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**“CREATING A MEDICAL WORKFORCE THAT MEETS
POPULATION DEMAND FOR MEDICAL SERVICES”**

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Abstract

Accessible health care requires a well-trained and well-motivated medical workforce which is able to cater for the population's need for safe, high-quality medical services. Concerns have been voiced in OECD member countries that the current and future medical workforce may not be able to deliver the medical services that patients need. Such concerns originate from projections of increasing demand, due to ageing populations and technological advances, and falling supply, reflecting an ageing medical workforce and a societal trend towards reduced number of hours worked. In addition to this, the composition of the medical workforce is characterised by a move away from primary care specialities and its distribution is concentrated in affluent, metropolitan areas to the detriment of rural and deprived urban areas.

This paper identifies, compares and evaluates policy levers that decision makers can use to influence the national stock of physicians, the geographical distribution and composition of the medical workforce and, thus, the ability of the medical workforce to meet population needs for medical services.

OECD member countries have put in place a variety of training, recruitment and retention policies to sustain the national stock of physicians. Training policies have included the expansion of medical school intake and regulation governing the choice of medical speciality. Recruitment policies have focused on stimulating the immigration of foreign physicians. However, migration can only offer a temporary solution to physician shortages. Instead, countries need to prioritise training, education and retention policies to address their future needs. Increasing job flexibility has been used as the main strategy to reduce the number of physicians that change career and to incite physicians to defer retirement. A variety of factors influence the effectiveness of these policies, including the time lags involved in increasing medical school intake and training places, the elasticity of the supply of foreign physicians and the productivity of the additions to the medical workforce.

Many OECD member countries have also put in place not one, but a number of concurrent policies to influence the geographical distribution. These policies have included educational policies, education-related funding policies, regulatory/administrative policies and financial policies. Unfortunately, there is little evaluation of these policies, but some success has been reported with educational and financial policies. Policies that increased the national stock of physicians have not improved the geographical distribution of physicians within a country.

If OECD member countries wish to increase the number of primary care physicians in the medical workforce, they can put in place policies that emphasise primary care training in the medical degree curriculum, augment exposure to primary care experiences during residency, or appoint highly-rated primary care physicians to academic positions to act as role models. Alternatively, OECD member countries can attract students to primary care specialities by increasing the amount of annual vacation time and stability of work schedules associated with these specialities.

INTRODUCTION

There are increasing concerns in OECD member countries that the current or future medical workforce may not be able to deliver the medical services that patients require. These concerns originate from projections of falling supply of and increasing demand for physician services. The supply of physicians in OECD member countries is projected to fall due to restrictions on medical school intake, a societal trend towards reduced hours of work, an ageing medical workforce and trends towards early and partial retirement. At the same time, demand for physicians is expected to increase due to economic expansion, population growth, an ageing population, technological advances, and higher patient expectations. In addition to this, the composition of the medical workforce is characterised by a move away from primary care specialities and its distribution is concentrated in affluent, metropolitan areas to the detriment of rural and deprived urban areas.

The aim of the OECD study on the medical workforce is to identify, compare and evaluate policy levers that decision makers can use to influence the national stock of physicians, the geographical distribution and composition of the medical workforce and, thus, the ability of the medical workforce to meet population needs for medical services.

METHODOLOGY

As part of this project, a network of national correspondents nominated by participating OECD member countries was established. This network fed into the project in the various phases of its development and execution. In particular, the network of national correspondents assisted the Secretariat in gathering the quantitative and qualitative information required for the project.

Data on issues relating to the medical workforce were collected using two approaches. First, a desk review of material relevant to medical workforce issues in OECD member countries was carried out. This covered the academic literature (articles published in scholarly journals and monographs), the grey literature (working papers and unpublished material) and official documents produced by OECD member governments. Second, the Secretariat relied on national correspondents to complete one quantitative questionnaire and one qualitative questionnaire. Questionnaires were designed by the Secretariat and approved by national correspondents during an expert meeting dedicated to the data collection exercise in April 2001. Questionnaires were sent to the 22 participating OECD member countries during Autumn 2002, with 19 countries returning at least one of the two questionnaires.

Issues related to the medical workforce are part of the work programme of other international organisations. In particular, co-ordination was established with the World Health Organization and the World Bank in order to share information and avoid duplication of efforts. The Secretariat also received input from other bodies, such as the BIAC and TUAC advisory committees at the OECD, and academic networks active in this field.

Policies designed to influence the stock of practising physicians

OECD member countries have put in place a variety of training, recruitment and retention policies to sustain the national stock of practising physicians by increasing the flow of physicians into the medical workforce and reducing any outflows. This has taken the form of policies affecting medical school intake, immigration and emigration, retention and retirement of physicians.

Physician education and training

Some OECD member countries have implemented policies governing medical school intake to increase or decrease the level of enrolment in response to changing demands for physician services. Table 1 summarises how selected OECD member countries have planned medical school intake with a view of influencing their stock of physicians. Most OECD member countries have operated some sort of *numerus clausus* over time, although some planning regimes have been operated more tightly or have been implemented later in some countries than in others.

The evolution of medical school intake over time in selected OECD member countries is presented in Figure 1. This shows that enrolment into medical school has been adapted to match supply of with demand for physician services, with medical school intake being reduced in Belgium in response to projected surpluses and intake being expanded in the United Kingdom in the context of projected physician shortages.

In Canada, Mexico and Sweden, medical school admissions over time have mirrored changing demand projections. A similar trend has been documented for Australia, France and the United States. Following the introduction of health insurance in the 1960s, there has been an expansion of the supply of physicians by increasing medical school enrolment and by setting up new medical schools. From the 1980s onwards, medical school intake was curtailed in response to projected surpluses of physicians and moves to constrain health care expenditure. The expansion of medical school intake in the 1960s and subsequent reduction in the 1980s is likely to contribute to an ageing medical workforce in these countries, with a higher number of retiring physicians expected to be replaced by a smaller pool of young physicians. In the late 1990s, however, trends of economic expansion, population growth, an ageing population, reduction in the number of hours worked, increasing female participation and retirements in the medical workforce have led to concerns about future shortages. This has led countries such as Australia, Canada and France to increase or plan to increase medical school intake in recent years (see Table 1).

If more physicians are needed in the future, will increasing medical school intake be an effective instrument in matching supply of with demand for physician services? The level of medical school intake depends on the size of cohorts of potential applicants, the number and size of medical schools, and attrition during medical school. A review of the US experience predicts 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 member countries, it should be noted that, in any case, changing medical school intake to match supply of with demand for physician services depends on the lead time involved in medical education and training.

Physician migration

Although OECD member countries generally favour long-term policies of national self-sufficiency to sustain their medical workforce, such policies usually co-exist with short-term or medium-term policies to attract physicians from abroad. Immigration of physicians is considered to be important in maintaining an adequate stock of physicians in countries such as Australia, Canada, England, Germany, New Zealand, Norway, Sweden, Switzerland and the United States. Conversely, Canada, New Zealand and Sweden perceived that physician emigration negatively affected the stock of physicians in their country. As a result, OECD member countries have adopted three types of policies designed to stimulate the immigration of foreign physicians, whilst minimising its negative impact on the home country. These have consisted of launching international recruitment campaigns, easing immigration requirements and setting

up special arrangements that foster shared learning between health care systems. International recruitment campaigns have involved advertisements in the medical press and participation in job fairs in Germany and language courses in Norway.

Other OECD member countries have eased general immigration requirements for physicians. In Canada, changes to the Immigration Act Regulation favour the immigration of physicians and increased efforts are being made to support licensure of foreign-trained physicians. Australia and the United States have made the relaxation of immigration requirements conditional on foreign physicians practising in rural areas. In Ireland, the option exists to fast track working visa for foreign physicians.

In addition to the two previous types of policies stimulating physician immigration, the United Kingdom has put in place arrangements that foster international co-operation and promote the National Health Service abroad (see Box 1). An International Fellowship Programme was launched in 2002 to attract experienced specialists from abroad to selected posts in the National Health Service for periods of one to two years.

However, concerns about ethical recruitment have led some OECD member countries to discourage recruitment from developing countries. In May 2003, Commonwealth countries approved an International Code of Practice guiding international recruitment of physicians based on the principles of transparency, fairness and mutuality of benefits. In addition to this, individual countries have adopted country-specific guidelines governing international recruitment of physicians. For instance, in Ireland, the Department of Health and Children has produced guidelines for employers on best practice recruitment from abroad.

Given that the temporary outflow of physicians from developing countries may be beneficial in terms of investment in skills, 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 graduate¹. Some OECD member 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.

A third approach has consisted of financially compensating the developing country for losses 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. Compensation policies have in fact been proposed by the International Code of Practice approved by Commonwealth countries. However, the problem with such policies is the difficulty in 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).

Few OECD member countries have implemented policies to reduce the level of emigration of physicians. Out of the countries that responded to the policy questionnaire, only New Zealand had

¹ Another rationale for restricting the length of stay by the foreign physician in the host country is that migrants experience their maximum intake of new knowledge within the first placement year. After that period, opportunities for transferring knowledge decline (Lowell and Findlay, 2001).

undertaken efforts to maintain contact with expatriate physicians, encouraging their overseas development while offering some incentives for their return.

Box 1 The British experience with policies stimulating immigration of physicians

Strategies adopted by the British Government to attract physicians from abroad include global and targeted recruitment campaigns and special arrangements that foster international co-operation and shared learning between health care systems.

The Department of Health launched a global recruitment campaign in September 2001 (Department of Health, 2002). An International Recruitment team was created within the Department of Health to identify consultant and general practitioner vacancies that could be appropriately filled by recruiting physicians from outside the United Kingdom. A database was created which holds information of sufficient detail and robustness to allow National Health Service Trusts to be confident that the applicant would be suitable to interview.

The global recruitment campaign was complemented by specific recruitment programmes targeting countries with physician surpluses. This process usually entailed the establishment of an inter-governmental agreement or an agreement with the appropriate professional bodies in the country. A government-to-government agreement was concluded between the United Kingdom and Spain in November 2000 to promote closer working between the two countries. Although this agreement initially applied to the migration of nurses, it has now been extended to cover the recruitment of associate specialists and general practitioners. As part of the recruitment package, each Spanish recruit is offered individual language programmes to help develop their communication skills. They also take part in an induction programme covering information about their chosen speciality, the National Health Service, the roles and responsibilities of their profession, as well as general information about living in the United Kingdom and British culture. Additionally, the International Recruitment team is working with other countries with perceived surpluses such as Switzerland, Austria, Italy, Greece, Bulgaria and India.

The third way is via special arrangements that foster international co-operation and promote the National Health Service abroad by shared learning between health care systems. An International Fellowship Programme was launched in 2002 to attract experienced specialists from abroad to selected posts in the National Health Service for periods of one to two years. It targets those specialities that need to grow in order to fulfil the National Health Service plan and those specialities with perceived shortages such as cardio-thoracic surgery, histopathology, radiology, nuclear medicine and psychiatry.

Physician retention

Policies to increase the stock of physicians through improved retention are under-developed in OECD member countries. Policies in Canada focused on retaining physicians in rural areas. In the United Kingdom, policies aimed to retain older physicians in the workforce by offering flexible working patterns, higher pay and flexible retirement options. In the Netherlands, retention policies have targeted working conditions in general practice.

A study reviewing the United Kingdom literature on general practitioner 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 2). It was argued that such flexibility would enable physicians to balance work and social 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.

Box 2 Improving retention of general practitioners in the United Kingdom

Increasing job flexibility was identified by a review of the British literature as the main instrument to improve retention of general practitioners. 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 expand the choice of long-term career paths. Policy needs to recognise that physicians wish to have better career development prospects. 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).

Physician retirement

Few OECD countries have implemented or planned specific policies to compensate for early and partial retirements. Existing retirement policies centre on increasing the stock of physicians by reducing the rate at which physicians take early retirement, by delaying retirement or by attracting retired physicians back into the workforce.

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.

Other policies aim to defer the retirement of physicians for a certain amount of time. Mexico is considering proposals to increase the retirement age in public health institutions by postponing 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.

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 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.

Policies designed to influence the geographical distribution of the medical workforce

The stock of physicians also varies across geographical areas within a country given that physicians are more likely to settle and practice in affluent, metropolitan areas than in rural and deprived urban areas. Policies affecting the flows in and out of the medical workforce at national level do not seem to be able to address the issue of the geographical distribution of physicians within a country. This is because policies designed to increase the national supply of physicians do not generally change the geographical distribution, even though all areas will attract more physicians. 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, is generally very muted (Gravelle and Sutton, 2001). Therefore, most OECD member countries have designed and implemented specific policies that aim to match supply of physicians with population needs in specific areas.

OECD member countries have generally in place not one, but a number of concurrent policies designed to influence the geographical distribution of the medical workforce. This includes educational policies, education-related funding policies, regulatory/administrative policies and financial policies. However, differences are noted in terms of the type of policies that OECD member countries use. Financial policies seem to dominate the policy landscape 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.

Educational policies

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.

One type of educational policies 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).

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 policies is founded on evidence that educational programmes that place more emphasis on the rural component of the curriculum or the health 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). This is reflected in 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.

Some educational initiatives have drawn simultaneously on a number of strategies to attract physicians to rural or 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).

Education-related funding policies

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

One of the most prominent programmes has been scholarships / loans to medical students in return for a commitment to practice in rural or 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. These return-of-service schemes have generally not proven to be successful because a substantial number of students have been able to buy their way out of their service commitment and few students remain in rural or deprived urban areas after their required period of service has transpired (Anderson and Rosenberg, 1990; Nigenda, 1997).

Additionally, OECD member 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.

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.

Regulatory/administrative policies

Regulatory/administrative policies relate to federal/central Government, provincial/state or local government regulations and guidelines that impose conditions on the choice of practice location. By regulating entry into geographical areas, it is argued that the medical workforce will be distributed more evenly and that the standard of care provided to regional communities will improve. 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 average income of local physicians. This, in turn, may abate the overall supply of physicians in the long-term.

One type of regulatory/administrative policies 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 New Zealand, a billing number policy was adopted by one regional authority in 1997 that granted unrestricted rights to bill to new graduates after they practised in designated rural areas for three years. In Canada, however, policies of billing numbers have been considered, but did not survive legal challenges.

Some OECD member countries have placed restrictions on practice location (e.g. Canada and New Zealand) or have set up a body that regulates practice location (e.g. United Kingdom). Until April 2002, the Medical Practices Committee considered all general practitioner applications for setting up practice in a specific area in England in function of the number of general practitioners already practising in that area. The committee would refuse an application if the number of general practitioners already practising in the area was considered to be adequate as determined by the patient list size, rurality and deprivation. According to a study by Maynard and Walker (1997), such a 'negative direction' policy seems to have provided a reasonably equitable distribution of general practitioner health care services. From April 2002, Primary Care Trusts in collaboration with Workforce Development Confederations are responsible for primary care workforce development in England based on a target number of general practitioners per 100,000 weighted population.

Policies that make immigration conditional on practice location have been used to increase supply in specific areas. In Australia, foreign-trained general practitioners 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. Visa waivers, through which international medical graduates can gain permanent residency status in the United States, are asked for those foreign physicians who work in designated areas.

Rather than increasing the stock of physicians, some regulatory/administrative policies have sought to encourage the substitution of registered nurses and nurse practitioners for general practitioners². OECD member countries such as Australia, Canada and the United States have introduced programmes designed to expand the role of nurses and train them to provide some of services traditionally provided by physicians. For instance, Rural Health Clinics in the United States are predominantly staffed by physician assistants, nurse practitioners and midwives who work under the supervision of a physician. However, such policies may just transfer pressure to the supply of nurses and raise the issue of the geographical distribution of the nursing workforce (which will be addressed in future work). Moreover, there is insufficient evidence to date to determine the feasibility and cost-effectiveness of the substitution of highly-trained nurses for physicians in rural areas.

New technologies such as telemedicine and telehealth have the potential to increase the supply of physicians in rural areas by facilitating professional communication and collaboration, support continuing medical education and increase access to other medical care services. The current state of telemedicine is that a variety of experimental and practical applications exist and are still being refined in countries such as Canada, Japan, New Zealand and the United States. However, little is known about the relative costs and benefits of these technologies. Moreover, a number of policy issues relating to protection of privacy, service standards, health professional licensure and reimbursement, liability insurance coverage still need to be addressed.

Financial policies

Financial policies refer to different methods of paying physicians and financial incentives. A variety of financial incentives have been used by OECD member countries to attract and retain physicians in rural or deprived urban areas by increasing income.

Some OECD member countries have introduced programmes of regionally differentiated remuneration, in which payments to physicians for patients from rural or deprived areas were 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 general practitioners 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.

It has been argued that existing financial arrangements do not provide adequate compensation for the added workload and additional demands associated with practising in rural or deprived urban areas (Worrall et al., 1997). Therefore, a second type of financial policies has tried to introduce more flexibility in the remuneration of physicians as a way of increasing supply in rural or deprived urban areas. Salaried schemes have been introduced to improve recruitment to rural areas in Canada and New Zealand and to promote recruitment to deprived urban areas in the United Kingdom. Additionally, Canada, New Zealand and the United Kingdom have subsidised the income or guaranteed a minimum income to physicians who practice in areas where the sparse population base does not make it economically viable for a physician to

² Although this is a general policy designed to address concerns over physician stock and the cost-effective delivery of medical services, it has also been specifically targeted at addressing the geographical distribution of the medical workforce.

practice. However, the effect of such alternate payment mechanisms on the geographical distribution of physicians has not yet been evaluated.

A range of other policies have been introduced by OECD member countries that provide financial support to attract and retain physicians in rural areas. Policies that provide financial support for establishing practice 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 practice. 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).

Policies designed to influence the composition of the medical workforce

If OECD member countries wish to increase the number of primary care physicians in the medical workforce, they can take two main avenues to promote the choice of a primary care speciality by students who are able to take any speciality. There is evidence that residency experiences and role models affect the choice of speciality³. A survey of American residents 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). Therefore, 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.

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 level 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 Esposito, 2003). These studies suggest that work schedule and leisure time are more important than remuneration level, possibly reflecting a desire of physicians to balance professional life and social commitments. This implies that policies that increase relative remuneration for primary care specialities may be less effective than policies that increase the amount of annual vacation time and stability of work schedules.

Conclusions

In order to produce a medical workforce that is able to assure the required supply of physician services, OECD member countries have employed a range of policy tools to influence the stock of practising physicians, the geographical distribution and composition of the medical workforce.

OECD member countries have put in place a variety of training, recruitment and retention policies to sustain their national stock of practising physicians. These policies have tended to focus predominantly on increasing the flow into the medical workforce, whereas policies that reduce flows out of

³ See, for instance, Henderson et al. (1996), Pitts (1997) and Griffith et al. (2000).

the workforce by improving retention of physicians seem to be relatively under-developed. Training policies have included the expansion of medical school intake and regulation governing the choice of medical speciality. Recruitment policies have focused on stimulating the immigration of foreign physicians. Increasing job flexibility has been used as the main strategy to reduce the number of physicians that change career and to incite physicians to defer retirement. A variety of factors influence the effectiveness of these policies, including the time lags involved in increasing medical school intake and training places, the elasticity of the supply of foreign physicians and the productivity of the additions to the medical workforce.

In the context of creating a stock of physicians that is able to provide the medical services that patients need, we would argue that physician migration flows can only offer a temporary solution and act as a short-term buffer. Attracting foreign physicians from other OECD member countries is likely to displace shortages from one country to another. Recruiting physicians from non-OECD member countries may have a negative impact on the development of these countries. Instead, OECD member countries need to prioritise training, education and retention policies to address their future needs.

Many OECD member countries have also put in place a number of concurrent policies to influence the geographical distribution of their medical workforce. Policies that increased the national stock of physicians have not been proven successful, but some success has been reported with educational and financial policies in improving the geographical distribution of the medical workforce. This suggests that OECD countries need to adopt a comprehensive and multi-faceted approach to attract and retain physicians in rural and deprived urban areas that encompasses interventions prior to medical school, during medical school and postgraduate training, and throughout medical practice.

If OECD member countries wish to increase the number of primary care physicians in the medical workforce, they can put in place policies that emphasise primary care training in the medical degree curriculum, augment exposure to primary care experiences during residency, or appoint highly-rated primary care physicians to academic positions to act as role models. Alternatively, OECD member countries can attract students to primary care specialities by increasing the amount of annual vacation time and stability of work schedules associated with these specialities.

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Table 1 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).
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 led 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 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.
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.

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.
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.

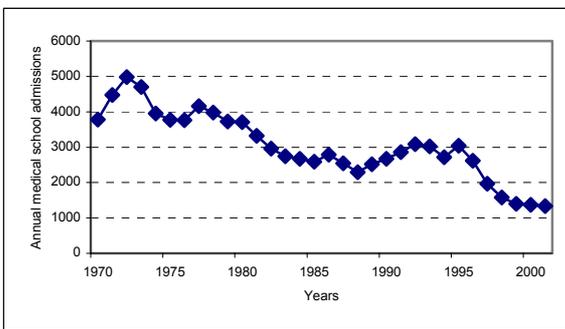
Table 1 (cont.) Planning of medical school intake over time

Country	Medical school intake
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. Additional 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. 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 medical workforce and a shortage of general practitioners by the year 2000.

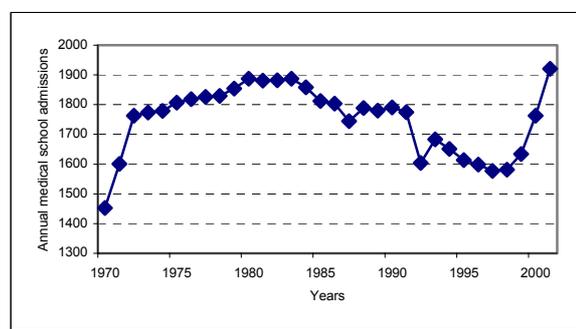
Source: European Observatory on Health Care Systems and OECD HRHC project.

Figure 1 Medical school admissions over time in selected OECD member countries

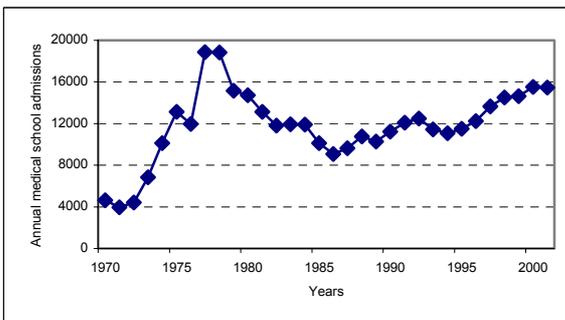
Belgium



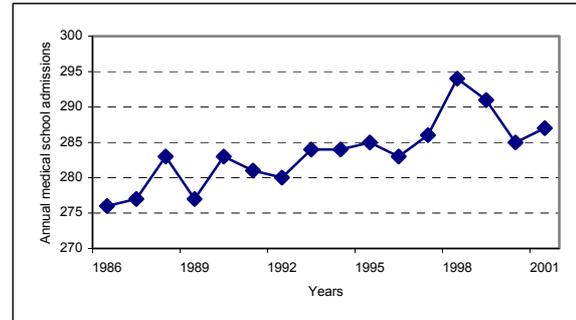
Canada



Mexico

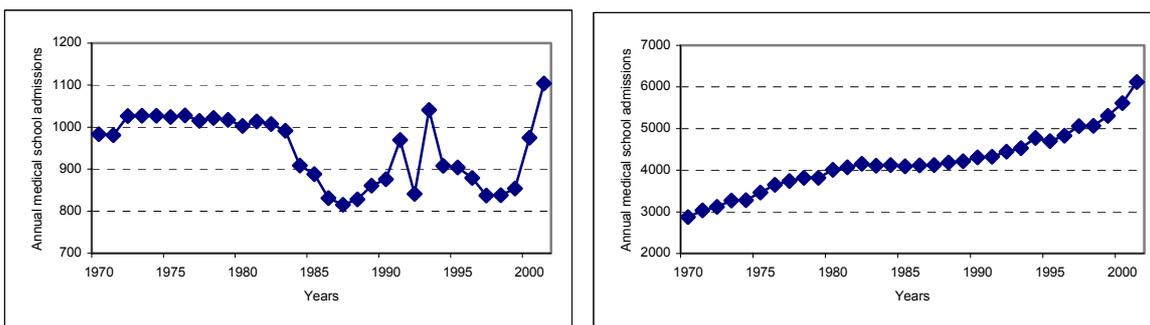


New Zealand



Sweden

United Kingdom



Source: OECD HRHC project.

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