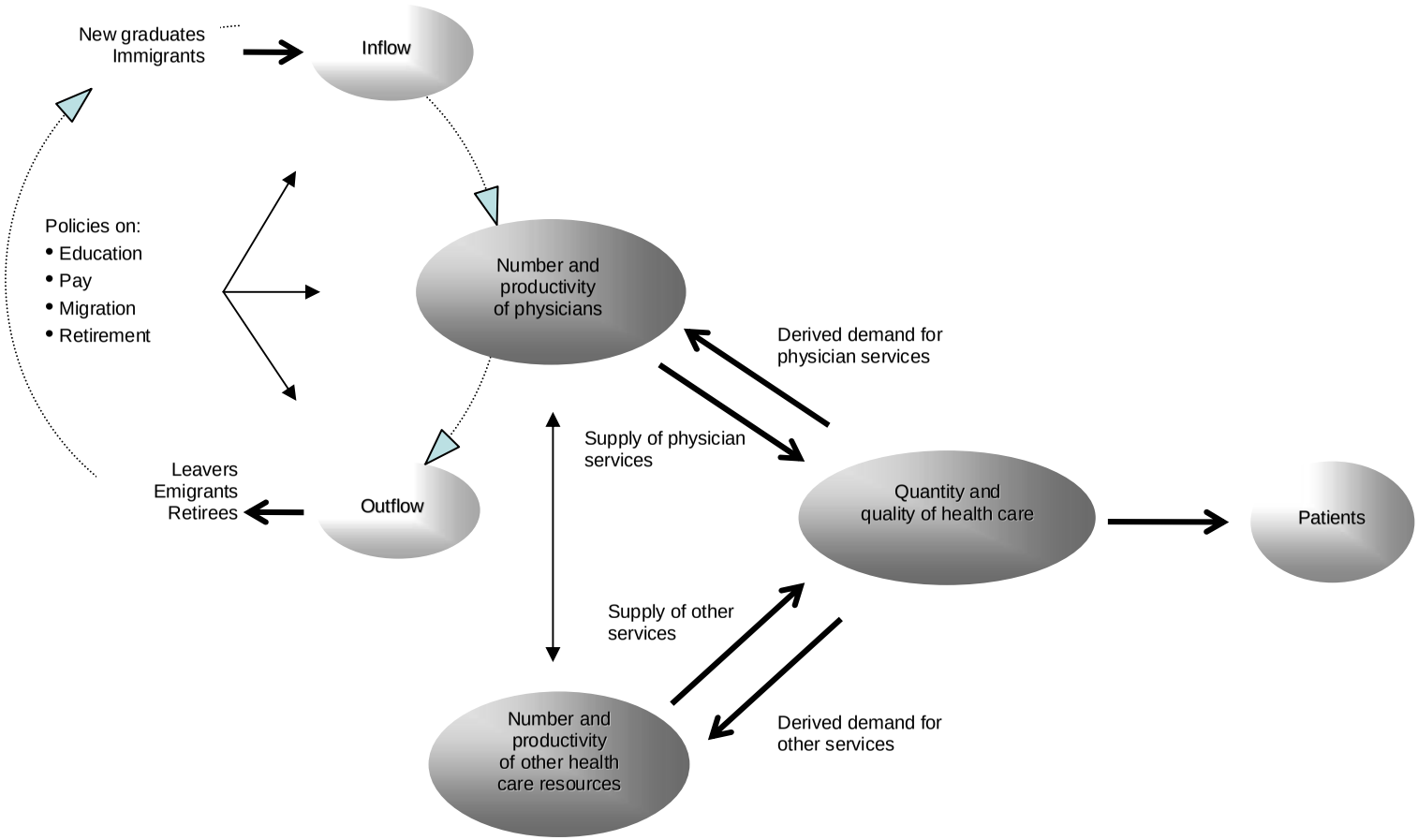
20. This paper explores these issues mainly from an international perspective. Section 2 proposes a framework for analysing physician employment in OECD countries by distinguishing between the demand for and the supply of physicians; and by identifying two different concepts of shortage and surpluse of physicians. Variations in levels of physician employment and their implications for costs, productivity and health outcomes across countries are explored in section 3. The evidence on current shortages and surpluses of physicians and a number of supply-side factors affecting future shortages and surpluses are then reviewed in section 4. This is followed by a discussion in sections 5 to 7 of various policies for ensuring an adequate supply of physicians, which distinguishes between the number of physicians at country level, the geographic distribution of physicians within a country, and the speciality composition of the physician workforce. Section 8 is devoted to a review of policies affecting the productivity of physicians. The final section presents some concluding remarks on ensuring an adequate supply of physician services.

2 DEMAND FOR AND SUPPLY OF PHYSICIANS

21. Figure 1 presnts a flow chart depicting the way in which the services of physicians contribute to the production of health care. The volume and quality of medical services is determined by the supply of physician services, in combination with the supply of services of other health care resources such as other health care workers, pharmaceuticals, equipment, beds, etc. There is corresponding demand for the services of physicians (and for the services of other health care resources) derived from the demand for health care itself. Assuring that countries have an adequate number of physicians to match demand is not a straightforward exercise, given that needs are difficult to assess. In this field, demand is largely socially determined. In particular, the volume of services demanded by a population covered by comprehensive public insurance or public provision may exceed the socially desirable level, which will depend on costs as well as on benefits. Even where insurance is privately financed, demand can be determined by agents who do not meet the costs. In addition, some discretion is possible in the mix of skills used in furnishing medical services.

22. Figure 1 indicates that the number of physicians is increased by flows into the workforce, originating from newly-graduated physicians and immigrating physicians; and reduced by flows out of the workforce, arising from emigration, career change and retirement. The hours physicians work, and the intensity with which they work during those hours, combine with the availability of other resources to determine productivity (real services per physician) in a complex manner. The Figure suggests that decision makers and managers can draw on a range of instruments including education, training and recruitment methods, methods and levels of remuneration to influence these factors.

Figure 1. Flow chart of the contribution of physician services to the production of health care



23. Physician density (*i.e.* the number of physicians per 1 million population) is affected by both demand for, and supply of, physicians. Demand for physicians is likely to differ with variations in, among other things, morbidity and mortality in the population, the proportion of gross domestic product that is spent on health, the level of health insurance coverage, and (to the extent that 'supplier-induced demand is possible) the methods of remunerating physicians. In other words, among other things, demand will depend on the design of the health system (Blumenthal, 2004). The supply of physicians is likely to vary because of differences in, among other things, the availability of physician education and training, and terms and conditions of service. At any one time, shortages and surpluses of physicians can occur if wages or fees are set at a level which does not match supply with demand. Additionally, shortages and surpluses can arise due to lags in responses to changes in demand (opr supply) (see Box 1) – for physicians the minimum time between entry to medical school and becoming fully qualified can extend from seven years to ten or more for many specialties.

Box 1. An economic definition of shortages and surpluses of physicians

Figure 2 depicts a standard demand and supply model, where the demand for physicians declines with the real wage and the supply increases. Depending on, for example, their levels of health expenditure and institutional arrangements, two countries A and B can have different demand and supply schedules for physicians, such as D_a and D_b, and S_a and S_b, respectively. Equilibrium between demand and supply would be attained in each country if fees and wages were set at P_a and P_b, resulting in levels of physician employment at Q_a and at Q_b, respectively. However, if, *purely for the sake of illustration*, real fees and wages in both countries had been set for many years at an intermediate wage, P_c, country A is likely to have developed a surplus of physicians equal to Q_c-Q_d, and country B is likely to have developed a shortage equal to Q_f-Q_e..

Figure 2. Derived demand for and supply of physicians

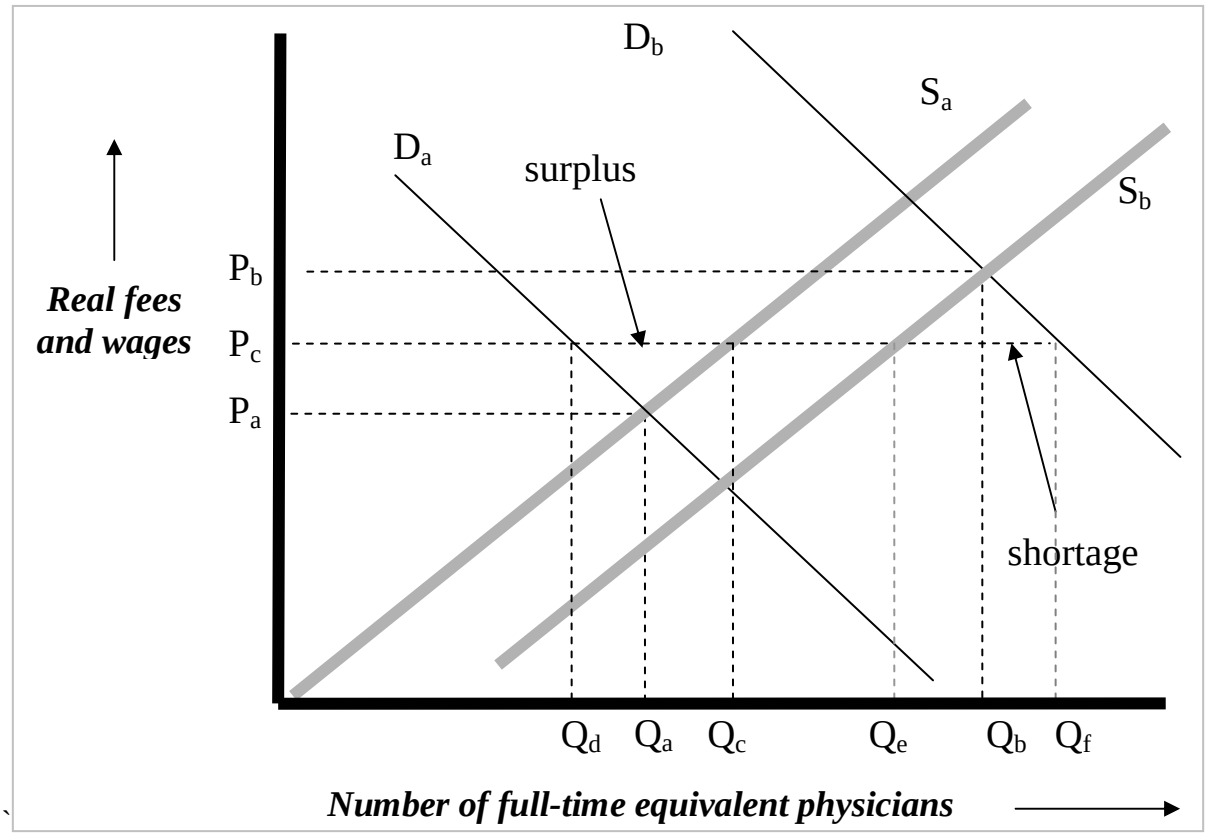


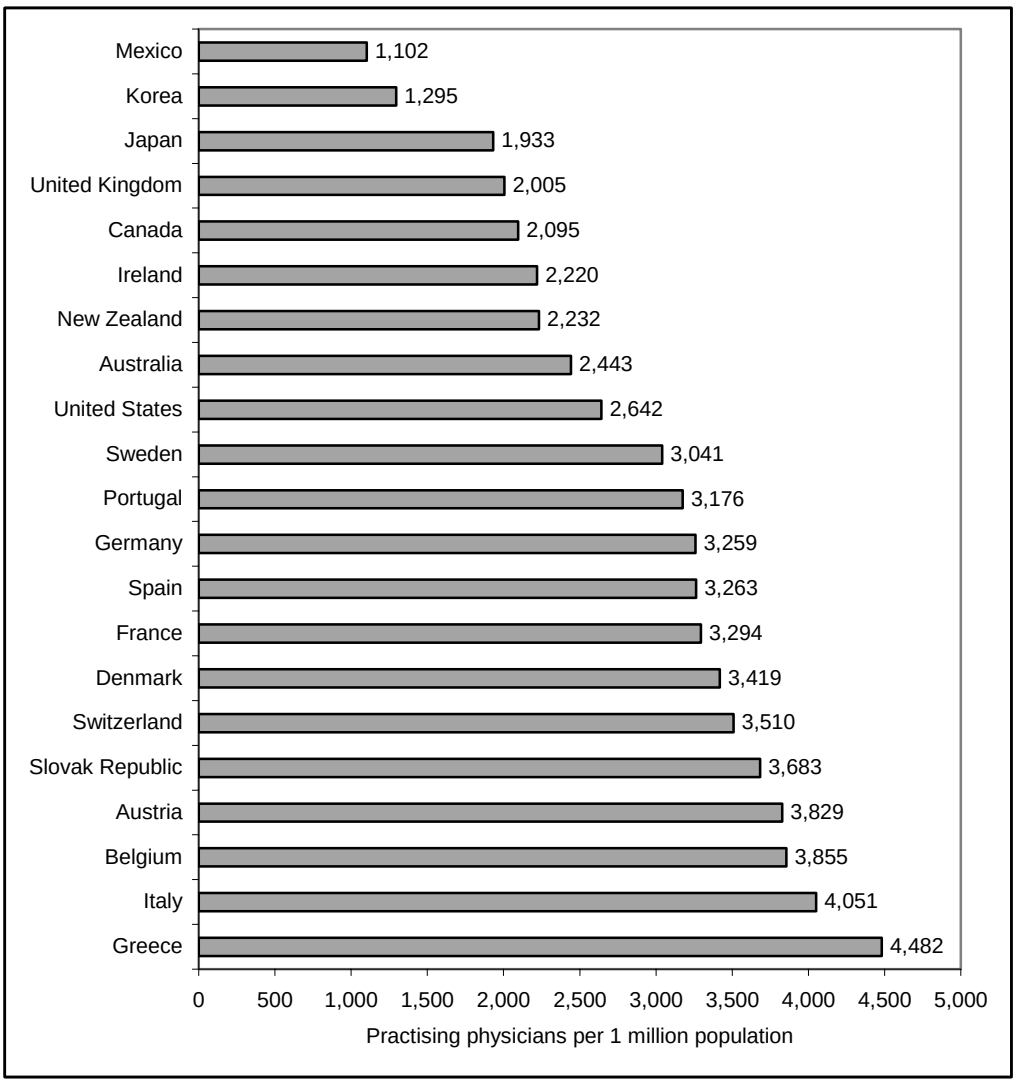
Figure 2 could also be interpreted as depicting a rise in demand in a single country (from D_a to D_b), with supply responding with a lag from S_a to S_b. If the exercise of monopsony power by the dominant public purchasers of health services restricts the rise in wages to P_c, this would be below the new level necessary to 'clear' the market , at P_b.

24. The microeconomic concept of shortages and surpluses set out in Box 1, should not be confused with the idea that the number of physicians per capita may not match some predetermined 'norm' or benchmark. This benchmark could be a minimum physician-to-patient ratio or a target number of physicians per capita in rural or deprived urban areas, in relation to which physicians shortages and surpluses can then be defined. In Australia, for example, a benchmark was proposed of 2.051 full-time equivalent practising physicians per 1,000 population based on 1994 data (Australian Medical Workforce Advisory Committee and Australian Institute of Health and Welfare, 1996). In England, the National Health Service Plan set forward a target number of 0.557 full-time-equivalent primary care physicians per 1,000 population weighted for need in each area in England (Secretary of State for Health, 2000). In the United States, the Council on Graduate Medical Education proposed a range of physician requirements of 0.6 to 0.8 primary care physicians and 0.8 to 1.0 specialist physicians per 1,000 population (Council on Graduate Medical Education, 1994).

3 ANALYSING INTERNATIONAL VARIABILITY IN PHYSICIAN EMPLOYMENT

25. There is substantial variation in the reported employment levels of physicians per 1 million population across OECD countries (see Figure 3). It is more than 3.5 per 1 000 population in Greece, Italy, Belgium, Austria, the Slovak Republic and Switzerland; and less than 2 in Japan, Korea and Mexico in 2000. Some of these differences are undoubtedly due to the incomplete standardisation of data across countries, but overall they seem to be too great to arise from definitional and coverage differences alone.

Figure 3. Physician density, 2000



Notes:
- Data on British and Mexican physicians do not include physicians practising in the private sector.
- Data on Greek physicians include some unemployed physicians.
- Date on Irish physicians refer to physicians entitled to practise rather than actively practising physicians.
- Data on Korean physicians include physicians practising oriental medicine.
- Data on Portuguese physicians include some retired physicians.
- Data on Slovak physicians include dentists.

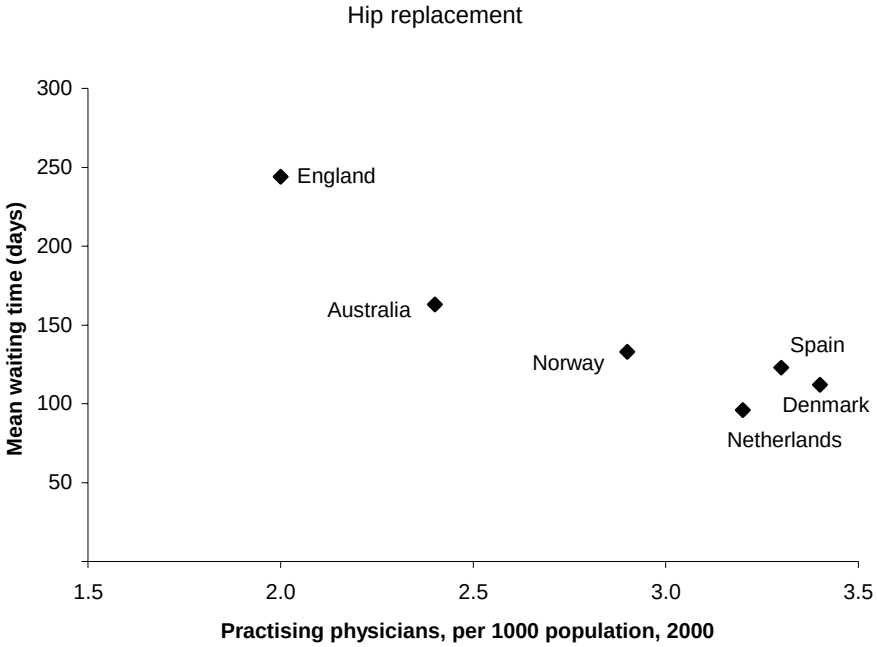
Source: Sources:

- Data are taken from Australian Bureau of Statistics, Australian Institute of Health and Welfare (Australia); Statistics Austria (Austria); Canadian Institute for Health Information, Association of Canadian Medical Colleges, Canadian Medical Association (Canada); DREES (France); National Statistical Service (Greece); Ministry of Health, Labour and Welfare (Japan); Korean Medical Association (Korea); National System of Statistics on Health, Secretariat of Health Bulletin of Statistical Information of Resources and Services (Mexico); New Zealand Health Information Service (New Zealand); National Board of Health and Welfare (Sweden); Foederatio Medicorum Helveticorum (Switzerland); American Medical Association (United States).
- Data for Belgium, Denmark, Germany, Ireland, Italy, Portugal, Slovak Republic and the United Kingdom are taken from OECD Health Data 2003, 3rd edition.

26. International variability in physician employment suggests that the level of demand for physicians varies considerably across countries. What can be said about the implications for outcomes, costs, activity levels and productivity of this international variability in physician employment?

27. There is evidence to suggest that higher densities of physicians tend to be associated with better health outcomes and responsiveness across countries, although the magnitudes of the effects cannot be estimated with any degree of reliability from international comparisons. In terms of health outcomes, previous OECD work has suggested that the number of physicians per capita is inversely associated with avoidable mortality across OECD countries, other things being equal.[1] In terms of responsiveness, the OECD project on waiting times indicated the existence of a statistically-significant, inverse relationship between physician density and waiting times for elective surgery across a small sample of countries with waiting times[2] (see Figure 4).

Figure 4. Physician density and waiting times



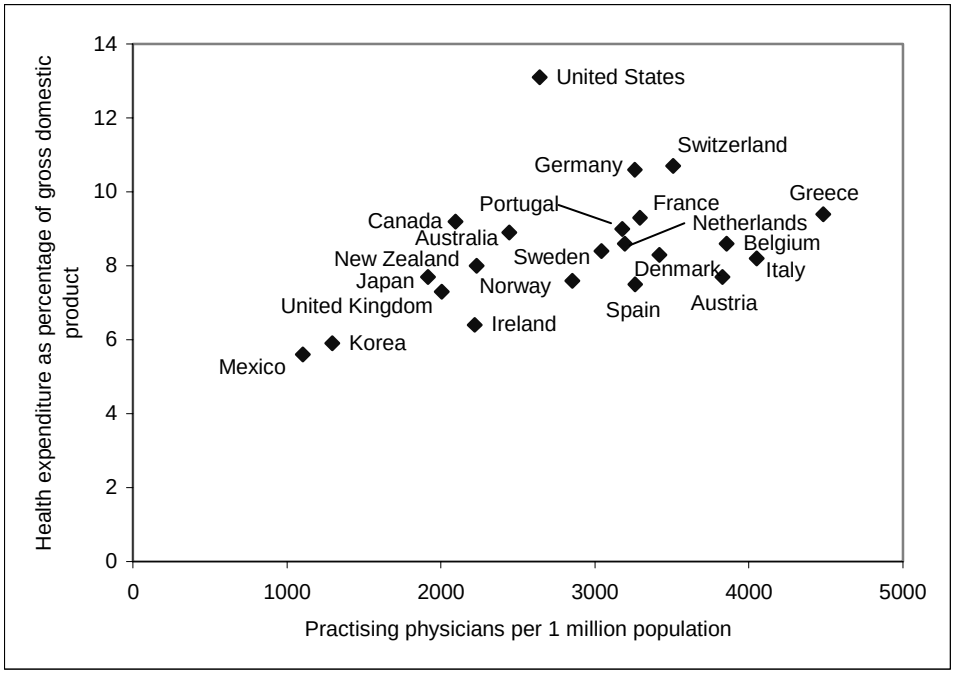
Source: Sources: OECD Health Data 2003, 3rd edition and country responses to the OECD Waiting Times Project Data Questionnaire.

28. Turning to costs, it is often assumed that more physicians lead to higher health expenditure, not so much because of their personal remuneration, but because their treatment interventions mobilise many other health care workers and resources. Figure 5 suggests that there is a weak positive association between physician density and the health spending effort (as a percent of GDP) across OECD countries. However, it is not possible to say from this chart in what direction causation flows.

1. See Or (2000).

2. For a fuller account of the findings of the OECD project on waiting times, see Hurst and Siciliani (2004).

Figure 5. Physician density and health expenditure, 2000



Note: The correlation co-efficient for these variables is 0.45 and the R^2 is 0.20.

Source: OECD human resources for health care project and OECD Health Data 2003, 3rd edition.

29. A previous econometric study (OECD, 1995) suggested that overall health expenditure per capita was associated positively with physician numbers in countries which paid their physicians by fee-for-services, as opposed to paying them by salary or capitation. Table 1 suggests similarly that the health expenditure share of GDP is positively associated both with physician density and with fee-for-service payment of physicians. As Section 8 discusses, fee-for-service systems often provide a greater quantity of medical services per provider.

Table 1. Physician density and payment method, 2000

Physician density[a]	Payment by fee-for-service		Blended payment		Payment mainly by salary or capitation	
	Countries	Health expenditure as percentage of GDP	Countries	Health expenditure as percentage of GDP	Countries	Health expenditure as percentage of GDP
Above average	Austria Belgium France Germany Switzerland	9.4%	Denmark Netherlands	8.8%	Greece Italy Portugal Slovak Republic Spain Sweden	7.8%
Below average	Canada	9.2%	Australia Ireland Japan Korea Mexico New Zealand Norway	7.2% (7.7%)[b]	United Kingdom	7.3%

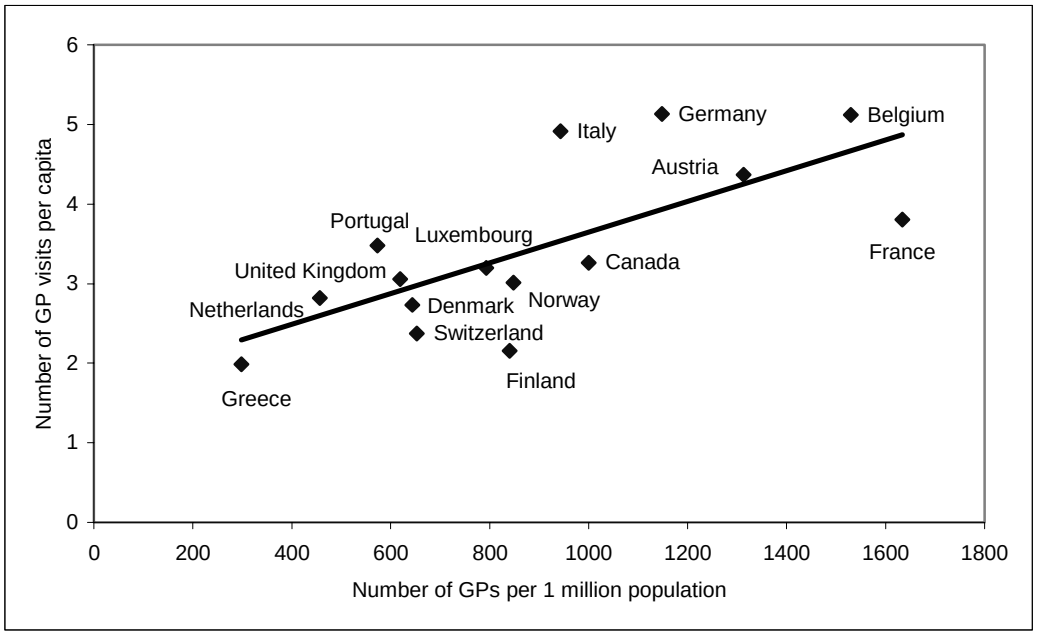
Notes:
- [a] Physician density above or below average physician density of countries included in the Table.
- [b] Average for countries in this group excluding Korea and Mexico. Health expenditure shares of gross domestic product and physician densities in Korea and Mexico are substantially lower than in the remaining countries.

Source: OECD human resources for health care project and OECD Health Data 2003, 3rd edition.

30. What is the relationship, if any, between physician density and physician activity levels and productivity? For example, is higher physician density associated with lower services delivered per physician, or is a higher density of physicians associated with a higher total number of medical acts? Adequate data for cross-country comparisons of the activities of specialists are not generally available. However, in the case of general practitioners (GPs) data are available from the European Community Household Panel (ECHP) Survey on the annual number of visits by patients to GPs across European countries. Figure 6 suggests that, although there is more variation in GP density than in the annual number of GP visits per capita across countries, there is nevertheless a statistically significant positive association between GP density and the annual number of GP visits per capita.[3] It is not clear which way causation runs but it is possible that an increase in GP density raises the quantity demanded either because it lowers money (or time) price per act (causing a movement down a fixed demand curve) or because it generates 'supplier-induced' demand – additional demand created by the GPs themselves in the form, for example, of suggestions for repeat consultations during patients' episodes of illness (causing an outward shift in the demand curve). However, given that the annual number of visits by patients to GPs does not rise in proportion to GP density, a higher GP density translates into a lower number of visits per GP (Figure 7). This negative relationship appears to be statistically significant. However, it is difficult to make any inference about physician productivity as we lack data on differences in the quality of care across countries.

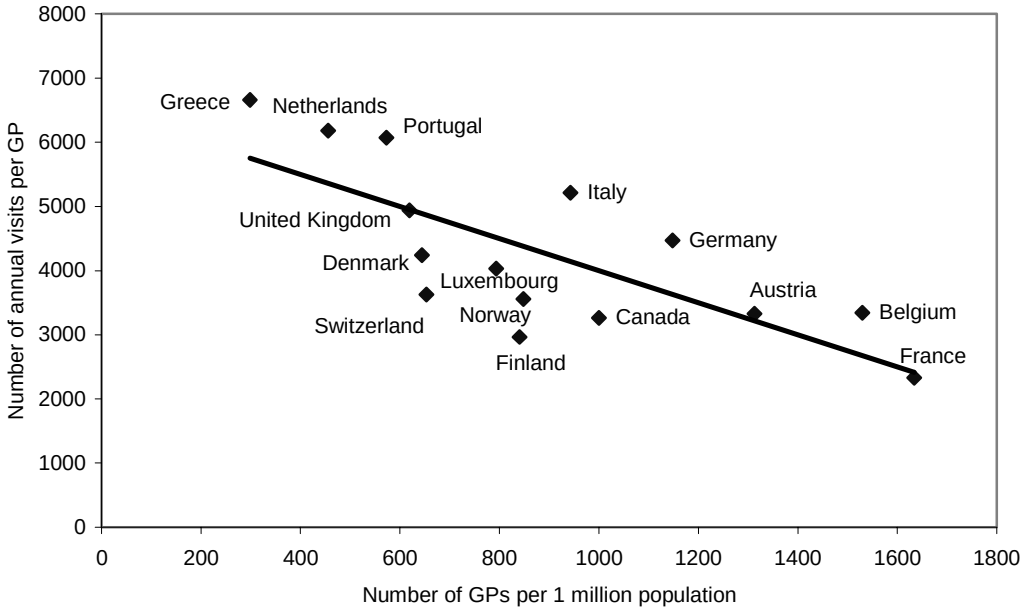
3. A tendency for an increase in *total* physician density to increase visits per GP, has been indicated by an econometric analysis of ECHP data. This study controlled for other variables related to individuals, such as self-reported health status, age, income and occupation, and for health system variables, such as method of paying the doctor, total health expenditure per capita and a variable reflecting GP gatekeeping. A significant finding of this study was that presence of GP gatekeeping is associated with higher visits to GPs and lower visits to specialists, than is the case in the absence of gatekeeping (Jiménez-Martin *et al.*, 2004).

Figure 6. The relationship between general practitioner density and the annual number of visits to general practitioners per capita



Notes:
- Data for Germany and the United Kingdom relate to 1996. Data for Switzerland relate to 1997. Data for Austria, Belgium, Denmark, Greece, Ireland, Italy, Netherlands, Portugal and Spain relate to 1999. Data for France and Norway relate to 2000. Data for Canada relate to 2001.
- The following linear regression was fitted to the data:
The annual number of visits to general practitioners per capita = 1.717 + 0.001931 (number of general practitioners per 1 million population) with $R^2 = 0.51$, p-value of F-test on overall model = 0.003.
Source: OECD human resources for health care project, OECD equity project and OECD Health Data 2003.

Figure 7. The relationship between general practitioner density and the annual number of visits per general practitioner



Notes:
- Data for Germany and the United Kingdom relate to 1996. Data for Switzerland relate to 1997. Data for Austria, Belgium, Denmark, Greece, Ireland, Italy, Netherlands, Portugal and Spain relate to 1999. Data for France and Norway relate to 2000. Data for Canada relate to 2001.
- The following linear regression was fitted to the data:
The annual number of visits per general practitioner = 6,495 – 2.498 (number of general practitioners per 1 million population) with $R^2 = 0.56$, p-value of F-test on overall model = 0.001.
Source: OECD human resources for health care project, OECD equity project and OECD Health Data 2003.

31. There is still controversy in the literature over the incidence and extent of 'supplier-induced demand'. For example, studies in Austria, France and Norway vary in the extent to which a higher physician density is associated with a higher volume of services.[4] Even for those studies that do find a positive association between the stock of physicians and the quantity of medical services delivered by physicians, there is no agreement, as mentioned above, as to whether this can be attributed to: a price or volume effect on access to and quality of health care; to supplier-induced demand by physicians; or, indeed, to a response to unobserved variations in population characteristics (Carlsen and Grytten, 2000). What does emerge from this literature is that individual physicians have considerable discretion over practice patterns that are influenced by, amongst other things, ethical constraints, practice protocols, amount of available time and views on appropriate level of income. In addition, it is not clear to date how any inducement affects the health of patients (Labelle *et al.*, 1994).

4. See, for instance, Sorensen and Grytten (1999); Grytten and Sorensen (2001); Delattre and Dormont (2003); Riedel (2003).

4 CURRENT AND FUTURE TRENDS IN PHYSICIAN EMPLOYMENT

4.1 Current shortages and surpluses of physicians

32. Some OECD countries are reported to be facing physician shortages, whereas others seem to be experiencing surpluses. In England, physician shortages can be observed in three-month vacancy rates of 4.7% of all specialist physician posts and 3.3% of all primary care physician posts in England in the year to March 2003 (Department of Health, 2003). On the other hand, there were claims of a physician over-supply in Belgium in 2000 (European Observatory on Health Care Systems, 2000). Some countries may have physician shortages in specific geographical regions such as rural and deprived areas, but have surpluses in affluent metropolitan areas. Australia reported a shortage of 1,240 primary care physicians in rural and remote areas and a supply in excess of benchmark levels of approximately 2,300 primary care physicians in metropolitan areas in 1998 (Australian Medical Workforce Advisory Committee, 2000). In other cases, shortages fall solely on certain categories of physician with specific skills or specialisation. In the 1980s and 1990s, a series of studies by the Graduate Medical Education Advisory Committee and the Council on Graduate Medical Education predicted a surplus of specialists equal to 15-30% of the physician workforce and a shortage of primary care physicians in the United States by the year 2000.[5] However, when the year 2000 arrived, there were few, if any, signs of a surplus of specialists and by 2004, there were reports that the Council on Graduate Medical Education was now expecting there to be shortages of physicians by 2020 and was thought likely to advise that medical school enrolment should be increased (Blumenthal, 2004). Meanwhile, there was some evidence of decreasing employment opportunities for specialists and increasing uptake of family medicine programmes by medical students in the second half of the 1990s (Grumbach, 2002).

4.2 Future trends affecting the demand for and the supply of physicians

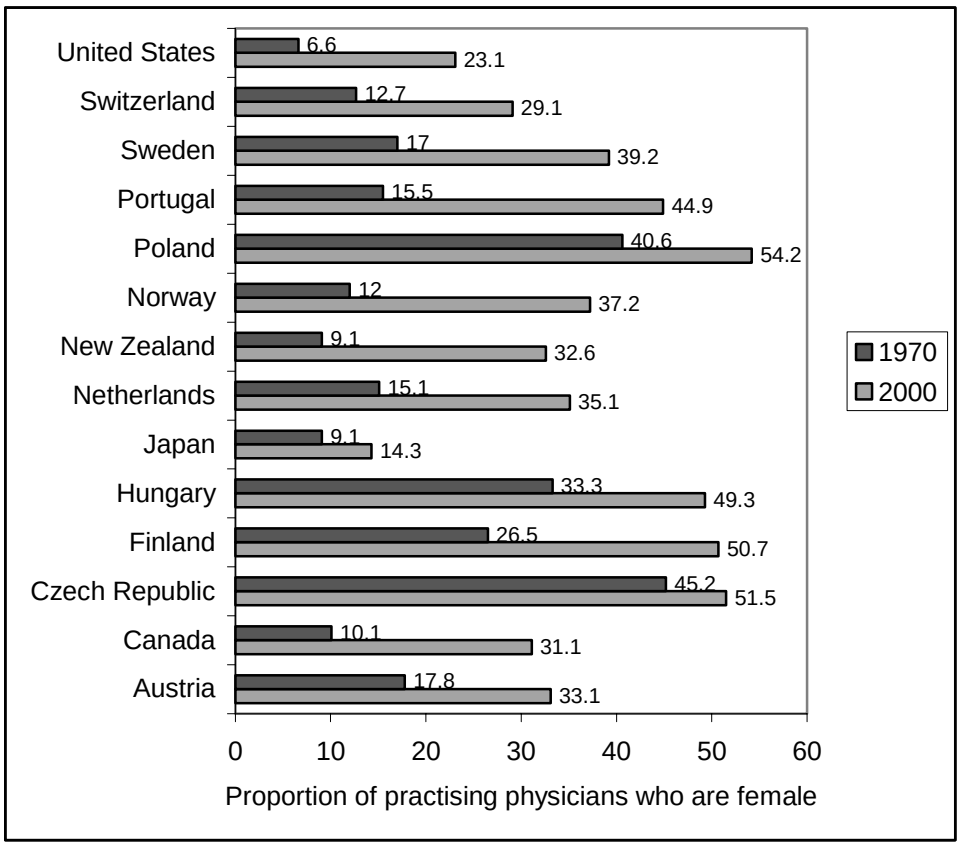
33. With gaps already appearing between the demand for and the supply of physicians in some countries, it is important to understand what future trends might affect demand and supply over the next 20 years. It is widely expected that demand for medical care will increase because of likely improvements in the standard of living, technological advances in medicine, population ageing and rising patient expectations. On the supply side, there are likely to be reductions in the availability of physicians in most countries unless steps are taken to increase recruitment. That is mainly because of increasing female participation in the workforce and physician workforce ageing. The latter will lead to a wave of retirements preceded by a drop in hours worked among older physicians.

4.2.1 Female participation in the physician workforce

34. The proportion of practising physicians who are female has increased considerably over time in many OECD countries (see Figure 8). In the Czech Republic, Finland and Poland, there were more female than male physicians in 2000.

5. See, for instance, Graduate Medical Education National Advisory Committee (1981) and Council on Graduate Medical Education (1992, 1994, 1995).

Figure 8. Female participation in the physician workforce, 1970-2000



Notes:

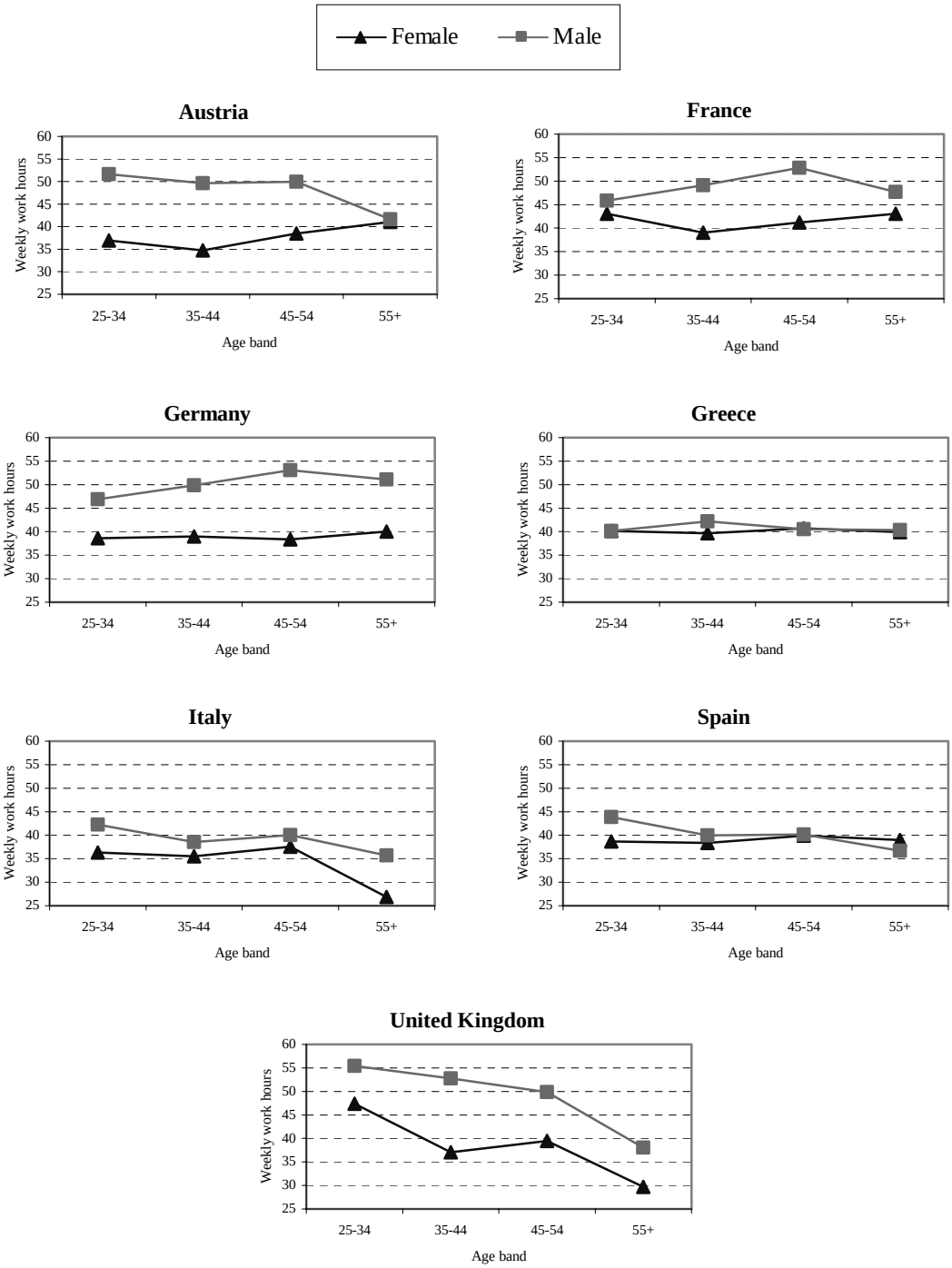
- Data for Austria refer to 1969 and 2000. Data for Canada, Czech Republic and New Zealand refer to 1971 and 2000. Data for Hungary, Sweden and the United States refer to 1970 and 1999.

Source: OECD Health Data 2003.

35. Increasing female participation in the physician workforce can have important consequences for the supply of physicians, given that female physicians tend to differ from their male colleagues in how they participate in the workforce. Evidence from Australia and Canada suggests that female physicians prefer primary care specialities, are less likely to work in rural areas, are more likely to leave the practice of medicine or practice at low activity levels during child-bearing age, tend to work fewer hours and are more likely to retire early.[6] Evidence from a number of European countries (Figure 9) also suggests that female physicians tend to work fewer hours than male physicians, particularly during childbearing age. Other things being equal, if the current tendency for female physicians to work fewer hours than their male colleagues persists, the supply of medical services will fall if female participation in the physician workforce increases.

6. See, for instance, Woodward and Hurley (1995), Australian Medical Workforce Advisory Committee and Australian Institute of Health and Welfare (1996), Australian Bureau of Statistics (1999) and Cohen (1999).

Figure 9. Average weekly work hours of physicians1 by age and gender, 2000



Notes:
[1] Data relate to the ISCO-88 code 222 'health professionals (except nursing)', which does not distinguish physicians from veterinarians, pharmacists and dentists. However, physicians generally represent the bulk of this three-digit class – usually between 75 and 90% - and thus this provides a fairly good approximation to the aggregate of interest.
- For France, physicians who work variable hours during the reference period are excluded.
- In some cases absolute data are very small and, hence, results should be treated with caution.
Source: Eurostat Labour Force Survey.

4.2.2 Physician ageing

36. Physician ageing is likely to have a profound effect on the future supply of physician services in many countries. The generation of doctors who were born during the 'baby boom' following World War II, will be coming up to retirement during the next decade or two. Meanwhile, numbers in young population cohorts, from which new recruits to medicine will mainly come, have been dwindling in many countries. That suggests that shortages of physicians could appear or worsen in some countries over the next two decades unless counter measures are taken. Table 2 shows that there is substantial variation in the proportion of young physicians in the workforce of selected countries: it ranged from 3.8% in Italy to 15.1% in Spain in 2001. There seems to be less variation in the percentage of people in the 20-29 age band who are physicians. Low percentages in Greece and Italy suggest that these countries may be able to sustain their physician workforce by attracting more young people into the physician workforce. However, in six out of the eight countries, the number of young physicians fell over a period of five years, and in five out of eight the proportion of practicing physicians in this age category fell. Hence, rather than anticipating the retirement of older cohorts by increasing the stock of young physicians, most of these countries appear to have increased the process of ageing of their physicians workforce by a fall in numbers of young entrants to the profession.

Table 2. Inflow of young physicians1 into the workforce, 1996-2001

	No. physicians aged 20-29 (in 1,000s), 1996	No. physicians aged 20-29 (in 1,000s), 2001	% practicing physicians aged 20-29, 1996	% practicing physicians aged 20-29, 2001	% people aged 20-29 who are physicians, 2001
Austria	3.4	3.3	8.0	8.2	0.3
Belgium	7.0	6.0	13.6	10.8	0.5
France	25.7	32.3	8.1	10.6	0.4
Germany	35.4	30.2	8.9	6.8	0.3
Greece	4.9	3.6	8.1	6.5	0.2
Italy	12.4	10.6	4.9	3.8	0.1
Spain	23.6	28.3	14.9	15.1	0.4
United Kingdom	37.9	34.9	19.2	14.5	0.5

Notes:
[1] Data relate to the ISCO-88 code 222 'health professionals (except nursing)', which does not distinguish physicians from veterinarians, pharmacists and dentists. However, physicians generally represent the bulk of this three-digit class – usually between 75 and 90% - and thus this provides a fairly good approximation to the aggregate of interest.
Source: Sources : EUROSTAT Labour Force Survey.

37. An attempt was made to supplement these data on numbers in the youngest age group by looking at net changes by five-year age category in physician numbers. However, for European countries the survey data were too unreliable to allow clear conclusions, possibly because the occupational category includes many other health professionals.

38. Table 3 shows more reliable data for Australia, Canada and New Zealand, disaggregated into specialists and primary care physicians. These data show strong inflows due to new graduates and immigrants at younger ages, and suggest net outflows due to retirement and movements into other professions from ages 50-54 onwards. However, these outflows are not very strong and generally do not exceed 10% of the work force until ages 60-64.

Net inflow/outflow rates1 of physicians2, 1996-2001 (percentages)

Primary care and specialist physicians

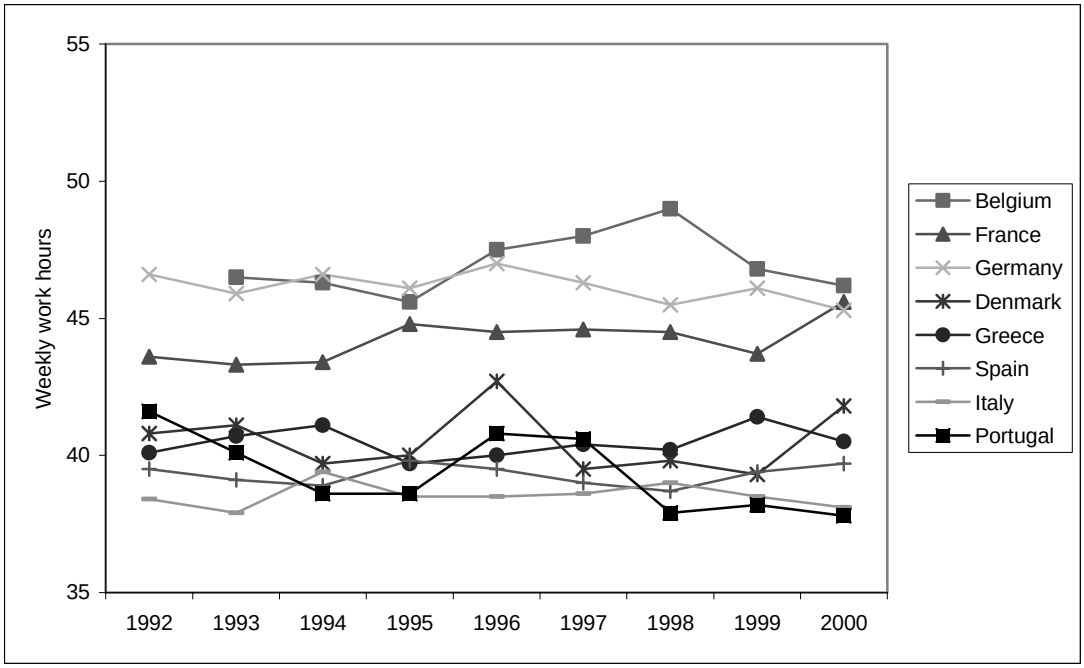
	Age band						
	30-34	35-39	40-44	45-49	50-54	55-59	60-64
Australian primary care physicians	62	107	116	97	95	96	85
Australian specialist physicians	192	102	112	96	102	95	84
Canadian primary care physicians	118	100	100	99	96	94	84
Canadian specialist physicians	115	106	101	100	97	96	91
New Zealand primary care physicians	415	137	101	102	82	89	83
New Zealand specialist physicians	6,700	485	135	104	98	86	79

Notes:
[1] The net inflow/outflow rate relates, in percentage terms, the absolute number of physicians and others in a particular age band in a specific year to that of the previous age group five years earlier.
- For Australia, net inflow/outflow rates are calculated over a four-year period (1995-1999) rather than a five-year period.
- For Canada and New Zealand, net inflow/outflow rates are calculated over the 1995-2000 period.
Sources : Australian Medical Labour Force Survey; Canadian Institute for Health Information, Canadian Post-M.D. Education Registry, Southam Medical Database; New Zealand Health Information Service.

4.2.3 Physician work hours

39. The supply of physicians is also influenced by the number of hours that physicians work. Figure 11 suggests that the number of hours worked by physicians in some countries that have an insurance-based health care system (Belgium, France and Germany) was higher than the number of hours worked by physicians in a number of countries that fund health care through taxation (Denmark, Greece, Italy, Portugal and Spain). It appears that the societal trend towards more leisure time has not yet translated into shorter work hours, with weekly work hours of physicians remaining relatively stable in the selected countries in the 1990s.

Figure 10. Number of weekly hours worked by full-time and part-time physicians1, 1992-2000



Notes:

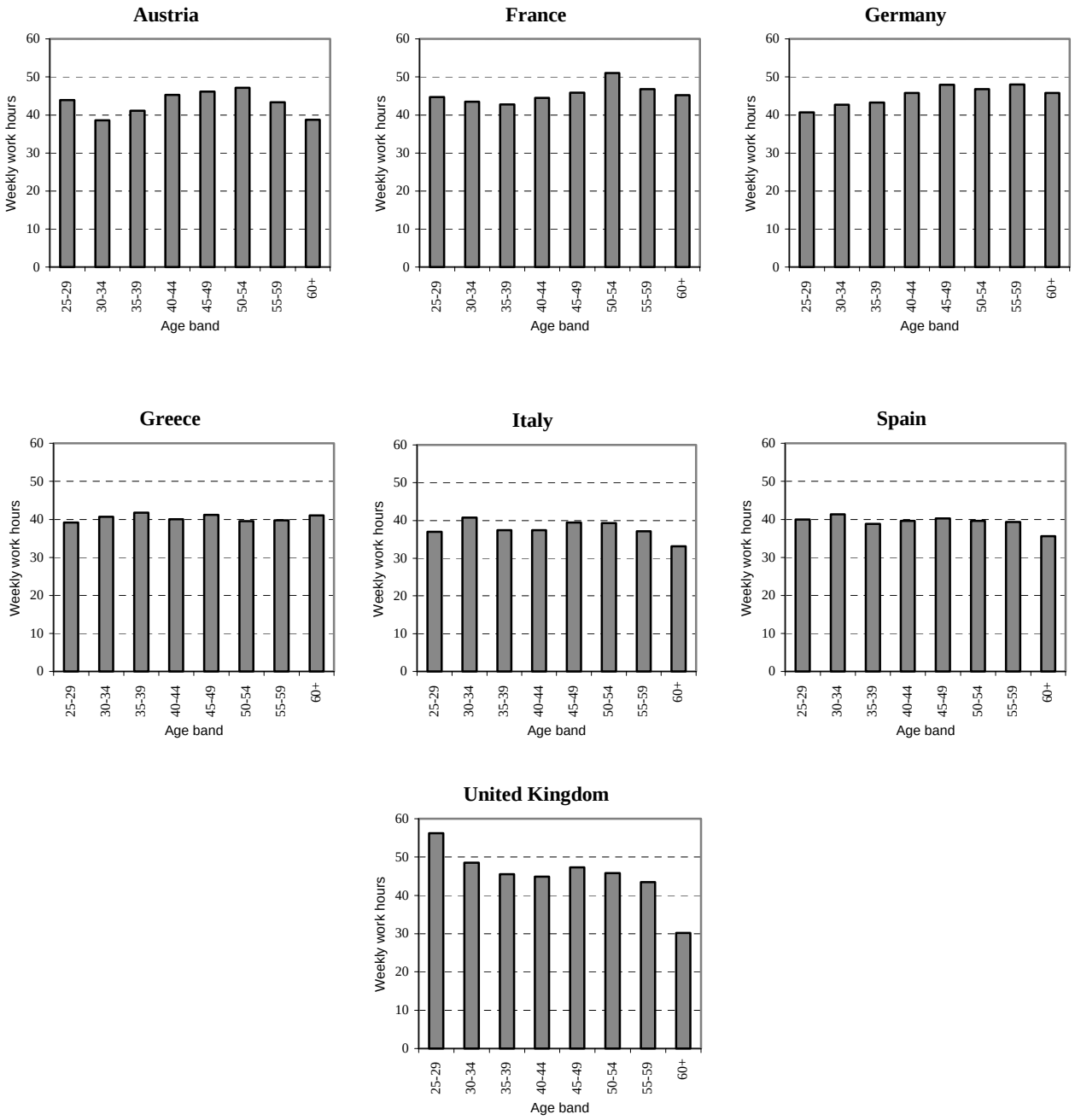
[1] Data applied to the category of 'health professionals' (category 222 of ISCO-88 code) as defined by EUROSTAT. This category comprises physicians, dentists, veterinarians, pharmacists, health professionals (except nursing) not classified elsewhere, with physicians making up around 75-90% of individuals classified in this category.

- Physicians who worked variable hours during the reference period were excluded from the calculations. This represented an average of 26% of physicians in the sample for Belgium and 30% for France.

Source: Eurostat Labour Force Survey.

40. Age seems to play a role in physician work hours. Figure 12 shows that in all countries (except Greece), weekly work hours rise for physicians between 35-39 and 45-49, but fall in most countries from 50-54 years onwards as physicians approach retirement age. That suggests that the coming 'retirement boom' among physicians will be preceded by a falling off in the hours of work that older physicians wish to offer, pre-retirement.

Figure 11. Number of weekly hours worked by full-time and part-time physicians1 by age, 2000



Notes:

[1] Data applied to the category of 'health professionals' (category 222 of ISCO-88 code) as defined by EUROSTAT. This category comprises physicians, dentists, veterinarians, pharmacists, health professionals (except nursing) not classified elsewhere, with physicians making up around 75-90% of individuals classified in this category.

- For France, physicians who worked variable hours during the reference period were excluded from the calculations. The reader should be aware that in some cases absolute data are very small and, hence, results should be treated with caution.

Source: Eurostat Labour Force Survey.

41. Regulations governing work hours, such as the 1993 EU Workin-Time Directive, have had implications for physician work hours. This Directive, which Member States had to comply with by November 1996, puts an upper limit of 48 hours on the number of hours worked per week by employee physicians (see Box 2). Data from the EUROSTAT Labour Force Survey suggest that, in Denmark, France, Germany, Greece, Italy, the Netherlands, Portugal and Spain, the average number of hours worked by full-time employee physicians was below 48 hours throughout the 1990s. Although the average number of hours worked by full-time employee physicians in the United Kingdom fell substantially from 57.2 hours in 1992 to 51.3 in 2001, this still exceeded the limit imposed by the Working Time Directive.

Box 2. EU Working-Time Directive

The aim of the 1993 European Union Working-Time Directive (93/104/EC) is to establish minimum requirements for encouraging improvements in working time, rest periods, annual leave and night work to ensure a better level of protection of the safety and health of workers. The Working-Time Directive applies to all sectors of activity, both public and private, although certain workers are excluded such as physicians in training. Additionally, self-employed workers are not covered by the Directive.

The Working-Time Directive provides for:

- a maximum 48 hour working week averaged over a reference period;
- a minimum daily rest period of 11 consecutive hours a day;
- a rest break where the working day is longer than six hours;
- a minimum rest period of one day a week;
- a statutory right to annual paid holiday of four weeks;
- night working must not exceed eight hours a night on average.

In 2000, the European Parliament and the Council of Ministers reached agreement on phased implementation of the Working-Time Directive for physicians in training (2000/34/EC). Under this agreement, average weekly hours worked by physicians in training will be limited to 58 hours per week from August 2004, 56 hours per week from August 2007 and 48 hours from August 2009, with in exceptional circumstances the possibility of an extension of the deadline to 2012. From August 2004, physicians in training must receive 11 hours continuous rest in every 24 hours or otherwise be given compensatory rest. Additionally, all time spent on-call will be considered as working time for the purposes of maximum hours worked and pay (irrespective of whether physicians actually get called).

42. Variation in physician work hours among OECD countries may affect both physician productivity and the safety of medical services delivered by physicians. It may also affect the health of physicians. A review of the scientific literature showed that long work hours, sleep deprivation and working at times when the biological clock is programmed for rest or sleeping affected physician productivity by increasing the time needed to complete tasks, lowering the quality of patient care and increasing the frequency of clinical mistakes (British Medical Association, 1999). A review of the experience of Denmark, France, Germany, Ireland, the Netherlands and the United Kingdom in regulating work hours of physicians in training found that working excessive hours resulted in fatigue which can be a significant contributor to medical errors (Australian Medical Association, 1998).

5 POLICIES AFFECTING THE NUMBER OF PRACTISING PHYSICIANS

43. The previous section has reported evidence on current physician shortages in some OECD countries and has suggested that future shortages could arise as a result of factors such as physician ageing unless actions are taken to increase inflows into or decrease outflows from the physician workforce. In order to sustain the number of practising physicians, OECD countries have put in place a variety of education, recruitment and retention policies to increase the flow of physicians into the workforce and to reduce outflows. This has taken the form of policies affecting medical school intake, immigration and emigration, retention and retirement of physicians.

5.1 Increasing flows of physicians into the workforce

5.1.1 Domestic physician education and training

44. OECD countries differ in whether they plan entry to medical schools or leave it to medical schools to determine the number of student places. Table 5 suggests that about 12 of the 19 countries listed, are now operating some sort of *numerus clausus* - but in some cases this has been adopted only recently. Most of the remaining countries appear to leave entry to medical school to market forces (or, at least to decentralised mechanisms).

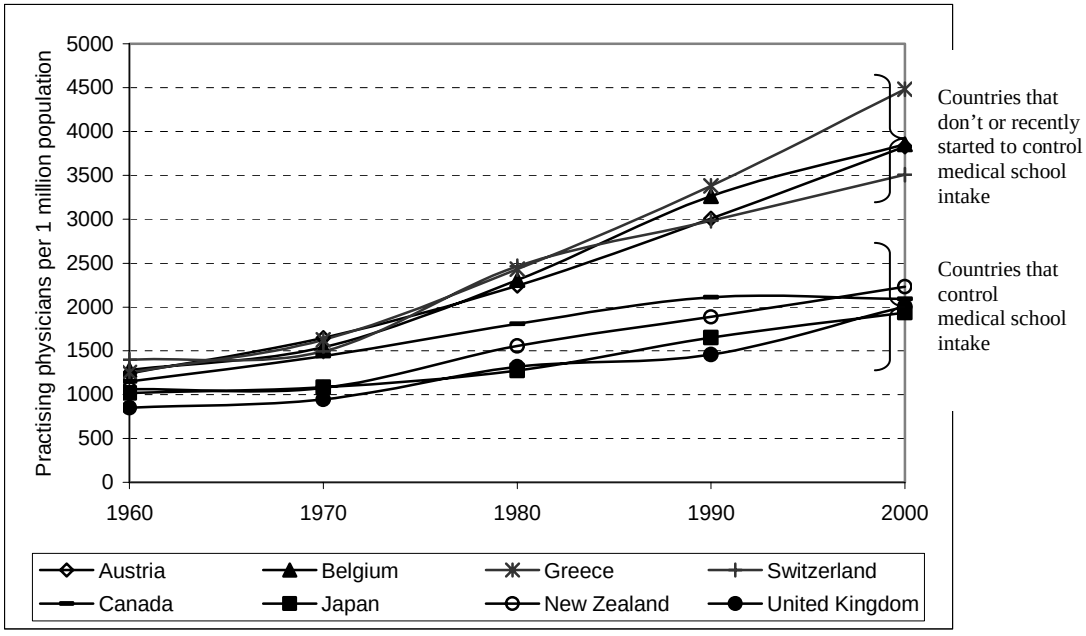
Table 3. Planning of medical school intake over time

Country	Medical school intake
Australia	Medical school intake is controlled by the Commonwealth Government through the funding of university places. In 1973, the Report of the Committee on Medical Schools to the Australian Universities Commission recommended an increase in medical school intake, including the establishment of two new medical schools to provide 1,560 graduates per year by 1991. In 1988, the Committee of Inquiry into Medical Education noted a surplus of GPs in urban areas. Since 1996, the Commonwealth Government has imposed a cap on medical school places to assist in controlling the supply of the medical workforce. The cap applies to domestic medical students only. The number of undergraduate medical school entrants has increased in the late 1990s (from 856 in 1995 to 1,334 in 1999). In 2005, the Federal Government requested the Productivity Commission to undertake an enquiry which would address *inter alia* the relation between workforce needs and medical school places.
Austria	The Government does not restrict the number of students admitted to medical school.
Belgium	In 1997, the Belgian Government fixed the number of physicians who would have access to accreditation for practice at 700 in 2004, 650 in 2005 and 600 in 2006. These numbers break down to 60% Flemish-speaking and 40% French-speaking students.
Canada	Following the introduction of hospital insurance in most provinces, the Hall Commission recommended an expansion in the number of physicians by increasing medical school intake and opening four new medical schools in 1964. These recommendations were progressively implemented and lead to a peak of 1,835 medical graduates in 1985. The 1984 workforce study into physician manpower in Canada (1980-2000) and a subsequent study by Barer and Stoddart in 1991 recommended a reduction in medical school intake in order to avoid a physician surplus. Consequently, the number of medical graduates fell to 1,516 in 1999. Recommendations made in 1999 by the Task Force on Physicians Supply are to increase medical school intake to 2,000 students per year.
France	France has employed a *numerus clausus* for admission in the second year of undergraduate medical school since 1971. Due to concerns over a surplus of physicians, the *numerus clausus* has been reduced progressively since 1980 to bottom out at 3,500 students in 1993. Since then, the *numerus clausus* has increased as a consequence of a projected shortage of physicians in 2010-2015. The *numerus clausus* has been set at 4,100 students in 2001 and 5,100 students in 2002.
Germany	The Government does not restrict the number of students admitted to medical school. Intake is determined by the number of places available at medical schools.
Greece	The Ministry of Education determines the number of available places in each medical school on the basis of available financial resources rather than an attempt to match demand and supply. The number of new students entering medical school has been recently stabilised.
Ireland	There are a certain number of state-funded places, but Colleges have discretion to take in more students. The Higher Education Authority determines the number of places available through the process of financial allocation.
Japan	The introduction of a national health insurance system in 1961 led to an increased demand for medical services. From 1970 onwards, new medical schools were set up and medical school intake increased from 4,380 in 1970 to 8,360 in 1982. In 1986, a Ministry of Health and Welfare Committee predicted that supply would outweigh demand by 10% in 2025 and recommended a reduction in medical school intake by 10% until 1995. In 1993, enrolment into medical school had dropped by 7%. In 1998, a Ministry of Health and Welfare Committee again recommended a 10% reduction in medical school intake until 2020.
Korea	There has not been an explicit policy about constraining or expanding the number of medical school admissions.
Mexico	From 1967 onwards, medical school intake increased and new medical schools were created due to higher demand from middle classes for higher education and due to the economic crisis which channelled people who couldn't find a job into the education system. Student enrolment peaked at 93,365 in 1980. The economic crisis implied that the health care system could not absorb the increased number of medical graduates, resulting in unemployment. Since 1980, the population of medical students has declined and the process of creating new medical schools has been halted.
Netherlands	Medical school intake is subject to a *numerus clausus*.
New Zealand	Enrollment into medical school is capped at 285 nationally.
Norway	The number of students entering medical school is limited to 594 medical students.
Spain	Medical school intake is controlled by the Ministries of Health and Education, and the National Conference of University Chairmen. Restrictions on the number of available places were introduced in 1978 and the 1987 agreement of the University Council.
Sweden	Medical school intake is controlled by the central Government, mainly by deciding and funding the number of students admitted to medical school. To accommodate a rapid expansion of the health care system, medical school intake was increased and new medical schools were created from 1960 onwards. The number of new medical students rose from 431 in 1960 to 1,026 in 1973. In the early 1980s, concerns over surpluses and a wish to constrain health care expenditure led to the decision to reduce medical school intake to 845 in 1984.
Switzerland	The Government does not restrict the number of students admitted to medical school.
United Kingdom	In 1966, the Royal Commission for Medical Education recommended an increase in medical school intake to 4,230 students and the creation of new medical schools. Subsequent reports by the Todd Committee, the Advisory Committee for Medical Manpower Planning and the Medical Workforce Standing Advisory Committee recommended increases in the number of physicians to meet population need for medical services. The *numerus clausus* was fixed at 5,091 students in 1998 and 5,600 students in 1999. The NHS Plan 2000 made recommendations for 1,000 more medical school places.
United States	The U.S. federal government does not impose any limitation on the number of medical school enrolments. However, due to the increasing prevalence of employer-based insurance, the Health Professions Education Assistance Act of 1963 led to the federal government investing in medical education.

Source: European Observatory on Health Care Systems and OECD human resources for health care project.

45. These different approaches may go some way towards explaining variation in physician density across countries. Figure 15 suggests that the level and growth rate of physician density over time has been higher in a selection of countries that have not controlled medical school intake centrally, or have controlled it only recently, than it has been in a selection of countries that have controlled intake for many years. Countries which fall into the first group include Austria, Belgium, Greece and Switzerland. Countries which fall into the second group include Canada, Japan, New Zealand and the United Kingdom.

Figure 12. Examining the impact of planning and market regimes on physician density in selected OECD countries, 1960-2000



Notes:

- Data for 1960 refer to 1961 for Canada and New Zealand. Data for 1970 refer to 1971 for Belgium and New Zealand.

- Data for the United Kingdom do not include physicians practising in the private sector.

- Data for Greece include some unemployed physicians.

Sources: OECD human resources for health care project and OECD Health database 2003.

46. In a few countries such as Austria, Belgium, Germany and Switzerland, the supply of physicians has been determined in a largely unregulated environment. Rising health expenditure at times of strong economic growth has made it possible to meet employment and income targets of physicians in these countries (Bloor and Maynard, 2003). However, a high and growing physician density together with fee-for-service payments to physicians may threaten the affordability of the health care system in times of stagnant economic growth. Additionally, the labour market for physicians may suffer from a number of market failures. For instance, licensing and regulatory requirements give physicians monopoly power. If entry to the market were controlled by medical trade unions, there might be under-supply of physicians. Conversely, the use of health insurance, which may affect price signals for patients, means that there may be potential excess demand for physician services. Moreover, asymmetry of information between physician and patient about diagnosis and required treatment creates the potential for physicians to induce some demand. The existence of such market failures has led to varying degrees of public intervention in

the supply of physician services in the majority of OECD countries, including workforce planning. However, in the case of workforce planning, it too may suffer from a number of failures (see Box 3).

Box 3. Limitations of workforce planning

Forecasting efforts have suffered from a lack of appropriate and reliable data on demand for and supply of physicians. A major uncertainty relates to the effect of future technological change on demand. Another uncertainty is about the future rate of growth of publicly-funded health expenditure, because it may be subject to changing political priorities. In addition, there may be uncertainties on the supply side due to unpredictable changes in migration flows, career change or retirement.

Workforce planning has generally been conducted in the context of uncertainty surrounding health care system design issues (Fooks *et al.*, 2002). For instance, planners have had to project the required number of primary care physicians in the absence of a consensus on the optimal model of organising primary care delivery (e.g. to what extent can nurse practitioners substitute for primary care physicians in the provision of primary care services?). Few exercises have had a focus beyond one specific health profession or considered the most cost-effective use of the skills of a range of providers. Ideally, workforce planning and supply policies should be integrated into health system reforms and the design of the health care system should take into account the need for physician services.

Tensions may arise from the different levels at which workforce planning takes place. In Australia, the Australian Medical Workforce Advisory Committee provides advice on physician supply policies at national level, but implementation is the prerogative of State/Territory Governments. This may lead to planning recommendations that do not take into account the budgetary implications and health service delivery decisions of State/Territory Governments (Gavel *et al.*, 2002). Differing and non-coordinated approaches to workforce planning by Canadian provinces and territorial jurisdictions have given rise to inter-provincial/territorial tensions.

Workforce planning is subject to political interference (Hall, 1998). Support for strategic planning may be limited in a rapidly evolving political environment characterised by changing priorities. Many workforce decisions, however, require longer-term planning given that, for instance, decisions to change medical school intake take time to have an effect on the actual physician workforce. Additionally, support may be short-lived in that planning may be initiated in response to an apparent workforce crisis, but is then discontinued as the crisis passes.

Workforce planning does not always take into account the viewpoints of the various stakeholders, undermining its accessibility and hindering its implementation (Goldsand and Frechette, 2001).

47. The cost-effectiveness of planning regimes appears to depend on whether countries attach more importance to avoiding either a shortage or a surplus of physicians. For instance, Sweden has generally had a policy of increasing health expenditure and physician employment over the past 40 years, with medical schools educating and training more physicians than are needed to replace flows out of the physician workforce. This is reflected in the relatively high annual growth rate of physician density from 1960 to 2000 (OECD, 2003a). However, growth in physician density has been constrained since the early 1980s by capping medical school intake in response to projections of physician surpluses and pressures to contain health expenditure. In the United Kingdom, there was a more constrained approach through several decades. This seems to have been determined by the desire to limit increases in health expenditure, concerns to avoid physician unemployment, and systematic under-estimation of future growth in demand for physicians (Medical Workforce Standing Advisory Committee, 1997).

48. The cost-effectiveness of policies designed to influence medical school intake depends on a number of additional factors, including the number and size of existing medical schools, the availability of a sufficient number of high-quality applicants and any public costs involved in funding additional places. Attrition during medical school also needs to be considered, with a number of studies reporting drop-out

rates in the United Kingdom of 8% to 14%.[7] Academic failure and personal factors (*e.g.* lack of motivation for study) appear to be the main reasons for students to drop out of medical school. Therefore, medical school admission procedures that test for previous academic performance and motivation for study may assist in reducing the economic and personal loss due to drop-out.

49. For instance, a recent review argued that the potential to increase medical school intake in the United States in the future is inhibited by the declining growth in the number of college-age individuals, the large size of existing medical schools which restricts further expansion, the costs and time involved in building new medical schools and the limited margin for further reducing attrition rates (Cooper, 2003). Even though these conditions do not necessarily apply to other OECD countries, it should be noted that using medical school intake to ensure an adequate supply of physicians depends on the time lag involved in putting students through medical school. This implies that, by the time that medical students graduate, demand conditions may have changed and demand may no longer match supply.

50. How can the effectiveness of physician workforce planning and implementation be improved to assure supply? Planning experiences in 18 countries reviewed by the World Health Organization and the Canadian experience suggest that workforce planning and implementation are more effective when it has strong leadership, is the result of a consultative process to solicit input, is integrated with health sector reform strategies, obtains financial support and high-level political endorsement (Egger *et al.*, 2000; Fooks *et al.*, 2002).

51. There is little evidence about when and to what extent market and planning approaches should be used or the appropriate criteria for guiding this choice. Hall (1998) argues that workforce planning should play a greater role if the public sector is the primary source of medical training, minimum quality standards are required, the public sector is the main employer of physicians, shortages/surpluses can substantially distort the provision of medical services and good data are available. In practice, supply policies are likely to be based on a combination of market and planning mechanisms.

5.1.2 Physician immigration

52. Although OECD countries generally favour long-term policies of national self-sufficiency to sustain their physician workforces, such policies usually co-exist with short-term or medium-term policies to attract practising physicians from abroad, on a temporary or permanent basis. Foreign-trained physicians can make a substantial contribution to the physician workforce: for example, they exceeded 20% of practising physicians in Australia, Canada, New Zealand, the United Kingdom (England) and the United States, in 2000. This is not surprising as in many cases it is likely to reflect patterns of migration affecting the population in these countries. Immigration increases the flexibility and reduces the cost of physician supply in the host country, although in some cases it may raise concerns about the quality and safety of health care services delivered by migrants. Immigration of physicians appears to be driven by a number of 'pull' factors such as opportunities for professional training, offers of higher wages, and better employment opportunities in the host country. 'Push' factors such as lack of employment opportunities and less attractive living and working conditions in the home country also play a role.

53. Immigration of doctors for training purposes can account for a substantial number of foreign-trained physicians in a country. Physicians from overseas who were attending postgraduate training in England made up 39.6% of all physicians from overseas in the National Health Service in 1995, 36.2% in

7. See General Medical Council (1992), Medical Workforce Standing Advisory Committee (1995), McManus (1996) and Parkhouse (1996). These figures are generally based on a definition of failure which includes all students re-taking an examination as well as those who are excluded from a course and, thus, should be treated with some caution.

2000 and 37.3% in 2001. International medical graduates who came to the United States to attend postgraduate training comprised 11.9% of all international medical graduates in 1980, 12.1% in 1990, 15.1% in 1995 and 13.1% in 2000. Similarly, training opportunities may account for a significant proportion of emigrating physicians. In 2001, the number of physicians who were registered in Switzerland, but were living abroad to attend postgraduate training and to practice, was 555 and 629, respectively.

54. Table 6 reports on the composition of the foreign(-trained) physician workforce in selected OECD countries. These data show that developing countries are just one, but not necessarily the main source of international recruitment of physicians by OECD countries: a large contribution to the foreign physician workforce of Australia, Austria, Belgium, Canada, Denmark, France, Germany, Ireland, Norway and Switzerland originated from another European country. Additionally, flows of physicians between OECD countries are not always uni-directional. For instance, in 2001, Irish physicians made up 15.2% of the foreign physician workforce in the United Kingdom. Conversely, 29.2% of foreign physicians in Ireland originated from the United Kingdom. This is sometimes referred to as a 'carousel movement' (Martineau *et al.*, 2002). Table 6 suggests also that, not surprisingly, physicians are more likely to move between countries speaking the same language. This is mirrored in migration flows between Australia, Canada, Ireland, the United Kingdom and the United States, between Germany, Austria and Switzerland, between France and Belgium, and between Denmark and Norway.

Table 4. Composition of foreign(-trained) physicians in selected OECD countries

Composition of foreign-trained physician workforce, Australia (1998)

United Kingdom	39.0%
Asia	28.0%
New Zealand	12%
Other countries	21%

Composition of foreign physician workforce, Austria (2001)

Germany	84.3%
Italy	7.3%

Composition of foreign physician workforce, Belgium (2001)

Netherlands	28.0%
Italy	17.7%
United Kingdom	16.5%
France	16.4%
Slovak Republic	12.4%
Africa	9.0%

Composition of foreign-trained physician workforce, Canada (1998)

United Kingdom	32%
South Africa	9.7%
India	9.6%
Eastern Europe	8.5%
Western Europe	8.2%

Composition of foreign physician workforce, Denmark (2001)

Norway	50.0%
Spain	24.7%
Germany	20.1%
United States	5.2%

Composition of foreign physician workforce, France (2000)

Europe	49.0%
North-Africa	33.0%
Sub-Saharan Africa	7.0%
Middle East	5.0%

Composition of foreign physician workforce, Germany (2000)

EU countries	27.5%
Other European countries	37%
Non-European countries	35.5%

Composition of foreign physician workforce, Ireland (2001)

United Kingdom	29.2%	France	3.2%
EU countries	13.6%	Italy	3.2%
Germany	6.0%	Canada	3.1%
Australia	4.2%	Central and Eastern Europe	3.1%
United States	3.4%	Others	31.2%

Composition of foreign physician workforce, Norway (2001)

Germany	32.7%	United Kingdom	6.2%
Sweden	19.9%	Iceland	6.1%
Denmark	15.8%	Finland	5.3%
Central and Eastern Europe	11.5%	Netherlands	2.4%

Composition of foreign physician workforce, Switzerland (2001)

Germany	59.7%	Italy	4.8%
Yugoslavia	13.1%	Albania	4.0%
Belgium	7.4%	Spain	3.2%
Sweden	4.9%	Argentina	2.9%

Composition of foreign physician workforce, United Kingdom (2001)

India	18.3%	South America	2.4%
Ireland	15.2%	Ukraine	1.7%
South Africa	7.0%	Poland	1.6%
Other Africa	7.0%	Australia	1.6%
South and South-Eastern Asia	7.0%	Belgium	1.6%
Northern Africa	5.3%	China	1.6%
Greece	4.7%	Denmark	1.5%
Pakistan	4.4%	France	1.5%
Germany	4.0%	Western Asia	1.5%
Algeria	3.6%	Italy	1.4%
Iraq	3.1%	Bosnia Herzegovina	1.4%
Spain	2.6%		

Composition of foreign-trained physician workforce, United States (2001)

India	19.5%
Pakistan	11.9%
Philippines	8.8%
Ex-U.S.S.R.	3.1%
Egypt	2.6%
Dominican Republic	2.5%
Syria	2.5%
United Kingdom	2.4%
Germany	2.3%
Mexico	1.8%

Sources: EUROSTAT Labour Force Survey, Department of Health and Aged Care (2001), Barer and Webber (1999), Bundesartzkammer (2002), Ministry of Health (2001), American Medical Association (2002).

5.1.2.1 International regulation governing physician migration

55. Immigration of physicians into OECD countries is governed by international agreements that impose general requirements that physicians have to fulfil in order to move and work abroad. These provisions refer to, amongst other things, nationality and citizenship requirements, national regulation governing the issuance of work permits, procedures and tests for examining asylum applications.

56. One of the agreements that covers the temporary immigration of physicians into an OECD country is the General Agreement on Trade in Services (GATS). This agreement seems to have had a very limited impact so far on physician migration. For instance, as a result of commitments under the GATS, temporary resident visas are available in Australia for suitably qualified physicians who satisfy labour market requirements (*i.e.* provide services to rural and remote communities). Within the GATS framework, Members are free to pursue domestic policies in areas such as technical standards, licensing and qualifications to ensure the safety and quality of health care provision. This implies that a commitment to allow entry of foreign physicians is still subject to those physicians meeting all domestic regulatory requirements to practice. GATS only states that such requirements must be transparent (*i.e.* made publicly available) and must be administered in a reasonable, objective and impartial manner.

57. International agreements stimulating the immigration of foreign physicians have been accompanied by requirements licensing medical practice in a country to ensure the quality and safety of services provided by migrants. However, licensing provisions may also serve to reduce competition in the host country and to raise the income of domestic physicians. This raises the issue of how foreign physicians are mobilised within the health care system of the host country and the conditions under which they have to work. In some cases, this has lead to a situation where physicians whose qualifications have not been recognised by the host country still practice medicine even though their status is unclear. In other cases, specialists work as generalists or generalists work as nurses. Once registered, physicians may also face discriminatory employment practices. A survey showed that 9% of foreign physicians claim discriminatory practices in finding employment in the United Kingdom (Jinks *et al.*, 2000).

58. Licensing requirements usually consist of holding the required qualifications (*i.e.* medical degree) from a recognised medical school and of having completed a period of training. However, the license is only valid within the jurisdiction of the granting body. This is usually an entire country, but in some cases a specific province or state, as in Canada and the United States. This implies that physicians who wish to practice in another country have to go through the process of having their qualifications recognised by the relevant body in the host country. Simplified procedures exist for physicians trained in specific countries. For instance, from 1st May 2002, graduates of British medical schools recognised by the General Medical Council are eligible for permanent registration in New Zealand without having to sit the New Zealand Medical Council registration examination. There is also a Mutual Recognition Agreement between Australia and New Zealand, providing for automatic recognition of primary medical qualifications conferred by all medical schools within these jurisdictions.

59. The EU has adopted a range of measures to simplify licensing provisions. In addition to the Treaty of Rome, which gives every EU citizen a personal right to move and reside freely within the territory of the Member States. Member States have adopted sectoral directives that facilitate the movement of physicians within the EU, through the harmonisation and recognition of qualifications and diplomas. The so-called “doctors’ directives” (75/362/EEC and 75/363/EEC) entitle any EU physician who has completed basic training in a Member State and who holds a recognised qualification to be automatically registered in any other Member State. However, the process of recognition of qualifications foresees that Member States are entitled to require an adaptation period and an aptitude test. The impact of the EU doctors’ directives on the movement of physicians appears to have been limited, so far, due to: the

general absence of physician surpluses in Member States; failure to implement the directives; and failure to recognise the equivalence of qualifications in some Member States.

5.1.2.2 Policies designed to stimulate physician immigration

60. Given the limited success of international agreements regulating physician migration, OECD countries have adopted various policies designed to stimulate the immigration of foreign physicians. These have included: launching international recruitment campaigns; easing immigration requirements; and setting up special arrangements that foster shared learning between health care systems. Germany has undertaken international recruitment campaigns involving advertising in the medical press and has participated in job fairs. Norway has offered immigrant physicians language courses. Canada, has made changes to its Immigration Act Regulation to favour entry of physicians. Australia and the United States have relaxed immigration requirements for foreign physicians willing to practice in rural areas. Ireland has taken steps to fast track working visas for foreign physicians. In the United Kingdom, employment in the National Health Service (NHS) has been promoted abroad and an International Fellowship Programme was launched in 2002 to attract experienced specialists from abroad to selected posts in the NHS for periods of one to two years.

61. Whereas immigration of physicians can reduce the cost of acquiring trained physicians in the host country, it can provoke shortages in the home country from which the physician emigrates. Moreover, it represents a transfer of human capital from the home to the host country, at least if the migration is permanent. That raises uncomfortable questions about international equity when the population of the host country is comparatively rich and healthy and the population of the home country is comparatively poor and sick. For this reason, a number of OECD countries have adopted so-called 'ethical recruitment' policies designed to restrict immigration from developing countries (see Box 4).

Box 4. Ethical recruitment policies restricting immigration from developing countries

In May 2003, Commonwealth countries adopted an International Code of Practice for the International Recruitment of Health Workers. The code of practice is intended to discourage physician recruitment from countries which are themselves experiencing shortages. Moreover, it sets out a number of principles that should guide international recruitment. Transparency of recruitment would normally involve an agreement between host and home countries. Fairness implies that host countries should not seek to recruit physicians who have an outstanding obligation to the home country and should inform migrants of their rights and job requirements. Finally, international recruitment of physicians should be based on mutuality of benefits to host and home countries.

Given that the temporary outflow of physicians from developing countries may be beneficial in terms of upgrading of skills (and remittances), a second type of policy has focused on offering grants to foreign students to enter medical school, while at the same time making it impossible for foreign graduates to obtain a work permit for a certain amount of time (*e.g.* five years). This, in effect, forces them to return to their home country after they graduate. Some countries have created regulations or have entered into bilateral agreements restricting the stay of foreign physicians. For instance, the United States has created a 'cultural exchange visa' that can be issued to foreign health care workers only for a limited duration of work. After the permitted stay, the visitor is required to return home for a two-year period before he is entitled to apply for re-admittance.

In the case of permanent migration, home countries incur a loss in terms of costs of education and training, and the value of the health care services that could have been provided if the physician had not left the country. Therefore, a third approach has consisted of financially compensating the home country for losses that it has incurred as a result of physician migration. The reimbursement of educational costs is in fact proposed by the International Code of Practice for the International Recruitment of Health Workers adopted by Commonwealth countries. However, such policies are inhibited by the difficulty of evaluating the country's net loss (subtracting direct and indirect costs created by the departure of the physicians from migration gains, such as an increase in scientific knowledge and remittances). In addition, the potential return of the physician might represent a problem in setting the level of compensation. Such difficulties may explain the fact that previous schemes attempting to tax host countries, and even migrants, have not proven to be successful (Lowell, 2001).

5.2 Reducing flows of physicians out of the workforce

62. Flows of physicians out of the workforce consist of physicians emigrating to another country, physicians moving to another job and physicians taking up retirement.

63. In countries such as Canada, New Zealand and Sweden, concerns have been expressed that physicians are emigrating at an earlier stage of their career and are staying away for a longer period of time. However, it appears that few countries have implemented policies to reduce the level of emigration of physicians and little is known about the effectiveness of existing programmes. New Zealand has undertaken efforts to maintain contact with expatriate physicians, encouraging their overseas development while offering some incentives for their return. In Ontario, Canada, a repatriation programme was introduced for Canadians who had undertaken a postgraduate training programme in the United States.

5.2.1 Physician turnover

64. In the United Kingdom, evidence from the Medical Careers Research Group suggests that five years after qualifying, 5-9% of physicians were no longer in medical practice (excluding emigration). A study reviewing the British literature on primary care physician retention suggested that retention policies need to focus on improving working-time flexibility, creating more flexible career development opportunities and offering a wider range of options for continued education and training (see Box 5). It was argued that such flexibility would enable physicians to balance work and family responsibilities, increase retention of female physicians, facilitate the return of physicians who have left the workforce and delay retirement plans of older physicians. In the Netherlands, retention policies have targeted working conditions in general practice.

Box 5. Improving retention of primary care physicians in the United Kingdom

Increasing job flexibility was identified by a review of the British literature as the main instrument to improve retention of primary care physicians. This can take the form of three main types of policies: improving working-time flexibility, creating more flexible career development opportunities and offering a wider range of options for continued education and training.

A first area in which there is scope for stimulating flexibility relates to working time. New work practices are being implemented that move away from traditional systems of permanent, full-time employment towards less rigid working arrangements (*e.g.* job share, part-time work, short-term work, planned career breaks, greater flexibility to take maternity leave and holidays). These policies aim to allow for better time management and more controllable working hours, which will enable physicians to more easily balance work and family responsibilities and pursue other medical and personal interests. More flexible work patterns may increase retention of female physicians and delay retirement plans of older physicians.

Another way of increasing job flexibility is to develop career development prospects by expanding the choice of long-term career paths. This can be achieved by including a clear ladder of opportunities, by offering opportunities to leave the job temporarily with a possibility of guaranteed return at a later stage, by creating posts that combine clinical tasks with research, teaching or management, and by making it possible to rotate jobs with other health disciplines.

A third area of flexibility is concerned with continued education and training opportunities. Continued medical education offers opportunities to enrich the professional experience and to further develop the skills of physicians. This is particularly so in rural areas where there is a need to provide opportunities to maintain skills. It is also crucial to provide re-entry training to facilitate the return of those physicians who have left the workforce.

Source: Young and Leese (1999).

5.2.2 Physician retirement

65. The societal trend towards early and partial retirement (OECD, 2001) is reducing the stock of physicians, with physicians retiring at an earlier age and older physicians trimming down the number of working hours. A survey of a sample of physicians in the United States aged 50 years or over suggested that 38% would retire within the next one to three years and 28% would reduce their activity levels (Hawkins, 2000). A national survey of primary care physicians in England found that the proportion of primary care physicians who were under 65 years of age and intending to quit direct patient care in the next five years rose from 14% in 1998 to 22% in 2001 (Sibbald *et al.*, 2003). To compensate for early and partial retirement of physicians, policies have tended to centre on decreasing flows of physicians out of the workforce by reducing the rate at which physicians take early retirement, by delaying retirement or by attracting retired physicians back into the workforce.

66. One policy approach to retain physicians in the workforce up to their potential retirement date is to offer more flexible working patterns that reduce workload. In the United Kingdom, a 'flexible retirement initiative' was launched in July 2000 that enabled staff nearing retirement to move into part-time work in ways that don't reduce pension benefits or move into a new role in a way which, even though staff may be in a lower paid post, preserves the pension entitlement from the higher level post.

67. Other policies aim to defer the retirement of physicians for a certain amount of time. Plans have been proposed in Australia to entice physicians who plan to retire early to stay in the workforce longer. Mexico is considering proposals to increase the retirement age in public health institutions by postponing access to retirement social benefits. In Sweden, proposals are being discussed whether physicians should be encouraged to work beyond the current retirement age of 65 years. The United Kingdom 'flexible retirement initiative' encourages staff to stay on beyond the normal retirement age for a limited number of months by offering additional pension contributions.

68. A third type of policy is designed to attract retired physicians back into the workforce. In the United Kingdom, health staff can retire and start receiving a pension whilst carrying on with part-time work. Such policies not only need to focus on getting physicians to return to practice, but also keep potential returners informed and interested while they are away. Therefore, all National Health Service Trusts have established 'keep-in-touch' schemes. This means that retiring staff can put their name forward to be called on to work for the National Health Service on a casual basis, as and when they choose.

6 POLICIES AFFECTING THE GEOGRAPHICAL DISTRIBUTION OF PRACTISING PHYSICIANS

69. Most, if not all, OECD countries suffer from an unequal geographical distribution of their physician workforce. Typically, rural areas, deprived urban areas and areas with significant indigenous populations experience shortages of physicians, while affluent, metropolitan areas face surpluses. Physicians generally prefer to practice in affluent, metropolitan areas due to their greater range of amenities. This may include greater employment opportunities, more attractive career pathways, better access to education services for children and superior cultural activities. This section reviews policies that countries have implemented to attract and retain physicians in rural or deprived urban areas.

70. As a side-effect of an increasing overall number of practising physicians, rural and deprived urban areas have been able to attract more physicians. However, the so-called 'spreading out', 'overflow' or 'trickle down' effect, in which the increasing number of physicians in affluent, metropolitan areas diffuse to rural and deprived urban areas when urban areas reach a saturation point in terms of competition, was not sufficient to eliminate geographic shortages in the United Kingdom and the United States (Politzer *et al.*, 1999; Gravelle and Sutton, 2001). A study of the US physician workforce found that overall physician density increased from 2,140 physicians per 1 million population in 1991 to 2,390 in 2001 (United States General Accounting Office, 2003). Non-metropolitan areas experienced a growth in physician density of 10% as compared with 23% in metropolitan areas.

71. Therefore, some countries have designed and implemented specific policies that aim to ensure an adequate supply of physicians in rural and deprived urban areas. Countries have generally put in place not one, but a number of concurrent supply-side policies designed to influence the geographical distribution of physicians. These include educational policies, education-related funding policies, regulatory/ administrative policies and financial policies. The nature of such policies differs between OECD countries. Financial policies seem to dominate in Canada, regulatory/administrative policies are the predominant type of policy instrument in Norway, whilst New Zealand and the United Kingdom use a combination of both. Education-related funding policies and educational policies are relatively under-developed in most countries, except for Australia and Japan.

6.1 Educational policies

72. Educational initiatives designed to attract physicians to rural and deprived urban areas have been based on two characteristics that affect the choice of practice location: the background of the medical student and the content of the medical curriculum.

73. One type of educational policy has attempted to encourage students with specific demographic characteristics to take up medical education and training. This reflects research evidence suggesting that medical students who come from a rural background or from a deprived urban area are more likely to locate in those areas after graduation (Grumbach and Seifer, 1995; Rolfe *et al.*, 1995; Easterbrook *et al.*, 1999). In Australia, selective admission policies of medical schools which take the form of affirmative entry programmes and scholarships for students with a rural background have been shown to be effective in attracting physicians to rural areas (Department of Health and Aged Care, 2001).

74. Other educational policies have attempted to attract physicians to rural and deprived urban areas by increasing the relevance of the medical education and training curriculum to the practice of medicine in such areas. This type of policy is founded on evidence that educational programmes that place more emphasis on the rural component of the curriculum or the health status of deprived urban areas and educational programmes that expose students to practice in rural and deprived urban areas are more likely to attract students to such areas when they graduate (Council on Graduate Medical Education, 1998; Rabinowitz *et al.*, 1999). Such considerations have affected educational policies in Australia, where medical students have at least eight weeks of rural experience in their curriculum. By 2000, 600 scholarships were offered to undergraduate and graduate medical students to work and study in rural areas. A number of Canadian jurisdictions propose rural training for undergraduate medical students and have a rural practice residency or speciality. In Greece, all physicians have to undertake two years of mandatory practice in rural areas after they obtain their medical degree. The General Practitioner Vocational Training Scheme in the United Kingdom exposes medical students to rural practice and lets them acquire special knowledge and skills useful in rural practice.

75. Some educational initiatives have drawn simultaneously on a number of strategies to attract physicians to rural and deprived urban areas. Since the 1970s, Norway and Sweden have located medical

schools in rural areas with the aim of bringing more students with a specific background into medical school and of providing more training in rural health to students. The Physician Shortage Area Program in the United States consists of a selective admission policy (students of rural origin with interest to practice family medicine in rural areas), financial aid, a family medicine programme and rural practice sites. Although it is difficult to assess the contribution of each component, such multi-faceted programmes have been successful in recruiting physicians to rural areas as well as retaining them (Rabinowitz, 1993; Inoue *et al.*, 1997).

6.2 Education-related funding policies

76. Education-related funding policies relate to those arrangements that have funded the education of physicians with a condition on practice location.

77. One of the most prominent programmes has been scholarships / loans to medical students in return for a commitment to practice in rural and deprived urban areas for a number of years. For instance, students who practice in North Norway have been partially exempted from the obligation to reimburse their loan. Japanese medical students can be exempted from repaying the loan if they work in a public hospital or clinic in a rural area for a certain period of time. In the United States, a number of programmes provide scholarships and loan repayment schemes to medical students in exchange for serving in specific areas. The evidence on the success of these return-of-service schemes is mixed. The National Health Service Corps in the United States has been successful in placing physicians in underserved areas after completion of training through scholarship provision or loan repayment programmes. However, return-of-service schemes have been less successful in Canada and Mexico given that a substantial number of students have been able to buy their way out of their service commitment and few students opt to remain in rural and deprived urban areas after their required period of service has expired (Anderson and Rosenberg, 1990; Nigenda, 1997).

78. Additionally, some countries have adopted policies funding departments of rural health in medical schools in order to expand the rural health component of the medical curriculum. In 1992, the Royal Australian College of General Practitioners founded a Faculty of Rural Medicine to develop and administer a four-year graduate diploma in rural general practice. Most territories created Rural Health Training Units. In 1996, the Australian Commonwealth Government funded the establishment of six university-linked Departments of Rural Health and an Advanced Specialist Training Posts Programme designed to create specialist training posts in major rural centres.

79. Other policies have funded continuing medical education in an effort to retain physicians in rural areas. Such policies were introduced in Australia as part of the National Rural Health Strategy. Similarly, a number of Canadian jurisdictions have provided continuing medical education grants to enable attendance at conferences, short courses and education programmes.

6.3 Regulatory policies

80. Regulatory policies include federal/central government, provincial/state or local government regulations and guidelines that impose conditions on the choice of practice location. By, for example, restricting entry to practice in over-doctored areas, the physician workforce can, in principle, be distributed more evenly improving the standard of care provided to rural and deprived urban communities. However, such entry controls usually entail that physicians are displaced into areas with a lower physician density. The resulting increase in the number of physicians is likely to reduce the average income of local physicians if they are paid by fee-for-service or capitation. This may act as a disincentive unless financial countermeasures are adopted.

81. One type of regulatory policy has made the issuance of billing numbers to physicians conditional on their practice location. For instance, Australian physicians who have not completed postgraduate training in a specialist field and foreign-trained physicians are only able to provide services which attract a Medicare rebate if they work in rural and remote areas for a number of years. In Austria, physicians are not able to get a contract with a regional health insurance fund if the threshold number of physicians is reached in a region. In Canada, while policies of limiting billing numbers have been attempted, they did not survive legal challenges.

82. Many countries do not allow physicians to practice in areas that are considered to be over-served. It is not possible for a German physician to obtain a license in an area where the number of physicians exceeds 110% of the number of physicians that this area needs as determined by planning. In the United Kingdom, until April 2002, the Medical Practices Committee considered all primary care physician applications for setting up practice in relation to the number of primary care physicians already practising in that area allowing for factors such as rurality and deprivation. The committee would refuse an application if the number of primary care physicians already practising in an area was considered adequate, but support applications for posts in areas which were considered to be under-served. Such a policy seems to have provided a reasonably equitable distribution of primary care physician health care services in the United Kingdom (Maynard and Walker, 1997).

83. Policies that make immigration conditional on practice location have been used to increase supply in specific areas. In Australia, foreign-trained primary care physicians receive assistance in gaining permanent residency and Fellowship of the Royal Australian College of General Practitioners in return for a commitment to work in a rural area for five years. J-1 visa waivers, through which international medical graduates can gain permanent residency status in the United States, are available for those foreign physicians who work in federally designated physician shortage areas.

84. New technologies such as telemedicine have the potential to increase the supply of physicians in rural areas by facilitating professional communication and collaboration over large distances, by supporting continuing medical education and by increasing remote access by patients to medical services. A variety of experimental and practical applications of telemedicine exist and are still being refined in countries such as Canada, Japan, New Zealand and the United States. However, little evidence has been assembled yet on the relative costs and benefits of these applications. Moreover, a number of policy issues relating to: protection of privacy; service standards; health professional licensure; reimbursement for services; and liability-insurance coverage, still need to be addressed.

6.4 Financial policies

85. A variety of financial incentives have been used by OECD countries to attract and retain physicians in rural and deprived urban areas by increasing their income.

86. Some countries have introduced programmes of regionally differentiated remuneration, in which payments to physicians for patients from rural or deprived areas have been increased relative to those for patients from other areas. In Canada, physicians in the Québec jurisdiction receive 115% of the Medicare basic fee if they practice in remote and isolated regions, 100% in intermediate regions, and 70% in all other areas for the first three years of practice. Bolduc *et al.* (1996) reported evidence that this policy increased the number of physicians practising in rural and deprived urban areas. A similar programme was introduced in the United Kingdom in which physicians receive higher capitation payments for patients from deprived areas. Until 1999, fee-for-service primary care physicians in recognised rural areas in New Zealand could claim a rural bonus payment of 10% of regular fees and of 25% of regular fees for home visits.

87. A range of other policies have been introduced that provide financial support to attract and retain physicians in rural areas. Policies that provide financial support for the initial set-up costs of practices in a rural area have been implemented in Austria, Canada and the United Kingdom. Canada and the United Kingdom also provide special travel allowances for rural practices. Grants supporting relocation to rural and remote areas have been introduced in Australia, Canada and the United Kingdom. Financial support of locum programmes has been made available in Australia, Canada and the United States. Canada and the United Kingdom have targeted payments at supporting on-call duty in rural areas. These programmes seem to have had some success in increasing the supply of physicians in rural areas (Bolduc *et al.*, 1996; Holub and Williams, 1996). However, it is unclear whether such policies are more or less costly than educational or regulatory approaches.

6.5 Other policies

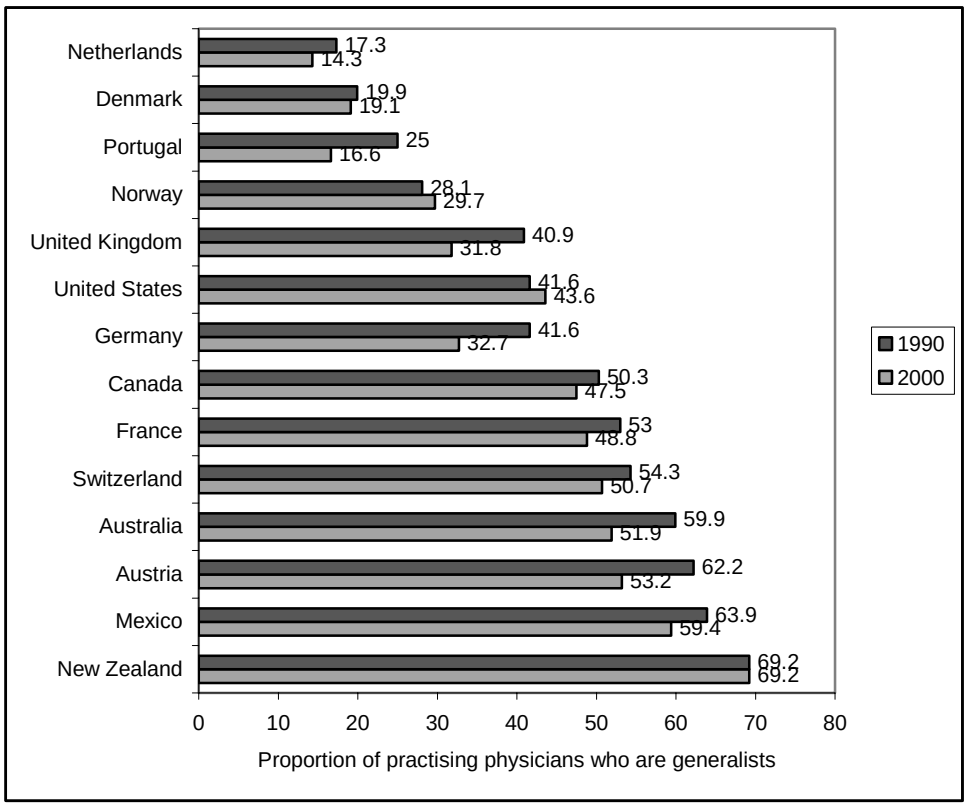
88. There is some evidence that the effectiveness of the policies mentioned above that focus on the physician can be further enhanced by supporting occupational opportunities for spouse/partner, education of children and accommodation.[8] To address the issue of the geographic distribution of physicians fully, however, such policies may need to be accompanied by initiatives that enhance the economic and social viability of local communities in rural and deprived urban areas.

7 POLICIES AFFECTING THE SPECIALITY COMPOSITION OF THE PHYSICIAN WORKFORCE

89. Differences are observed in the speciality composition of the physician workforce. In particular, there is substantial variation in the proportion of practising physicians who are generalists across countries (see Figure 17). In 2000, generalist physicians in Denmark, the Netherlands, Portugal and the Slovak Republic made up less than 20% of practising physicians, whereas this proportion exceeded 50% in Australia, Austria, Mexico, New Zealand and Switzerland. Meanwhile, the proportion of physicians who are generalists has been declining in most of the OECD countries for which data were available. Presumably, this is a consequence of the growing knowledge base and complexity of medicine.

8. See, for instance, Rolfe *et al.* (1995), Kamien (1998) and Rabinowitz *et al.* (1999).

Figure 13. Proportion of practising physicians who are generalists, 1990-2000



Notes:

- Data for Germany for 1990 refer to 1991.

- Generalist physicians are the sum of general practitioners and other general physicians. General practitioners (also denoted by the terms 'primary care physicians' and 'family doctors') are general physicians who provide care to undifferentiated patients at the point of first contact and take continuing responsibility for providing the patient's care. Data exclude paediatricians and other physicians providing care to specific groups of patients. Other general physicians refer to other general physicians who are not general practitioners, either because they provide care to a differentiated group of patients or because they do not take continuous responsibility for providing the patient's care. An example is generalist physicians working in hospitals.

- Data for Greece refer to the proportion of general practitioners in the physician workforce.

Sources: Data are taken from the Commonwealth Department of Health and Ageing, and the Australian Institute of Health and Welfare (Australia); Statistics Austria (Austria); Canadian Institute for Health and Information, Association of Canadian Medical Colleges, and Canadian Medical Association (Canada); DREES (France); National Statistical Service (Greece); Korean Medical Association (Korea); National System of Statistical Health and Secretariat of Health Bulletin of Statistical Information of Resources and Services (Mexico); New Zealand Health Information Service (New Zealand); National Board of Health and Welfare (Sweden); Foederatio Medicorum Helveticorum (Switzerland); American Medical Association (United States).

90. Many OECD countries still see value in a 'primary-care-led' health care system. If OECD countries wish to increase the number of primary care physicians in the workforce, they can take two main avenues to promote the choice of a primary care speciality by medical students. A first avenue is through the medical training environment, with medical schools emphasising primary care training in the medical degree curriculum, augmenting exposure to primary care experiences during residency, or appointing highly-rated primary care physicians to academic positions to act as role models. There is evidence that residency experiences and role models affect the choice of speciality.[9] A survey of American residents

9. See, for instance, Henderson *et al.* (1996), Pitts (1997) and Griffith *et al.* (2000).

showed that exposure to specific types of clinical practice was rated the most important factor affecting the choice between surgical and primary care residency (Woodworth *et al.*, 2001).

91. A second type of policy designed to attract medical students to primary care specialities takes into account economic factors such as the level of indebtedness in health care systems where students finance their medical studies, remuneration levels and working conditions. U.S. studies have shown that students who are more concerned about the level of debt are more likely to choose non-primary care specialities (Malloy and Stroup-Benham, 2001; Woodworth *et al.*, 2001). Therefore, policies offering scholarships may attract more medical students to primary care specialities. There is also evidence that medical students increasingly choose those specialities that offer a more regular work schedule, more leisure time and higher earnings (McKay, 1990; Thornton and Esposto, 2003). Indeed, these studies suggest that work schedule and leisure time are more important than remuneration level in determining choice of speciality, presumably reflecting a desire among physicians to balance professional life and social commitments.

8 POLICIES AFFECTING PRODUCTIVITY OF PRACTISING PHYSICIANS

92. The supply of physician services is determined by the number of practising physicians in combination with their activity levels and productivity. Productivity may be affected by remuneration methods and levels. OECD countries have adopted a range of methods for remunerating physicians. In addition, many countries have changed the method by which they pay physicians with a view to finding a better balance between stimulation of productivity and cost-containment. The following section contains a review of payment methods and reforms to payment methods across countries. It explores the impact of single payment methods on the quantity and quality of medical services delivered by physicians and examines the effect of mixed or blended payment methods that have been developed in an attempt to counteract some of the adverse incentives of single payment methods.

8.1 Physician payment methods in OECD countries

93. Fee-for-service, capitation and salary are, respectively, the main single methods of remunerating physicians. Under fee-for-service, physicians receive a fee for each item or unit of care that they provide. Under capitation, they receive a periodic lump sum per patient to cover all the health care that patients require (at the physicians' discretion). Salaried physicians receive a lump-sum payment, usually on a monthly basis, for a specified number of hours of work.

94. There is considerable variation in how OECD countries pay their physicians and often variations within countries across the private and public sectors (see Table 7). Some countries that finance most health care through taxation, employ primary care physicians directly and pay them a salary (such as in Greece, Portugal, Spain and Sweden), whereas in others, primary care physicians are self-employed and are paid by a mix of capitation, salary and fee-for-service (such as in Australia, Denmark, New Zealand, Norway and the United Kingdom). Office-based physicians in insurance-based health care systems tend to be independent contractors who are paid mainly by fee-for-service, as in Austria, Belgium, France, Germany, Japan, Korea, Switzerland and the United States (Medicare). Specialists who work in hospitals are generally paid by salary in the public sector, and by fee-for-service in the private sector.

Table 5. Physician payment methods

Countries	Primary care physicians[a]	Ambulatory care specialists[a]	Physicians in public hospital[a]	Physicians in private hospital[a]
Australia	75-80% by blended payment (mainly fee-for-service, 10% of income derived from capitation and target payments for immunisation).	Fee-for-service, with no limit on use of services and annual expenditure.	Blended payment (salary for treating public patients and fee-for-service for treating private patients in public hospital).	Fee-for-service and salary.
Austria	60% by fee-for-service and 40% by fee-for-service and capitation.	90% by fee-for-service, 10% by capitation and fee-for-service.	90% by salary and 10% by fee-for-service.	90% by fee-for-service and 10% by salary.
Belgium	Fee-for-service.	Fee-for-service.	Fee-for-service.	Fee-for-service.
Canada	Mainly by fee-for-service, some alternative payment methods.	Mainly by fee-for-service.		Majority by fee-for-service.
Denmark	Blended payment (63% of income from fee-for-service, 28% from capitation).	Not relevant.	Salary.	
England	86% by blended payment (capitation, practice allowance, fee-for-service for selected services, target payments for immunisation), 14% by fee-for-service for private work.	100% by salary for public patients, fee-for-service for private patients.	100% by salary for public patients, fee-for-service for private patients.	100% by fee-for-service.
France	Fee-for-service.	Fee-for-service.	Salary.	Fee-for-service.
Germany	100% by fee-for-service.	100% by fee-for-service.	Salary. Fee-for-service for private patients.	100% by salary.
Greece	Salary in public sector, fee-for-service in private sector.	Salary in public sector, fee-for-service in private sector.	Mainly by salary.	Blended payment (fee-for-service and salary).
Ireland	Fee-for-service if higher patient income, capitation if lower patient income.		Salary. Fee-for-service for treating privately insured patients in public hospital.	
Japan	Fee-for-service.	Salary for hospital outpatient services, fee-for-service for independent outpatient clinics.	Salary.	
Korea	100% by fee-for-service	100% by fee-for-service.	100% by salary.	100% by salary.
Mexico	Salary in public sector, fee-for-service in private sector.	Salary in public sector, fee-for-service in private sector.	Salary.	Fee-for-service.
Netherlands	Fee-for-service if higher patient income, capitation if lower patient income.			Blended payment (salary and fee-for-service).
New Zealand	78% by fee-for-service and 22% by capitation.	Majority by salary.	Majority by salary.	Majority by fee-for-service, minority by salary.
Norway	Blended payment (70% of income from fee-for-service and 30% from capitation).	Salary and fee-for-service in public sector, fee-for-service in private sector.	Salary.	
Portugal	Salary in public sector, fee-for-service in private sector.		Salary.	Fee-for-service.
Slovak Republic	Blended payment (capitation and target payments for preventive care).	100% by fee-for-service.	100% by salary.	Fee-for-service.
Spain	Blended payment (85% of income from salary and 15% from capitation).	100% by salary.	100% by salary.	Mainly by fee-for-service.
Sweden	Salary.	Salary.	100% by salary.	100% by salary.
Switzerland	96% by fee-for-service and 4% by salary.	90% by fee-for-service, 10% by salary.	Fee-for-service, salary and blended payment (fee-for-service and salary).	Fee-for-service, salary and blended payment (fee-for-service and salary).
United States	Blended payment.	Blended payment.	Blended payment.	Blended payment.

Sources: [a] OECD human resources for health care project, [b] OECD (2001).

8.2 Policies that use single payment methods to influence quantity of care

95. What is the evidence on the effects on physician productivity of the different single payment methods? Salary payment has been shown to reduce the quantity of medical services as compared with fee-for-service, with capitation having a similar, but more subdued, effect. In their systematic review of the literature, Gosden *et al.* (1999) concluded that salary payment is associated with fewer tests and referrals than both fee-for-service and capitation, and fewer procedures per patient, lower throughput of patients per physician, longer consultations and more preventive care when compared with fee-for-service alone. Studies from Canada, Germany, Norway and the United States have found that salaried primary care physicians had fewer visits per patient and a lower number of, but longer consultations than physicians paid on a fee-for-service basis.[10] There was scant evidence about the effect of salary payment on health outcomes. Two U.S. studies, which are now dated, showed that specialist physicians who were paid on a salary basis ordered fewer tests and had a lower rate of surgery than fee-for-service specialist physicians (Wilson and Longhmire, 1978; Epstein *et al.*, 1986). An English study comparing primary care physicians paid by capitation and fee-for-service with salaried primary care physicians found no differences in the quality of care they provided (Gosden *et al.*, 2003).

96. In Norway, the effect of salary payment on the quantity of medical services delivered by primary care physicians was diluted by clinical factors. Kristiansen and Holtedahl (1993) showed that fee-for-service increased the volume of home visits compared to salary payment, but that the effect of the payment method was less important than the influence of patient characteristics. The precedence of clinical over financial concerns was confirmed by Grytten and Sorensen (2001), who found no differences in the number of examinations between salaried physicians and physicians paid on a fee-for-service basis. These authors argued that the primacy of clinical concerns is mainly due to strong peer control in Norway.

97. Denmark has paid primary care physicians both on a fee-for-service basis and on a capitation basis. In an experiment conducted in Copenhagen, primary care physicians moved from fully capitated payment to mixed payment based on capitation and fee-for-service, resulting in an increase of services that provided extra fees such as consultations and diagnostic and curative services, and a decrease in rates of referral and prescriptions (Krasnick *et al.*, 1990).

98. There is little evidence about the impact of fee-for-service versus capitated reimbursement for specialist physicians in OECD countries. One U.S. study documenting a shift from fee-for-service to capitated payment to gynaecologists found that capitation reduced the number of elective procedures, whereas similar practice patterns were maintained for severe conditions (Ransom *et al.*, 1996).

99. In countries that have introduced a capitation system, concerns have been raised that physicians may find it financially rewarding to select people with fewer health needs or actively discourage high-risk people (this practice is known in the literature as 'cream-skimming'). However, there is no conclusive evidence about its occurrence. Although the healthier mix of enrollees of U.S. managed care organisations (Congressional Budget Office, 1994) may be the result of the selection of favourable risks, this may also reflect patient preferences. There is little more than anecdotal evidence of its occurrence in the United Kingdom. There have been reports of an increase in the proportion of patients removed from fundholders' registers at the request of the primary care physician (Glennerster *et al.*, 1994). However, it is not clear whether this reflects cream-skimming or is instead related to additional workload and pressures of fundholding.

10. See, for instance, Hillman *et al.* (1989), Maheux *et al.* (1990), Burkowitz *et al.* (1995), Johnson and Holtedahl (1997), Sorensen and Grytten (2003).

8.3 Policies that use blended payment methods to influence quantity of care

100. In order to avoid some of the adverse incentives of simple physician payment methods, while retaining their desirable features described above, some countries have introduced mixed or blended payment methods for physicians.

8.3.1 Blended payment methods

101. Blended payment methods that combine a fixed component through either capitation or salary and a variable component through fee-for-service for specific interventions may produce a more desirable mix of incentives than any single payment method. Such methods have been used to promote the provision of medical services that are deemed to be cost-effective or to counteract the impact of a certain payment method on physician activity levels.

102. A basic capitation or salary remuneration can be mixed with a set of specific target payments to primary care physicians to promote the provision of particularly cost-effective services, such as vaccinations, immunisations and early detection of cancer services. Target allowances for preventive care have been paid to primary care physicians in Australia, Portugal and the United Kingdom. However, if targets are set unreasonably high, target payments may become a disincentive to increasing physician activity. Moreover, once the highest target is reached, there is no additional financial reward to cover the remaining population. Target payments may also incite physicians to game the system by prioritising those dimensions of output that attract a financial reward at the expense of other areas of performance that are not subject to financial incentives.

103. Some countries have combined fee-for-service payments with lump sums to influence physician practice patterns in a specific way. In France, primary care physicians who sign up to be 'referring physicians' (gatekeepers) receive an annual lump sum for general patient monitoring in addition to fee-for-service payment. Fee-for-service payments have also been attached to costly procedures, such as specific medications and medical equipment, to offset disincentives not to provide these services under capitation payment. This practice is used in some health maintenance organisations in the United States to reduce the risk that capitated physicians would bear if such services did not attract a specific payment.

8.3.2 Financial incentives at individual and collective levels of the physician workforce

104. Fee-for-service payments paid by third payers who simply reimburse fees charged by physicians, combined with no controls on the services actually delivered, can lead to high prices, unnecessary service utilisation and rising expenditures (Barnum *et al.*, 1995).

105. Therefore, some countries have adopted approaches to offset the incentive under fee-for-service reimbursement for individual physicians to increase volume with collective incentives to contain health expenditure. In order to contain costs, Germany has experimented with regulated fee or point schedules with limits on the total value of payments. Global budgets are negotiated between associations of sickness funds and primary care physicians, with physicians being reimbursed on the basis of points per service. At the end of the reimbursement period, the value of a point is determined according to the volume of services to keep total expenditures within the global budget. However, this system can create an incentive for individual physicians to maintain their income by expanding even more the volume of services, which in turn further reduces the monetary conversion factors. To counteract such behaviour, regional physician associations monitor the volume of services provided by primary care physicians and financially penalise those physicians with higher-than-average service volumes that cannot be attributed to case mix. Moreover, a lump-sum component is added to the remuneration package of primary care physicians to avoid an excessive expansion of physician activity.

106. Some OECD countries have either frozen or reduced fee levels in an attempt to contain health expenditure. Japan, for instance, has not only controlled fee increases generally, but also has selectively reduced fees for procedures that show 'inappropriate' volume expansion. It has also restrained the prices of some surgical and high-tech hospital treatments, relative to primary care-based services, thus providing an incentive to substitute primary care for hospital-based care. The adoption of 'resource-based relative value scales' in Canada, Korea and the United States has produced changes in relative fees, increasing relative remuneration for services, such as consultations with primary care physicians, and reducing it for procedure-based services, such as surgery and diagnostic testing.

107. An issue that has not received much attention in the literature is the institutional mechanisms through which governments of OECD countries have attempted to influence fee levels with a view to controlling physician income and containing health expenditure. Box 6 explores the process of collective bargaining in countries that pay physicians by fee-for-service under systems of national health insurance in terms of the stakeholders involved in this process, how the negotiation process takes place, and the power balance between stakeholders.

Box 6. Process and outcomes of collective bargaining of fee levels

Collective bargaining over fee levels is often undertaken by government and representative associations of health insurance funds on one side of the negotiating table and by physicians' associations on the other. Consumers and patients are generally not formally represented at such negotiations. The strong role of representative associations underscores the importance of collective bargaining, rather than individual contracting, in the health care systems of Belgium, Canada, France, Germany, Korea, the Netherlands and Switzerland. This contrasts sharply with the United States where labour and antitrust laws prevent physicians from forming collective bargaining units to negotiate with managed care organisations.[11]

In Belgium, Canada, France, Germany, Japan, Korea, the Netherlands and Switzerland, the Government has generally operated as a key actor in the decision-making network, even though its involvement in the negotiating process has often remained indirect. Governments have circumscribed the scope of the negotiations and have imposed unilateral agreements, by implementing binding fee schedules in Belgium, France, Korea and Switzerland, and by introducing fee adjustments and expenditure caps in Canada, Germany and Japan. Health insurance funds have acted more or less as the natural allies of Government as they share the goal of cost control.

Although medical associations participate in the bargaining process on behalf of physicians, their members have not always endorsed the agreements that have been struck. In the Netherlands, the National Association of Medical Specialists lost part of its membership because many specialists became dissatisfied about the representation of their interests by the Association in the negotiations. Two new medical associations were created and some medical societies asked to be recognised as representative organisations. Some physicians also went to court to challenge the legitimacy of a collective agreement that had been accepted by their medical association (Lieverdink and Maarse, 1995).

Collective bargaining over fee levels has often provided an effective institutional arrangement to reconcile the conflicting goals of government and health insurers on the one hand and medical associations on the other hand. The regular occurrence of negotiating rounds has encouraged the stakeholders to sustain workable relations. On the other hand, reaching a consensus has sometimes required a lengthy negotiating process and conflict has sometimes been displaced from the negotiating table to the health care arena (Lieverdink and Maarse, 1995 and Marchand, 2003).

108. Policies that have attempted to curb health expenditure by controlling fee levels can be eroded if physicians increase the quantity of medical services that they deliver (as in ambulatory care in Australia

11. The National Labor Relations Act states that self-employed physicians or employees who act as managers or supervisors in the course of providing clinical care cannot become unionised. Moreover, any sort of co-ordinated activity by physicians for economic purposes (without resorting to formal unionisation) would likely run foul of federal antitrust law (Choudhry and Brennan, 2001).

and Japan) or switch the mix of services towards those that attract higher fees (such as in provision of more on-site diagnostic services, as in France and Germany) (OECD, 2003b). Such behaviour may or may not be desirable depending on whether the extra services are cost-effective or not. In Belgium and Korea, fee reductions have led to some substitution of services with high margins for those with low margins (Kwon, 2003; Marchand, 2003). Recent U.S. studies suggest that the response of specialist physicians to reductions in fee levels is complex, depending on a mix of factors including: the margins that can be earned on different medical services; the relative market shares for medical services; the share of physician income generated by specific medical services; the ability of physicians to induce demand; the response of demand to physician inducement; and time costs.[12] Fee controls may also produce shifts towards areas where fee levels are not limited. In Greece, where social insurance reimbursement rates for physician visits are set at relatively low levels, physicians tend to shift patients to private practice (OECD, 2003b).

8.4 Policies that use physician payment method to influence the quality of care

109. Against a background of growing evidence on shortcomings in quality of care (Chassin *et al.*, 1998; Newhouse, 2002), OECD countries are showing increasing interest in paying physicians by results, *i.e.* rewarding physicians for the quality of care both in terms of health improvements and responsiveness to their patients.

110. Payment methods that reward primary care physicians for quality are being implemented in both Australia and the United Kingdom. Since 1994, Australia has implemented incentives that originally rewarded physicians who spend more time with patients and that are now linked to performance on a range of quality indicators. In the United Kingdom, from April 2004, about a fifth of the income of primary care physicians will be based on 146 indicators of quality, such as: keeping a register of patients with hypertension; recording smoking status for such patients; and recording whether such patients who smoke have been offered smoking cessation advice at least once. Another approach has been to give salaried physicians merit pay for good performance. In the United Kingdom, senior specialist physicians are eligible for a distinction award if they meet objectives such as the adoption of high standards of clinical care; adoption of patient-centred care; commitment to service targets; participation in clinical governance; and use of evidence-based practice (Department of Health, 2002).

111. However, there is not much evidence, so far, about the results of attempts to reward physicians for the quality of the care they deliver and there remain many difficulties in designing an objective performance appraisal system (Ullrich, 1997). The worries about systems of payment which try to reward quality include whether they may distort practice between areas where quality can be measured and areas where it cannot; whether they may encourage selection of less risky patients; and whether they may distort record keeping. Such schemes require careful monitoring and regulation.

12. See, for instance, Tai-Seale *et al.* (1998), Yip (1998) and Gruber *et al.* (1999).

9 CONCLUDING REMARKS

112. OECD countries have very different densities of physicians per million population, reflecting variations in morbidity and mortality, variations in levels of health expenditure and differences in the design of health systems. There are signs that higher levels of staffing are found in countries which have not tried to restrict entry to medical schools, at least until recently, whereas lower levels of staffing are found in those countries that have planned and controlled entry into physician training for many years.

113. Whereas controlling numbers of physicians can assist in securing cost-containment, there is some evidence to suggest that it will also constrain outcomes and responsiveness. Much will depend on what is happening to productivity. In the case of general practitioners, there is some evidence that across European countries there is an inverse association between GP density and patient consultations per GP – which suggests, if only weakly, that constraining GP numbers, up to a certain point, may not bring about a proportional reduction in patient access. However, little can be said about the implications for GP productivity because, for the time being, there is a lack of measures of quality of care.

114. In the face of the growing demand for the services of physicians and some tightening of the supply, due partly to ageing of the workforce, there is growing concern about shortages of physicians in some OECD countries.

115. In the medium to long term, countries which operate a *numerus clausus* should allow medical school intake to rise, particularly if national self-sufficiency is a long term goal. In future, because of the ageing of many workforces, this may involve attracting an increasing share of shrinking cohorts of young people into physician training. Applications to medical schools greatly exceed places available in many countries, which implies that there should be little problem in attracting an increasing share into the profession – although improvements to relative pay and conditions of service may be necessary to staff the less popular specialties and regions.

116. International migration of doctors can increase the flexibility of the relevant labour markets, especially in the short run, by speeding the process of reaching equilibrium. However, it raises difficult questions about international equity when there are persistent net flows of staff from poorer countries with low and, sometimes, declining health status to richer countries with high and rising health status.

117. Policies that reduce flows out of the workforce by improving retention of physicians seem to be relatively under-developed. OECD countries need to continue to increase job flexibility to retain younger physicians and to incite older physicians to defer retirement.

118. To attract and retain physicians in rural and deprived urban areas, OECD countries can introduce educational policies that promote the admission of students who come from a rural background to medical school, regulatory policies that impose restrictions on practice location, and financial policies that provide financial support for practising in rural and deprived urban areas. Mixed success has been reported with policies that provide scholarships to medical students in return for a commitment to practice in an area for a minimum period of time. The effectiveness of policy interventions that focus on the physician, can be enhanced by measures that support occupational opportunities for spouse/partner, education of children and accommodation.

119. There are trends towards increasing specialisation in medicine at a moment when some OECD countries are promoting a primary care-led health care system. In order to encourage the choice of a primary care speciality by students, countries can place more emphasis on primary care training, on exposure to primary care experiences and on introduction of primary care role models. Meanwhile, there is evidence to suggest that it is the more favourable conditions of service, such as regular work schedules and more leisure time, that attract students to primary care specialities.

120. The services delivered by physicians depend on their productivity as well as on their numbers. There has been some investigation of the effect of methods of remuneration on physician productivity. A review of the relevant literature confirms what might be expected: that fee-for-service methods of payment raise activity per physician compared with salaried or capitated methods of payment. However, it is not clear what impact, if any, higher activity levels per physician have on the quality of care they deliver. There has been much interest in, and experimentation with, physician payment methods which reward quality of care directly in a number of countries. However, such developments continue to be constrained by technical difficulties in measuring and monitoring quality of care across much of the range of services provided by doctors.

121. This study suggests that many questions remain to be answered about the best way to match the supply to the demand for physician services. Although a range of policy instruments for influencing supply have been identified, there is a lack of systematic evidence about the relative effectiveness and cost-effectiveness of using these different instruments. Similarly, much remains to be discovered about the best way to plan for, or regulate, entry to the medical profession, given the tendency for training programmes to experience cycles of boom and bust, arising mainly from the lags inherent in completing long professional training courses. It would be useful to shed more light on the scale and determinants of international migration of doctors and on the benefits and costs of such migration for the host and home countries, respectively. Turning to productivity, further work is needed to understand what combination of policies is best suited to motivating doctors. In particular, lessons need to be distilled from the new experiments, now underway in some countries, to reward physicians (when it is feasible to do so) for the quality of the services they provide.

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