

Chapter 3

Better Use and Mobilisation of Workforce Skills

Chapter 3 reviews other health workforce policies aiming at an efficient use of the available health resources. A better use and mobilisation of available health workforce skills is possible through a portfolio of policies, including: improving retention, enhancing integration, developing more efficient skill mix, and improving productivity.

OECD countries can adopt a variety of policies to make better use of the existing health workforce to address future shortages. Better retention, enhanced integration, and a more efficient skill-mix within the existing workforce can contribute to improving their availability, competence, responsiveness and productivity. Furthermore a country will more easily retain its existing health professionals when its health workforce is managed well and thus will have less need for recourse to additional immigration, *ceteris paribus*. This is why a combination of all policies is desirable for successfully addressing health workforce shortages. Policies to make better use of the existing workforce will be reviewed in this chapter.

1. Retaining the health workforce

Each year, many health workers move to a different position or leave, temporarily or permanently, the profession, the region or the country.¹ To reduce turnover,² policy makers and health-system managers have often increased remuneration and employed financial incentives. However, the impact of these practices is mixed. Alternative policies focusing on improving occupational status and the working environment are gaining increasing attention and appear to produce good results.

1.1. Retention difficulties compromise the ability to deliver high-quality care

While a certain degree of turnover is to be expected in an efficient medical and nursing labour market, excessive turnover might compromise the delivery of high quality health services and signal retention difficulties. It generates recruitment and temporary replacement costs, and it is associated with initial low productivity among the new hires. For example, O'Brien-Pallas and colleagues estimated the direct and indirect cost of turnover per nurse at USD 16 600 in Australia, USD 10 100 in Canada, USD 10 200 in New Zealand and at USD 33 000 in the United States (O'Brien-Pallas *et al.*, 2006). Retention difficulties can also negatively affect a number of important treatment and follow-up activities (Minore *et al.*, 2005).

Different types of turnover will call for a diversity of policy approaches to managing retention. "Controlled" turnover refers to retirement, redundancy and redeployment. "Voluntary" turnover is used to refer to employees leaving in response to dissatisfaction in the current job or to seek career progression and better pay in a new job. Unfortunately, there is no systematic information on the relative importance of each type of turnover. Some evidence suggests that retirement and voluntary termination are among the main drivers of turnover, although there is substantial variation across countries and professions (O'Brien-Pallas *et al.*, 2007; Cash and Ulmann, 2008).

1.2. Is it all about better pay?

There are a number of financial levers to assist managers and policy makers to retain medical and nursing staff, including pay rises, bonuses, loan-repayment policies, targeted financial aid for staff families, and training scholarships.

Improved remuneration is among the most common approaches to reduce nurse turnover. Yet, financial incentives have produced mixed results here. While between 58% and 90% of nurses in several European countries express significant dissatisfaction with pay, evidence from one of the NEXT studies³ suggests that poor remuneration explains only marginally their intention to leave the nursing profession. Literature reviews on nursing supply found only a weak positive relationship between wage and labour supply (Shield, 2004; Chiha and Link, 2003; and Antonazzo *et al.*, 2003). However, there is some evidence that wage is one underlying reason for leaving the profession (Hasselhorn *et al.*, 2005).

Setting the right remuneration level to influence doctors' supply is far from easy. Health sector reforms aiming at keeping remuneration from rising in order to contain overall health cost have exposed some countries to difficulties in maintaining an adequate level of services (Docteur and Oxley, 2004). Pay increases for doctors in the United Kingdom, implemented as part of a new contract for hospital consultants in 2003, seem to have increased consultant numbers (Buchan, 2008). But they also led to significant cost increase (NAO, 2007). As in the case of nurses, policies have focused on a mix of both financial and other incentives, such as on improving working-time flexibility, creating more flexible career development opportunities and offering a wider range of options for continued education and training.

1.3. Better workforce organisation and working conditions

Low esteem, limited work control and dissatisfaction⁴ with working conditions seem to be more important determinants of decisions to leave the nursing profession than perceived low pay (Hasselhorn *et al.*, 2005). As a result, policies focusing on the occupational status and the working environment are gaining increasing attention. Several OECD countries have developed policies to reduce nurse turnover by alleviating workload (Simoens *et al.*, 2005). 'Healthy workplace' strategies such as flexible work arrangements, family-friendly initiatives, leave and compensation benefits and safety practices are perceived to have a positive impact on nurse retention (Wagner *et al.*, 2002). Other successful initiatives include career development programmes and job redesign or task-shifting to reduce burnout. A study on the perceived work ability of nurses in ten European countries suggests institutional policies to sustain work ability through better working conditions, improving quality of the working environment and finding suitable alternative nursing work for those no longer able to cope in their current post (Camarino *et al.*, 2006).

The so-called "magnet hospitals" in the United States offer examples of successful practices. Magnet hospitals typically adopt: flat organisational structure, decentralised decision-making, flexibility in scheduling, positive nurse-physician relationships, opportunities for professional development, a good balance between effort and reward, and investment in education for nurses (Hasselhorn *et al.*, 2005). These institutions have successfully attracted and retained nurses during times of serious shortages, while also achieving good patient outcomes. The number of hospitals that have achieved or applied for Magnet Recognition for organisational excellence in nursing services administration suggests positive changes have been achieved in US nurse work environments (Aiken and Cheung, 2008).

Although retention is less critical an issue for doctors than it is for nurses, workforce strategies addressing non-monetary factors appear likewise to affect physician retention. According to one recent study on Germany, three factors have a direct impact on physicians' job satisfaction and hence retention, namely decision-making and recognition; continuous education and job security; administrative tasks and collegial relationships (Janus *et al.*, 2007).

Flexibility is an important factor, especially given the growing feminisation of the medical workforce (Figure 1.6 above). Young and Leese (1999) identified improving working-time flexibility, creating more flexible career development opportunities, and offering a wider range of options for continued education as the main instruments to improve medical retention in the United Kingdom. Moreover, there are gender-related differences in the content of work and choice of medical specialisations, requiring policy attention in light of the transition from a traditionally male profession to an increasingly female profession. Organisational changes might however be difficult to implement. Introducing flexible working hours or increasing work autonomy is likely to meet some resistance and face bureaucratic difficulties in many organisations. There can also be country-specific difficulties. Part-time employment opportunities exist in the United States, including opportunities for older physicians, but the high costs of malpractice insurance, which are not pro-rated for part-time employment, often present a barrier (Cooper, 2008).

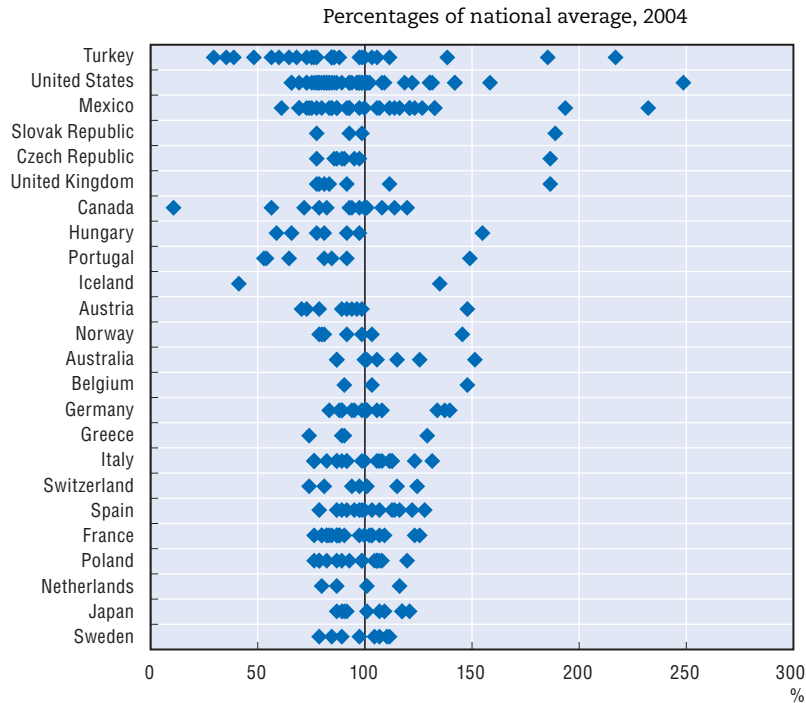
Finally, violence against health professionals, in particular women, is a growing phenomenon⁵ which has however not captured much attention so far (Dalphond *et al.*, 2000). Some studies suggest a direct link between aggression and the increases in sick leave, burnout and staff turnover (Farrell, 1999; O'Connell *et al.*, 2000). Initiatives to reduce violence have started to appear in some OECD countries. In the United Kingdom, the National Health Service initiated a *Zero Tolerance* campaign in 1999 – later replaced by the Security Management Service – to better protect NHS staff and property. Among the most common measures implemented to reduce violence are the introduction of closed circuit television surveillance, controlled access to certain areas, security guards, and better lighting.


1.4. Improving retention in remote and underserved areas

Virtually all OECD countries suffer from a geographical maldistribution of their health workforce between rural, remote or poor areas and urban, central, and rich localities. The largest disparities in doctors per capita between the best and least-endowed regions are found in the United States and in Turkey, where the regions with the highest densities may have up to 2.5 and 2.2 times the national average, respectively (Figure 3.1). Unfortunately, data on regional variation in staffing levels are not adjusted for need, making it impossible to judge to what extent differences may reflect variation across areas with unequal needs.

Financial incentives to improve geographical maldistribution of doctors seem to generate mixed results. Wage differences are one of the most frequent reasons for international migration, especially between lower and higher income countries (WHO, 2006). Domestic programmes offering higher remuneration for doctors and nurses locating or moving to underserved, deprived, or rural areas tend to have a short-term impact, but no lasting effect in the medium to long term (Bourgueil *et al.*, 2006) possibly because wage payments alone cannot compensate for lack of facilities and for lack of access to good education for doctors' and nurses' families. Similar issues arise in middle income countries, notably South Africa. It is also unclear whether pay-related policies are more or less costly than other educational or regulatory approaches (Simoens and Hurst, 2006).

As in the case of financial incentives, many of the policies to address geographical imbalances have tended to have only a short term impact. Australia, the United States and New Zealand have developed minimum-stay requirements for immigrant doctors or locum programmes and visa waivers to attract foreign health professionals to underserved areas. Moreover, though migrant health workers are indeed willing to address problems of maldistribution and undersupply, few appear to be retained in areas of need once

Figure 3.1. **Regional variations in physician density**

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Note: Each point above refers to the density of doctors in one particular region relative to the average density in the corresponding country. Regions located under (resp. over) 100% have a density of doctors which is lower (resp. higher) than the national average.

Source: OECD (2007c), *Regions at a Glance*, Paris.

permanent status and/or unconstrained registration has been achieved, a pattern ensuring that fresh global intakes are regularly required. Also, large short-term inflows do not allow the continuity of practice in the medium to long term, and have high turnover cost in terms of recruitment and training.

Increasingly, OECD countries have adopted measures to improve medium and long-term retention in rural areas. They have encouraged student interest in working in rural areas during basic training, or improved professionals' skills for working in these areas, or better identified students most apt to work in rural areas. Students originating from remote areas are more likely to go back to practice in their origin regions. Recently, New Zealand medical schools have increased their entry quota to allow more students from rural areas in medical schools. In Canada, medical school training has largely been conducted in urban areas, and has offered only limited, optional, exposures to rural medicine and lifestyle. Hence, efforts have been undertaken in three specific areas regarding education and medical training. These include providing more exposure to rural medicine in medical schools, developing rural relevant skills in residency, and increasing the number of medical students from rural areas. The expansion of the undergraduate medical education in British Columbia and the founding of a new medical school in Northern Ontario, both with campuses in rural areas, illustrate this new approach regarding exposure to rural medicine and lifestyle (Dumont and Zurn, 2008).

Policies have also sought to prevent isolation of health professionals and to improve lifestyle. They have included measures to encourage collaboration and coordination between

health professionals in rural areas, facilitate professional development, and help spouses to find a job (Bourgueil *et al.*, 2006). However, addressing staffing shortages in underserved areas requires a mix of policies which go beyond the health sector. For example, these areas do not offer minimum services (*e.g.*, schools) and job opportunities for partners.

1.5. Attracting health professionals to shortage specialties

Similar to the question of geographic distribution are the difficulties in recruiting medical and nursing personnel to certain careers. The question of distribution across specialities may in some cases be even more fundamental than the issue of shortages and surpluses in aggregate numbers. Most OECD countries experience difficulties in attracting medical students to family practice, general specialists, psychiatry, and other specialties needed in rural areas. In the context of the ageing and feminisation of the population, some OECD countries may be experiencing shortages in medical personnel trained for geriatrics and surgery careers.

Even when undergraduate and graduate medical and nursing curricula are promptly adapted in light of epidemiological changes, these may not be sufficient to attract students to certain careers, because several conditions are at play in the students' choice – status, pay, perceived burden, working times. As in the case of geographical distribution, improvements to relative pay, work flexibility and conditions of service and suppression of bullying during training may be necessary to attract doctors to less popular specialties. For example, these appear critical for encouraging women to undertake a career in surgery (Ormanczyk *et al.*, 2002). Early career advice and support during medical school and after graduation was found to encourage young doctors to take up shortage specialties in the United Kingdom (Mahoney *et al.*, 2004). According to a review of experience in OECD countries, giving students experience of primary care practice and appointing primary-care role models to academic positions influence students' choices towards a career in primary care (Simoens and Hurst, 2006).

1.6. Developing flexible retirement policies

In many countries the “baby boom” generation account for a substantial share of the workforce, and many will reach retirement age within the next ten to twenty years. Until recently, few OECD countries had implemented or planned specific policies to address this issue (Simoens *et al.*, 2005). In fact, until the late 1990s, it was common cost-saving strategy for employers in some countries to offer early-retirement incentives to nurses.⁶ The feminisation of the medical workforce is likely to reinforce these trends, as women health professionals tend to retire earlier than their male counterparts.⁷ In some OECD countries, the yearly number of retirees has already been close to that of graduates and retirement rates will increase in the future.⁸

More flexible working patterns that allow health professionals who have reached pensionable age to continue to work and receive pension benefits may encourage them to delay retirement. In the United Kingdom, a flexible-retirement initiative launched in 2000 enabled staff nearing retirement to move into part-time work while preserving pension entitlements (Simoens and Hurst, 2006). In France, doctors who reach the statutory pensionable age can combine a pension and earnings up to an income limit. Also, elderly doctors can be exempted from night and week-end shifts (Cash and Ulmann, 2008). In Belgium, a number of hospitals have experienced better nurse retention by allowing those aged 55 years and older to work 32 hours while still earning the wage corresponding to 40 hours (Peterson, 2001).

Strategies to improve retention should address modification of the mix of tasks performed by “older nurses”. In Canada, for example, nurses have one of the highest sick-leave rates of all workers. These are mainly attributed to work-induced stress, burnout and musculoskeletal injury, which are likely to affect older nurses in particular (Shamian *et al.*, 2003).

Finally, many OECD countries are debating changes in the statutory pensionable age. While such an approach could contribute to alleviate shortages to some extent, this measure, if adopted, will take time for it to take full effect. Also, this will not reduce the rate of pre-retirement withdrawal from the profession.

2. Enhancing integration in the health workforce

Immigrant health workers who cannot practice their profession in the destination country and doctors and nurses dropping out of the health labour market (other than those reaching retirement age) represent a loss of skills. OECD countries might benefit from addressing the process of recognition of the diploma of foreign-trained health professionals, as well as from designing policies to recruit back domestically-trained health workers who have left the workforce.

2.1. Recognition of foreign diplomas and targeting errors

As a prerequisite for practice, health professionals must meet registration or licensing requirements. This guarantees the educational and practice standards which are needed to promote patient safety and high quality of health care delivery. To obtain registration, foreign-trained doctors and nurses must obtain recognition of their qualifications. Recognition procedures are necessary to ensure that practice standards are met when foreign professionals are absorbed into the health workforce. However, they may also serve as a means to control unwanted inflows of foreign-trained health workers. Despite common features, OECD countries have adopted somewhat different approaches towards such recognition (Box 3.1).

The process of recognising foreign qualifications is complex and can lead to significant inefficiencies due to errors in targeting.

A first important inefficiency, although not discussed in depth in this report, concerns accepting qualifications which are invalid. The quality of medical and nursing education is not homogenous and this limits the cross-transferability of skills. Errors in this direction risk endangering patients' safety and, ultimately, would damage health outcomes. Much of the delays, rejections, and scrupulous screening involved in the process of recognition of foreign qualifications have to do with preventing these errors. Clearly, other policy objectives may play a role in the process, too. For example delays in recognition may be shortened or criteria relaxed depending on the state of the domestic job market, as emerges from the experience of the United Kingdom (Buchan, 2007). Language proficiency, although not directly related to professional skills, is also a key requirement for responsive, efficient and safe delivery of health care. Migrants need to satisfy language tests in most OECD countries and in some cases the passing scores have been increased recently (Box 3.1).

Second, rejecting (or failing to recognise) qualifications which are valid may induce qualified health professionals to work in low-pay or low-skill occupations, below their level of qualification. This loss of social status and, often, financial resources, can produce lower motivation for health professionals and difficulties in societal integration. It also produces a

Box 3.1. Approaches to the recognition of foreign qualifications

After verifying credentials, health professionals need to satisfy language tests, and theoretical and practical licensing exams. For example, the national licensing examination for registered nurses in the United States, or the registration examination (the NZREX clinical) for doctors in New Zealand. In some countries, for instance in New Zealand or the United Kingdom, the required level of language proficiency has been increased over time, which can have a direct impact on inflows of foreign-trained doctors and nurses. A period of adaptation or initial supervision is required in the United Kingdom, Finland and Ireland.

Requirements tend to be less restrictive and recognition of qualifications is facilitated within free mobility areas (e.g., the Nordic Passport Union, the Trans-Tasman Area, the European Union). For example, under the legal framework adopted by the European Union, medical professionals' training certificates obtained in one member state are recognised automatically in other member states.

Some OECD countries adopt simplified procedures leading to temporary or conditional registration of health professionals, for example when skills are considered as near-equivalent (the Netherlands) or when health professionals entered the country as temporary migrants and through sponsoring schemes (Australia). In New Zealand, provisional registration is offered to individuals who worked continuously for at least three years in a health system considered as comparable (Zurn and Dumont, 2008).

At the other end of the scale, some countries require foreign-trained professionals to obtain national postgraduate qualifications (e.g., Canada); complete internship periods and postgraduate residency training (e.g., the United States); or to acquire citizenship of the host country (e.g., Italy, Finland, Greece, Turkey and Luxembourg). In France, despite the fact that the Public Health Code mentions a criterion of nationality (Art. L-4111-1), in practice many foreign doctors are working in public hospitals. Most of them used to be working under precarious contract arrangements as trainees. An important effort has been made recently to regularise their professional status (about 9 500 authorisations have been delivered by the Health Ministry since 1999), and a new procedure has been implemented for recognition of qualifications of foreign-trained doctors (Ordre National des Médecins, 2006). These requirements delay entry or reduce inflows of foreign-trained professionals into the health workforce of the host country.

waste of qualified skills in need in the health sector. Many health professionals immigrate on grounds other than their professional skills (refugees, family members) and failure to use their skills is a clear loss. Unfortunately, little evidence is available on the scope of this *brain waste* in the medical field and even more on its economic impact. Calculations of the cost of non-recognition of foreign credentials are complex and, where available, their validity is affected by measurement difficulties and assumptions about the transferability of diploma and quality of education in origin countries (von Zweck and Burnett, 2006; Reitz, 2001).

Strategies to ease integration difficulties

Several countries have employed specific programmes to facilitate the integration of foreign-trained health professionals. The Canadian government has recently allocated CAD 75 million to fully integrate 1 000 physicians and 500 other health care professionals who move permanently to Canada in the next five years, while Australia has funded competency-based bridging programmes for the past 20 years, achieving highly efficient outcomes in nursing (Hawthorne, 2006; Hawthorne et al., 2006). The Canadian government has also invested in efforts to streamline the process for verifying the credentials of

international medical graduates, and has enhanced access to information by creating a national database about international medical graduates. In Portugal, a relatively small programme supported by non-governmental organisations assists immigrant nurses in obtaining the equivalence of their educational and professional diploma.

Refugees face particular difficulties in having their medical qualification recognised, notably because of lack of language proficiency and absence of relevant documents. The United Kingdom has implemented special programmes to help refugees and overseas qualified health professionals who are settled in the United Kingdom to pass qualification requirements (Butler and Eversley, 2005). Similar initiatives exist in the United States and other OECD countries (Dumont and Zurn, 2007).

Policies have also addressed social factors and practices that militate against the integration and retention of foreign-born health professionals into society and work (Box 3.2). These programmes facilitate the integration of immigrants and internationally trained health professionals into the labour force, although no evaluation of their cost effectiveness is available.

Box 3.2. Retention of foreign-born health professionals

While there is no reason why foreign-trained health workers should behave any differently from domestic trained health workers, in practice they often face specific difficulties that might contribute to recruitment and retention problems.

Social and cultural factors may play a role in the retention of overseas nurse graduates (Omeri, 2006). In the United Kingdom, for example, foreign-trained nurses encounter language problems, are confronted with differences in clinical and technical skills, and may face open racism in the workplace (Buchan, 2004). Many may choose to change job or re-migrate.

In some cases, existing practices may make it more difficult for foreign-born professionals to remain in the labour market. For example, contractual arrangements with foreign-trained health workers might be used to fill in temporary shortages or address turnover. In other cases, contractual arrangements may improve retention. In the United States, some hospitals contract agencies to recruit foreign-trained nurses and will benefit from the agency's insurance or full or partial remuneration if recruited nurses fail their contractual obligation (Brush *et al.*, 2004).

Most countries do not have specific retention policies for foreign health workers, even when the latter represent a large share of the health workforce. Policies aiming at matching skills, improving language knowledge, and helping migrants in their new social and cultural environment could thus be very beneficial. Some public institutions hire private companies to address some of these issues. For instance, the Royal Danish Armed Forces contracted a private company to recruit doctors from Poland. In this process, intensive Danish language training as well as professional and cultural adaptation is provided during several months before doctors start working in Denmark (Paragona, 2006).

2.2. Recruiting “back” health workers

Evidence on policies to “recruit back” health workers who have left the health profession is rather scarce. However, some recent experience suggests that such policies could make a difference. This has given rise to growing policy interest on the topic. While the potential to recruit back doctors seems limited in most OECD countries because the number of inactive doctors is relatively small, the pool of inactive nurses is larger (Gupta *et al.*, 2003).

In New Zealand, for instance, around 14% of the Registered Nurses (RN) and Midwives in 2000⁹ were neither in a nursing or midwifery job, nor in paid employment. This percentage was even higher for enrolled nurses (NZHIS, 2002). In the United States, almost 17% of licensed Registered Nurses¹⁰ were not employed in nursing as of 2004 (USDHHS, 2006). This was the lowest percentage of inactivity since 1980, but it represents nonetheless a significant outflow from the nurse stock (Aiken and Cheung, 2008). Although almost 40% of these inactive nurses were aged 60 years or above – and thus did not have good prospects for returning to active employment – the potentially employable group of RNs below the age of 50 totalled approximately 160 000 individuals. Considering the total number of vacant positions for Registered Nurses in hospitals of around 116 000 (AHA, 2007), policies to attract back nurses would seem to have a high potential.

Given the cost of training nurses, it is likely that the benefit of policies to recruit back nurses would more than outweigh cost. Furthermore, a relatively large percentage of inactive nurses seem to be interested in returning to practice. In New Zealand, for example, over three quarters of inactive nurses and midwives would consider returning to clinical work (Zurn and Dumont, 2008).

However, few countries have developed specific policies to attract nurses back to the profession and, where implemented, strategies have not proved an easy task. In the United Kingdom, the National Health Service Plan encouraged the return of qualified nurses by providing back-to-practice courses, improved work-based learning, additional nursery facilities, and mentoring of nurses returning to work (Secretary of State for Health, 2000). Over the past few years, the annual number of nurses and midwife returnees is estimated around 3 800 or 1% of the total number of qualified nurses and midwives, but there is no indication of any upward trend (Buchan, 2007).

As in the case of retention, policies to encourage the return of health professionals to the health workforce would need to encompass a mix of financial incentives, career development programmes, and targeted benefits. Some of the main factors that would facilitate attracting nurses back to the clinical workforce, include more flexible hours of work, availability of return-to-work programmes, salary increase, and provision of child care facilities (Zurn *et al.*, 2005). Ireland abolished fees for back-to-practice courses, and nurses and midwives undertaking such courses receive a salary in return for a commitment to rejoin the public health service upon completion of the course. In addition, many of the courses are being delivered on a flexible part-time basis (Department of Health and Children, 2002). Trends over time also suggest that a weak economy encourages nurses to re-enter the health workforce (Aiken and Mullinix, 1987).¹¹

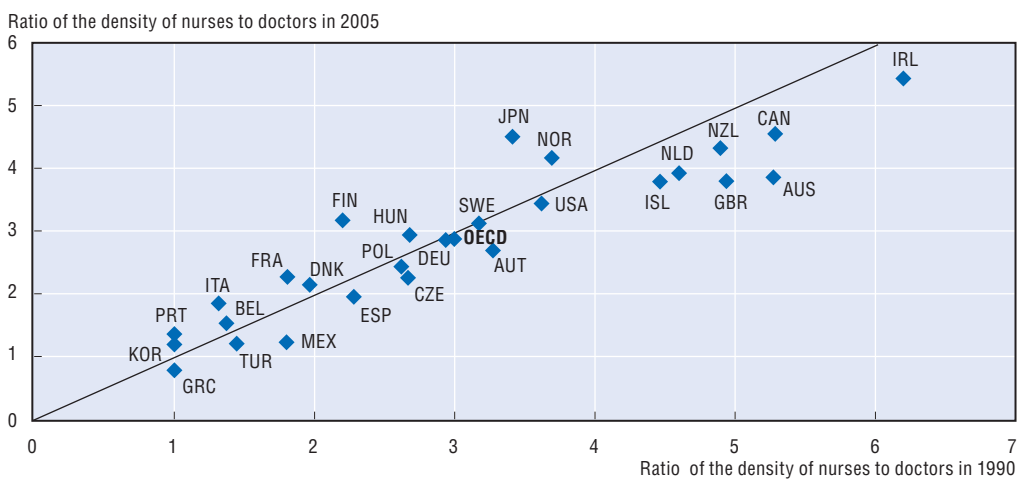
3. Adapting skill-mix


Most of the policy attention on using skill-mix¹² changes to improve health-system performance focuses on physicians and nurses. Task shifting between nurse and doctors can improve productivity. However, changing the skill-mix is a challenging task, particularly because of the need to secure the cooperation of the professional groups concerned.

Greece, Korea and Turkey have roughly the same number of doctors and nurses, while in Ireland there are more than five nurses for each doctor. Between these extremes, the ratio of nurses to doctors varies widely across the OECD. Given such variation, it is legitimate to question what should be the appropriate skill-mix between doctors and nurses, and what should be the definition of the respective tasks of these two groups of professionals.

One of the factors which may have affected the growth of density of both doctors and nurses is substitution between them, usually in the form of nurses taking over some of the tasks hitherto performed by doctors. Nurses have been substituted for doctors in a small way in some OECD countries (see for example, Buchan and Calman, 2004; Buchan, 2008). However, as has been shown above, physician numbers have been growing faster than nurse numbers in the majority of OECD countries over the past 15 years. Figure 3.2 suggests that in 17 out of 28 countries for which data are available the ratio of nurses to doctors in 1990 was above that in 2005 (that is, in Figure 3.2, the observation for the country is found to lie below the 45° line). This suggests that technological and economic changes have added more to the demand for doctor-skills than to the demand for nurse skills in these countries over this period.

Figure 3.2. **Change in skill mix between 1990 and 2005 or nearest year available**



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Note: Data refer to practicing doctors and nurses.

Source: OECD Health Data 2007.

Literature reviews of the role of advanced practice nurses (APNs) suggest that nurses can supply care equivalent to that provided by doctors in primary care settings for certain patients. However, the long term benefits or cost from such policies are not yet clearly established (Buchan and Calman, 2004).

Physician assistants are predominantly located in the United States, where this profession was introduced in 1967 (Hooker, 2006). Canada, England, Scotland, Australia, New Zealand and the Netherlands have explored the potential of using physician assistant either to supplement physician services, working under the supervision of a licensed physician, or to deliver tasks usually carried out by doctors. Studies revealed that physician assistants' skills largely overlap with those of primary care physicians, and that they are capable of taking on a high degree of responsibility in other areas of medicine (Hooker, 2006).

While there seems to be a potential for developing new nursing roles and to encourage the use of physician assistants, various factors can hinder this change. Introducing new scope of practice can "blur" frontiers between professions and create tension between, and even within, occupational groups (Kinley *et al.*, 2001). It is not uncommon for professional associations to resist changes in professional boundaries. Institutional factors may also slow down the development of advanced nursing roles. For instance, few countries allow

nurses to be reimbursed directly for the new services they provide. Also, given the context of nursing shortages and task shifting, increasing the number of nurses in advanced nursing roles might encourage them to offload tasks to unqualified staff further down the line (Buchan and Calman, 2004).

4. Enhancing health workforce productivity

Improved productivity of physicians and nurses in the workforces can help close upcoming gaps between the demand for and the supply of health professionals. Estimates of productivity are an important adjuster in models of workforce supply and part of increasingly more sophisticated demand-based and trend forecasts of health professionals (Cooper *et al.*, 2002). All other things being equal, improved productivity of human resources would reduce the number of health professionals needed to achieve a given output, or improve throughput delivered with a given level of resources. But, what is the right indicator of productivity, and is it possible to point to an optimal productivity level?

There are several challenges related to the concept of productivity. Different indicators of health professional activity and outcomes can be used to measure productivity. This will influence assessment of whether health systems face shortages or, conversely, oversupply of medical professionals, and the related policy responses.

Take, for a start, traditional approaches to evaluating health professionals' productivity, which have measured the rate of activity (*e.g.*, doctors visits) produced in a given period of time by each unit of labour. OECD countries have implemented several policies to address productivity in this respect, including changes in payments methods, improved working methods and conditions, and changes in technology or in the way care is organised and delivered (Box 3.3).

Using this notion, it appears that the quantum of professionals' supply can be related to productivity levels. Analyses of variation in per capita supply of health professionals across countries, regions, and health-care settings suggest for example that physician productivity may be related to the density of doctors, all other things being equal. Using data from the European Community Household Panel (ECHP) Survey on the annual number of patients' visits to general practitioners (GPs) across the EU15, Figure 3.3 shows a negative, statistically significant, relationship between GP density and the number of visits per doctor. In other words, countries featuring a higher density of doctors appear to have a lower productivity of doctors, as measured by the number of annual visits per doctor.¹³ Furthermore, countries with the same number of physicians, such as Switzerland, Denmark and the United Kingdom, display large differences in the number of annual visits, suggesting room for improving productivity.

Supply constraints, if coupled with improved and carefully administered payment systems, have led to enhanced productivity (Docteur and Oxley, 2004). In Finland, sharp cuts in health expenditure in the early 1990s did not seem to have harmed efficiency. On the contrary, they were associated with rises in health centre productivity, measured as activities per unit of real expenditure (OECD, 2005a). In Switzerland, per capita consultations with doctors – at 3.4 in 2002 – were lower than the OECD average of 9.7, while the number of doctors – at 3.6 per 1 000 population – was among the highest in the OECD. Although this may reflect a relatively low revealed demand for health-care services and a relatively good underlying health status of the population, the data also suggest that the same levels of outputs could be achieved with lower resources (OECD, 2005b).


Box 3.3. Factors and practices influencing professionals' productivity

Productivity changes over time, as a consequence of external factors and countries' policies. Technological innovation is an important source of change, and offers opportunities for advances in productivity for both nurses and doctors. For example the introduction of day surgery, favoured by technological improvements, led to an increase in the number of surgical procedures that given hospitals and surgery units could perform.

Several workplace and societal changes have a direct impact on productivity. New lifestyle models encourage a better balance between work and private life, leading to shortened working times for health professionals. Earlier retirement by doctors and nurses, as well as increasing part-time working, have a similar effect. In the United Kingdom, while less than 40% of midwives were working part time in 1994, in 2004, more than 60% were working part-time.

Midwives working full and part time, United Kingdom, 1994 and 2004

	Midwives working full time		Midwives working part time		Total number of working midwives
	Number	Percentage	Number	Percentage	
1994	20 889	59.5	14 238	40.5	35 127
2004	12 999	38.6	20 688	61.4	33 687

StatLink  <http://dx.doi.org/10.1787/448325213477>

Source: Statistical Analysis of the Register, Nursing and Midwifery Council, August 2005, as reported in Bosanquet et al (2006).

Women tend to work fewer hours than their male counterparts during childbearing years and take career breaks, but evidence reviewed by Bloor et al. (2006) suggests that women doctors may be less likely to take early retirement. Workforce productivity will show differences across age groups for man and women. Clearly, these factors may vary productivity over a working life time, but will not impact upon productivity per hour worked.

Changes in the way care is delivered and organised, including the use of technologies and the mix of human and non-human resources that provide health services, affect productivity trends. For example, the growing number of elderly patients with chronic illnesses encourages a reorientation of the way care is delivered from cure to care, requiring a different mix of physicians and non-physician health professionals. The successful adoption of new disease management models and of improving care-coordination methods will affect professionals' productivity in these care settings.

Team work can lead to more productive health professionals. Effective teamwork has been recognised as a condition for enhancing clinical outcomes and achieving more with less (see, for example, West et al., 2002; Leggat, 2007). However, further work is required to understand which conditions are best to make teams of health professionals more effective or productive.

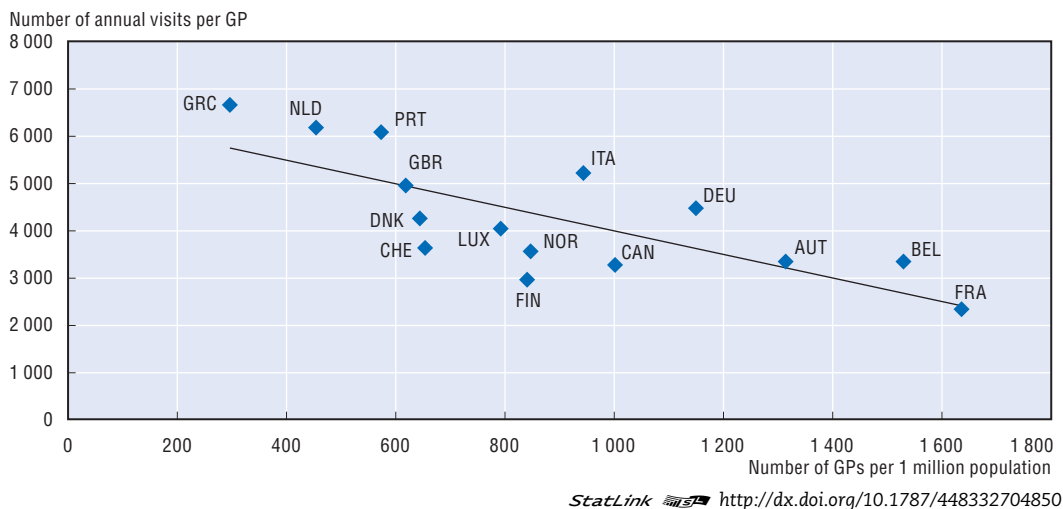
Health policies can help in boosting productivity, too. Nurse dissatisfaction and low motivation have led to high turnover and absenteeism. This, in turn, causes reductions in productivity and poor quality of care. Several countries have targeted policies to improve working conditions (including reductions in work intensity) to encourage nurse productivity and reduce turnover (Simoens et al., 2005) (see Section 2.1 in Chapter 2).

Box 3.3. Factors and practices influencing professionals' productivity (cont.)

Payment methods and levels are the most prominent policies to influence productivity of health professionals. Across the OECD, remuneration methods for hospitals, physicians, and other providers have moved away from cost-reimbursement towards activity-based payments that reward productivity (OECD, 2004). Among single payment methods for physicians, fee-for-service – as in the case of office-based physicians in Austria, Belgium, France, Germany, Japan, Korea, Switzerland and the United States (Medicare) – is known for encouraging productivity.

While encouraging productivity, pure activity-related payments may not direct providers to deliver the right quantity and quality of service, and at the right time. For this reason, several countries have introduced blended payment mechanism (which combine a fixed capitation or salary component with a variable fee-for-service element) to promote the provision of cost-effective care. Mechanisms of payment by results (which link payments to the quality of care provided) have also been introduced to reward physicians for the quality of care provided to patients in Australia and in the United Kingdom (Simoens and Hurst, 2006).

Figure 3.3. The relationship between general practitioner density and the annual number of visits per general practitioners



Source: Simoens and Hurst (2006).

That high physician supply is associated with lower productivity has emerged also from analyses of regional and practice-setting variation in per capita supply. For example, work by Wennberg and Cooper (1998) shows that the use of health care services varies dramatically around the United States. These variations are not associated with substantial differences in benefits to the patients. Variation in Medicare spending across US regions – which can be linked to higher-intensity of practice in regions with a higher density of doctors – did not result in better quality of care, or improved health status (Fisher *et al.*, 2003). Similarly, low physician/patient ratios were associated with good health status, as shown by research on large prepaid group practices in the United States (Weiner, 2005).

These studies suggest that, up to a point, low physician's input can come with improved productivity with no harm to patients. They also suggest that improving regional maldistribution of professionals across better-served and least-equipped areas, as well as more equitable distribution of professionals across specialties, may go a long way towards addressing supply gaps.¹⁴ And, thirdly, they point to the fact that more adequate measures of results are needed. The notion of measuring health professionals' services as the output of medical work may need to be questioned.

At present, the output of doctors' work is usually measured by the number of office visits and procedures, a notion similar to the way productivity is calculated in industrial firms. However, physician productivity should be based on improvement of patients' health and responsiveness – the end – rather than physician visits or procedures – the means to the end. Such an approach could be used to incentivise health care workers to provide more adequate care to patients.

Improvements in patient outcomes could be achieved by doing less rather than more. Larger service volumes may in fact be of marginal benefit in terms of improved value for money and patients' health. For example, population based research suggests that above a certain threshold, as use of service increases, quality and health related outcomes do not improve (Weiner, 2007).

On the other hand, a low staff/population ratio can lead to adverse health outcomes if a minimum ratio is not achieved. Very low numbers of doctors can be harmful, as shown for example by analysis on the adverse impact of low supply of neonatal intensive care resources on outcomes (Goodman *et al.*, 2001). Needleman *et al.* (2002) estimated that higher nurse/patient ratios in the United States were associated with a 3% to 12% reduction in the rates of outcomes potentially sensitive to nursing, such as urinary tract infections and hospital-acquired pneumonia. Another difficulty is in assessing the optimal level of services and accounting for socioeconomic heterogeneity across geographical units (Cooper, 2008).

Unfortunately, the overall evidence is far from being conclusive and it is especially difficult to make inferences about optimal supply levels to maximise people's health. A review of the literature on associations between medical staffing and patient health outcomes concludes that although improvements in patients' outcomes might be possible by expanding doctors' supply, the optimal doctor-to-population ratio is not known (Bloor *et al.*, 2006). Part of the problem lies with difficulties in the measurement of outcomes and quality of care, a developing field.¹⁵ Another difficulty lies with the fact that the notion of the right measure of productivity will depend on broader health-system objectives, which may evolve over time. The desire for more health-system responsiveness, for example, may explain at least part of the apparent association between economic growth and physician numbers. Finally, even assuming the right measures have been developed, mechanisms aligning rewards to the performance of health professionals, are not without risks. Initial results from the United Kingdom's Quality and Outcomes Framework (QOF), for example, suggest that both quality improvement and the payments to practitioners exceeded initial expectations, straining the National Health Service (NHS) coffers (Galvin, 2007; NAO, 2007).

In summary, improvements in health professional productivity have the potential to reduce the rate at which human resources should grow in order to meet future demand expectations. At one extreme, if productivity enhancement occurs at the same rate at

which the demand for professional services is growing, then the pressure to build larger stocks of health professionals would disappear. Arguably, other policies such as a better distribution of resources across a country may suffice or at least contribute to meet needs. However, given much uncertainty about the optimal health professionals' ratio to the population, it would not be prudent to count solely on increased productivity to address future needs. Furthermore, questions about the most appropriate way to measure outputs have surfaced. Policy makers should be aware that new concepts based on outcomes and responsiveness may change the way productivity is calculated, and hence the way future needs are assessed.

5. Examples of useful practices

This chapter has discussed the contribution of health workforce policies to make the best use of available workforce and skills. Some examples of useful practices in these areas include the following:

- “Magnet hospitals” are successful in promoting nurse recruitment and retention. They are organisational settings characterised by an emphasis on professional autonomy, decentralised organisational structures, participatory management, and self-governance.
- Admitting more medical students from rural areas to medical schools is a policy with a positive medium and long-term impact on the geographical distribution of doctors as such students are more likely to take up practice in rural areas.
- Providing flexible retirement policies and adapted work for older health workers can improve retention. For example, some countries have enabled staff nearing retirement to move on to part-time work while preserving pension entitlements, or to combine pension and earnings after retirement.
- Attracting back to the health workforce individuals trained as health workers but not active or working in another field, has been adopted successfully in some countries. For example, in Ireland the return of qualified nurses is encouraged by providing back-to-practice courses, and in the United Kingdom improved work-based learning, nursery facilities, and mentoring have had favourable effects.
- Special programmes assist the integration of internationally educated health care workers in countries like Canada, Portugal and the United Kingdom. In the latter, some programmes help refugees who are settled in the country to pass qualification requirements.
- Changing physician/nurse skill-mix, by employing nurses and physician assistants to perform tasks traditionally delivered by physicians, has been shown to be effective in some settings, although less is known about its cost-effectiveness.
- The introduction of ICT systems, better care coordination, disease-management programmes for chronically ill patients, and activity based payments (such as payment by results) can influence the productivity of health professionals.

Further work is necessary however to assess the opportunity cost of different policies and refine productivity measurement, thereby helping policy makers in trading-off between different options.

Notes

1. For instance, the national turnover rate for Registered Nurses in the United States was 15.5% in 2003 (COMON, 2006).
2. Turnover expresses the percentage of a defined labour force that is lost each year through retirement, death, international migration or occupational changes.
3. The NEXT-Study is investigating the reasons, circumstances and consequences surrounding premature departure from the nursing profession in several European countries (Belgium, Finland, France, Germany, Great Britain, Italy, the Netherlands, Poland, Sweden, and in Slovakia).
4. For example, more than 40% of nurses working in hospitals report dissatisfaction with their job in the United States, Canada, England, Scotland, and Germany (Aiken *et al.*, 2001).
5. In Sweden, health care has even been reported to be the sector with the highest risk of violence (Chappel and Di Martino, 1999).
6. For example, in France, 2 900 doctors left the profession in 2004 while 3 500 graduated (Cash and Ulmann, 2008). In Italy, a country with a lower nurse density than the OECD average, around 12 500 nurses retired each year between 1997-2002, whereas the yearly number of new graduates was 5 700 during that period (Camerino, 2006).
7. In Germany, only 6.2% of qualified nurses were 55 years old and over in 2002, compared to 11.1% of female workers as a whole (Hasselhorn *et al.*, 2006).
8. In Australia, for example, the nursing retirement rate will be significantly higher between 2006 and 2026, than it was between 1986 and 2001. Between 2006 and 2026 Australia is projected to lose almost 60% of the current nursing workforce to retirement (Schofield, 2007).
9. Or around 6 000 individuals who purchased an Annual Practicing Certificate.
10. Or 488 000 registered nurses.
11. In the United States, for example, inactive nurses returning to work along with nurse immigration accounted for a substantial share of the growth of the employed nurse workforce over the period 2000-2003 following a period of decline in nurse graduations (Buerhaus *et al.*, 2003).
12. Skill mix is a relatively broad term which can refer to the mix of staff in the workforce or the demarcation of roles and activities among different categories of staff.
13. Unfortunately, it is not possible to control for visit duration.
14. As has been shown in various studies on the United States and the United Kingdom. However, doctors tend not to settle where care is most needed. See, for example, Goodman *et al.* (2001) and Gravelle and Sutton (2001).
15. The OECD is pursuing a project to develop a set of health care quality indicators based on comparable data across 23 countries (www.oecd.org/health/hcqi). This will help to fill existing gaps in the measurement of health care quality across countries.

References

- AACN – American Association of College of Nursing (2005), “With Enrollment Rising for the 5th Consecutive Year, US Nursing Schools Turn Away 30,000 Qualified Applicants”, available at www.aacn.nche.edu/Media/NewsReleases/2005/enrl05.htm.
- AAMC – Association of American Medical Colleges (2006), *AAMC Statement on the Physician Workforce*.
- Adams, R.H. (2006), “International Remittances and the Household: Analysis and Review of Global Evidence”, *Journal of African Economies*, Vol. 15, Supplement No. 2, pp. 396-425.
- AHA – American Hospital Association (2007), *AHA Survey of Hospital Leaders*.
- Aiken, L.H. and R. Cheung (2008), “Health Workforce and International Migration: A Case Study on Nurses in the United States”, OECD Health Working Paper, forthcoming, OECD, Paris.
- Aiken, L.H. and c.f. Mullinix (1987), “The Nurse Shortage: Myth or Reality?”, *New England Journal of Medicine*, Vol. 317, No. 10, pp. 641-646.
- Aiken, L.H. et al. (2001), “Nurses’ Reports on Hospital Care in Five Countries”, *Health Affairs*, May/June, pp. 43-52.
- Allan, H. and J. Larsen (2003), “We Need Respect: Experiences of Internationally Recruited Nurses in the UK”, Presented to the Royal College of Nursing.
- Antonazzo, E. et al. (2003), “The Labour Market for Nursing: A Review of the Labour Supply Literature”, *Health Economics*, Vol. 12, pp. 465-478.
- Awases, M. et al. (2005), “Migration of Health Professionals in Six Countries: A Synthesis Report”, WHO Regional Office for Africa.
- Bach, S. (2003), “International Migration of Health Workers: Labour and Social Issues”, Working Paper No. 209, ILO, Geneva.
- Barer, M.L. and G.L. Stoddart (1991), “Toward Integrated Medical Resource Policies for Canada”, prepared for the Federal/Provincial/Territorial Conference of Deputy Ministers of Health.
- Beine, M., F. Docquier and H. Rapoport (2008), “Brain Drain and Human Capital Formation in Developing Countries: Winners and Losers”, *The Economic Journal*, Vol. 118, No. 528, pp. 631-652, April.
- Bessiere, S. et al. (2004), “La démographie médicale à l’horizon 2025”, *Études et Résultats*, No. 352, DREES, Paris, November.
- Bhagwati, J.N. (eds.) (1976), *The Brain Drain and Taxation – Theory and Empirical Analysis*, Amsterdam, North-Holland, pp. xi-292.
- Bhagwati, J.N. and M. Partington (eds.) (1976), *Taxing the Brain Drain – A Proposal*, Amsterdam, North-Holland, pp. xiii-222.
- Bloor, K. et al. (2006), “Do We Need More Doctors?”, *Journal of the Royal Society of Medicine*, Vol. 99, pp. 281-287, June.
- Bosanquet, N. et al. (2006), “Staffing and Human Resources in the NHS – Facing up the Reform Agenda”, Reform Thinktank, London.
- Bourgueil, Y., J. Mousques and A. Tajahmadi (2006), “Improving the Geographical Distribution of Health Professionals: What the Literature Tell Us”, *Questions d’Économie de la Santé*, No. 116, IRDES, Paris.
- Brush, B., J. Sochalski and A. Berger (2004), “Imported Care: Recruiting Foreign Nurses to the US Health Care Facilities”, *Health Affairs*, Vol. 23, No. 3, pp. 78-87.
- Buchan, J. (2004), “Here to Stay? International Nurses in the UK”, Paper Commissioned by the Royal College of Nursing, available at www.rcn.org.uk/publications/pdf/heretostay-irns.pdf.

- Buchan, J. (2007), "Health Worker Migration in Europe: Assessing the Policy Options", *Eurohealth*, Vol. 13, No. 1, pp. 6-8.
- Buchan, J. (2008), "Health Workforce and International Migration: A Case Study on the United Kingdom", OECD Health Working Paper, forthcoming, OECD, Paris.
- Buchan, J. and L. Calman (2004), "Skill Mix and Policy Change in the Health Workforce: Nurses in Advanced Roles", OECD Health Working Paper, No. 17, OECD, Paris.
- Buchan, J., R. Jobanpura and P. Gough (2005), "Should I Stay or Should I Go?", *Nursing Standard*, Vol. 19, No. 36, pp. 14-16.
- Buerhaus, P.I., D.O. Staiger and D.I. Auerbach (2003), "Is the Current Shortage of Hospital Nurses Ending?", *Health Affairs*, Vol. 22, No. 6, pp. 191-198.
- Butler, C. and J. Eversley (2005), *More than You Think: Refugee Doctors in London, their Numbers and Success in Getting Jobs*, Refugee Doctor Programme Evaluation Network, London.
- Camerino, D. (2006), "Factors Influencing Turnover among Italian Qualified Nurses", Presentation at the 28th International Congress on Occupational Health, Milan, 11-16 June 2006, available at www.next.uni-wuppertal.de/download/conway2006b.pdf.
- Camerino, D. et al. (2006), "Low-perceived Work Ability, Ageing and Intention to Leave Nursing: A Comparison among Ten European Countries", *Journal of Advanced Nursing*, Vol. 56, No. 5, pp. 542-552, December.
- Cash, R. and P. Ulmann (2008), "Migration des professionnels de santé : le cas de la France", OECD Health Working Paper, forthcoming, OECD, Paris.
- Chaloff, J. (2008), "Mismatches in the Formal Sector, Expansion of the Informal Sector: Immigration of Health Professionals to Italy", OECD Health Working Paper, forthcoming, OECD, Paris.
- Chan, B. (2002), *From Perceived Surplus to Perceived Shortage: What Happened to Canada's Physician Workforce in the 1990s?*, Canadian Institute for Health Information.
- Chappell, D. and V. Di Martino (1999), "Violence at Work", *Asian-Pacific Newsletter on Occupational Health and Safety*, Vol. 6, No. 1.
- Chiha, Y.A. and C.R. Link (2003), "The Shortage of Registered Nurses and Some New Estimates of the Effects of Wages on Registered Nurses Labour Supply: A Look at the Past and a Preview of the 21st Century", *Health Policy*, Vol. 64, pp. 349-375.
- COGME – Council of Graduate Medical Education (2005), *Physician Workforce Policy Guidelines for the United States*, Sixteenth Report, 2000-2010.
- Commonwealth Secretariat (2003), *The Commonwealth Code of Practice for the International Recruitment of Health Workers*, London.
- COMON – Coalition of Michigan Organizations of Nursing (2006), "The Nursing Agenda for Michigan: 2005-2010: Actions to Advert a Crisis", COMON, available at www.michigancenterfornursing.org/mimages/NAText06.pdf.
- Connell, J. and B. Stilwell (2006), "Recruiting Agencies in the Global Health Care Chain", in C. Kuptsch (ed.), *Merchant of Labour*, ILO, Geneva.
- Cooper, R. (2008), "The US Physician Workforce: Where Do We Stand?", OECD Health Working Paper, forthcoming, OECD, Paris.
- Cooper, R. et al. (2002), "Demographic Trends Signal an Impending Physician Shortage", *Health Affairs*, Vol. 21, No. 1, pp. 140-154.
- Dalphon, D. et al. (2000), "Violence against Emergency Nurses", *Journal of Emergency Nursing*, Vol. 26, pp. 105-109.
- Dauphinee, D. (2006), "The Circle Game: Understanding Physician Migration Patterns within Canada", *Academic Medicine*, Vol. 81, Supplement No. 12, pp. 49-54.
- Department of Health (2004), "Code of Practice for the International Recruitment of Healthcare Professionals", London.
- Department of Health and Children (2002), "The Nursing and Midwifery Resource: Final Report of the Steering Group: Towards Workforce Planning", Dublin.
- DFID – Department for International Development (2007), *Moving out of Poverty – Making Migration Work Better for Poor People*, London.

- Dobson, J. and J. Salt (2007), "Foreign recruitment in Health and Social Care: Recent Experience Reviewed", *International Journal of Migration, Health and Social Leave*, Vol. 2, No. 3/4, pp. 41-57.
- Docteur, E. and H. Oxley (2004), "Health-care Systems: Lessons from the Reform Experience", OECD Health Working Paper, No. 9, OECD, Paris.
- Doyle, N., G. Hughes and E. Wadensjo (2006), *Freedom of Movement for Workers from Central and Eastern Europe*, Swedish Institute for European Policy Studies (SIEPS), Stockholm.
- Dumont, J.C. and J.B. Meyer (2004), "The International Mobility of Health Professionals: An Evaluation and Analysis Based on the Case of South Africa", *Trends in International Migration*, SOPEMI Edition 2003, OECD, Paris.
- Dumont, J.C. and P. Zurn (2007), "Immigrant Health Workers in OECD Countries in the Broader Context of Highly-skilled Migration", *International Migration Outlook*, Part III, OECD, Paris, pp. 162-228.
- Dumont, J.C. and P. Zurn (2008), "Health Workforce and International Migration: A Case Study on Canada", OECD Health Working Paper, forthcoming, OECD, Paris.
- Dumont, J.C., J.P. Martin and G. Spielvogel (2007), "Women on the Move: The Neglected Gender Dimension of the Brain Drain", IZA Discussion Paper, No. 2920, Bonn.
- Ebihara, S. (2007), "More Doctors Needed Before Boosting Clinical Research in Japan", *The Lancet*, Vol. 369, No. 9579, p. 2076.
- Expert Panel on Health Professional Human Resources (2001), "Shaping Ontario's Physician Workforce", Ontario Minister of Health and Long-Term Care.
- Farrell, G.A. (1999), "Aggression in Clinical Settings: Nurses' Views – A Follow-up Study", *Journal of Advanced Nursing*, Vol. 29, pp. 532-541.
- Fisher, E.S. et al. (2003), "The Implications of Regional Variations in Medicare Spending", Part 1: The Content, Quality and Accessibility of Care, *Annals of Internal Medicine*, Feb. 18, Vol. 138, No. 4, pp. 273-287.
- Galvin, R. (2007), "Pay-for-Performance: Too Much of A Good Thing? A Conversation with Martin Roland", *Health Affairs*, Vol. 25, pp. w412-w419.
- Goodman, D. (2004), "Do We Need More Physicians? The Answer Is to be Found in a Reexamination of Physician Productivity", *Health Affairs*, Web Exclusive, W4-67.
- Goodman, D.C. et al. (2001), "Are Neonatal Intensive Care Resources Located According to Need? Regional Variation in Neonatologists, Beds, and Low Birth Weight Newborns", *Pediatrics*, Vol. 108, No. 2, pp. 426-431.
- Gravelle, H. and M. Sutton (2001), "Inequality in the Geographical Distribution of GPs in England and Wales 1974-1995", *Journal of Health Services Research and Policy*, Vol. 6, No. 1, pp. 6-13.
- Gupta, N. et al. (2003), "Assessing Human Resources for Health: What Can Be Learned from Labour Force Surveys?", *Human Resources for Health*, Vol. 1, No. 5, available at www.pubmedcentral.nih.gov/picrender.fcgi?artid=179883&blobtype=pdf.
- Hasselhorn, H.M., B.H. Muller and G.P. Tackenberg (2005), *NEXT Scientific Report*, University of Wuppertal, Wuppertal.
- Hasselhorn, H.M., G.P. Tackenberg and A. Buescher (2006), "Work and Health of Nurses in Europe: Results from the NEXT-Study", University of Wuppertal, Wuppertal.
- Hawthorne, L. (2006), *Labour Market Outcomes for Migrant Professionals: Canada and Australia Compared*, Citizenship and Immigration Canada, Ottawa.
- Hawthorne, L., G. Hawthorne and B. Crotty (2006), *The Registration and Training Status of Overseas Trained Doctors in Australia*, Faculty of Medicine, Dentistry and Health Sciences, The University of Melbourne, Melbourne.
- Hildebrandt, N. and D. McKenzie (2005), "The Effects of Migration on Child Health in Mexico", Policy Research Working Paper Series, No. 3573, The World Bank and University of Nevada, Department of Resource Economics, Reno.
- Home Office (2008), *Accession Monitoring Report*, May 2004-December 2007.
- Hooker, S. (2006), "Physician Assistants and Nurse Practitioners: The United States Experience", *The Medical Journal of Australia*, Vol. 185, No. 1, pp. 4-7.

- House of Commons (2007), "Health Committee: Workforce Planning: Fourth Report of Session 2006-7", The Stationary Office, London.
- HRSA – Health Resources and Services Administration (2004), *What is Behind HRSA's Projected Supply, Demand and Shortage of Registered Nurses?*, HRSA, Rockville, September.
- Igushi, Y. (2006), *Growing Mismatches of Health Professionals in Japan*, Kwansai Gakuin University.
- ILO – International Labour Organisation (2006), *Merchant of Labour*, C. Kuptsch (ed.), ILO, Geneva.
- IMF – International Monetary Fund (2007), "World Economic Outlook", *Spillovers and Cycles in the Global Economy*, Chapter 5, IMF, Washington, DC.
- Janus, K. et al. (2007), "German Physicians on Strike – Shedding Light on the Roots of Physician Dissatisfaction", *Health Policy*, Vol. 82, pp. 357-365.
- Joint Learning Initiative (2004), *Human Resources for Health – Overcoming the Crisis*, Cambridge.
- Joyce, C., et al. (2007), "Riding the Wave: Current and Emerging Trends in Graduates from Australian University Medical Schools", *Medical Journal of Australia*, Vol. 186, pp. 309-312.
- Kaczmarczyk, P. (2006), "Highly Skilled Migration from Poland and Other OECD Countries – Myths and Reality", Reports and Analyses, Vol. 17/06, Center for International Relations, Warsaw.
- Kangasniemia, M., L.A. Winters and S. Commander (2007), "Is the Medical Brain Drain Beneficial? Evidence from Overseas Doctors in the UK", *Social Science and Medicine*, Vol. 65, pp. 915-923.
- Kinley, H.C. et al. (2001), "Extended Scope of Nursing Practice: A Multicentre Randomised Controlled Trial of Appropriately Trained Nurses and Preregistration House Officers in Pre-operative Assessment in Elective General Surgery", Health Technology Assessment, London.
- Kolars, J. (2001), "Forecasting Physician Supply and Demand", *Medical Education*, Vol. 35, No. 5, pp. 424-425.
- LaBonte, R., C. Packer and N. Klassen (2006), "Managing Health Professional Migration from Sub-Saharan Africa to Canada: A Stakeholder Inquiry into Policy Options", *Human Resources for Health*, Vol. 4, No. 22.
- Laleman, G., G. Kegels, B. Marchal, D. Van der Roost, I. Bogaert and W Van Damme (2007), "The Contribution of International Health Volunteers to the Health Workforce in Sub-Saharan Africa", *Human Resources for Health*, Vol. 5, No. 19.
- Leggat, S.G. (2007), "Effective Healthcare Teams Require Effective Team Members: Defining Teamwork Competencies", *BMC Health Service Research*, Vol. 7, No. 17, accessible at www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1800844#B3.
- Lennon, B. (2005), "Medical Workforce Expansion in Australia – Commitment and Capacity", 9th Medical Workforce Collaborative Conference.
- Mahal, A. and M. Mohanan (2006), "Medical Education in India: Implications for Quality and Access to Care", *Journal of Educational Planning and Administration*, Vol. 20, No. 4, pp. 173-184.
- Mahoney, R. et al. (2004), "Shortage Specialties: Changes in Career Intentions from Medical Student to Newly Qualified Doctor", *Medical Teacher*, Vol. 26, No. 7, pp. 650-654, November.
- Martin, J. (2007), "Editorial – The Medical Brain Drain: Myths and Realities", *Trends in International Migration*, SOPEMI Edition 2007, OECD, Paris.
- Martineau, T. and A. Willetts (2006), "The Health Workforce: Managing the Crisis Ethical International Recruitment of Health Professionals: Will Codes of Practice Protect Developing Country Health Systems?", *Health Policy*, Vol. 75.
- Maybud, S. and C. Wiskow (2006), "Care Trade: The International Brokering of Health Care Professionals", in C. Kuptsch (ed.), *Merchant of labour*, ILO, Geneva.
- Maynard, A. (2006), "Medical Workforce Planning: Some Forecasting Challenges", *The Australian Economic Review*, Vol. 39, No. 3, pp. 323-329.
- Mcintosh, T., R. Torgeson and N. Klassen (2007), "The Ethical Recruitment of Internationally Educated Health Professionals: Lessons from Abroad and Options for Canada", CPRN Research Report H/11, Health Network.
- Mensah, K., M. MacKintosh and L. Henry (2005), *The "Skills Drain" of Health Professionals from the Developing World: A Framework for Policy Formulation*, Medact, London.
- Minore, B. et al. (2005), "The Effects of Nursing Turnover on Continuity of Care in Isolated First Nation Communities", *Canadian Journal of Nursing Research*, Vol. 37, No. 1, pp. 86-100.

- NAO – National Audit Office (2007), *Pay Modernisation: A New Contract for NHS Consultants in England*, NAO, 19 April.
- Needleman, J. et al. (2002), “Nurse-Staffing Levels and the Quality of Care in Hospitals”, *The New England Journal of Medicine*, Vol. 346, No. 22, pp. 1715-1722.
- Nursing Council New Zealand (2006), *Workforce Statistics Update*, Nursing Council New Zealand, Wellington.
- Nyonator, F. and D. Dovlo (2005), “The Health of the Nation and the Brain Drain in the Health Sector”, in T. Manuh (ed.), *At Home in the World? International Migration and Development in Contemporary Ghana and West Africa*, Accra, Sub-Saharan Publishers, p. 229.
- NZHIS – New Zealand Health Information Service (2002), *New Zealand Nurses and Midwives 2000*, NZHIS, New Zealand.
- O’Brien-Pallas, L. et al. (2006), “The Impact of Nurse Turnover on Patient, Nurse, and System Outcomes: A Pilot Study and Focus for a Multicenter International Study”, *Policy, Politics and Nursing Practice*, Vol. 7, pp. 169-179.
- OECD (2003), *Poverty and Health – DAC Guidelines and Reference Series*, OECD, Paris.
- OECD (2004), *Towards High-Performing Health Systems*, OECD, Paris.
- OECD (2005a), *OECD Review of Health Systems – Finland*, OECD, Paris.
- OECD (2005b), *OECD Review of Health Systems – Switzerland*, OECD, Paris.
- OECD (2006a), “The Supply of Physician Services in OECD countries”, OECD Health Working Paper, No. 21, OECD, Paris.
- OECD (2006b), “Projecting OECD Health and Long-term Care Expenditures: What Are the Main Drivers?”, Economics Department Working Paper, No. 477, OECD, Paris.
- OECD (2007a), *International Migration Outlook*, OECD, Paris.
- OECD (2007b), *Health at a Glance*, OECD, Paris.
- OECD (2007c), *Regions at a Glance*, OECD, Paris.
- O’Connell, B. et al. (2000), “Nurses’ Perceptions of the Nature and Frequency of Aggression in General Ward Settings and High Dependency Areas”, *Journal of Clinical Nursing*, Vol. 9, pp. 602-610.
- Omeri, A. (2006), “Workplace Practice with Mental Health Implications Impacts on Recruitment and Retention of Overseas Nurse in the Context of Nursing Shortage”, *Contemporary Nurse*, Vol. 21, No. 1.
- Ordre National des Médecins (2006), *Étude de la Problématique des PADHUE*, Paper adopted during the 28 April 2006 session of National Council of the Medical Order, Dr Xavier Deau, Président de la Section Formation et Compétences Médicales, available at www.web.ordre.medecin.fr/rapport/padhue2006.pdf.
- Ormanczyk, M.E., C.M. Naftalin, A.C. Kydd and R.F. Cooper (2002), “Will More Women Choose a Surgical Career when Working Hours are Reduced?”, *Bulletin of The Royal College of Surgeons of England*, Vol. 84, No. 8, pp. 264-268, September.
- Paragona (2006), “Polish Doctors to Work in the Royal Danish Armed Forces”, Press Release, 5 May.
- Peterson, C.A. (2001), “Nursing Shortage: Not a Simple Problem – No Easy Answers”, *Online Journal of Issues in Nursing*, Vol. 6, No. 1.
- Reitz, J.G. (2001), “Immigrant Skill Utilization in the Canadian Labour Market: Implications of Human Capital Research”, *Journal of International Migration and Integration*, Vol. 2, pp. 347-378.
- Schofield, J. (2007), “Replacing the Projected Retiring Baby Boomer Nursing Cohort 2001-2026”, *BMC Health Service Research* 7:87; available at www.pubmedcentral.nih.gov/picrender.fcgi?artid=1906767&blobtype=pdf.
- Secretary of State for Health (2000), *The NHS Plan: A Plan for Investment. A Plan for Reform*, HMSO, London.
- Shamian, J. et al. (2003), “Nurse Absenteeism, Stress and Workplace Injury: What Are the Contributing Factors and What Can/Should Be Done about It?”, *International Journal of Sociology and Social Policy*, Vol. 23, pp. 81-103.
- Shield, M. (2004), “Addressing Nurse Shortages: What Can Policy Makers Learn from the Econometric Evidence on Nurse Labour Supply?”, *The Economic Journal*, Vol. 114, pp. F464-F498, November.
- Simoens, S. and J. Hurst (2006), “The Supply of Physician Services in OECD Countries”, OECD Health Working Paper, No. 21, OECD, Paris.

- Simoens, S., M. Villeneuve and J. Hurst (2005), "Tackling Nurse Shortages in OECD Countries", OECD Health Working Paper, No. 19, OECD, Paris.
- Stark, O. (2004), "Rethinking the Brain Drain", *World Development*, Vol. 32, No. 1, pp. 15-22.
- Tyson, S. (2007), "Human Resources for Health – Ignorance-based Policy Trends", DFID, Presentation at Sussex University, "Human Resources for Health and Migration: Mobility, Training and the Global Supply of Health Workers", 14-16 May.
- USDHHS – US Department of Health and Human Services (2006), *Registered Nurse Population: Findings from the March 2004 National Sample Survey of Registered Nurses*, Washington, DC.
- Von Zweck, C. and P. Burnett (2006), "The Acculturation of Internationally Educated Health Professionals in Canada", *Occupational Therapy Now*, Vol. 8, No. 3, pp. 22-25, May.
- Vujicic, M. et al. (2004), "The Role of Wages in the Migration of Health Care Professionals from Developing Countries", *Human Resources for Health*, Vol. 2, No. 3.
- Wagner S. et al. (2002), "A Catalogue of Current Strategies for Healthy Workplaces", Report commissioned for the Canadian Nursing Advisory Committee, Ottawa.
- Wanless, D. (2002), "Securing our Future Health. Taking a Long Term View", Final Report, H.M. Treasury, London.
- Watson, D.E et al. (2004), "Family Physician Workloads and Access to Care in Winnipeg: 1991-2001", *Canadian Medical Association Journal*, Vol. 171, No. 4, 17 August.
- Weiner, J. (2005), "Prepaid Group Practice Staffing and US Physician Supply: Lessons for Workforce Policy. What Can We Learn from Examining the Staffing Levels of Some of the Country's Largest Organized Delivery Systems?", *Health Affairs*, Web Exclusive, pp. W 4.43-59.
- Weiner, J.P. (2007), "Expanding the US Medical Workforce: Global Perspectives and Parallels", *British Medical Journal*, Vol. 335, pp. 236-239.
- Wennberg, J.E. and M.M. Cooper (eds.) (1998), *The Dartmouth Atlas of Health Care 1998*, American Health Association Press, Chicago.
- West, M.A. et al. (2002), "The Link between the Management of Employees and Patient Mortality in Acute Hospitals", *International Journal of Human Resource Management*, Vol. 13, No. 8, pp. 1299-1310.
- WHO – World Health Organization (2006), *World Health Report 2006: Working Together for Health*, WHO, Geneva.
- Wiskow, C. (2006), "Health Worker Migration Flows in Europe: Overview and Case Studies in Selected CEE Countries (Romania, the Czech Republic, Serbia and Croatia)", Working Paper No. 45, ILO, Geneva.
- World Bank (2006), *Close to Home: The Development Impact of Remittances in Latin America*, Washington.
- Young, R. and B. Leese (1999), "Recruitment and Retention of General Practitioners in the UK: What Are the Problems and Solutions?", *British Journal of General Practice*, Vol. 49, pp. 829-833.
- Zurn, P. and J.C. Dumont (2008), "Health Workforce and International Migration: Can New Zealand Compete?", OECD Health Working Paper, No. 34, OECD, Paris.
- Zurn, P., C. Dolea and B. Stilwell (2005), "Nurse Retention and Recruitment: Developing a Motivated Workforce", Issue Paper No. 4, International Council of Nurses, Geneva.

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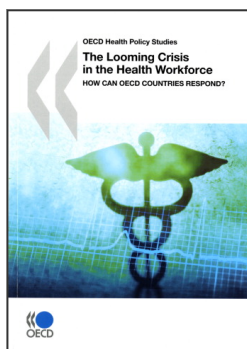


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