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HEALTH SYSTEMS AND POLICY ANALYSIS

POLICY BRIEF

# How can optimal skill mix be effectively implemented and why?

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This policy brief, written for the WHO European Ministerial Conference on Health Systems, 25–27 June 2008, Tallinn, Estonia, is one of the first in what will be a new series to meet the needs of policy-makers and health system managers.

The aim is to develop key messages to support evidence-informed policy-making, and the editors will continue to strengthen the series by working with authors to improve the consideration given to policy options and implementation.

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## Key messages

Skill-mix initiatives focus on changing professional roles – directly and indirectly. They change roles directly through extension of roles or skills, delegation, and the introduction of a new type of worker; they change them indirectly through modifications of the interface between services – that is, where care is provided.

Skill-mix initiatives may be motivated both by qualitative considerations (such as quality improvement, professional development and quality of work-life concerns) and quantitative considerations (such as shortages, maldistribution and cost-effectiveness).

Policy instruments that support the effective implementation of skill-mix initiatives include:

- modifying or introducing new professional roles through the development of different organizational and regulatory arrangements, including regulating professional scopes of practice and overcoming institutional barriers;
- supporting new or enhanced professional roles through collective financing and altered financial incentives; and
- ensuring the educational foundations (competence and capacity) for the new and expanded professional roles.

Across all initiatives, it is essential that the professional organizations affected and the government support new professional roles.

Skill-mix initiatives must be driven by need and must be sensitive to the health system and health professional; one-size-fits-all approaches are not helpful.

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## Executive summary

The first step towards determining and implementing an optimal skill mix within a health system involves defining the skill mix and achieving clarity about the key policy problems for which it is envisioned as a solution.

Skill-mix initiatives focus on changing professional roles directly or indirectly. Direct initiatives look at enhancement (by extending roles or skills), substitution, delegation and innovation (by introducing a new type of worker). Indirect initiatives, however, modify the interface between services – that is, where care is provided; they consider transfer (by moving the provision of a service from one health care setting to another), relocation (by shifting the location of a service without changing the people who provide it) and liaison (by using specialists in one health care sector to educate and support staff working in another sector).

The problems for which skill mix can be a potential solution include: shortages of certain provider groups and their maldistribution; rising health care costs and the related desire to improve the cost-effectiveness of health care service delivery; and quality improvement, including addressing professional development and quality of work-life concerns.

The optimal skill mix has been determined in different ways in different European contexts and has been implemented in diverse ways, according to the context. Skill-mix initiatives have sometimes been driven by the need or desire to change the professional roles of established professions or to introduce new professional roles. At other times, the initiatives have been driven by the need or desire to pursue a new strategic direction for health systems that required a shift in existing professional roles. Among five European countries that represent different types of welfare and health care systems – Finland, Germany, Spain, the Russian Federation and the United Kingdom – the most extensive deployment has taken place in the United Kingdom, followed by Finland; in Germany, Spain and the Russian Federation, it has taken place to a much lesser extent. Across all five countries, the initiatives that targeted changes in professional roles typically included modifications to structural factors – particularly, legislation, regulation of the scope of practice, certification, education and training (usually the first to be modified), and often also collective financing and the public provision of services.

The development and implementation of advanced practice nursing in the United Kingdom provide useful insights that are applicable to other European health systems. With significant support from government and a lack of opposition from the dominant medical profession, this initiative has been widely implemented in the United Kingdom. Arguably, the relative success of this initiative is dependent on conducive contextual factors in the United

Kingdom. The enabling contextual factors in the United Kingdom, however, are critical to a better understanding of the viability of various skill mix approaches in other countries.

The contextual factors that influence the implementation (and potential scaling up) of skill-mix initiatives include sensitivity to existing professional roles, the needs of the health system, and support from government and relevant professional associations or unions, and these differ from country to country. These factors can operate at several levels: the structural (macro) level; the institutional (meso) level; and the interactional (micro) level. Policy instruments that address skill-mix issues thus need to deal with:

- modifying or introducing new professional roles through the development of different organizational and regulatory arrangements;
- supporting new (or enhanced) professional roles through collective financing and changing financial incentives; and
- ensuring the educational foundations (competence and capacity) for new and expanded professional roles.

In all cases, the support of the professions affected and the government is essential.

As findings from studies of skill-mix initiatives are often difficult to generalize, two multistep approaches that move from identifying the problem and initiative needs to providing the capacity to undertake change and the choice of option – both of which reinforce the importance of the contextual elements – are highlighted in the concluding section of the policy brief. These multistep approaches can help health system managers and policy-makers determine whether and which skill-mix initiatives should be undertaken. Overall, however, changing services, which may require a shift in skill mix, may be a more effective approach than changing the skill mix directly.

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## Policy brief

### The policy issue: determining and implementing an optimal skill mix

#### *Defining skill mix*

Skill mix is a somewhat amorphous term that has come to mean different things to different stakeholders (1–3). Buchan and various colleagues (4–6) were among the first to define skill mix more generally as “the combinations of activities or skills needed for each job within the organization” (7), but more specifically as the particular mixture of occupations or grades or posts (depending on the system) in an organization. Similarly, Sibbald, Shen and McBride (8) define it as the “mix of skills or competencies possessed by an individual; ratio of senior to junior grade staff within a single discipline; or mix of different types of staff within a multidisciplinary team”. Other terms used in the literature for similar concepts include task shifting (9) and task delegation (10), which involves shifting tasks from one group of health care workers to another lower-level group or to a new group of workers entirely.

Beyond these loose definitions, a more useful distinction can be made between skill-mix approaches that focus on changing professional roles directly and those that change roles indirectly through modifications in the provision of services (Table 1).

#### *If skill mix is the solution, what is the problem?*

To better understand skill mix as a policy issue, it is important to address why there is a concern with existing roles, to describe the problems or challenges within European health systems that are related to this and to learn how these problems have affected particular groups or jurisdictions. A 2006 report from the WHO Regional Office for Europe (11) identified human resources for health challenges faced by all health care systems in the WHO European Region. These challenges include:

- looming shortages of some types of health care workers;
- accelerating labour migration;
- distributional imbalances (such as geographic, gender, occupational and institutional) of various types of workers; and
- qualitative imbalances (such as underqualification or misqualification) of health care workers.

Together these challenges have “given rise to a belated recognition of the centrality of human resources for health as the backbone of all health actions”

**Table 1. Categorization of skill-mix initiatives**

Mode	Action
<i>Changing roles</i>	
Enhancement	Increasing the depth of a job by extending the role or skills of a particular group of workers
Substitution	Expanding the breadth of a job – in particular, by working across professional divides or by exchanging one type of worker for another
Delegation	Moving a task up or down a traditional unidisciplinary ladder
Innovation	Creating new jobs by introducing a new type of worker
<i>Changing the interface between services</i>	
Transfer	Moving the provision of a service from one health care setting to another – for example, by substituting community care for hospital care
Relocation	Shifting the venue from which a service is provided from one health care setting to another, without changing the people who provide it (such as running a hospital clinic in a primary care facility)
Liaison	Using specialists in one health care sector to educate and support staff working in another sector (e.g. hospital outreach facilitators in primary care).

Source: Sibbald, Shen & McBride (8).

(12). Optimizing the skill mix is highlighted as a policy solution for a range of human resources for health problems. Achieving this optimization means not only changing roles between professionals, but it also means interfaces between services or simply enacting policies that locate the right professionals in the right place and retain them there. As such, the major issues for which an appropriate skill mix is a potential solution include: shortages of certain provider groups and (related to this) their maldistribution; a desire to improve the cost-effectiveness of health care service delivery in the face of rising health care costs; and quality improvement, including addressing professional development and quality of work-life concerns (5). These policy drivers often coexist, so that a variety of different skill-mix initiatives are required (Table 2).

**Table 2. New roles and skill mix: drivers, issues and possible interventions**

Driver and issue	Possible interventions
Respond to shortages of staff in particular occupations or professions	Substitute skills Improve utilization of available skills Develop a new role
Improve management of organizational costs – specifically labour costs	Reduce unit labour costs or improve productivity by altering staff mix or level
Improve quality of care	Improve utilization and deployment of staff skills by achieving the best mix of staff and roles
Achieve cost-effective use of new medical technology and interventions	Retrain staff Provide new skills Introduce a different mix or new type of role or worker
Maximize the health benefits of new programmes or initiatives by having appropriately skilled workers in place	Assess the cost-effective mix of staff required Enhance the skills of current staff Introduce new roles
Health system reform that involves cost-containment, improved quality of care and performance, and responsiveness of health sector organizations	Reprofile or re-engineer Adjust labour Introduce new roles Introduce new workers
Scope for changes in (or constraints on) roles of different occupations and professions	Change or enhance roles Require new skills
Changes in legislative environment, such as increased medical indemnity costs	Introduce new workers

Source: Buchan & Dal Poz (7).

### *Human resources for health: shortages and maldistribution*

In general, most countries claim to face shortages in human resources for health and, in particular, they often face shortages in relation to geographical location or skills. While some of these shortages are felt more acutely in certain countries and by certain professional groups, almost all countries suffer from a maldistribution of human resources, which is characterized by urban

concentration and rural deficit (13). Most countries further experience problems in matching the skills of professionals available to local health needs. Particular deficits are in public health, health policy and management skills.

Compounding these problems is the increased mobility of health care workers within the Region (11).

Staff shortages are one of the leading drivers of skill-mix initiatives. The United Kingdom, for example, has far fewer physicians per population unit than the other countries examined in this policy brief, and is below the European Union (EU) average (Table 3). This has been highlighted as one of the most critical issues facing the United Kingdom's National Health Service, and the government has responded with an explicit commitment for "more staff, working differently" (14).

In Finland, the shortage of doctors in specialized medical care in 2003 was 8%, and in primary health care the shortage was 11%. Also, it is estimated that 21% of chief physicians and 26% of chief nurses will retire between 2006 and 2010, potentially exacerbating existing shortages (15).

In Germany, after a phase of overproduction of doctors, the country saw a decline and subsequent stabilization in the number of medical students

**Table 3. Health care workers per 100 000 population for selected countries in the WHO European Region, 2006**

Country	Physicians	General practitioners	Nurses	Midwives
Finland	329.86	166.29	855.95	35.92
Germany	343.86	98.71	780.03 <sup>a</sup>	20.56 <sup>a</sup>
Russian Federation	430.89	27.27	805.93	45.98
Spain	322.11 <sup>b</sup>	73.76	743.68	~15 <sup>c</sup>
United Kingdom	212.61 <sup>d</sup>	67.31 <sup>e</sup>	~932 <sup>c</sup>	62.46 <sup>b</sup>
EU average	315.04	97.71	741.56	36.01 <sup>a</sup>

<sup>a</sup> 2005 figures.

<sup>b</sup> 2003 figures.

<sup>c</sup> Estimate based on ratio of doctors to nurses in Rechel, Dubois & McKee (11).

<sup>d</sup> 2002 figures.

<sup>e</sup> 2004 figures.

Source: *European Health for All database* (16).

entering the register between 1993 and 2000 (17). Since then, however, the number of doctors per capita has continued to rise. While the western part of the country therefore still has a large number of doctors across settings, a shortage in the eastern part of Germany, especially in rural areas, is a concern for the profession and policy-makers.

In the Russian Federation, although the Soviet system produced enormous numbers of physicians, reaching a ratio of 471 physicians per 100 000 population in the late 1990s, only 1500 were trained in modern family medicine or general practice – less than 0.2% of all physicians (18). As the Soviet version of a general practitioner (the *Uchastkovii terapevt* – a physician with a narrow clinical repertoire who serves as a primary contact for a geographically defined population and usually act as a referral point to secondary care) is dying out, with no new physicians entering the specialty, primary health care is, in general, greatly understaffed.

In Spain, there is concern about the number of nurses. The country has one of the lowest ratios of nurses per population unit in the EU (11). Also, the geographical distribution of nurses is more uneven than that of physicians. The difference between the regions with the lowest and highest ratios of nurses to population unit is more than twofold.

While skill-mix initiatives have been employed to address issues of shortages in human resources for health in various countries, such initiatives may inadvertently increase the shortages in another group, if they are not well developed or thought through (6). This consideration is developed in the section on factors influencing the ability to scale up skill-mix initiatives.

### *Rising health care costs*

In many contexts, skill mix is defined within a cost-containment discussion of efficiency and reform, which often results in the delegation of tasks to less skilled and, more importantly, lower paid workers. The substitution of cheaper for more expensive workers – for example, substituting care assistants for nurses – has also become increasingly apparent in many countries (7). Yet cost-effectiveness is not generally examined when pursuing such measures, and the savings from substituting low-cost for high-cost personnel are not assured, as they depend on the former not consuming more resources in delivering the same volume and quality of care as the latter (8). Also, changing the skill mix initially increases costs, because of the need to retrain staff and phase out older ways of working. Only in the longer term, once new roles are set and training programmes adopted, does the potential for cost savings exist. Cost savings should not therefore be the main driver for skill-mix initiatives, particularly not in the short term.

### *Professional development and work-life concerns*

The composition and orientation of the health workforce is also changing qualitatively, both in terms of work-life concerns and the desire for professional development. The introduction of the 1993 Working Time Directive (93/104/EC) in the EU, for example, has resulted in legislative changes in the United Kingdom that reduced the time junior doctors can work, thereby exacerbating pre-existing shortages (5). Moreover, career choices of an increasingly female medical workforce, aimed at achieving a more realistic balance between work and family, are creating a shortage of physicians in the United Kingdom and, more generally, across Europe (11); the work patterns of men are also changing.

With regard to professional development, nursing in most European countries has become more professionalized, requiring more time invested in education and training. Nurses in Germany and Spain, in particular, have increased educational requirements for entry to practice. Also, nurses have become more concerned about insufficient social recognition, inadequate career development, low wages, poor working conditions and unsupportive management. In terms of satisfaction of users and professionals, skill-mix initiatives are only beginning to address these qualitative dimensions of work and professional recognition.

### *Scope and methods*

In view of the concerns noted above, this policy brief addresses the question of how optimal skill mix can be determined and implemented. Recalling the definitions and drivers of skill mix, we focus on three broad elements:

1. changes to professional roles within established professions (enhancement, substitution);
2. proposals for new professional roles (innovation); and
3. proposals for new strategic directions for health systems, which require a shift in professional roles (transfer).

We focus in particular on the cases of Finland, Germany, Spain, the Russian Federation and the United Kingdom, as these represent different types of European welfare and health care systems (19–21). To help establish the context, Table 4 compares these systems on the basis of their regulation, coordination of provider groups and their services, and human resources in health management. This policy brief is based on a detailed literature review, including major policy and contextual background documents drawn from both primary and secondary sources. This includes a search of relevant web sites of relevant stakeholder groups and policy think tanks in Europe and abroad, along with extensive searches of relevant databases.

We also draw on a specific example, advanced practice nurses in the United Kingdom, from which some important insights can be gleaned about better understanding of the effects and requirements of skill mix. Also, we comment on the potential to scale up these and other skill-mix initiatives, by highlighting the key contextual factors that influence the outcomes of these initiatives, and conclude by highlighting some important issues about their appropriateness in solving persistent problems in human resources for health.

### **Alternative ways of addressing skill-mix initiatives in Europe**

This section examines the different ways that skill-mix initiatives – by changing roles, creating new roles and shifting roles – have been pursued in different policy and country contexts.

#### *Changing professional roles in established professions*

Skill-mix proposals for changing professional roles in established professions are captured in two of Sibbald, Shen and McBride's modes (8): enhancement and substitution (see Table 1, p.2). Some of the skill-mix initiatives pursued in the United Kingdom were included in the country's 2001–2005 Changing Workforce Programme, which called for developing the role of nurse practitioners (and other advanced roles for nurses and allied health professionals), so as to address the shortage of physicians. The report also called for developing the role of trained health care assistants to free nurses and other health professionals from part of their workloads (6). This was reiterated in the subsequent Wanless report, which suggested that, in addition to shifting care from physicians to nurses, health care assistants could cover about 12.5% of nurses' current workload (22).

In Finland, some enhancement and substitution proposals were initiated by the government's 2002 Decision in principle by the Council of the State on securing the future of health care (23). The decision resulted in many local initiatives, whereby nurses assumed tasks which had previously been the remit of doctors: for example, preventive care and long-term follow-ups for certain chronic diseases (such as type 2 diabetes, obesity, high blood pressure, asthma and rheumatism), diagnosis and care of certain mild, acute infectious diseases (such as respiratory and/or urinary tract infections), and drawing up certain health certificates.

Typically, the modification of the division of labour between doctors and nurses and between licensed university-trained nurses and practical vocationally trained nurses in Finland has been achieved through local negotiations within hospital districts and health centres (24). More than half of these initial pilot projects are becoming permanent arrangements (25). While a broad set of

Table 4. Comparison of the coordination of provider groups and human resources in health management

Finland	Germany	Russian Federation	Spain	United Kingdom
<b>Regulation</b>				
Centralized state regulation by the National Authority for Medicolegal Affairs (Ministry of Social Affairs and Health)	Decentralized corporate regulation Network of public law institutions, based on two pillars: statutory health insurance funds and physicians associations (joint self-administration of statutory health insurance care)	Centralized state regulation	Decentralized regulation Autonomous communities produce health care plans. Also, there is a centralized health plan.	Centralized state regulation Regulatory bodies increasingly include various stakeholders.
<b>Professionalization and human resources in health management</b>				
A broad range of health professional groups are licensed, granting them exclusive right to professional practice. All public sector professionals, including physicians, are employees, with salaries negotiated through comprehensive income-policy settlements. Since 2007, there are signs of a shift towards local settlements.	Academization of health professional groups (Bologna agreements), but no statutory recognition as a self-governing profession Some human resource management, but limited to the medical profession Control of entry to medical schools and ambulatory care	Until recently, the senior doctor in the hospital performed the duties of manager. Recently, new management-training courses have been introduced.	The majority of medical staff and other health care professionals are civil servants. All negotiations on working conditions are done centrally and, therefore, health managers have little power to manage health care professionals. After passing the entrance exams, health care workers receive a permanent status within the system.	Rapid professionalization New regulatory bodies Some human resource management, especially for physicians and nurses Active recruitment of foreign professionals

Coordination of provider groups and services			
<p>Municipalities are key producers of public health care services.</p> <p>They run primary health care centres and purchase specialized care from hospital districts.</p> <p>The role of private services has been increasing as a result of marketization.</p> <p>Private health care offers doctors lucrative opportunities to practise, but private services are often run by large firms.</p>	<p>The medical profession represents the provider side in major regulatory bodies.</p> <p>Other health professions are excluded.</p> <p>More recently, nurses have been included in hospital governance on the organizational level.</p> <p>Services are highly fragmented.</p> <p>Across hospital and ambulatory care, there is a lack of coordination.</p>	<p>The majority of health care personnel who work for government receive a salary.</p> <p>The salary is very low, but medical professionals lack a professional organization to lobby for higher salaries.</p> <p>In the private sector, the salary situation is somewhat better, but this sector is still underdeveloped.</p>	<p>Medical professionals are employed by regional hospitals or regional primary health care, in both cases, they receive salaries.</p> <p>There are also some general practitioners working in primary health care facilities, and they bill for their services.</p> <p>There is poor coordination between general practitioners and specialized care providers.</p>
<p>There is regulation across different professions.</p> <p>Inpatient and outpatient health care and social care are coordinated.</p>			

complex tasks has been referred to other professionals via these projects, this shift has revealed tensions in the division of labour. As doctors' salaries are substantially higher, nurses expect that their assumption of new responsibilities will be reflected in pay increases. Also, it is difficult to recruit nurses for increasingly demanding work when they are required to pursue additional studies, on their own time, to obtain the necessary qualification to undertake these extended tasks. Further, local negotiations between professional groups have at times been tense. Finally, the continued existence of symbolic professional boundaries is suggested by certain tasks, such as minor diagnosis and prescription, not having been extended to nurses or midwives.

In Germany, skill mix was discussed as an option for health reform for the first time in 2007. The initiative was not driven by government action or by pressure exerted by a professional body, but by the Advisory Council on the Assessment of Developments in the Health Care System, generally perceived as a policy think tank. Following a hearing with various health professional groups, the Council suggested that skill mix should be considered as a new strategy for more effective human resource management (3). Its report also made clear that the existing legal framework and education system act as barriers to skill-mix initiatives. While a redistribution of tasks – such as enabling certain groups of nurses to prescribe drugs – is desirable in Germany, it will thus require substantive changes in the law.

In the Russian Federation, the skill-mix issues of existing professional roles are generally concerned with enhancing the role of general practitioners working in primary care or with the balance between general practitioners and specialized physicians working in hospitals. Although the need to attract physicians to primary health care and to change the skill mix in favour of generalists has been proclaimed at all levels of health administration, it has not received the necessary support from senior health managers. Also, the system is insufficiently equipped to accommodate such a change. Consequently, the issue is being pursued through health system changes, rather than through changes in professional roles themselves.

To date, enhancement initiatives have focused almost exclusively on nurses. In these initiatives, extended roles for nurses have included: nurse-led primary care clinics for asthma; nurse-initiated thrombolysis; nurses as patient educators in rehabilitation; and specialist home care support nurses for patients with chronic obstructive pulmonary disease or multiple sclerosis. Sibbald, Shen and McBride found that, while nurses in primary care generally delivered as good quality care as did doctors, reported health gains for patients were modest in all cases (8). They also found that – although nurses were rated highly for their interpersonal skills, in terms of patient satisfaction – their longer consultations, greater number of investigations and higher patient recall meant that the net salary

cost savings over physicians were negligible. The substitution of nurse–midwives for physicians revealed similar findings as those noted in primary care, but the evidence base that supports the substitution of nurses by less trained staff lacked data on cost, efficiency and quality of care.

#### *Enhancement and substitution of nurses' roles in select European countries*

Progress in the enhancement and substitution of nurses' roles in Germany, Greece, Ireland, the Netherlands, Slovakia, Sweden and the United Kingdom is as follows (5).

- The United Kingdom is the only country to report some current level of use of nurses in advanced practice roles, including the capacity to prescribe.
- Greece, Ireland, the Netherlands and Slovakia report that pilot projects are under way or are being considered.
- Germany is planning for stronger emphasis on interdisciplinary cooperation.
- Sweden is increasing the competence of nurses in the areas of anaesthesia, diabetes and asthma, but otherwise there is no mention of substitution initiatives.

#### *Proposals for new professional roles*

Innovation refers to skill-mix initiatives that involve new professional roles, and this includes general practitioners with special interests, nurse practitioners, clinical nurse specialists and advanced practice nurses (8). The distinction between these initiatives and the enhancement and substitution initiatives discussed above is weak, however. For example, changes in skill mix in the United Kingdom have included the development of a new grade of consultant nurse within hospitals (6). But is this actually a new professional role or is it enhancement of an existing role? It is often questionable whether initiatives actually result in new types of worker or new types of work using existing staff (7).

Although not necessarily new, the *feldshers* in the Russian Federation (care providers similar to nurse practitioners that work in rural areas where there are no physicians) could also be considered in this category. Because of the shortage of general practitioners, which is particularly the case in rural areas, nearly 10% of nurses are *feldshers*. The utilization of new professional roles in primary health care in rural areas is not unique to the Russian Federation. New professional roles, such as nurse practitioners in some countries and physician assistants in the United States, have been developed to address shortages in rural areas. Interest in physician assistants has spread to the United Kingdom

(26), and some American-trained physician assistants have been hired in certain segments of the National Health Service (27).

Not only are new professional roles difficult to delineate, but they are also difficult to introduce. They first require formal acknowledgement and then appropriate and consistent regulation by clinical governing bodies. Also, health workers undertaking new roles require revised training, skills and competence. These and other challenges are discussed in the section on factors influencing the ability to scale up skill-mix initiatives.

### *Shifting professional roles to meet health-system changes*

Most proposals that require a shift in professional roles – so-called transfer policies – involve a move from hospital to community (8). This includes the movement of outpatient clinics to general practitioner clinics, as in the United Kingdom, as well as the redirection of patients from emergency rooms to primary care providers. Patient satisfaction tends to be higher with community-based care, and the quality of care is similar to that of institutional care. The cost-effectiveness of these transfer interventions, however, has yet to be adequately assessed.

The most significant health service reform initiative in the United Kingdom that relates to a shift in professional roles has been the introduction of the new National Health Service Direct service in November 2000. This is a single telephone number service with 24-hour availability. It provides health information and advice to callers. Calls are taken by nurses who apply decision support software to provide consistent clinical criteria, and the service is supplemented by an online service and web site that provide information and a guide to common symptoms. Under the National Health Service Direct model, primary care consultations have become the remit of call centre nurses – a shift in traditional nursing functions, a physical relocation of those nurses and additional training for them.

In Finland, a shift in service provision takes the form of a new transsectoral occupational qualification: practical nurses for health and social care. This has been introduced to address care provision and management issues for the elderly, given changing demographics and cost pressures. The new role merges a large number of narrowly framed occupations into one broader qualification (28). All trainees receive the same basic training in both health and social care during the first two years, but then they specialize in one discipline in the final year.

Another shift, in Finland, has been towards interdisciplinary primary health care teams; to a lesser extent, this is also occurring in Spain. In Finland, this shift has required modifying the role of general practitioners and public health nurses. In

Spain, the 1984 reform of primary health care has resulted in general practitioners moving from single practices to teams in publicly owned primary care centres.

The most extensive deployment of the various skill-mix initiatives delineated has been in the United Kingdom, followed by Finland; it has occurred to a much lesser extent in Germany, Spain and the Russian Federation. Across all country cases, the initiatives target health professionals on two fronts: changing professional roles and changing services. The former changes typically involve the need to modify the structural context (mainly legislation and regulation) of the scope of practice, certification, education and training, and often also collective financing and the public provision of services. As these are key factors that influence the potential scaling up of skill-mix initiatives, they are discussed in the section on factors influencing the ability to scale up skill-mix initiatives. First, however, we develop the example of advanced practice nurses in the United Kingdom, to highlight considerations that may be applied to scale up similar initiatives in other European health systems.

### **The case of the advanced practice nurse in the United Kingdom**

The International Council of Nurses defines an advanced practice nurse as “a registered nurse who has acquired the expert knowledge base, complex decision-making skills and clinical competence for expanded practice,” typically at the master’s degree level (29). Advanced practice nurses are able to make independent and collaborative decisions about patient care (5). This policy brief uses the term advanced practice nurse, while the designated term in the United Kingdom, according to the Royal College of Nursing, is advanced nurse practitioner. In the United Kingdom, the role of the advanced nurse practitioner was initially developed in primary care, but has since expanded to include tertiary care, and primarily involves urgent/emergency care.

Although advanced practice nurses and nurse practitioners have been part of the National Health Service since the early 1970s, their role was reaffirmed in a 1999 report by the Department of Health (30). At that time, there were roughly 3000 advanced practice nurses in the United Kingdom (5). Shortly thereafter, in a major report on reforming the National Health Service, the importance of breaking down traditional demarcations between clinical roles was emphasized (31). The 2002 Wanless report further suggested that nurse practitioners could take on about 20% of work currently undertaken by general practitioners and junior doctors (22).

A specific example of an advanced practice nurse takes the form of specially trained nurses who are able to prescribe medications and provide diagnoses from a specified list and for specific conditions. In May 2001, the Government

extended the ability to prescribe medications to more groups of nurses and for a wider range of drugs. By 2006, there were almost 7000 extended formulary nurse prescribers and over 6500 nurses qualified to become supplementary prescribers. The former had so-called independent prescribing responsibilities from the Nurse Prescribers' Extended Formulary to treat a defined list of conditions, while the latter could prescribe any controlled drug included in a patient's clinical management plan and agreed upon by a doctor.

In May 2006, this role was further expanded with the creation of nurse independent prescribers, and the Nurse Prescribers' Extended Formulary was discontinued. Nurse independent prescribers can prescribe any licensed medicine for any medical condition within their competence, including some controlled drugs, solely for the specified medical conditions. Nurse independent prescribers are not required to undertake extra training, and any additional individual training needs will be addressed through continuing professional development initiatives. They must, however, first meet the eligibility criteria determined by the Nursing and Midwifery Council. Once these are met, it is then a matter for local decision, in the light of local National Health Service needs and circumstances, whether nurse independent prescribers will be engaged.

### ***Critical contextual factors***

The major policy drivers for advanced-practice-nurse initiatives were staff and skill shortages, government-led policy initiatives and the establishment of a new type of service (5). All three drivers are indicative of substantial government support, and achieving such support is a crucial barrier to be overcome through uniform legislation and regulations.

As mentioned, the support of the medical profession is also an important consideration. In the United Kingdom, the medical profession has been supportive and is so to a greater extent than is the case for similar initiatives elsewhere – for example, in the United States. This may be due to different financial structures, such as the predominance of fee-for-service payment of doctors in the United States (which potentially puts doctors in competition with nurses for patients) and the predominance of capitation (payment to a provider of medical services according to the number of members in a health-benefit plan) and salary payments of doctors in the United Kingdom (which encourages delegation by doctors and team-based care). The 1990 general practitioner contract (fundholding, whereby a general practitioner controlled his or her budget for the purchase of hospital services) in the United Kingdom resulted in general practitioners' encouraging primary care nurses to undertake extended roles, such as promoting health and managing chronic diseases. These roles were enhanced by the skill-mix initiatives and were seen as "best able to meet

the new performance targets attracting payment. Thus economies of scale and scope accelerated growth in general practice team size and complexity" (8). Financial incentives and disincentives are also required to help bring about these kinds of skill-mix changes.

### ***Evidence as a major facilitator***

In addition to structural and political facilitators of skill-mix initiatives, the research evidence for initiatives that involve enhancement has also played an enabling role in the case of the United Kingdom. One of the earliest systematic reviews and meta-analyses in the area examined whether primary care nurse practitioners provide care equivalent to that provided by physicians (32). It was found that outcomes were at least equivalent and that patient satisfaction increased. Similar findings were reported in a Finnish systematic review (33).

A more recent meta-analysis found no appreciable differences in general between physicians and nurses in health outcomes for patients, process of care, resource utilization or cost (34). Similar to earlier studies, the more recent meta-analysis found that patient health outcomes were comparable, but that patient satisfaction was higher with nurse-led care; the effect on physician workload and direct cost of care was, however, variable. The authors cautioned that many studies were not of good quality.

### ***Equity considerations***

Unlike the implementation of enhanced nursing roles in other jurisdictions, such as the *feldshers* in the Russian Federation, nurse practitioners and advanced practice nurses in the United Kingdom are not limited to a particular geographic location, such as rural or remote underserved regions.

### ***Sustainability and scaling up***

While some factors facilitate skill-mix initiatives, others constrain them. In the United Kingdom, two of the major constraints were lack of funding and shortages of nurses with appropriate training (5). Indeed, the current educational and training infrastructure lacks the capacity to scale up the training of a significantly larger number of advanced practice nurses. The Royal College of Nursing has begun to address this by spelling out certain educational qualifications and competences for nurse practitioners (35), and particularly for nurses prescribing medications. Nevertheless, despite successful qualification following Nursing and Midwifery Council training and despite entry into the professional register, the nurse practitioner is not a protected title: that is, it has no legal standing. This lack of clarity in the definition of advanced practice nurse and nurse practitioner was highlighted as a major concern for public

protection, because the public was unclear about what roles or functions these nurses were entitled to perform.

In summary, with significant government support and a lack of opposition from the dominant medical profession, skill-mix initiatives that involve enhanced roles for nurses have been widely implemented in the United Kingdom. Arguably, the relative success of these initiatives is highly dependent on the context of United Kingdom: a centralized system of public financing, strong and permanent limitation on human resources (especially doctors), remuneration of health professionals by capitation payments, the development of group practice in primary care and the strong organization of nurses. Although the environment has largely been conducive in the United Kingdom, facilitating contextual factors need to be better understood to assess the viability of skill-mix initiatives in other countries.

## **Factors influencing the ability to scale up skill-mix initiatives**

### *Contextual framework*

The contextual factors that enhance or impinge on the scaling up of skill-mix initiatives can be divided into three levels: the macro, meso and micro levels (Table 5) (36,37).

Macro-level contextual factors operate across all skill-mix initiatives, and include the influence of regulations on scope of practice (such as professionalization, statutory recognition and the education system) and economic factors, which include coverage of services (public or private) provided by different health professionals, and payment models (such as salary or fee for service). The macro level also has an influence on liability issues, which cross economic and regulatory domains. Contextual factors at the meso level apply when setting up a programme in the local organizational context, and include those institutional arrangements that affect skill-mix initiatives within hospitals or other health care institutions and community settings, and any educational programmes (either entry to practice or continuing) that foster skill-mix initiatives and interdisciplinary practice more broadly. Contextual micro-level factors affect the quality of skill-mix initiatives at the level of everyday practice, and include interpersonal relations between the various health professionals and any previous experience they have had with skill-mix initiatives.

In view of this multilevel perspective, policy instruments for a skill mix need:

- to allow the modification or introduction of new professional roles through the development of different organizational and regulatory arrangements;

**Table 5. Contextual factors that affect skill-mix initiatives**

Level and factors	Issues and requirements
<b>Macro</b>	
<i>Economic factors</i>	
Funding	Stability and level of funding for skill-mix initiative
Remuneration	How providers are paid within and across disciplines
Insurance coverage	Needed especially for the expanded role or new role of providers; also dependent on setting (meso level)
<i>Regulatory and legal factors</i>	
Scopes of practice	Overlapping scopes of practice allow substitution of professionals with different training to take on new tasks
Registration requirements	Differences in education levels required for professional registration by discipline
Provider accountability	Compatibility of provider insurance across disciplines Comfort with delegating authority to most responsible provider
<i>Education and training</i>	Existing levels of education; opportunities for enhancement and new requirements
<b>Meso</b>	
Population health needs	Demographic, cultural and health needs of the local population
Provider supply	Availability of providers of different disciplines who can address population health needs with different skill mixes
Existing local health system	Recognition that the skill-mix initiative must fit within the existing mix of services, to meet gaps in service delivery and provide an effective continuum of care across settings
Stakeholder support	Support by professional association for skill-mix initiatives and lobbying efforts – either for or against
<b>Micro</b>	
Uncertainty/insecurity	Degree of uncertainty or insecurity about skill-mix initiatives among affected professionals, and any previous experience with skill mix
Professional cultures and practice styles	Degree to which differences in professional cultures and practice styles are recognized within skill-mix initiatives and adjustments made to respect differing needs and expectations
Communication	Formal and informal methods of communication among professionals involved in skill-mix initiatives
Working relationships	Pre-existing and evolving relationships among professionals involved in skill-mix initiatives

- to support new or enhanced professional roles through collective financing – involving them in the public provision of services – and changing financial incentives; and
- to ensure that the educational foundations (competence and capacity) for the new and expanded professional roles are in place.

As mentioned earlier, it is essential to have the support of the professional organizations affected. This is the case for those initiatives that target changing professional roles directly, as opposed to those that evolve from changes in the interface between services and that tend not to elicit the kind of upfront opposition seen in some of the case studies mentioned in this policy brief, such as Germany.

### *Organizational and regulatory arrangements*

Much of the research on skill mix highlights how organizational and regulatory structures can either facilitate or hinder change. In some cases, changes are required across sectors, such as health and social care, particularly if the initiative is related to the development of a new service or the transfer of an existing service from one sector to another (8). The regulation of professional scopes of practice are particularly critical and can either enable or hinder enhancement or substitution opportunities, depending on the accommodation of overlapping scopes of practice (36). In many instances regulations must be changed to enable the skill-mix initiative to be scaled up beyond the pilot phase, and this requires the support of the government and key stakeholders.

In Germany, where skill-mix initiatives have been pursued primarily to overcome the fragmentation of services (by establishing more integrated and collaborative services), fragmentation of the health system still serves as a barrier to change. Further barriers, which are embedded in the regulatory framework and stakeholder arrangements, include the absence of uniform regulation of provider organizations and poor coordination across the various sectors and occupational groups. The health system is also highly polarized by the doctors' associations and sickness funds, which act as a strong barrier to new professional groups and new players in the health policy process (38). Also, the regulation and organization of health care are highly physician-centred. Although the state is increasingly taking a more interventionist role, new health policies and incentives continue to focus on the medical profession.

The situation is similar in Spain, where many institutions with different interests are involved in decision-making about human resources for health, which is also the case in the decentralized system of health care provision. This makes it more difficult to gain a consensus on the necessary number of physicians or nurses and to coordinate the centralized regulation of education, training and

working conditions. Although formal responsibility for health care is officially delegated to the country's 17 autonomous communities, regulations governing the payment of health care professionals, labour relations and negotiation of working conditions mirror the civil service system and are established by the central government. This leaves health managers at the regional and facility level with limited flexibility in trying new models of staffing, and a limited capacity to negotiate incentives and to enforce the commitment of professionals to the objectives of a new model (39).

Centralization can thus be either a blessing or a curse for skill-mix initiatives, depending on whether there is central support and how the centre is viewed by the periphery. Centralized support has been forthcoming in the United Kingdom, though the approach has been to allow skill-mix initiatives to evolve locally and to scale these up, rather than a top-down approach to regulating and defining advanced professional roles (5).

### *Collective financing and changing incentive structures*

Appropriately funding new or enhanced professional roles and changing the financial incentives (or disincentives) for existing professionals have been highlighted as critical factors in the success and sustainability of skill-mix initiatives. This has been shown to be the case in the United Kingdom with regard to advanced practice nurses, but it is also true in countries outside the WHO European Region, including Canada and the United States (36,37,40).

In Finland, the expanded roles for nurses reveal the importance of appropriately paying substitute providers for their new work, and this has important implications for the potential cost-effectiveness of such initiatives. If the substitute professionals demand remuneration comparable to that of the current professional group – as they do – this negates any cost savings. To promote the implementation of such skill-mix initiatives, other factors would be needed, including shortages of the professional group currently performing the task.

In the Russian Federation, where most human-resource issues (such as working time, vacation, conditions of discharge and pension age) are defined by the federal law on labour, and where the federal law on tariff value regulates public salaries, the potential exists to provide central funding for skill-mix initiatives. Additional funding can also be made at the discretion of management – for example, from directly paid services or from voluntary medical insurance schemes. Measures have been initiated to adapt management and training of the workforce to the new challenges facing the Russian health system (18). Major difficulties during this transition process are adverse regulatory and working environments, inadequate health care infrastructure and weak financing mechanisms.

### *Educational competence and capacity*

As noted in the case of the United Kingdom, educational competence for enhanced or new professional roles is vital. So too is having the capacity to train for those new roles. This requires both standards for new or expanded roles and an appropriate educational delivery infrastructure.

In Spain, where nursing is a short-course programme, the educational capacity issue is crucial. The decision about whether the teaching of nursing should be upgraded to a long-term course is currently under discussion; this upgrade would be essential for any expanded scope of practice to be considered. Beyond this issue, however, introducing nurse practitioners into the Spanish health care system may not be realistic, given the lack of nurses and the relative surplus of physicians.

In the Russian Federation, where the focus has been on expanding the role of general practitioners, an educational system that is centrally controlled by the government is a potential facilitator. But even though the federal government supports the increase in the number of general practitioners, only a limited number of physicians actually go into this specialty, due in large part to concerns about it being low-status work. Financial incentives, such as scholarships explicitly for general practitioner studies, might be helpful. To help overcome the status barrier, a highly recognized credential, such as a family practice specialty, may be more important.

### *Professional associations*

The support (or at least the lack of opposition) of the professional associations or unions most affected by skill-mix initiatives is also important. As noted, the medical profession in the United Kingdom supported the advanced-practice-nurse initiative. In countries such as Germany and Spain, the medical profession strongly lobbies the government, and has given little support to skill-mix initiatives that affect its traditional scopes of practice. Also, as noted in the case of Finland, physicians have been particularly reluctant to delegate certain symbolic tasks, such as diagnosing and prescribing.

### **Conclusions**

In this policy brief, we have described the major drivers of skill-mix initiatives, the types of skill-mix options pursued and the critical contextual facilitators and constraints to the implementation of these pursuits across several countries in the European Region – all of which are experiencing a number of challenges to human resources for health, some similar and others country specific. Also, we have highlighted the evidence (or lack thereof) for the costs that can reasonably be expected and the consequences of some of these decisions and initiatives.

Some of the findings from the studies conducted on skill-mix initiatives, however, may be difficult to generalize. Moreover, skill-mix initiatives should be driven by the needs of a specific patient population and health system, rather than pursuing a universal ideal mix of health personnel (7).

Nevertheless, to assist health system managers and human resources for health decision-makers in determining whether and which skill-mix initiatives should be undertaken, two helpful approaches have been developed. The first approach consists of a four-step process:

1. evaluating the problem in terms of current services, activities and staffing configuration;
2. assessing the span of control in the face of contextual constraints;
3. assessing the resources available to support implementation and evaluation; and
4. selecting and implementing an approach to a skill mix, which is influenced by the time required for change and the desired coverage of the initiative.

The span of control is especially important and, while several elements have already been noted, a more complete list includes (41):

- national pay structure;
- staffing norms and staffing ratios;
- employment regulation – civil service and public sector fixed allocation of jobs;
- regulation and accreditation of health workers;
- autonomy of education sector;
- accreditation of organizations;
- external control of budgets;
- public–private mix of provision;
- labour market factors, such as relative pay and job protection;
- general economic situation; and
- societal and cultural values.

The second approach is complementary and consists of five steps (9):

1. gathering and analysing available human-resource data before reaching any decisions, which involves asking such questions as what tasks are needed, who is doing them now and who could complete these tasks instead;

2. establishing strategic partnerships, to provide the leadership and policy changes needed to implement skill-mix initiatives;
3. gathering client and community perspectives, which are important to ensure that skill-mix changes will be accepted by those they are meant to serve;
4. carefully evaluating the human-resource implications; and
5. carefully considering the recruitment strategies and selection criteria used to help meet deployment goals, such as providing better coverage in rural or underserved areas.

Beyond these two helpful multistep approaches, both of which reinforce the importance of the key contextual elements we have considered, it is important to reiterate that skill-mix initiatives should be driven by the needs of local health systems and patients. At the same time and in terms of potential policy decisions, it appears that changing health services, which then requires a shift in skill mix, may be a more effective approach than changing the skill mix directly.

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