

Increasing access to health workers in remote and rural areas through improved retention

Background paper

for the first expert meeting to develop evidence-based recommendations to
increase access to health workers in remote and rural areas
through improved retention

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Introduction

The Department of Human Resources for Health at WHO is implementing a programme of work to support Member States to address the issue of inequitable distribution of health workers in remote and rural areas. This programme is a response to requests from Member States affected by the global health workforce crisis^{1,2}, as well as a response to the recent calls for action from the Kampala Declaration and Agenda for Global Action³ and the G8 Communiqué⁴. Moreover, increasing access to health workers in such underserved areas will help countries improve their health outcomes, based on the values, principles and approaches of primary health care, as highlighted in the recent “World health report: primary care now more than ever” (WHO, 2008).

Currently, there is a lack of specific operational solutions and recommendations that countries can adapt to their specific context to respond to this challenge. This is particularly important, as the topic is of relevance for both developed and developing countries. In this context, WHO’s programme of work aims to provide up-to-date and evidence-based recommendations to Member States on effective strategies that can be employed to ensure health workers are where they are most needed in a sustainable manner. It consists of three main strategic pillars:

- building and sharing the evidence base on effective strategies that increase access to health workers in remote and rural areas
- supporting countries to evaluate, adapt and implement such strategies
- developing and disseminating evidence-based recommendations on this topic.

This paper serves as background documentation for the first expert meeting for developing the evidence-based recommendations for increasing access to health workers in remote and rural areas through improved retention, to be held in Geneva on 2-4 February 2009. It is intended to provide an overview of the issues, challenges and potential solutions to the problem of inequitable access to health workers in remote and rural areas.

The paper is divided in six main sections:

1. Context: the global health workforce crisis and re-emphasizing the importance of the health workforce for achieving health outcomes within strong health systems.
2. Overview of indicators that can be used to document and measure the problem of maldistribution of health workers.
3. Choices of location of health workers as a critical element in the design of effective interventions and the main factors that influences those choices.
4. Analysis of the available evidence on effective interventions for increasing access to health workers in rural and remote areas and proposes a typology for these interventions.
5. Gaps in the evidence, methodological challenges and challenges for implementation at country level.
6. Concluding remarks and highlights for further discussion; potential research questions for which recommendations will be developed; and proposals for the scope of these recommendations.

¹ http://www.who.int/gb/ebwha/pdf_files/WHA57/A57_R19-en.pdf

² http://www.who.int/gb/ebwha/pdf_files/WHA59/A59_R23-en.pdf

³ <http://www.who.int/workforcealliance/Kampala%20Declaration%20and%20Agenda%20web%20file.%20FINAL.pdf>

⁴ http://www.g8summit.go.jp/eng/doc/doc080714__en.html

1) Global shortages and inequalities at national level

It is by now widely acknowledged that health workers, as an integral part of health systems, are a critical element in improving health outcomes. *The World Health Report 2006: working together for health* sounded the alarm that, without sufficient numbers of adequately trained and supported health workers, there is a significant risk of not attaining the health-related Millennium Development Goals (MDGs) (WHO, 2006)

Country evaluations of disease-oriented programmes have found that the lack of appropriately trained and motivated health workers is one of the major bottlenecks in implementing evidence-based health interventions to improve maternal and child health, and to address HIV/AIDS, malaria and tuberculosis (Dreesch et al., 2005). The absence of well educated and properly managed health workers was also identified as one of the health systems constraints to achieve the MDGs, along with poor infrastructure, drugs and supply systems, and information systems (Travis et al., 2004).

There is indeed a positive correlation between the availability of health workers and better health outcomes, as well as increased coverage of essential health interventions (figure 1). These correlations have been demonstrated in a number of cross-country ecological analysis (Robinson and Wharrad, 2000; Robinson and Wharrad, 2001), (Anand, 2004), (Zurn et al, 2005), (Speybroek et al, 2006), (Anand and Barnighausen, 2007).

Figure 1. Density of health workers (doctors, nurses and midwives) and probability of survival

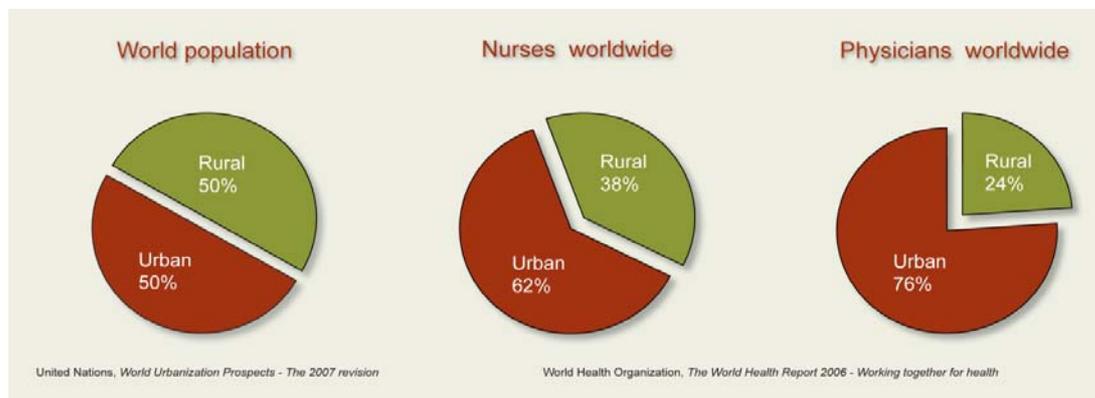


Source: World health report 2006: working together for health. WHO, 2006.

The World Health Report 2006 estimated that the world lacks about 4 million health workers, if a minimum level of health outcomes is to be achieved (WHO 2006). The report identified 57 'crisis' countries as being the most affected by this dearth in health personnel, predominantly in Sub-Saharan Africa and Asia. However, health worker shortages are currently reported by many other countries, both developed and developing. Such shortages are symptoms of a poorly managed health workforce and health care system. The causes of the crisis are complex, and have to do with insufficient production capacity, but also with an inability to keep the workers that are being produced in the places where they are most needed. Therefore, because of the complex web of factors that influences the mobility of health workers, any efforts to scale up the health workforce in response to the crisis must be combined with effective measures to attract and maintain both existent and newly trained health workers where they are needed most.

In the majority of countries, rural and remote areas are usually lacking sufficient numbers of health workers. Approximately one half of the global population lives in rural areas, but these areas are served by only 38% of the total nursing workforce and by less than a quarter of the total physicians' workforce (figure 2). At the country level, imbalances are even more prominent (see section 2). There are also countries, such as some francophone sub-Saharan African countries (Cote d'Ivoire, Mali, Democratic Republic of Congo), where there is large overproduction of health workers, with medical unemployment in urban areas, and at the same time with shortages in rural areas. Other countries have apparently a sufficient numbers on average, but with shortages in rural areas (Germany, France).

Figure 2. Rural/urban worldwide distribution of physicians, nurses and population



2) Access to health workers in remote and rural areas – documenting the problem

Definitions

The task of defining rural areas has always been particularly challenging. The term 'rural' invokes images of farms, villages, small towns, and open spaces. But there is no consensus on specific definition for these areas. This also reflects the reality that “rural” and “urban” are multidimensional concepts, making clear-cut distinctions between the two difficult. Is population density the defining concern, or is it geographic isolation? Is it small population size that makes it necessary to distinguish rural from urban? If so, how small is rural? Is there a socio-economic dimension that differentiates between the two? The OECD has recently proposed a common definition for the purpose of conducting comparative analysis between countries for rural development (see box 1 in the annex).

The United Nations itself recognizes the difficulty of defining urban and rural areas globally, stating that, “because of national differences in the characteristics that distinguish urban from rural areas, the distinction between urban and rural population is not amenable to a single definition that would be applicable to all countries” (United Nations, 1998). Rural areas are usually defined as “what is not urban” (United Nations, 2004), and so inconsistencies in the definition of what is urban lead to inconsistencies in characterizing what is rural. An urban agglomeration is generally easier to define. The United Nations describes it as a place that “comprises a city or town proper and also the suburban fringe or thickly settled territory lying outside, but adjacent to, its boundaries. A single large urban agglomeration may comprise several cities or towns and their suburban fringes. (United Nations, 1998).

Each country has its own definition for these terms, taking into account in most cases two main elements: the settlement profile (population density, availability of economic structures) and the accessibility from an urban area (distance in kilometres or hours drive).

Because of difficulties in agreeing on a single definition, for the purpose of this paper, the following definitions are proposed:

'Rural areas' are considered to be those areas which are not urban in nature. An 'urban agglomeration' refers to the de facto population contained within the contours of a contiguous territory inhabited at urban density levels without regard to administrative boundaries. It usually incorporates the population in a city or town plus that in the sub-urban areas lying outside of - but being adjacent to - the city boundaries (United Nations, 2008).

"Under-served areas" can be interpreted in the broadest sense. It refers to geographical areas where relatively poorer populations reside - areas that have limited access to qualified health care providers and health services of adequate quality. It may include, for example: remote rural areas; small or remote islands; urban slum areas; areas that are in conflict or post-conflict; refugee camps; and areas inhabited by minority or indigenous groups⁵.

⁵ http://www.who.int/alliance-hpsr/callsforproposals/Alliance%20HPSR_IncentivesAttractAndRetainHealthWorkers.pdf

This paper however focuses on recent research conducted mainly in rural and remote areas, with less emphasis on areas in conflict or post-conflict, urban slums, and refugee camps. Further revisions and updates will expand on those areas if deemed necessary by the expert group.

In addition, the paper has mainly focused on three types of health workers: doctors, nurses and midwives. Other types of health workers, such as dentists, pharmacists, managers and support workers can be further analysed in further revisions.

Inequalities and imbalances – measurement issues

Almost four decades ago it was noted that "the availability of good medical care tends to vary inversely with the need for it in the population served" (Hart, 1971). This remains still valid today.

Documenting the extent of the inequalities and maldistribution of health workers can be done using a variety of measures. The most commonly used are the health workers densities in urban compared with rural areas. Other measures include the vacancy rates, turn-over rates, attrition rates, absenteeism, and unemployment rates.

The global averages presented in the introduction hide even deeper inequalities on a country by country basis, for both developed and developing countries. For example, in Bangladesh: 30% of nurses are located in four metropolitan districts where only 15% of the population lives (Zurn et al, 2004). In South Africa rural areas are inhabited by 46% of the total population, but only 12% of doctors and 19% of nurses are working there (Hamilton and Yau, 2004), In South Africa (Statistics SA, 1996, Rensburg, 1999), where 46% of the population lives in rural areas, only 27% of general practitioners, 25% medical specialists, 7% dentists, and 6% psychologists practice in those areas.

In Kenya, 64% of psychiatrists are located in the capital, Nairobi, which accounts for only 7.5% of the population; and in 2002 in Mali, 265 midwives were posted in Bamako or in regional hospitals, while only 164 were working at the peripheral level. As a result, only 24% deliveries were attended by a skilled professional.

In USA (Ricketts, 2000) – 9% of registered physicians practice in rural areas, whereas 20% of the population live in rural areas. In France there are also large inequalities in the density of general practitioners, with well-off areas of the south of France and Paris *intra-muros* being much more endowed than the centre or north (Cash and Ulmann, 2008) (figure 3).

While rural Canada covered 99.8% of the nation's territory, and accounted for 24% of the Canadian population in 2006, this only represents 9.3% of the physician workforce. Often times, shortages in rural areas in developed countries causes a pull factor for health workers from developing countries, with severe consequences for the latter. Table 1 presents the density of doctors by size of census metropolitan areas and agglomerations (urban areas) and by Metropolitan Influence Zone categories (rural areas) (Dumont et al, 2008).

Figure 3. France density of general practitioners

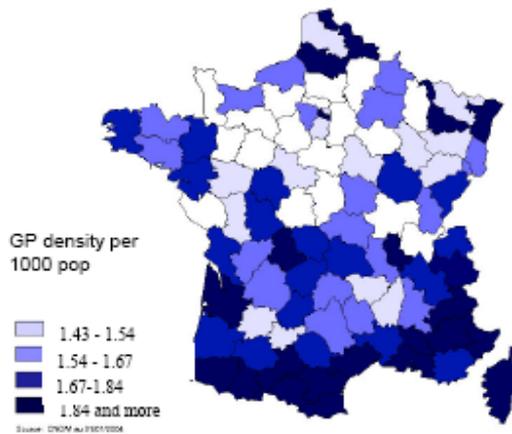


Table 1. Share of foreign-trained physicians and density of physicians by type of urban/rural communities, 2006

Rural /Urban	Size of area	Share of foreign-trained physicians	Density of physicians
Urban communities	10,000-24,999	39.6	2.4
	25,000-49,999	34.3	2.2
	50,000-99,999	18.6	1.9
	100,000-499,999	22.7	2.7
	500,000-999,999	16.8	3.4
	1,000,000+	21.2	2.1
Rural com.	Strong MIZ	27.4	0.7
	Moderate MIZ	26.9	1.0
	Weak MIZ	40.2	1.8
	No MIZ	30.1	0.7

Source: Dumont et al, 2008

Vacancy data can give some indication of the inability of an organization to fill a post. They are defined as % of unfilled posts. For example in Tanzania in 2003, 60% of posts for personnel with nursing skills were vacant (Wyss, 2003). The NHS in England reports 'three month' vacancies- i.e. posts that have remained unfilled for three months or more. The most recent vacancy data available is for March 2006 in the NHS in England, and coincides with the period when financial difficulties were impacting on staffing in the NHS. Funded but unfilled posts that are recorded as vacant may give some indication of the number of jobs that are 'hard to fill' because of staffing movement or shortages. The regional pattern of vacancies does vary across profession; for doctors, the northern and eastern regions have tended to report higher than average levels of three months vacancies, while for nurses, the hardest to fill posts were reported in the regions in London and elsewhere in the South East of England, reflecting higher living costs in these regions for non-medical staff (tables 2 and 3).

Table 2. Three-month vacancy rates for doctors/dentists by geographical distribution, 2006, NHS

Total England	1.8%
North East Total	2.3%
North West Total	2.5%
Yorkshire and the Humber Total	3.0%
East Midlands Total	1.7%
West Midlands Total	1.3%
East of England Total	2.2%
London Total	1.8%
South Central Total	0.7%
South East Coast	1.1%
South West Total	0.9%

Source: NHS Vacancy Survey 2006

Table 3. Three month vacancy rates for registered nurses by geographical distribution, 2006, NHS

Total England	0.9%
North East Total	0.6%
North West Total	0.4%
Yorkshire and the Humber Total	1.0%
East Midlands Total	0.6%
West Midlands Total	0.2%
East of England Total	1.4%
London Total	2.0%
South Central Total	1.1%
South East Coast	1.0%
South West Total	0.9%

Source: NHS Vacancy Survey 2006

In France the question of vacant post is regularly considered in studies on physicians, particularly for specialties that are less attractive. Today, there is more a problem of geographical maldistribution rather than a lack of physicians. The number of vacant posts varies from one region to another, with a particularly difficult situation in the overseas territories. Based on a report in 2006 (Berland report, 2006, cited in Cash and Ulmann, 2008), the vacancy rates are higher than 30% in Mayotte, 41 % in Guyana and Guadelupe, and 20% for the regions of Auvergne, Basse-Normandie, Bourgogne, Franche-Comté, Limousin, Lorraine, Nord-Pas-de-Calais, Martinique et Picardie. The vacancy rates by specialties are higher for maxillo-facial surgery, plastic surgery, oncology, emergency medicine, forensic medicine, anesthesiology, psychiatry and radiology. (Cash, Ulmann, 2008).

There are also other indicators to measure the movements of health workers in general, such as turnover rates, absenteeism, unemployment or dual employment. For example, USA had 20-30 % nursing turnover rate in 2002, compared to 50% in 1950s (Zurn et al, 2005). In South Africa there were 35 000 unemployed registered nurses, despite 32 000 vacancies (OECD, 2004). However, it is difficult to get detailed data on these measures broken down by geographical area.

3) Health workers' choices of location

Trends in health workforce

From the literature, we can observe three main trends in health workforce today:

- People are moving very strongly towards work-life balance models
- People are motivated by a complex structure of rewards, in which non-financial benefits play an increasingly important role
- People will move quickly to another job or place if their expectations are not met.

In this context, it is increasingly difficult for managers and policy makers to recruit and retain an adequately skilled and motivated health workforce. Motivation and job satisfaction have been proven to be critical to increasing the performance of health workers and thus the performance of the health system. The problems in recruitment and retention will lead to workforce shortages, while inability to motivate health workers will lead to decreased productivity. It is therefore essential for policy makers to have a good understanding of recruitment, retention and motivation issues.

Conceptual framework and the research domain

The final result of having health workers in remote and rural areas depends on two inter-linked aspects:

- a) the factors that influence the decision or choice of health workers to come to, stay in or leave those areas, and
- b) the extent to which health system policies and interventions respond to these factors.

The literature on health worker retention in general covers two main aspects:

1) The extent of the problem:

- a. descriptive studies highlighting the extent of imbalances and deficits in health personnel in rural and remote areas
- b. analysis of factors influencing decisions and choices of health workers to come to, stay in or leave remote and rural areas.

2) Retention interventions, either proposed and/or evaluated:

- a. descriptions of potential/proposed interventions, which could be designed in a specific context, given the factor analysis, but which were never implemented
- b. evaluations of specific retention strategies.

Table 4 in the appendices presents a summary of studies that attempted to document the problem of rural/urban imbalances and to identify the factors affecting labour participation, choice of location, and decision to stay in or quit rural or remote areas. We identified 55 studies that cover 30 countries.

Factors influencing choices of location

The factors affecting movements of health workers need to be analysed and understood in the larger context of the global health labour market. There is a vast literature on factors affecting choices of location in rural and remote areas, and they have been well identified and summarized in some recent reviews (Dieleman, 2006, Lehmann et al, 2008). Recently, these factors have become to be known as 'push' and 'pull' factors, mainly in relation to research on internal and international migration of health workers (Zurn et al, 2004, WHO, 2004).

"Pull" factors are identified as those which attract an individual to a new destination. These might include improved employment opportunities and/or career prospects, higher income, better living conditions or a more stimulating environment. 'Push' factors are those which act to repel the individual from a location. They often mirror "pull" factors and might include loss of employment opportunity, low wages, poor living conditions, lack of schooling for children, etc. (Lehamnn et al, 2008).

There are many theories and models trying to explain the factors involved in workers' mobility. Some originate in economic theory, such as the Neoclassic Wage Theory, which suggests that the choice is driven largely by financial motives and by the probability of finding employment (in Lehmann et al, 2008). In this sense, it has been argued that "a health worker will accept a job if the benefits of doing so outweigh the opportunity cost" (Hongoro, Normand, 2006).

There are also behavioural theories, starting with those of Maslow and Herzberg, which put at the centre of a more complex decision-making process the satisfaction that workers get out of their job.

Given their importance in the design and implementation of retention strategies, it is critical to have a very good understanding of these factors. Often, however, understanding them requires careful research methods, as these factors are related to human behaviour and individual preferences, which are difficult to quantify. Various methods have been proposed to identify the factors related to choices of location, from more traditional semi-structured interviews or focus groups, to more recent methods such as the discrete choice experiment. The latter method is an approach by which detailed choices are presented to health workers, and they are asked to choose between two possible scenarios until a set of factors is identify that fully explain the decisions to remain in rural or remote areas (Chomitz et al, 1998; Mangham and Hanson 2007; Hanson and Jack, 2007; Mangham, Hanson, McPake 2009).

The complexity of these factors makes their categorization difficult, but they are generally discussed as individual, organizational or broader environment factors. They do not influence health workers' choices and decisions for location or practice in an isolated manner, but rather interact and influence each other. Generally discussed as individual, organizational and larger environmental factors, they need to be well identified so that appropriate responses can be designed. Therefore, the research methodologies used to elicit these factors need to be harmonized and their pertinence improved.

4) Attracting and keeping people in remote and rural areas - what works?

As said before, the final result of having health workers in remote and rural areas depends on two inter-linked aspects:

- a) The factors that influence the decision or choice of health workers to come to, stay in or leave those areas, and
- b) The extent to which health system policies and interventions respond to these factors.

What often happens is that the health system response is not aligned with the factors influencing health workers choices, and this response is most often a stop-gap measure (such as for example increasing wages or rural allowances), rather than a longer term cohesive strategy.

An extensive literature review conducted by WHO has found that 19 countries have put in place various interventions to respond to this challenge, but these interventions are at various stages of implementation, and very few have been actually evaluated for impact. The methodology used for this review is detailed in box 2 in the annex. Table 5 in the appendices presents a summary of the studies that either described retention strategies or evaluations of such strategies (table 5).

Mapping the policy interventions

Six recent published literature reviews, of which two are systematic reviews and one is a Cochrane protocol for a systematic review, have attempted to provide a systematic analysis of the literature on the various strategies that have been used to increase access to health workers in remote and rural area (Grobler et al, 2005, Chopra et al, 2008, Bourgueil et al, 2006, Lehmann et al, 2008, Sempowski et al, 2003, Wallis-Shattuck, 2008). Other on-going reviews have also attempted an analysis of these various retention strategies (World Bank, 2009, forthcoming).

Based on these reviews, it is proposed to group the various interventions into the following three categories or domains of intervention:

- a) education and regulatory interventions,
- b) monetary compensation (direct and indirect financial incentives), and
- c) management, environment and social support.

This grouping is proposed for further discussion during the first expert meeting. Table 6 presents the main types of interventions in each of the proposed category.

Table 6. Categories of interventions used to improve retention of health workers in remote and rural areas

Category of intervention	Examples
A. Education and regulatory interventions	• Targeted admission of students from rural background
	• Recruitment from and training in rural areas
	• Changes / improvements in medical curricula
	• Early and increased exposure to rural practice during undergraduate studies (diversification of location of training sites)
	• Educational outreach programmes
	• Community involvement in selection of students
	• Compulsory service requirements (bonding schemes)
	• Conditional licensing (license to practice in exchange of location in rural areas for foreign doctors)
	• Loan repayment schemes (paid studies in exchange of services in rural areas for 4-6 years)
	• Producing different types of health workers (mid-level cadres, substitution, task shifting)
• Recognize overseas qualifications	
B. Monetary compensation (direct and indirect financial compensation)	• Higher salaries for rural practice
	• Rural allowances, including installation kit
	• Pay for performance
	• Different remuneration methods (fee for service, capitation etc)
	• Loans (housing, vehicle)
	• Grants for family education
	• Other non-wage benefits
C. Management, environment and social support	• General improvement in rural infrastructure (housing, roads, phones, water supplies, radio communication etc)
	• Improved working and living conditions, including opportunities for child schooling and spouse employment, ensured adequate supplies of technologies and drugs
	• Supportive supervision
	• Support for continuous professional development, career paths
	• Special awards, civic movement, and social recognition
	• Flexible contract opportunities for part-time work
	• Measures to reduce the feeling of isolation of health workers (professional/specialist networks, remote contact through telemedicine and telehealth)
	• Increased opportunities for recruitment to civil service

Aligning choices of location with interventions

Also observed is often times a lack of coherence between what is proposed as a retention strategy and the factors that matter for health workers in their choice for location. Most often countries have tried to implement financial incentives. This is despite the fact that factor analysis studies have consistently showed that financial incentives and awards are neither the first nor the most important factor in the decision to leave or stay in a remote or rural area. Moreover, this type of intervention can be very costly, and may not be sustainable in the long run, and there is a risk of spill-over effects towards other service sectors.

Table 7 attempts a correlation between the factors influencing the choices and decisions of health workers to practice in remote and rural areas and the categories of interventions that could respond to those factors. The deepest concerns of health workers when it comes to practicing in remote and rural areas are those related to the socio-economic environment, such as working and living conditions, access to education for children, availability of employment for spouses, insecurity, and work overload. It has been observed that strategies that can respond to these concerns are rarely designed and implemented by governments. Effective interventions must operate on the set of key determinants, and will need to address local contextual factors as well as broader sectoral factors that are affecting worker motivation at the local level.

Table 7. Push and pull factors for the movement of health workers from rural to urban areas, by category of potential policy intervention

Category of retention intervention	Push factors	Pull factors
Education and regulatory interventions	<ul style="list-style-type: none"> • desire for further training • lack of appropriate skills • desire to get international experience 	<ul style="list-style-type: none"> • access to continuing medical education and professional development
Monetary compensation (direct and indirect financial incentives)	<ul style="list-style-type: none"> • poor remuneration • lack of private sector or opportunities for moonlighting 	<ul style="list-style-type: none"> • better remuneration • allowances
Management, environment and social support	<ul style="list-style-type: none"> • poor working and living conditions • lack of clear career profiles • lack of schooling for children and jobs for spouses • work overload • lack of management support • emotional burn-out • decline of health services • political conflicts and wars • social unrest 	<ul style="list-style-type: none"> • improved standards of living • improved working conditions • opportunities for education of children • better supervision

“Bundled” interventions

Another important finding is that single interventions are not effective, as the attraction and retention factors are complex and intricate. Therefore, the strategies to attract and retain health workers in remote and rural areas should include a set of combined or “bundled” interventions. For example, in Thailand a complex programme was put in place which included regulatory interventions (compulsory contract of 3 years of public work after graduation), coupled with economic aspects (rural development project and financial incentives), as well as education and managerial interventions (rural recruitment and training in rural health facilities; development of community medicine, improved personnel management). The results after 30 years showed a reduction of the differences between urban and rural density of health workers per population (figure 4).

What works?

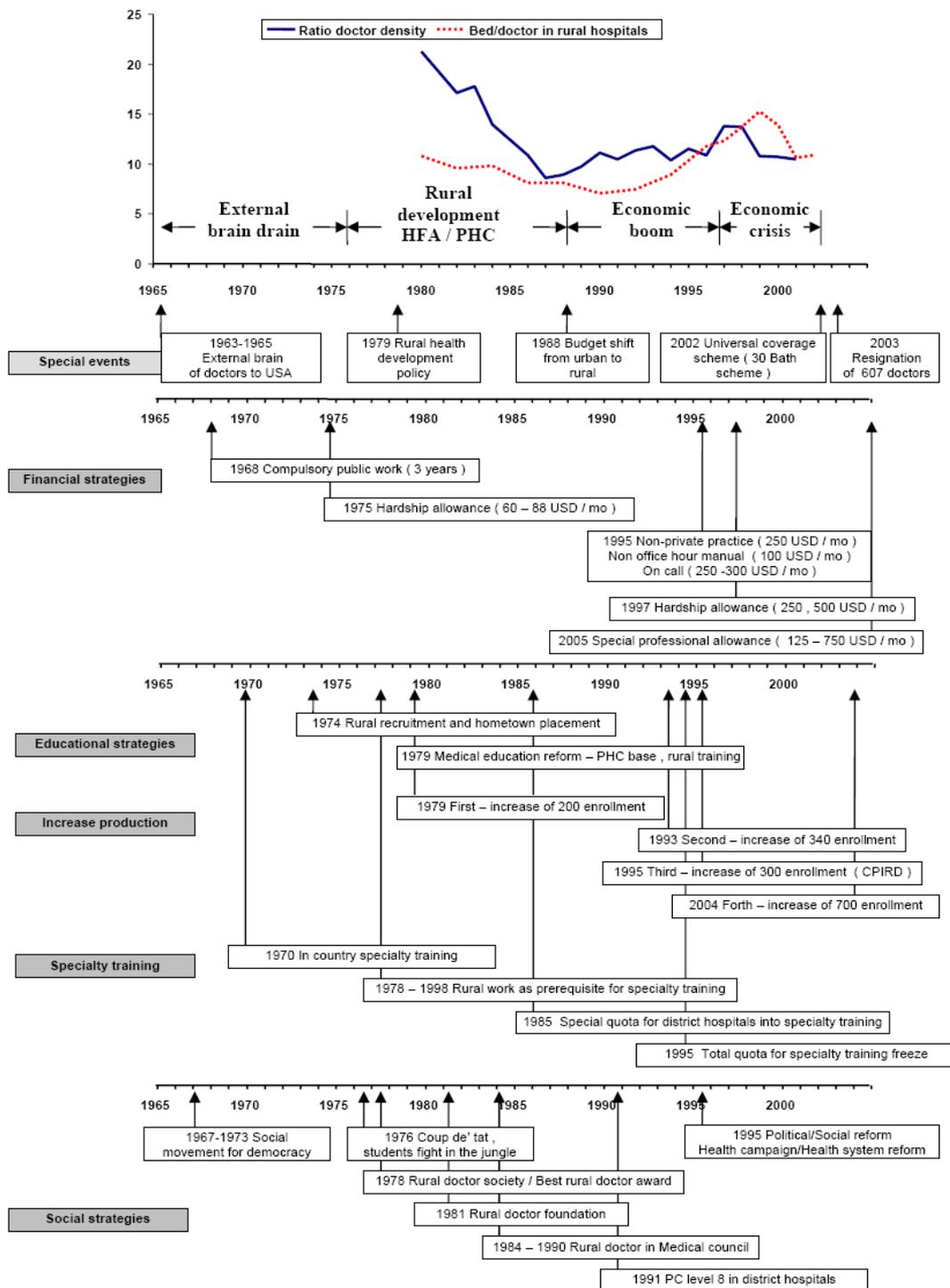
The obvious question is what works and why? The answer is neither simple nor evident. In general, the effectiveness and sustainability in the long term of all these various interventions need to be better understood and demonstrated. There is very little evidence and the quality of much of what exists is weak. Grading this evidence is even a greater challenge. We found 31 studies in which some sort of evaluation of the intervention has been presented, although the strength of this body of evidence is fairly weak. The studies cover 15 countries. Tables 8, 9, and 10 in the appendices present examples of studies that have conducted evaluations of strategies that aimed at increasing access to health workers in remote and rural areas, for each of the three proposed domains of interventions.

However, given the current state of the evidence some key messages can still be extracted to begin to respond to the question “what works?”

A. Education and regulatory interventions:

- Health professionals from rural background are more likely to practice in rural areas (consistent findings from observational studies)
- Clinical rotations in a rural setting may influence medical students’ subsequent decision to work in an underserved area (quasi-randomized trials)
- Adapting curricula to include rural health issues improve competences to work in rural areas and creates more interest to work in these areas
- The effectiveness of compulsory placement has been assessed by descriptive surveys with inconclusive results (it addresses the short term maldistribution, but is criticized for alienating people from the profession, and for the difficulties in administration and enforcement)
- Loan repayment schemes, direct incentives and medical-resident programmes to encourage rural placement have the highest service completion rates and physicians retention rates

Figure 4. Reduction in the differences between urban and rural densities of health workers in Thailand, following a complex set of retention strategies



Source: Noree et al, 2005

B. Type and level of remuneration.

- Direct financial incentives to practice in rural areas may encourage rural practice, in particular in developed countries, but reports from developing countries are not positive, with the exceptions perhaps of a few countries, such as Mali, Zambia, and South Africa (Perry, 2006, Souleyman 2008, Coulibaly et al 2008, Reid, 2004, Koot, 2005)

C. Management, environment and social support:

- Professional and community support to rural workers encourages rural practice (but no quantitative results from an actual intervention); it can be achieved by supportive supervision, internet access and community involvement projects, as well as by professional networks) (Loevinsohn et al, 1995, Marquez and Keanne, 2002, Lehmann et al, 2008)
- Very few countries have implemented large scale interventions to improve the infrastructure and living conditions, and evaluations of these interventions have been published (Mali, Thailand and Zambia are such examples) (Noree et al, 2005 Wibulpolprasert et al, 2003, Coulibaly, 2008, Jabot et al, 2008, Koot, 2005). This is despite the fact that factors that rank highest in workers' preferences and choices of location are precisely those related to the local infrastructure, isolation and working conditions.

The following section brings in some discussion about the quality of the evidence for these strategies.

5) Gaps in the evidence, methodological challenges, and country level implementation issues

Gaps in data and knowledge about choices for location

National HRH databases need to be further strengthening to allow for good quality description of health worker distribution in rural and remote areas.

The methods used to identify workers preferences and choices for location need to be further refined. They will need to consider – among other things – whether differences exist between different types of health workers.

Gaps in methodology, monitoring and impact evaluation

As the current evidence points out, there is a large body of knowledge on the descriptive aspects of retention (i.e. factors influencing motivation and retention, job satisfaction etc), but far less knowledge on the impact of the various strategies and the challenges related to their implementation.

There are very few evaluations to show the impact and effectiveness of interventions, specifically in developing countries. There is very little rigorous evidence to support any financial, regulatory, education or management interventions to improve access to health workers in remote and rural areas. Methodological challenges for these kinds of evaluations are often one of the reasons for this dearth of knowledge.

Applying rigid criteria to assess the quality of these evaluations will even further reduce their numbers. However, the issue of grading or assessing the strength of the evidence needs to be further discussed, because in the health system policy domain it is difficult to design feasible analytical studies of the type used for clinical medicine (particularly randomized controlled trials). In health systems policy interventions the context in which a policy is designed and implemented varies from country to country and even –within the same country – from region to region or between different time periods. In recognition of this context-specificity when considering health systems interventions, there has been a growing interest recently in the use of “realist reviews” to better understand and interpret the evidence on health systems interventions, whose effectiveness and impact depend very much on the context in which they are designed and implemented (Pawson et al, 2005). Assessing the impact of retention strategies is also difficult because of challenges in attributing the effects to the intervention or to other confounding factors.

Some of the **outcome measures** that can be used in the impact analysis of retention strategies are:

- changes over time in the ratio of health workers densities between urban and rural areas
- percentage of health professionals who choose to work in a rural or underserved community as a consequence of an intervention
- duration in service of the health workers

- number of outpatient visits at public health facilities in rural facilities before and after an intervention
- patient satisfaction with care provided by rural providers (in before and after studies) worker satisfaction
- health outcomes indicators (morbidity rates, mortality rates/in the long-run)

Gaps in country level implementation

Another finding is that often times the various schemes are proposed without a baseline study to understand the factors that influence health workers' decisions. Sustainability is an issue, as many interventions start as pilot experiments in a region or district, with little capacity for scaling up or for even sustaining the interventions for a longer term.

6) Research questions and concluding remarks

Interventions to improve retention need to consider the local situation and context. A baseline analysis of factors influencing workers choices and preferences for location should inform the development of retention strategies for rural and remote areas.

Single interventions may not work, as the underlying factors are complex, so the interventions will need to address the complexity of these factors.

Monitoring and evaluation measures should be built in the strategy from the very start of the programme. Cost analysis should also be part of these regular evaluations.

Intersectoral collaboration is key in this area, where changes in practice and regulation would require interventions from other sectors, such as labour, finance, local development, education etc.

The initial rapid review of the literature has shown that some of the critical questions for which research has not yet provided clear answers are as follows:

1. What is the role of different factors in influencing where health workers' choices of location and how best can they be identified?
2. How do these factors vary by cadre of health worker and by gender?
3. How effective are different interventions in influencing health worker location?
4. How should effective retention interventions be designed and implemented to improve staffing of rural health facilities?
5. What regulatory frameworks need to be in place for the design and implementation of retention packages (such as for example salary increases, producing different types of health workers, or compulsory service requirement)?
6. How can the impact of retention strategies be measured and evaluated?

For the discussions of the expert group:

1. Agree upon whether the categories of strategies proposed in this paper should be that upon which the recommendations are built. Consider whether other types of strategies (such as for example, different models of service delivery, including contracting and public-private partnerships) should be considered by this group, as these strategies have as final outcome an increased access to health services in remote and rural areas
2. Agree on the types of health workers for which the recommendations will be developed
3. Identify and agree upon a common research framework for evaluating the effectiveness of interventions
4. Identify the research gaps and programme to fill the gaps
5. Examine specifically the aspects related to challenges for country level implementation

7) Annexes

Box 1. OECD definition for rural areas

The OECD has recently developed a simple definition of rural areas for the purpose of making international comparisons of rural conditions and trends, which has proved useful despite the great differences in rural problems, perspectives and policies at national level. The definition distinguishes two hierarchical levels of territorial unit: local and regional. At local community level (NUTS 5), the OECD identifies rural areas as communities with a population density below 150 inhabitants per square kilometer. At regional level (mainly NUTS 3), the OECD distinguishes larger functional or administrative units by their degree of rurality, depending on what share of the region's population lives in rural communities. To facilitate analysis, regions are then grouped into three types:

1. **predominantly rural regions:** over 50% of the population living in rural communities;
2. **significantly rural regions:** 15 to 50% of the population living in rural communities;
3. **predominantly urban regions:** less than 15% of the population living in rural communities.

The Eurostat approach is based on the degree of urbanization. An algorithm was developed to classify every European region according to one of three classes:

1. **Densely populated zones:** these are groups of contiguous municipalities, each with a population density superior to 500 inhabitants/km², and a total population for the zone of at least 50,000 inhabitants.
2. **Intermediate zones:** these are groups of municipalities, each with a density superior to 100 inhabitants/km², not belonging to a densely populated zone. The zone's total population must be at least 50,000 inhabitants, or it must be adjacent to a densely populated zone.
3. **Sparsely populated zones:** these are groups of municipalities not classified as either densely populated or intermediate.

(Source: 'A typology of rural areas in Europe. Indicators on strength and weakness of rural territories and selection of areas (Nuts III)', Milan, November 1999. Available at: <http://www.nordregio.se/spespn/Files/2.3.ruralareas.pdf>)

Box 2. Methodology for the literature review on increasing access to health workers in remote and rural areas

The literature review searched for papers published **between 1995 and September 2008**. The **search terms** used were: *Retention, retention strategies / retention strategy, retention scheme, staff retention, financial incentive, monetary incentive, non-financial incentive, non-monetary incentive, bonding scheme, compulsory service, rural AND retention, remote AND retention, remote area, rural area, allowance AND rural, allowance AND remote, recruitment AND rural, recruitment AND remote, rural / urban balance, maldistribution, distribution, absenteeism, salary, rural AND access, remote AND access, vacancy rates, benefits, motivation, patient satisfaction, utilization of services, medicalization*. Each of these terms were searched independently and then searched with the addition of: *Health worker, health professional, human resources for health, nurse, doctor, physician, midwife, health workforce*.

The **databases** searched included: PUBMED, EMBASE, MEDLINE, Cochrane library, the WHO database, WHOLIS. Many journals were involved in our search, although particular attention was given to those focusing primarily upon rural health matters and human resource issues. These included *Australian Journal of Rural Health, Rural and Remote Health, Human Resources for Health* and *the Canadian Journal of Rural Medicine*. Once our search strategy had been developed, we also made use of several organizational and NGO data sources addressing retention strategies such as *EQUINET*, Capacity Project and *Santé Sud*.

Over 500 papers were initially considered, with 245 eventually included in the database. We identified 55 studies that either described a rural imbalance problem or identified factors influencing choices of location and practice in remote and rural areas, covering 30 countries. We also identified 48 studies that either described or evaluated an intervention to improve retention in rural areas, covering 19 countries. Of these, only 31 studies presented some sort of evaluation, and these covered 15 out of the 19 countries mentioned before.

The **selection criteria** for the articles that were kept in the final database were: studies discussing health worker retention issues in rural or remote areas with regards to doctors, nurses or midwives, studies that looked at factors that influence choices for location and practice in rural and remote areas, and studies that either described or evaluated an intervention aimed at improving retention in these areas.

Exclusion criteria: urban slums, conflict and post-conflicts, village health workers and community health workers. We did not include in the final database studies that looked at various models of service delivery to improve access to health services in remote and rural areas, such as contracting, private-public partnerships.

Efforts were also made to identify non-published reports in English, French, Spanish, Portuguese, Chinese and Russian. However, little was found in the regions of Eastern-Mediterranean, China, Russia and Latin America.

Quality of the evidence was assessed according to the Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach. Although this approach is more commonly associated with clinical guidelines, it can be equally relevant when developing recommendations for health systems. The GRADE approach identifies four levels of evidence quality which have been adopted for the methodology of our literature review.

- **High quality:** further research is very unlikely to change our confidence in the estimated effect
- **Moderate quality:** further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate
- **Low quality:** further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate
- **Very low quality:** an estimate of effect is very uncertain

The quality of the evidence depends heavily upon the study design. For example, although observational studies start with a 'low quality' rating, grading upwards may be warranted if the magnitude of the intervention effect is very large. Quality of evidence may be downgraded due to limitations in study design such as imprecise estimates, bias, use of indirect evidence or variability of results (Source: GRADE: an emerging consensus on rating quality of evidence and strength of recommendations, 2008).

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