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## KEY MESSAGES

Countries affected by health workforce shortage and/ or maldistribution are highly unlikely to achieve universal health coverage. In the absence of benchmarks on density and distribution of health workers required to achieve universal health coverage, more specific targets are necessary considering the country needs and realities, and the potential contribution of non-traditional cadres, such as community health workers and mid-level health providers.

Multi-pronged approaches for health workforce development, such as task shifting, training and retention efforts, have led to progress in improving coverage for infectious disease control. Comprehensive strengthening of health workforce, and scaling up workforce production for the continuum of maternal, newborn and child health care are options for working towards population-specific universal coverage. These lessons can be applied also for comprehensive universal health coverage, as countries progressively broaden the objectives of their health systems.

Investment should be made in both implementing policies and approaches of proven efficacy, such as those enshrined in the Kampala Declaration and Agenda for Global Action, and in strengthening the evidence base to better inform policy making.

Priority topics for research in the health workforce domain were identified in 2008, ranging from strategies to address rural retention and dual practice problems, to (cost-)effectiveness of different training and regulation approaches. Some progress has been registered in implementing the research agenda identified (for instance new evidence - and normative guidance - has emerged on rural retention approaches, and the determinants of effectiveness of task-shifting are now better understood), but many areas represent persisting evidence gaps to date.

Success stories in achieving universal health coverage from several countries have been reported in the literature, but few have been applied at scale in other countries. Contextual differences enabling these successes must be more carefully studied to extrapolate findings to other contexts. Combined approaches suitable for complex systems, such as systems thinking, realist review, and national platform evaluation, are useful to understand the reality of maldistribution, retention problems, and performance issues of the health workforce, learning not only what works (or not), but how, for whom, and under what context.

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## EXECUTIVE SUMMARY

Health workers remain in many countries the weakest link of health systems: according to the World Health Report 2006 (WHR 2006), 57 countries fell below the critical threshold of 2.3 physicians, nurses and midwives per 1,000 population, considered generally necessary to achieve an acceptable level of coverage of essential health services. In addition to shortage and maldistribution challenges, limited training capacity, weak management systems and poor working conditions, including inadequate financial and non-financial incentives, conspire to determine high attrition and poor morale and performance.

Exploring the intersections between the universal health coverage paradigm and the current health workforce challenges and opportunities requires an analysis of all the interconnected aspects of the planning, production and management of human resources for health, across the working lifespan of health workers.

Lack of standard definitions for certain health worker cadres, absence of comparable data sources and weak health workforce information systems prevent having a full picture of the status of health workforce at the global level, and in low- and middle-income countries in particular.

Based on available information, many countries affected by the heaviest burden of disease fall far below the recommended minimum density of health workers, despite recent investments by many countries and development partners to scale up education of health workers.

A concentration of health workers in urban areas is a recurrent feature in most low- and middle-income countries, having a detrimental effect on (equitable) coverage of essential health services and health outcomes.

Among the countries facing health workforce shortage and maldistribution, there have been different approaches to overcome challenges and move towards universal health coverage. We categorize them broadly in disease-specific approaches, comprehensive horizontal approaches, and semi-horizontal approaches. The strategies adopted don't have in reality such tightly defined boundaries, and typically they are implemented together within the same country, but it is useful to adopt this classification to explore and describe the policy discourse and the health system responses to health workforce challenges as they have evolved in the last decade.

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Disease-specific approaches to health workforce strengthening have been documented more extensively in the case of HIV and AIDS programmes. Multi-pronged approaches for health workforce development, such as task shifting, training and retention efforts, have led to progress in progressing towards universal coverage for HIV/ AIDS. Approaches such as comprehensive strengthening of health workforce, and scaling up workforce production for the continuum of maternal, newborn and child health care are options for working towards population-specific universal coverage. These lessons can be applied also for comprehensive universal health coverage, as countries progressively broaden the ambitions and objectives of their health systems. Broadening the disease-specific universal coverage paradigm to universal access to maternal, newborn and child health services as an intermediate milestone is a valid approach towards attaining a more comprehensive (horizontal) universal health coverage.

Much of the evidence discussed in the report comes from low-income countries. However many middle-income countries have managed to overcome health workforce impediments, reaching universal coverage with more limited resources than high-income countries through a variety of strategies and approaches to both scale up and retain their health workforce. It is possible to examine these experiences to draw inferences of relevance to low-income countries.

The need for more and better evidence in relation to human resources for health has been underscored by a number of initiatives and studies over the last decade.

Some information needs relate to the routine management information systems of the health sector, including for instance the availability, distribution, employment status and performance of health workers. Others may relate to information required to track developments of particular initiatives, such as the minimum dataset required to monitor the implementation of the Code of Practice on internal recruitment of health workers. There are also significant evidence gaps in relation to wider policy approaches and strategies to develop, maintain and optimize the performance of the health workforce.
Due to the complexity of HRH interventions, and the limitations in extrapolating findings of HRH studies and evaluations to other contexts, multi-method approaches are needed to strengthen the research efforts, both in high and low-income countries. Mixed approaches can allow a sound effectiveness evaluation to be complemented by an understanding of the reality and context for successful implementation.

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The health workforce truly represents the critical pathway to achieve universal health coverage, but shortage, maldistribution and peformance challenges hinder the attainment of even more modest objectives, such as selective (disease-specific or population-specific) coverage with essential health services.

There is a global consensus on priority strategies to address the health workforce crisis, which is enshrined in the Kampala Declaration and Agenda for Global Action. Governments and other stakeholders should fully implement these strategies to bolster human resources for health.

In terms of increasing health worker availability, the target of 2.3 physicians, nurses and midwives per 1,000 population is not attainable in all contexts, because funding the proposed number of highly skilled health workers would require some low-income countries to devote an unrealistic proportion of their gross domestic product (GDP) to health. The expansion of non-traditional cadres, such as community health workers and mid-level health providers, should be considered as a priority policy option in these contexts.

Several evidence-based policy options to improve retention of health workers in rural areas have been identified, including measures related to education and training, regulation, financial and non-financial incentives, management support. Countries should select and implement the ones most relevant to the local context. Interventions to improve quality and performance have been less rigorously studied in low- and middle-income contexts.

As efforts are intensified on maternal and child health in the drive to progress towards universal health coverage in the context of a global financial crisis, health systems research should strengthen the normative and evidence base that can contribute to sound policy setting and planning, thereby ensuring that scarce resources are increasingly directed towards interventions of proven effectiveness and that represent the best value for money.

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## LIST OF ACRONYMS

| AIDS | Acquired Immunodeficiency Syndrome |
|---|---|
| ART | Anti-Retroviral Therapy |
| CHPS | Community-based Health Planning and Services |
| CHW | Community Health Worker |
| CPIRD | Collaborative Project to Increase Production of Rural Doctors |
| DFID | Department for International Development |
| EHRP | Emergency Human Resource Programme |
| EPI | Expanded Program on Immunization |
| GDP | Gross Domestic Product |
| GHWA | Global Health Workforce Alliance |
| GRADE | Grading of Recommendations, Assessment, Development and Evaluation |
| HIV | Human Immunodeficiency Virus |
| HRH | Human Resources for Health |
| IMCI | Integrated Management of Childhood Illnesses |
| ISCED | International Standard Classification of Education |
| ISCO | International Standard Classification of Occupation |
| ISIC | Industrial Classification of All Economic Activities |
| JICA | Japan International Cooperation Agency |
| JLI 2004 | Joint Learning Initiative report 2004 |
| MCE of IMCI | Multi-Country Evaluation of Impact, Cost and Effectiveness of Integrated Management of Childhood Illness |
| MDG | Millennium Development Goal |
| MMR | Maternal Mortality Ratio |
| MNCH | Maternal, Newborn and Child Health |
| NCD | Non-Communicable Disease |
| NGO | Non-Governmental Organization |
| NHIS | National Health Insurance Scheme |
| OPD | Outpatient department |
| PEPFAR | U.S. President's Emergency Plan for AIDS Relief |

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| PLHIV | People Living with HIV |
|---|---|
| PMNCH | Partnership for Maternal, Newborn and Child Health |
| PMTCT | Prevention of Mother-to-Child Transmission |
| UNICEF | United Nations Children's Fund |
| VHV | Village Health Volunteers |
| WHO | World Health Organization |
| WHR 2006 | World Health Report 2006 |

# INTRODUCTION

*All people everywhere will have access to a skilled, motivated and supported health worker, within a robust health system.[1]*

This is the vision of the Global Health Workforce Alliance (GHWA), which was launched in 2006 as part of the response to the global HRH crisis, highlighted in the *World Health Report 2006 - Working together for health* (WHR 2006).[2]

The WHR 2006 further stated that, "The ultimate goal of health workforce strategies is a delivery system that can guarantee universal access to health care and social protection to all citizens in every country".

The universal health coverage paradigm is built around the concepts of availability, accessibility, acceptability and affordability.[3]

The correlation between availability of health workers, coverage of health services and health outcomes is well established.[4] In this sense, progress in health workforce strengthening is a pre-requisite in moving towards universal coverage. Health workers however remain in many countries the weakest link of health systems: according to the WHR 2006, 57 countries fell below the critical threshold of 2.3 physicians, nurses and midwives per 1,000 population, considered generally necessary to achieve an acceptable level of coverage of essential health services (WHO 2006, op cit).

The global shortage, estimated by World Health Organization (WHO) at 4.3 million health workers (WHO 2006, op cit), is compounded by uneven geographical distribution within countries, with a concentration of highly skilled personnel in urban areas, and exacerbated by international migration from low- and middle-income countries to countries that offer better working conditions and remuneration. As health workers are the direct providers of health services, their presence and distribution impacts directly on the availability and accessibility dimensions of universal health coverage.

Limited training capacity, weak management systems and poor working conditions, including inadequate financial and non-financial incentives, conspire to determine high attrition and poor morale and performance of health workers, which can negatively impact on quality and acceptability of services provided, as well as their affordability when poorly remunerated staff engage in survival strategies, such as charging under-the-table out-of-pocket payments.

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With a view to such realities, the WHR 2006 report laid out a 'working lifespan' approach, and since then the policy discourse on health workforce at global and country level has broadened to considered the policies and strategies relating to the stages when people enter the workforce, the period of their lives when they are part of it, and the point at which they make their exit. For example, education and training are key issues in the entry stage. Then, in the active performance stage, supervision, effective incentives, systems support and lifelong learning can be the keys to improve performance.  Finally, at the exit stage, migration and attrition must be overcome. All of these stages are crucial not only for overcoming the present crisis, but to cope with emerging health workforce challenges in low-income countries.

It is clear, therefore, that exploring the intersections between the universal health coverage paradigm and the current health workforce challenges and opportunities requires an analysis of all these interconnected aspects of the planning, production and management of human resources for health.

Of great importance as well is the increasing recognition that the socio-economic fabric of a society also influences heavily the inequitable production, deployment and distribution of health workers, having a bearing on the education, recruitment and deployment and retention patterns. Multi-strategic approaches to ensure equitable and universal coverage of health workers should also address such social determinants.[5]

In recognition of the fundamental importance of the health workforce in attaining universal health coverage objectives, the technical attention to and political momentum for health workers has grown considerably in the past few years. After the 2004 Joint Learning Initiative report (JLI 2004) and the WHR 2006 had raised attention to the issue, GHWA convened the First Global Forum on Human Resources for Health in Kampala in March 2008 and adopted the *Kampala Declaration and Agenda for Global Action,* which has become the global reference on priority strategies to address the health workforce crisis. Then, in July 2008, the Toyako G8 summit supported the Declaration and drew attention to the health workforce, and more recently the grave impact of the health workforce challenges on the possibility of attaining the health Millennium Development Goals (MDGs) was a strong undercurrent of the UN High Level Summit on the MDGs[6].

Against this backdrop, in this paper we explore through a selective literature review (see annex 1) critical issues relating to the health workforce that can contribute to the movement towards universal health coverage. Building on a framework first proposed by Rhode et al,[7] which categorizes health systems according to whether they provide

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selective (less than 50%) coverage, comprehensive (over 80%) coverage and in transition between selective and comprehensive coverage (between 50% and 80%); we also explore how different countries have adopted different strategies and intermediate targets to gradually move towards universal health coverage, differentiating between *disease-specific universal coverage, semi-horizontal universal coverage* (limited to the care of maternal, newborn and child health), and *horizontal universal coverage*.

To contextualize the findings of our analysis we start by providing an overview of the definition and current state of the health workforce in low-income countries. Then, we present evidence in support of interventions to scale up the health workforce towards achieving disease-specific universal coverage, towards semi-universal coverage by highlighting health workforce interventions specific to maternal, neonatal and child health, and finally, we deal with horizontal universal coverage. We also try to identify lessons learned from middle-income countries to complement evidence from low-income countries.

Finally, we reflect on the strength and wider applicability of the available evidence, identifying some strategic directions for policy makers where the evidence base is sufficiently robust, and delineating a way forward for researchers where the limitations and weaknesses of the information basis prevent drawing clear policy recommendations.

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# STATE OF THE HEALTH WORKFORCE IN LOW-INCOME COUNTRIES

Definition of health workers remains a controversial issue in many low-income countries, as their roles and competencies differ from country to country.[8] An understanding of the current status of the health workforce requires addressing three categories of questions, relating, respectively, to density (*How many?*), distribution (*Where? Who?*), and performance (*What do they do? How do they do it?*)[9]

## *Definition*

WHO defines health workers as "all people engaged in actions whose primary intent is to enhance health" (WHO 2006, op cit). In addition, a new more operational framework has been recently proposed (Dal Poz et al 2009, op cit), which divides health workers into three categories:

A. Those with health education and training working in the health sector;

B. Those with training in a non-health field (or with no formal training) working in the health sector;

C. Those with health training who are either working in a non-health-care-related industry, or who are currently unemployed or not active in the labour market.

The sum of the three elements (A, B, and C) yields the total potential health workforce available. In this way, the framework can be a useful tool for identifying potential data sources and gaps for health workforce analysis. Population censuses and labour force surveys can provide information on all three elements, while health facility assessments or payroll and other administrative records provide data only for the active health workforce.

In addition to raw numbers, a labour market analysis is critical for getting an accurate diagnosis of production, deployment, distribution and other aspects related to the health workforce at national and sub-national level.

Health workforce classification is another important dimension of health worker definition. As for internationally standardized classifications, three types can provide a coherent framework for categorizing fields and levels of training, and occupations and industries of employment according to shared characteristics: the International Standard Classification of Education (ISCED), the International Standard Classification of

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Occupations (ISCO), and the International Standard Industrial Classification of All Economic Activities (ISIC).[ibidem]

The ISCO-2008 classifies health workers into three sub-categories: health professionals (with 14 professional titles), health associate professionals (with 16 professional titles) and personal care workers (with 3 professional titles). Moreover, 5 titles of additional health-related unit groups are identified, such as health service managers. Therefore, in total, the ISCO-2008 designates 38 occupational titles.[ibidem]

When the health worker crisis was advocated as an issue in the mid-2000s, it was mostly the number of medical doctors, nursing, and midwifery professionals which tended to be highlighted. This perspective was based on the ISCO-1988. Now, under ISCO-2008, medical doctors are divided into two titles: general medical practitioners and specialist medical practitioners. Nursing and midwifery professionals are also divided into two classes: Nursing professionals and midwifery professionals. This more nuanced categorization hopefully will lead to better future estimates of existing capacity, needs and gaps to achieve universal health coverage. Yet the revised categories have yet to be effectively reflected in health workforce policy making, as most countries continue to plan their health workforce targets in terms of physicians, nurses and midwives. Community-based health workers and mid-level health providers frequently don't have a definition, which contributes to their limited integration in health sector planning and management, despite their important contribution to scaling up coverage of essential health services in low- and middle-income countries.[10,11]

*Density*

In its WHR 2006, the WHO recommended a density target for all countries: a minimum of 2.3 physicians, nurses, and midwives per 1,000 people. This goal was set based on the ISCO-1988 to "attain adequate coverage of some essential health interventions and core MDG-related health services". This point suggests that the 2.3 per 1000 target is not set with a view to horizontal universal coverage.

The momentum created by the WHR 2006 spurred attention at the global level and action at the country level, in particular in relation to the production of new health workers through education and training. Brazil, Ethiopia and India were among the countries who scaled up education and training at national scale.[12]

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Bilateral donors took action as well: an exemplary case of a large-scale response is the United States Government *President's Emergency Plan for AIDS Relief* (PEPFAR), which carried out activities in 14 low-income and 19 middle-income countries between 2004 and 2009. As a result of PEPFAR initiatives, the overall number of health personnel trained or retrained was 5,255,400. Of that total, 1,547,600 were trained during 2009 alone.[13] These training activities however have been largely related to in-service training, and have therefore focused primarily on expanding the skill set of existing health workers (in particular in relation to preventive, promotive and curative services for HIV and AIDS). As a result of the recognition that even disease-specific universal coverage for HIV services is not feasible under existing health workforce constraints, PEPFAR has also committed to the training of 140,000 new health workers.[14]

And similarly there are several other initiatives which have attempted to increase health worker availability: an initiative by the UK Department for International Development (DFID) has set a target to raise the existing number of health workers from 26,683 in 2006 to 45,904 by 2015 in Mozambique.[15] Likewise, the Japan International Cooperation Agency (JICA) has committed to train and retrain 100,000 health workers in Sub-Saharan Africa after the Toyako G8 Summit.[16] Through the Catalytic Initiative to Save a Million Lives (10), UNICEF has worked together with the Ministry of Health and trained nearly 6,000 community health workers (CHWs) in Malawi and 4,000 CHWs in Ghana.[17] And when national governments take action themselves, much more ambitious targets and results can be attained: Brazil for instance trained hundreds of thousands of community health workers through its Family Health Programme,[18] And Pakistan has similarly trained large number of lady health workers.[19]

Despite these efforts, according to WHO Health Statistics 2010 the patterns of health worker density don't reflect a univocal trend, showing some increases, some decreases, some countries with no change, and some countries with mixed results, with simultaneous increases and decreases in different cadres of their health workforces. These may be partly due to the lag time of both surveys and administrative records to capture differences in availability of health workers, as well as the weaknesses and heterogeneity of data sources.

Even with the more modest objective of semi-horizontal coverage, Bossert and Ono argue that the target of 2.3 physicians, nurses and midwives per 1,000 population is not realistic at the country level,[20] because funding the proposed number of health workers

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would require some low-income countries to devote a huge proportion of their gross domestic product (GDP) to health: for example, Ethiopia would have to devote 53% of its GDP to health in order to reach the WHO target, if the current ratio between physicians and nurses or midwives remains constant. Moreover, according to their projections, 46 countries would not reach the target even if they devoted 8% of their GDP to health. They propose that more realistic, country-specific targets will have a better chance of winning the support of national governments and donor stakeholders.

If the WHO health workforce target, 2.3 per 1000 population, is not realistic, what is a realistic density for which to aim? Assuming a ceiling of 8% of GDP, Bossert and Ono calculated attainable targets per 1000 people as 0.35 health workers (physicians, nurses, and midwifes) for Ethiopia, 0.71 for Tanzania, and 2.34 for Kenya. Though seemingly realistic, these targets imply that Ethiopia and Tanzania might not be able to achieve the MDGs in their current economic situations, a conclusion also supported by a needs-based study set in Tanzania.[21] These analyses bring a necessary dose of realism but they can also ring of pessimism.

These three types of health workers (physicians, nurses, midwives) were selected because the available data are more reliable compared with that on other health workers. Kruk and colleagues examined the relationships between doctor and nurse concentrations and utilization rates of five essential health services, including caesarean sections, measles vaccinations, and tuberculosis diagnosis, in developing countries. By this approach, they found that the densities of doctors, nurses and aggregate health workers were not associated with essential health services such as caesarean section and tuberculosis diagnosis. To explain this result, they argued that health workers who are neither doctors nor nurses, such as clinical officers and community health workers, may be providing a substantial proportion of health services in such settings.[22]

Moreover, a growing body of literature supports the role of mid-level workers, who are not doctors but have been trained to "diagnose and treat common health problems, to manage emergencies, to refer appropriately and to transfer the seriously ill or injured for further care".[23,24,25] A similar body of evidence is emerging for community health workers (Lewin 2010, op cit; Global Health Workforce Alliance 2010, op cit).

However, regarding the density of mid-level health workers and community health workers, little has been documented. Although more evidence is needed, the WHO is proposing a core indicator for health worker density: the number of health workers per 10,000 population.[26] The target number still needs to be determined on the basis of what is required to attain a minimum level of service coverage, but the direction now is

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to go beyond physicians, nurses and midwives; included in this new model is a wide range of other categories of service providers, such as mid-level health providers, community health workers, dentists, pharmacists as well as management and support workers. This orientation seems like an appropriate direction, and further research is expected to identify more realistic country-specific targets.


## Distribution

According to the WHO report on 'increasing access to health workers in remote and rural areas through improved retention,' approximately 50% of the global population lives in rural areas, but these areas are served by 38% of the total nurses and 24% of the total physicians.[27] This situation is especially dire in 57 countries facing health workforce crises: for example in Bangladesh 30% of nurses are located in four metropolitan districts, where only 15% of the population resides.[28] In many countries maldistribution is arguably a more pressing problem than absolute scarcity,[29] and patterns of service coverage reflect a similar trend, with disadvantaged and rural areas having a lower service coverage than urban areas.[30]

As retention is one of the key strategies to solve maldistribution problems, the topic has gained attention in the *Kampala Declaration (2008)*[31] *and the G8 Communiqué (2008).*[32] The *Commission on Social Determinants of Health (2008)* (WHO 2008, op cit)) *and the High-level Taskforce on Innovative International Financing for Health (2009)*[33] also urged action to improve retention in rural areas.

The WHO report seeks to identify evidence-based recommendations for improving retention, and categorized them into four broad groups: education, regulation, financial incentives, and personal and professional support (WHO 2010, op cit).

Policy options relating to education include the possibility to locate health professional schools outside of major cities.[34] A related approach is to revise pre-service education curricula to reflect rural health issues.[35]

In the area of regulation, options include to scale up education of the types of health workers who are most likely to meet rural health needs (Mullan 2007, op cit), and optimizing the impact of compulsory service programmes, which, if well planned with incentives, can contribute to a nation's plan for health workforce capacity development,

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distribution and retention in rural and underserved areas.[36]

Regarding financial incentives, evidence suggests that rural retention can be improved by making it worthwhile for health workers to move to remote or rural areas by combination of fiscally sustainable financial incentives.[37,38]

Finally, it is necessary to improve living conditions, personal and professional support, opportunities for career development, and recognition for health workers.[39,40,41]

When a retention strategy is being designed, it is advisable to perform a thorough market analysis as a key early step in the whole policy process (from the identification of problems, the selection of candidate interventions through to implementation and monitoring and evaluation). Undertaking this step, together with the analysis of the context, would lead to better strategies to improve retention of and increase access to health workers.

Another dimension of imbalance of the health workforce relates to gender. In many countries, women tend to be concentrated in the lower-status health occupations, and to represent a minority among more highly trained professionals, such as physicians, dentists, pharmacists and managers. As decisions tend to be made by men, there is a risk of paying less attention to particular features of working conditions to protect women. To overcome this risk, gender mainstreaming in health workforce monitoring and evaluation strategies is recommended (Dal Poz 2009, op cit).

*Performance*

The performance of health workers comprises both personnel efficiency and provider quality (Bossert et al 2007, op cit). To improve performance, we need to ensure that the "pipeline to generate and recruit the health workforce" exists and is functional, and that "education and training programmes are adapted to the changing needs of the population".[42]

Yet the determinants of health worker performance have not been studied well in low-income countries. Theoretically, a core indicator to assess the performance of the health workforce is 'primary health care attendances/ total staff'. However, available research utilizing this indicator is limited.

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An interesting emerging methodology to measure health worker performance is the application to this field of realist evaluation approaches.[43]

For example Marchal and colleagues used a realist evaluation framework for hypothesis formulation, data collection, data analysis and synthesis of findings, and evaluated the role of human resource management in hospital performance in Ghana. Methodologically, they found that the realist evaluation can be fruitfully used to develop detailed case studies that analyze how management interventions work and in which conditions. In their specific case, Marchal and colleagues suggested that a well-balanced style of human resource management can stimulate organizational commitment on the part of health workers.[44]

This realist approach was also taken in a review paper analyzing human resource management interventions to improve health workers' performance in low- and middle-income countries.[45] The authors' realist perspective identified which human resource management interventions might improve performance, under which circumstances, and for which group of health workers. They also proposed detailed indicators for evaluating health workers' performance, as part of monitoring and evaluation activities that should be a fundamental part of the policy process. This paper emphasizes the need of systems thinking and realist approach to address complex policy interventions such as retention of human resources of health in underserved areas. Both approaches entail the use of qualitative and quantitative methods.

The role of financial incentives in improving health workers performance has received a lot of attention and financial support in recent years.[46] There are selected examples where results-based financing of essential health services has worked: Rwanda for example has improved the performance of its health workers through a results-based financing scheme that is credited to have contributed to increases in coverage of essential services.[47] At the global level, however, the evidence on the effectiveness of performance-based financing schemes is less univocally supportive of this policy option.[48] Moreover the introduction of performance-based financing is a highly complex type of interventions, whose potential system implications may go beyond what can be conceptualized at the design stage or measured through short-term data collection efforts. As in many complex interventions, a systems thinking approach is required to evaluate the feasibility and the appropriateness of performance-based financing schemes.[49]

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# PATHWAYS TO UNIVERSAL COVERAGE

Among the countries facing health workforce shortage and maldistribution, there have been different approaches to overcome challenges and move towards universal health coverage. We categorize them broadly in disease-specific approaches, semi-horizontal approaches, and comprehensive horizontal approaches. The strategies adopted don't have in reality such tightly defined boundaries, and typically they are implemented together within the same country, but it is useful to adopt this classification to explore and describe the policy discourse and the health system responses to health workforce challenges as they has evolved in the last decade.



Disease-specific universal coverage    Semi-horizontal universal coverage    Horizontal universal coverage
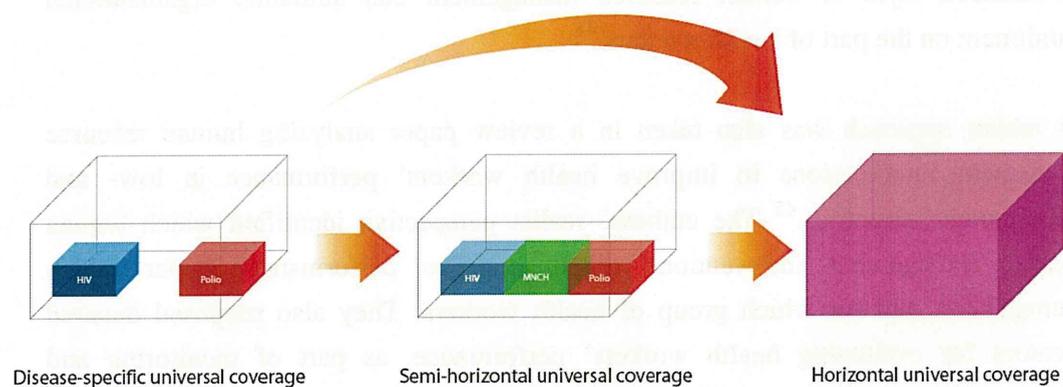
*Figure 1: transition through different stages of universal coverage.*

## *Disease-specific universal coverage*

Though many types of disease-specific universal coverage issues have been experienced in low-income countries, HIV/AIDS is worth highlighting as it has been the most complex and well-documented case in the literature. The shortage of health workers is a chronic problem, exacerbated by the direct effect of the HIV/AIDS epidemic on the health workforce.[50,51] In contrast, most of the countries hardest hit by the AIDS pandemic have limited capacity to cope with newly emerging epidemics such as non-communicable chronic diseases, cancer, mental health, and injuries.

## *Health workforce shortage: barrier to scaling up ART access/coverage*

Until 2002, antiretroviral therapy (ART) coverage was severely limited in low-income countries. As a result, nearly 95% of people infected with HIV worldwide had limited access to ART.[52,53]. This was primarily due to the high cost of the drugs and the lack of an adequate health system infrastructure (especially health workers) for delivering ART.[54]

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Under global initiatives, such as the Global Fund to fight AIDS, Tuberculosis, and Malaria, and PEPFAR, and with improved commitment on the part of governments, ART was provided free of charge and the main financial barrier was thus removed. As patient demand was considerably increased, the health workforce shortage was recognized as a key constraint that limited the effective scale-up of HIV services to meet projected goals.[55,56]

*Strategies to strengthen the health workforce for HIV/AIDS*

To overcome the bottleneck for scaling up HIV services, new strategies were adopted including the WHO's Treat, Train and Retain campaign.[57] This particular initiative consisted of a three-step programme with the objective to increase the ranks of personnel able to deliver HIV services.

The first strategic step is HIV treatment, prevention and care services for health workers infected with and affected by HIV. In 2001, it was estimated that between 19% and 53% of all deaths of government health employees in African countries were caused by HIV/AIDS;[58]; and the absence and loss of staff due to HIV/AIDS further increased the workload of an already overburdened health workforce.[59,60,61,62] In response, programmes focusing on health workers' HIV treatment and care were established in several countries in sub-Saharan Africa, resulting in declines in HIV-related attrition of health workers.[63,64,65,66]

The second pillar of the overarching strategy is training new health workers and retraining the existing personnel, who can then absorb some of the responsibilities of the highly skilled personnel through task shifting, thus more efficiently using the available health workforce, and allowing the expansion of the overall human resources pool.

Training on HIV and AIDS has been supported by global initiatives, most notably by PEPFAR.[67]

Scaling up the health workforce has been effectively achieved through task shifting from physicians to non-physician clinicians, nurses, community health workers and even patients. This approach has been shown to increase the coverage and services provided for HIV patients, without affecting the quality of services when adequately planned and supported, both in relation to delegation of tasks to other cadres of health professional[68,69,70,71,72,73,74] and to community health workers.[75,76,77,78,79,80,81,82,83,84]

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