WHO guideline on health workforce development, attraction, recruitment and retention in rural and remote areas

An update of the WHO guideline
Increasing access to health workers in remote and rural areas through improved retention: global policy recommendations (2010)

World Health Organization

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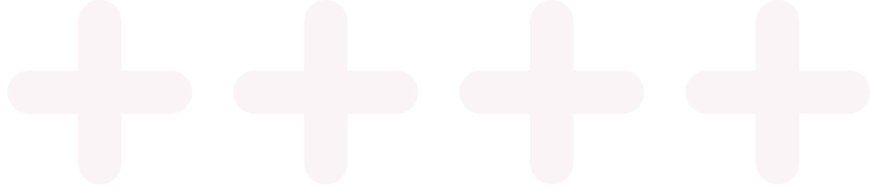

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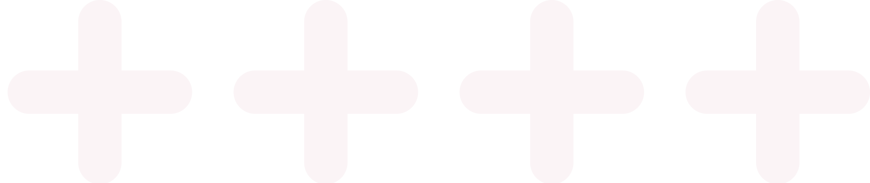
Glossary of terms

Term	Definition
Accelerated medically trained clinician	Accelerated medically trained clinicians cover several occupations, including clinical officers, physician assistants and clinical associates. They are trained in regionally specific, compressed medical models to deliver specific services relevant to the context.[a]
Access	The perceptions and experiences of people as to their ease in reaching health services or health facilities in terms of location, time, and ease of approach.[b]
Attraction (rural)	The influence exerted in the preferences of students or health workers to work in rural or remote areas, usually evoking interest or increasing the pull factors.
Availability	The sufficient supply and appropriate stock of health workers, with the competencies and skills mix to meet the health needs of the population.
Bundled intervention	A group of evidence-based interventions put together into a package. When implemented together they produce better outcomes than when delivered separately.[c]
Community engagement	A process of developing relationships that enable stakeholders to work together to address health-related issues and promote well-being to achieve positive health impact and outcomes.[d]
Continuing professional development	Training that not only involves clinical update or educational activities but also includes wide-ranging competencies such as research and scientific writing; multidisciplinary context of patient care; professionalism and ethical practice; communication, leadership, management and behavioural skills; team building; and use of information technology.[e]
Decent work	According to the ILO, decent work involves opportunities for work that is productive and delivers a fair income, security in the workplace and social protection for families, better prospects for personal and social integration, freedom for people to express their concerns, organize and participate in the decisions that affect their lives and equality of opportunity and treatment for all women and men.[f]
Development (workforce)	The enhancement of training, skills and performance of health workers.
Enhanced scope of practice	Development or acquisition of skills or expertise beyond the currently recognized scope of practice.



Health workers	All persons engaged in actions whose primary intent is to enhance health.[g]
Interprofessional education	When two or more health professionals learn about, from and with each other.
Multidisciplinary team	Group of health care workers from different disciplines, working together to provide a specific service.
People-centred care	An approach to care that consciously adopts the perspectives of individuals, carers, families and communities as participants in, and beneficiaries of, trusted health systems that respond to their needs and preferences in humane and holistic ways.[h]
Primary health care model of care	A model of care that meets people's health needs through comprehensive promotive, protective, curative, rehabilitative and palliative care throughout life, while addressing the broader determinants of health (behavioural, economic and social), ultimately empowering people to optimize their health though advocacy and active participation.[i]
Pull factors	Factors that attract an individual to a new destination, including improved employment opportunities, career prospects, financial and non-financial incentives, better living or working conditions or a more stimulating environment.[j]
Push factors	Factors that repel an individual from a location, including loss of employment opportunity, low wages, poor living or working conditions, or lack of schooling for children.[g]
Recommends	Term used for "strong recommendations" that are meant to be followed by all or almost all users of the guideline.
Recruitment	Effective contracting and posting of health workers.
Regulation	Can be defined broadly to encompass any government control exercised through legislative, administrative, legal or policy tools.
Rural health topics	Context-dependent topics specific to rural settings, including rurality, epidemiology, social and cultural aspects of rural health, practicalities of access to health care (for example, challenges in transportation), competencies needed in rural and remote settings and dealing with emergencies.

Term	Definition
Rural retention	Health workers remaining employed in rural areas for certain periods of time.
Rural training pathways	Programmes that provide rural training experiences to students considering rural practice.
Scaffolding	A variety of instructional techniques used to move students progressively towards stronger understanding and greater independence in the learning process, such as teaching simplified versions of a lesson or using multiple illustrations.[k]
Social accountability	The obligation to direct education, research, and service activities towards addressing the priority health concerns of the community, region, or nation it has a mandate to serve. The priority health concerns are to be identified jointly by governments, health care organizations, health professionals and the public.[l]
Suggests	Term used for "conditional recommendations" that should be followed if it is feasible and acceptable to all relevant stakeholders.
Telehealth	The delivery of health care services, where distance is a critical factor, by all health care professionals using information and communication technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries, research and evaluation, and for the continuing education of health care providers, all in the interests of advancing the health of individuals and their communities.[m]
UHC service coverage index	Coverage of essential health services (defined as the average coverage of essential services based on tracer interventions that include reproductive, maternal, newborn and child health, infectious diseases, noncommunicable diseases and service capacity and access, among the general and the most disadvantaged population).[n]
Whole-of-government approach	Collaboration of the different arms of government, diverse ministries or public agencies to solve problems.

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Executive summary

Securing equitable access to health services for rural and remote populations continues to be a challenge for governments and policy-makers around the world. At the core of this complex challenge is a global shortage of well trained, skilled, motivated health workers.

Purpose

Securing equitable access to health services for rural and remote populations continues to be a challenge for governments and policy-makers around the world. At the core of this complex challenge is a global shortage of well trained, skilled, motivated health workers. In 2016, the World Health Organization (WHO) estimated a shortfall of 18 million health workers to achieve universal health coverage by 2030, primarily in low- and middle-income settings. Shortages are often felt most acutely in rural, remote and hard-to-reach areas, where health workforce densities are generally lower than national averages. Even in settings where national shortages are not observed, issues of maldistribution can occur, leaving some populations behind. Rural populations, which tend to be poorer and less healthy, fall disproportionately into this category.

It is crucial that issues of density and distribution of health workers are addressed in order to attain better health outcomes for rural populations. Addressing inequities in density and distribution are also key to maintaining commitments to primary health care, universal health coverage and the Sustainable Development Goals. There are also opportunities for health systems to contribute to sustainable and inclusive economic development in rural and remote areas. Investment in a transformed health workforce has the potential to create the conditions for inclusive economic growth and job creation, thereby promoting greater economic stability and security. Such investment can play a transformative role in expanding and financing decent work opportunities for women and youths in rural and remote areas, who are often among society's most vulnerable.

The policy recommendations within this guideline address the wide range of factors influencing rural health workforce shortages and distributional inequities. The challenges involved in the development of a competent rural health workforce, including the supply of health workers, their education, training and competencies, and creation of the capacity to absorb, retain and effectively manage health workers where they are most needed, are addressed. The political economy and overarching governing systems, as well as the attractiveness of rural practice and positions, are also considered. Finally, guidance for the successful planning, implementation, monitoring and evaluation of rural health workforce development, attraction, recruitment and retention strategies are included as fundamental elements of the policy process.

Scope of the guideline

This is an update of the WHO guideline *Increasing access to health workers in remote and rural areas through improved retention: global policy recommendations*, which was approved by the WHO Guideline Review Committee in 2010. The recommendations in this update aim to improve the development, attraction, recruitment and retention of all types of health workers in rural and remote areas, by reviewing the large body of literature, evidence and experience since the 2010 recommendations were issued.

Health worker occupations covered by this guideline include a broad and inclusive definition of the health workforce – all persons engaged in actions whose primary intent is to enhance health. These recommendations apply to all health worker occupations, including those in the formal, regulated health sector (public and non-State) and those in more informal roles (such as volunteers), as well as students aspiring to or currently attending education programmes in health-related disciplines. The policy recommendations outlined in this guideline aim to support those who can influence health workforce distribution.

This guideline takes forward many international calls to action for more to be done to address the inequitable density and distribution of health workers, including World Health Assembly resolution WHA63.16 on the WHO Global Code of Practice on the International Recruitment of Health Personnel, by which Member States agreed to consider adoption of measures to address the geographical maldistribution of health workers and to support their retention in underserved areas.

The Guideline Development Group (GDG) met in early 2020 to develop recommendations aiming to strengthen primary health care and build resilient health systems with a focus on the health workforce. Although the GDG met before COVID-19 was declared a pandemic, these recommendations are of significant importance and relevance in the COVID-19 period. COVID-19 has highlighted the crucial importance of primary health care, health worker availability and resilient health systems, all of which are essential to the ability to contain outbreaks. The widespread nature of the COVID-19 pandemic highlights the need to strengthen and improve primary health care in rural and remote areas, and the global importance of leaving no one behind, no matter how geographically isolated they may seem.

Target audience

The primary target audience for this guideline is national authorities and other policy-makers from national and subnational levels, across several sectors including health, finance, education, labour, development and public service responsible for policies and planning. The secondary target audience includes professional associations representing different health workforce occupations, regulatory bodies, health system managers, human resource managers, heads of education and training institutions, employers of health workers, civil society, nongovernmental organizations, development partners, funding agencies, health workers, researchers, activists and rural and remote communities.

Formulation of the recommendations

The revision of the 2010 *Global policy recommendations* commenced with an update of the systematic review of evidence covering the period 2010–2019. The 2010 recommendations were based on evidence from 1995 to 2009; therefore, the recommendations for this revised guideline were developed based on a synthesis of the sum of evidence (covering 1995–2019) on strategies that improve rural health workforce density and access. The systematic review team rated the certainty of the evidence using the GRADE (Grading of Recommendations Assessment, Development and Evaluation) approach. In addition, evidence was collected through a systematic review of the values, preferences, feasibility and acceptability related to policies for recruiting and retaining health workers in underserved areas, and a stakeholders' survey on the perception of the acceptability and feasibility of the 2010 recommendations. This process resulted in a comprehensive body of evidence that was considered in the development of these recommendations.

The WHO Secretariat convened a gender-balanced, regionally representative and multidisciplinary GDG to review the synthesized evidence and associated certainty and provide guidance to policy-makers on how to design, implement and evaluate the strategies to attract, recruit and retain health workers in rural and remote areas. Evidence published over the previous 25 years was reviewed by the GDG, whereupon new recommendations were formed. The development of this guideline followed the standards for systematically reviewing and using evidence in the production of WHO guidelines, as outlined by the Organization's Guideline Review Committee. This includes using the GRADE evidence to decision framework and presenting the certainty of the evidence in the GRADE format.

Recommendations

- *Good practice statement for the development, attraction, recruitment and retention of health workers in rural and remote areas:*
- **Interventions should be interconnected, bundled and tailored to the local context.**
- *Policy recommendations for the development, attraction, recruitment and retention of health workers in rural and remote areas are as follows.*

Education

1. WHO recommends using targeted admission policies to enrol students with a rural background in health worker education programmes	
Strength of recommendation – strong	Certainty of evidence – moderate
2. WHO suggests locating health education facilities closer to rural areas	
Strength of recommendation – conditional	Certainty of evidence – low
3. WHO recommends exposing students of a wide array of health worker disciplines to rural and remote communities and rural clinical practices	
Strength of recommendation – strong	Certainty of evidence – low
4. WHO recommends including rural health topics in health worker education	
Strength of recommendation – strong	Certainty of evidence – low
5. WHO recommends designing and enabling access to continuing education and professional development programmes that meet the needs of rural health workers to support their retention in rural areas	
Strength of recommendation – strong	Certainty of evidence – low

Regulation

6. WHO suggests introducing and regulating enhanced scopes of practice for health workers in rural and remote areas	
Strength of recommendation – conditional	Certainty of evidence – low
7. WHO suggests introducing different types of health workers for rural practice to meet the needs of communities based on people-centred service delivery models	
Strength of recommendation – conditional	Certainty of evidence – low
8. WHO acknowledges that many Member States have compulsory service agreements. When compulsory service in rural and remote areas exists, WHO suggests that it must respect the rights of health workers and be accompanied with fair, transparent and equitable management, support and incentives	
Strength of recommendation – conditional	Certainty of evidence – low
9. WHO suggests providing scholarships, bursaries or other education subsidies to health workers with agreements for return of service	
Strength of recommendation – conditional	Certainty of evidence – low

Incentives

10. WHO recommends employing a package of fiscally sustainable financial and non-financial incentives for health workers practising in rural and remote areas	
Strength of recommendation – strong	Certainty of evidence – low

Support

11. WHO recommends investing in rural infrastructure and services to ensure decent living conditions for health workers and their families	
Strength of recommendation – strong	Certainty of evidence – low
12. WHO recommends ensuring a safe and secure working environment for health workers in rural and remote areas	
Strength of recommendation – strong	Certainty of evidence – low
13. WHO recommends providing decent work that respects the fundamental rights of health workers	
Strength of recommendation – strong	Certainty of evidence – low
14. WHO suggests identifying and implementing appropriate health workforce support networks for health workers in rural and remote areas	
Strength of recommendation – conditional	Certainty of evidence – low
15. WHO recommends a policy of having career development and advancement programmes, and career pathways for health workers in rural and remote areas	
Strength of recommendation – strong	Certainty of evidence – low
16. WHO suggests supporting the development of networks, associations and journals for health workers in rural and remote areas	
Strength of recommendation – conditional	Certainty of evidence – low
17. WHO recommends adopting social recognition measures at all levels for health workers in rural and remote areas	
Strength of recommendation – strong	Certainty of evidence – very low

Overarching principles for the formulation of policies

Improving access to health workers in rural and remote areas is grounded in a commitment to health for all. It is important to focus on equity to ensure that the needs of rural and remote communities drive policy responses. There is a close link between this guideline and primary health care models of care. Policies pertaining to the development, attraction, recruitment and retention of health workers in rural and remote areas are also tightly linked to global progress on sustainable development and universal health coverage. To achieve gains, a whole-of-government and whole-of-society approach, involving different sectors and stakeholders along with community engagement, will be necessary. Embedding rural health policies in national health plans can increase accountability and enable monitoring, leading to more strategic, evidence-informed health workforce planning.

Improving access to health workers in rural and remote areas is a complex and multifaceted policy dilemma. The unit in charge of human resources for health policy and governance plays an important role in effective implementation and driving better outcomes. Key considerations include acceptability and feasibility of the policy interventions, their impact, and their consequences for policy-makers, health workers and local communities. As such, what can be implemented with success in one area may not be appropriate for another location. The recommendations in this guideline therefore present a menu of policy options. As part of the process of implementation, an appropriate bundle of interventions should be selected, taking into account the specific context. Success in improving access to health workers in rural and remote areas depends on the selection of appropriate, context-relevant, feasible, acceptable and affordable interventions from the menu of evidence-informed recommendations presented in this document. The right selection and coordinated implementation of those interventions will yield more sustained improvements compared to implementing *all* of the recommendations, or trying to address attraction, recruitment and retention in a fragmented fashion.

Understanding health workers and their preferences, interests, goals and needs will help inform a relevant and acceptable selection of interventions. This is facilitated by health labour market analysis and analysis of the factors that influence the decisions of health workers to relocate to, stay in or leave rural and remote areas. Such analyses and consultations should include a wide range of health workers that are important in delivering holistic and integrated people-centred services.

Encouraging health worker education institutions to be socially accountable and work closely with health services is important in the efforts to produce the right kind of health workers for rural and remote health care. Considering race, gender, ethnicity, language, sexuality, disability and sociodemographic background of community and health workers is an important component of the acceptability of care. Acknowledging the pervasive gender dynamics and resultant occupational segregation by gender in the health sector and responding accordingly to ensure that women in the workforce are adequately valued, supported, protected and promoted will be highly beneficial to rural and remote communities, in terms of achieving both health goals and goals related to gender equality. Strengthening health workforce leadership and management at central, local and facility levels is crucial for assessing options and championing interventions to improve rural retention.

Incorporating monitoring and evaluation is essential to assess design, implementation, outputs, outcomes and ultimately the impact of policies. This will help ensure a strong evidence base for attraction, recruitment and retention policies. In addition, capturing lessons learned from different contexts will promote understanding of the when, why, how and in what circumstances interventions work well or fail. Enabling reflective practice through virtual networks, not only among policy-makers but also among health workers, will be key to ensuring that lifelong learning takes place and that policies are flexible, dynamic and agile.

Selecting and evaluating the bundle of interventions

To assist in the selection, design, implementation, monitoring and evaluation of appropriate strategies for rural retention based on their context, this guideline proposes a framework and six core questions to guide the selection of the appropriate bundle of interventions.

a) **Relevance.** Which interventions best respond to national and local priorities and the expectations of health workers and rural communities?

b) **Acceptability.** Which interventions are politically or socioculturally acceptable and have the most stakeholder support?

c) **Feasibility.** Which interventions face the fewest barriers to implementation?

d) **Affordability.** Which interventions are cost effective and what is their fiscal impact?

e) **Effectiveness.** Have synergies, complementarities and potential unintended consequences between various interventions been considered?

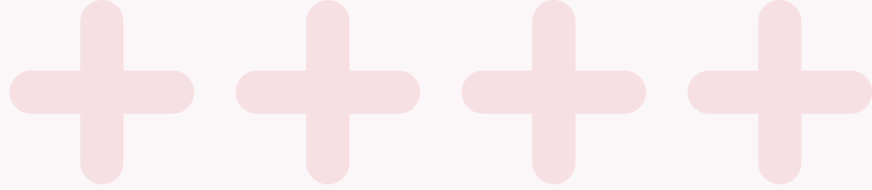
f) **Impact.** What indicators will be used to measure impact over time?

The framework specifies the dimensions for which the effects of retention strategies can be measured: development, attractiveness, recruitment, and retention.

Limitations

A central challenge in developing this guideline was applying the GRADE evidence to decision framework. Most of the included studies evaluated complex health workforce policies, where there were many confounding factors. Many studies observed the effect of policies in the field, a setting quite different from clinical interventions that use controls and can adjust for confounding factors and variables. The certainty of evidence for most of the recommendations is attributable to these constraining factors rather than the lack of studies or lower effectiveness. The GDG noted this throughout the process, stressing that that there may always be this higher degree of uncertainty in the evaluation of evidence when developing health system guidelines.

Notwithstanding challenges in applying the GRADE evidence to decision framework, the context and research base has greatly evolved since the 2010 *Global policy recommendations* were published. Over 100 new studies are included in this guideline, resulting in a larger, more comprehensive evidence base, which is now informed by a wider array of health worker occupations and contexts. This increased evidence is critical to informing effective policy and increasing confidence in effective implementation. The evidence for these recommendations comes from over 110 countries that cover all WHO regions and World Bank country income classifications.



1.0 Background

Nearly half of the world's population live in rural areas. An estimated 2 billion people living in these areas do not have adequate access to essential health services, which adversely affects health outcomes.

Almost half of the world's population live in rural areas *(1)*. Projections suggest that around one in three people globally will still live in a rural area by 2050 *(1)*. Although there is a clear trend towards urbanization, urbanization is not the solution to rural health challenges *(2)*. Urban and rural areas can be thought of as an organic whole – they matter to each other, and a failing in one will eventually impact the entity.

Consequently, it is been suggested that governments need to promote sustainable ruralization alongside urbanization *(3)*. This guideline adopts a similar approach and maintains commitments to the Sustainable Development Goals (SDGs) and universal health coverage that can only be fulfilled if the gaps in the rural health workforce are effectively addressed.

Rural populations tend to be poorer and less healthy. Health systems in rural areas are usually weaker and access to health workers is lower. It is estimated that 51–67% of rural populations have limited access to essential health services *(4)*. Globally, this translates into an estimated 2 billion rural people without adequate access to essential health services. The multifactorial causes of this gap include socioeconomic deprivation, geographical barriers, distance, lack of transport or telecommunications, low acceptability of services and the cost of accessing services. A central element limiting access is the deficiency in numbers and mix of trained motivated health workers required to provide effective health service coverage in rural and remote areas. This deficiency is a result of variability in the adoption of primary health care models in countries and the challenge in developing, attracting, recruiting and retaining health workers in rural and remote areas. The result is that equitable access to health care services for rural and remote populations remains a pervasive challenge confronting governments and policy-makers around the world. This challenge is complex and the recommendations in this guideline aim to help the users make informed decisions to increase access to health workers in rural and remote areas.

1.1 Rationale

Early in the Millennium Development Goals (MDGs) era, scientific studies revealed a clear relationship between health workforce density and distribution and the achievement of global goals, particularly health outcomes *(5)*. Policies to redress geographical imbalances in the health workforce and evidence of their effectiveness became more prevalent *(6, 7)*. In 2010, the World Health Organization (WHO) produced *Increasing access to health workers in remote and rural areas through improved retention: global policy recommendations (8)* (see Table 1.2). However, a decade on from the 2010 *WHO Global policy recommendations*, countries are still struggling to meet the health needs of rural communities, resulting in rural areas lagging behind urban areas across many health indicators, notably with regard to reproductive, maternal and child health, with worse outcomes in rural areas compared to urban areas observed in many regions across the world *(4)*. Globally, children born in rural areas are 1.7 times more likely to die before age 5 years than children born in urban areas *(9)*. In term of maternal outcomes, only 67% of births among rural mothers are attended by a skilled birth attendant, compared to about 90% of births among urban mothers *(10)*.

Overall supply of health workers and the distribution of this workforce are central to countries' ability to meet the health needs of rural communities. In 2016, WHO estimated a shortfall of 18 million health workers to achieve universal health coverage by 2030, primarily in low- and middle-income country settings. Maldistribution means that these shortages are felt most acutely in rural, remote and hard-to-reach areas. Data suggest that although about half the global population is living in rural areas only 36% of the global nursing workforce is located in rural areas *(11)*. In Canada, the density of doctors in urban areas is 2.6 doctors per 1000 population, compared to 0.9 doctors per 1000 population in rural areas *(12)*. In the United States of America there are 2 doctors per 1000 population in urban areas compared to 0.82 doctors per 1000 population in rural areas *(13)*. While Brazil has an average of 1.9 doctors per 1000 population, in some rural and remote places within the state of Amazonas there are as few as 0.28 doctors per 1000 population *(14)*. Bangladesh has 1.8 doctors per 1000 population in urban areas compared to 0.1 doctors per 1000 population in rural areas *(15)*, while India has 11.4 times more doctors in urban areas *(16)*. Maldistribution of health workers not only is specific to doctors and nurses, but also cuts across all health occupations, including pharmacists *(17)*, physician assistants *(18)* and health assistants *(19)*. In China, the density of health workers in urban areas is 10.2 per 1000 population compared to only 3.9 per 1000 population in rural areas *(20, 21)*. Although data from the public sector are more readily available, maldistribution is not an issue isolated to the public sector *(22)*.

Another key issue is supporting, maintaining, retaining and motivating the current rural health workforce, with single-year attrition or turnover rates in rural areas estimated as high as 82% for doctors in a rural Rwandan clinic *(23)* and 66–128% for nurses and Aboriginal health practitioners in the Northern Territory of Australia *(24)*. The setting in which health workers work; their level of motivation, work organization, management capacity, the division of labour, and availability of resources *(25)*; and the efficiency of the other building blocks of health systems *(26)* play important roles in health worker productivity and ultimately in health outcomes.

The relationship between health workforce density and distribution, health coverage and the achievement of health outcomes is clear. The 2030 Agenda for Sustainable Development confirmed the importance of health workforce density and distribution for the achievement of global health goals, setting a target of substantially increasing health financing and the recruitment, development, training and retention of the health workforce in developing countries and explicitly including an indicator on health worker density and distribution in the global indicator framework for the SDGs. Yet, inequalities in access are pervasive and poor health outcomes, particularly for the rural poor, continue. It is therefore critical for the global health agenda to revisit the global policy guidance for increasing access to health workers in rural and remote areas within the context of the SDGs, universal health coverage, the reaffirmation of a global commitment to primary health care and an improved evidence base.

The factors that contribute to the maldistribution of the rural and remote health workforce are multiple and complex. They include available supply or shortage of health workers, level of health workforce development, degree of challenges with attraction, recruitment and retention of health workers in rural and remote areas, and human resources for health governance. The attraction, recruitment and retention of health workers in rural and remote areas, and health workers' decisions to go to, remain in, or leave those areas, are influenced by several interconnected factors *(27)*, including the international environment and international health labour market dynamics; national environment, notably political climate, social stability, labour relations, policy and management of deployment (posting and transfer) *(28)* and remuneration; local environment, including general living conditions and the social environment; and working environment, including management, local labour relations and infrastructure. This wide range of intertwined factors highlights the importance of an intersectoral approach and interconnected bundled intervention packages.

In 2019, WHO reviewed the health workforce planning documents from 151 countries and found that while three quarters outlined a policy approach addressing shortages of health workers in rural and remote areas in their health workforce planning documents, only a fifth outlined an approach that bundled policies addressing education, regulation, incentives and support. Therefore, while the majority of countries have outlined an approach to address rural health workforce gaps, very few are doing so in a holistic manner that covers development, attraction, recruitment and retention of health workers in rural and remote areas in a comprehensive manner.

Interventions to improve access to adequate, appropriate and competent health workers that deliver quality health services in rural and remote areas need to be supported with the necessary investments in health workforce development at all levels – national, subnational and local. However, current levels of investment in the health workforce are suboptimal *(29)*. The mismatch between the *need* for health workers, the *demand* for health workers (the number of health worker jobs available) and the *supply* of health workers (the number of available health workers) in rural and remote areas has clear links to funding *(26, 30)*, notably in the level of fiscal decentralization, the funding available to rural and remote districts and facilities, and the resultant demand for health workers in these areas *(30)*. Increasing the demand for health workers and improving access to health care in rural areas requires economic capacity *(31)*. Investment needs to be increased for the education, training and decent work opportunities for the right health workers based on local needs, and resources provided for the facilities in which they train and practise.

Following the recognition that primary health care is fundamental to achieving universal health coverage and SDG 3, governments, through the United Nations Political Declaration of the High-Level Meeting on Universal Health Coverage *(32)*, reaffirmed their actions to scale up efforts to promote the recruitment and retention of competent, skilled and motivated health workers and encourage incentives to secure the equitable distribution of qualified health workers in rural, hard-to-reach and underserved areas, including through providing decent, safe working conditions and appropriate remuneration. These commitments are presented in Table 1.1. They need to be actualized to ensure a measurable improvement in access to health workers in rural and remote areas.

The call for this guideline, a revision of the 2010 recommendations, was first made in the WHO guideline *Increasing access to health workers in remote and rural areas through improved retention*: *global policy recommendations (8)*. This revision is based on new evidence, research and feedback from Member States. This guideline comes at a time when massive efforts are needed to address a global pandemic in the face of a global shortfall of 18 million health workers needed for universal health coverage *(33)*. In the face of the COVID-19 pandemic, it has never been more evident that the commitments to and investments in the health sector, health workforce and preparedness have far-reaching implications not only for health and inclusive development, but also for economic stability.

Table 1.1 International calls to action on the health workforce

2004	The World Health Assembly resolutions on migration in 2004 and rapid scaling up of health workers in 2006 both requested Member States to put in place mechanisms to address the retention of health workers	Resolution WHA57.19 on international migration of health personnel: http://www.who.int/gb/ebwha/pdf_files/WHA57/A57_R19-en.pdf Resolution WHA59.23 on rapid scaling up of health workforce production: https://apps.who.int/gb/ebwha/pdf_files/WHA59/A59_R23-en.pdf
2008	In March 2008, the Kampala Declaration and Agenda for Global Action of the first Global Forum on Human Resources for Health requested governments to "assure adequate incentives and an enabling and safe working environment for effective retention and equitable distribution of the health workforce"	Kampala Declaration: http://www.who.int/workforcealliance/Kampala%20Declaration%20and%20Agenda%20web%20file.%20FINAL.pdf
2008	The G-8 (Group of 8) communiqué of July 2008 restated the need to ensure the effective retention of health workers	Tokyo Framework for Action on Global Health: report of the G-8 Health Experts Group: http://www.mofa.go.jp/policy/economy/summit/2008/doc/pdf/0708_09_en.pdf
2008	The November 2008 report of the Commission on Social Determinants of Health urged action by governments and international partners to specifically address the imbalances in the geographical distribution of health workers in rural areas as a structural determinant of poor health outcomes	Final report of the Commission on Social Determinants of Health: http://www.who.int/social_determinants/thecommission/finalreport/en/index.html
2009	In June 2009, the High-Level Taskforce on Innovative International Financing for Health Systems urged all governments to ensure that all people, including rural and remote populations, have access to safe, high-quality and essential health care services	High-Level Taskforce on Innovative International Financing for Health Systems: https://www.who.int/bulletin/volumes/88/6/09-075507/en/
2010	Article 5.7 of WHO Global Code of Practice on the International Recruitment of Health Personnel, May 2010, calls for Member States to consider adopting measures to address the geographical maldistribution of health workers and to support their retention in underserved areas	WHO Global Code of Practice on the International Recruitment of Health Personnel: https://www.who.int/hrh/migration/code/code_en.pdf?ua=1
2015	Sustainable Development Goal target 3.c calls for a substantial increase in health financing and the recruitment, development, training and retention of the health workforce in developing countries, measured by indicator 3.c.1 on health worker density and distribution	SDG 3: https://sustainabledevelopment.un.org/sdg3

Table 1.1	International calls to action on the health workforce	
2016	The Global Strategy on Human Resources for Health: Workforce 2030, published in 2016, outlines as its first objective to "optimize performance, quality and impact of the health workforce through evidence-informed policies on human resources for health, contributing to healthy lives and well-being, effective universal health coverage, resilience and strengthened health systems at all levels"	WHO Global Strategy on Human Resources for Health: Workforce 2030: https://apps.who.int/iris/bitstream/handle/10665/250368/9789241511131-eng.pdf?sequence=1
2016	The High-Level Commission on Health Employment and Economic Growth, 2016, recommended reforming service models to focus on high-quality, affordable, integrated, community-based, people-centred primary and ambulatory care, paying attention to underserved areas	High-Level Commission on Health Employment and Economic Growth: https://www.who.int/hrh/com-heeg/en/
2018	At the Global Conference on Primary Health Care, Astana, October 2018, the global community made a declaration to strive for the retention and availability of the primary health care workforce in rural, remote and less developed areas	Global Conference on Primary Health Care: from Alma-Ata towards Universal Health Coverage and the SDGs: https://www.who.int/docs/default-source/primary-health/declaration/gcphc-declaration.pdf
2019	The September 2019 Political Declaration of the High-Level Meeting on Universal Health Coverage requires countries to scale up efforts to promote the recruitment and retention of competent, skilled and motivated health workers, especially in rural, hard-to-reach and underserved areas	Political Declaration of the High-Level Meeting on Universal Health Coverage: https://www.un.org/pga/73/wp-content/uploads/sites/53/2019/07/FINAL-draft-UHC-Political-Declaration.pdf

1.2 Previous recommendations on increasing access to health workers in rural and remote areas

In 2010, WHO produced the health systems guideline *Increasing access to health workers in remote and rural areas through improved retention: global policy recommendations (8)*. This initial guideline was developed in response to overwhelming requests from global leaders, civil society and Member States. After reviewing the existing knowledge and evidence available, an expert group provided practical guidance with 16 recommendations for policy-makers on how to design, implement and evaluate strategies to attract and retain health workers in rural and remote areas. These evidence-informed recommendations, outlined in Table 1.2, were grouped into four spheres of influence on the career paths of all rural health workers, namely education, regulation, financial incentives, and personal and professional support *(8)*.

Table 1.2 Categories of interventions used to improve attraction, recruitment and retention of health workers in remote and rural areas (2010 guideline)

Category	Intervention / Strength of recommendation	Quality of evidence
Education	A1 Admit students from rural backgrounds	
	Strength of recommendation – strong	Quality of evidence – moderate
	A2 Locate health professional schools outside major cities	
	Strength of recommendation – conditional	Quality of evidence – low
	A3 Provide clinical rotations in rural areas during studies	
	Strength of recommendation – conditional	Quality of evidence – very low
	A4 Develop curricula that reflect rural health issues	
	Strength of recommendation – strong	Quality of evidence – low
	A5 Provide continuous professional development for rural health workers	
	Strength of recommendation – conditional	Quality of evidence – low
Regulations	B1 Enhance scope of practice for rural health workers	
	Strength of recommendation – conditional	Quality of evidence – very low
	B2 Introduce different types of health workers	
	Strength of recommendation – conditional	Quality of evidence – low
	B3 Ensure compulsory service in rural areas is supported and incentivized	
	Strength of recommendation – conditional	Quality of evidence – low
	B4 Subsidize education for return of service	
	Strength of recommendation – conditional	Quality of evidence – low
Incentives	C1 Offer appropriate financial incentives	
	Strength of recommendation – conditional	Quality of evidence – low
Professional and personal support	D1 Improve living conditions for rural health workers	
	Strength of recommendation – strong	Quality of evidence – low
	D2 Provide a good, safe and supportive working environment	
	Strength of recommendation – strong	Quality of evidence – low
	D3 Facilitate outreach support from urban areas	
	Strength of recommendation – strong	Quality of evidence – low
	D4 Develop rural career development programmes	
	Strength of recommendation – strong	Quality of evidence – low
	D5 Support establishment of professional networks in rural areas	
	Strength of recommendation – strong	Quality of evidence – low
	D6 Adopt public recognition measures for rural workers	
	Strength of recommendation – strong	Quality of evidence – low

Source: WHO *Global policy recommendations* (8).

1.3 Target audience

1.3.1 End users of the guideline

The primary target audience of this guideline is national authorities at all levels – national, subnational and local – across several sectors, including health, finance, education, labour, development and public service. The focus is on those sectors responsible for policy and planning at the national and local levels that affect the health workforce directly and indirectly.

The secondary target audience includes health services managers, human resource managers, heads of education and training institutions, health workers, employers of health workers, health regulatory bodies, councils, associations and trade unions representing different health workforce occupations, civil society, nongovernmental organizations, development partners, funding agencies, researchers, activists and remote and rural communities.

1.3.2 Stakeholders

This guideline emphasizes that sustained political, institutional and financial commitments are needed to actualize improvements in rural health. The involvement of many different stakeholders is key to the successful implementation of interventions. In the principle of primary health care, community participation and engagement are needed at all levels of assessing, planning, adoption, adaptation and implementation of the retention strategies. Representation of the groups presented in Table 1.3 is therefore highly encouraged.

1.4 Objectives of this guideline

This guideline aims to support national authorities in their efforts to improve health outcomes by strengthening the density and capacity of the health workforce in rural and remote areas. The guideline plays a central role in policies for the attainment of universal health coverage and sustainable and inclusive development.

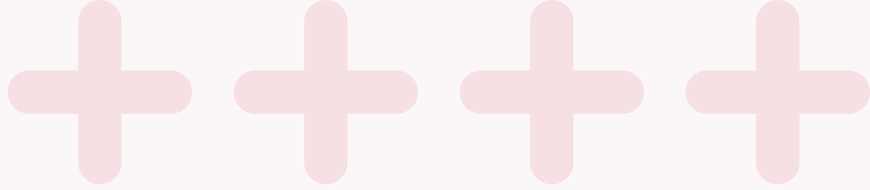
The specific objectives of this guideline are to:

- provide up-to-date practical guidance to policy-makers and stakeholders on how to design, implement and evaluate a bundle of interventions to develop, attract, recruit and retain health workers in rural and remote areas;
- identify relevant contextual elements and implementation and evaluation considerations at policy and system levels;
- identify priority gaps in evidence to be addressed with further research.

Table 1.3 Stakeholders impacting rural and remote health workforce policy

Category	Stakeholders
Civil society	Community leaders and members Community-based organizations Patients' rights organizations
Government	Health (national, subnational, local government) Executive leadership (president, prime minister, cabinet) Legislative bodies Finance Education Labour Defence and military Civil service agencies and commissions Statutory professional councils, regulatory bodies Local administrators
Employers	Private for-profit businesses Public–private partnerships Voluntary or non-profit organizations
Representatives of health workers	Professional and occupational associations Professional and occupational unions
International stakeholders	Bilateral and multilateral agencies Philanthropic organizations Professional and occupational organizations
Other stakeholders	Faculty, trainers and students of health worker educational institutions and facilities Media Health workers

Source: Adapted from George, Scott and Govender *(34)*.



2.0 Methods

This is the first update of *Increasing access to health workers in remote and rural areas through improved retention: global policy recommendations*. The evidence-informed recommendations relate to the movements of health workers within national boundaries.

2.1 Scope

This is the first update of *Increasing access to health workers in remote and rural areas through improved retention: global policy recommendations*. The evidence-informed recommendations relate to the movements of health workers within national boundaries. This guideline directly takes forward Member States' recommendations as elaborated in World Health Assembly resolution WHA63.16, on the WHO Global Code of Practice on the International Recruitment of Health Personnel (2010). Specifically, Article 5.7 of the Global Code of Practice states that "Member States should consider adoption of measures to address the geographical maldistribution of health workers and to support their retention in underserved areas, such as through the application of education measures, financial incentives, regulatory measures, social and professional support" *(35)*. The recommendations are also relevant to the work on identifying and addressing misalignments in the health labour market *(36)* and strengthening monitoring, evaluation and learning through the National Health Workforce Accounts *(37)*.

The aim of this guideline was to update the 2010 recommendations by assessing the validity of those recommendations. Therefore, the same framework (that is, the same categories and the same population, intervention, comparison, outcome of interest and setting (PICOS) questions) was applied to the entirety of evidence (covering 1995–2019). The recommendations presented in this guideline were developed based on the evidence. The strength of the recommendations and the quality of evidence from the 2010 recommendations did not inform the process.

In keeping with the 2010 recommendations, these recommendations focus on interventions that are within the remit of health workforce policy, planning and management. The four main categories of intervention are:

- education
- regulation
- incentives
- support.

Through this revision process, the emerging evidence and expert input suggest that a broader expansion of the categories may be needed in a future revision of this guideline (see section 6). The recommendations focus on strategies to increase the availability of motivated and skilled health workers in rural and remote areas through improved health workforce development, attraction, recruitment and retention. They aim to strengthen primary health care, develop and improve access to health workers, and build resilient and inclusive health systems.

The Guideline Development Group (GDG) met in early 2020 before COVID-19 was declared a pandemic. Nevertheless, given the importance of equitable access to competent health workers for emergency preparedness, these recommendations will be increasingly relevant for improving access to health workers and building resilient and inclusive health systems. COVID-19 has highlighted the crucial importance of primary health care and investing in essential public health functions, including through implementation of the International Health Regulations (2005), increasing health worker availability and building resilient health systems, all of which are essential to the ability to detect and contain outbreaks. The widespread nature of the COVID-19 pandemic highlights the need to strengthen and improve primary health care in rural and remote areas, and the global importance of leaving no one behind, no matter how geographically isolated they may seem. In today's highly interconnected world, weak health systems in rural and remote areas could have far-reaching consequences for global health security. Many of the recommendations in this guideline, notably those pertaining to continuing learning, enhanced scopes of practice, incentives, decent work, and safe working conditions, are shown to be particularly relevant in the context of health emergencies, where responsiveness and adaptability are crucial. As we begin to learn from the COVID-19 pandemic, special consideration should be given to the importance of surge capacity, health worker safety, supporting health workers at the individual level and optimizing the role of health workers during times of crisis. WHO interim guidance on *Health workforce policy and management in the context of the COVID-19 pandemic response* provides a holistic framework to inform health workforce actions during the pandemic *(38)*. Policies to develop and increase equitable access to rural health workers are a key component of building resilient health systems able to address emergencies.

2.1.1 Rural health workforce

The Global Strategy on Human Resources for Health: Workforce 2030 adopts a broad and inclusive definition of the health workforce, which covers all workers in health services, public health and related areas, and workers who provide support to these activities *(39)*. The recommendations in this guideline apply to all health worker occupations in the formal, regulated health sector (public and non-State), as well as to students aspiring to or currently attending education programmes in health-related disciplines. This includes health care providers (doctors, nurses and nursing assistants, midwives, accelerated medically trained clinicians, pharmacists and pharmacy assistants, physiotherapists, dentists, laboratory technicians, community health workers, and traditional and complementary medicine practitioners) as well as managers and support workers (human resource managers, health managers, public health workers, epidemiologists, clinical engineers, teachers and trainers). All of these health workers form an important component of rural health workforce teams and are covered by these recommendations. Nevertheless, the impact of these recommendations and their intended and unintended consequences for each health occupation and the gender of health workers should be considered as part of the policy development process.

2.1.2 Rural and remote communities: geographical considerations and definitions

As with the 2010 recommendations, the recommendations in this guideline are specifically aimed at rural, remote or hard-to-reach areas, as opposed to all underserved areas. The definition of "rural area" and "urban area" is generally based on the national characteristics that distinguish them, such as population size and density, administrative criteria and economic structures and features *(40)*. For the purpose of these recommendations the United Nations, Department of Economic and Social Affairs, Population Division definition of "rural areas" is followed, using a rural/urban classification dichotomy *(1)*.

The concept of rurality goes beyond the geographical realities of rural and remote locations to include a clear set of behavioural norms, well defined community views of social roles tied to tradition and religious practices, strong relationship and friendship bonds, a high value placed on self-sufficiency and self-reliance, and a struggle for survival as rural decline accelerates *(3, 41, 42)*. Each rural community will interface with these realities differently, which highlights the need to engage with local communities and elicit community preferences to ensure that planning

and implementation of health workforce intervention strategies are undertaken actively and effectively and achieve optimal results.

Although this guideline covers both rural and remote populations, there are differences between them that could influence the choice of intervention. Remote populations are considered smaller, more isolated and more highly dispersed, with less political influence or power and greater socioeconomic disadvantages, which may result in worse health outcomes *(43)*. Remote-living Indigenous people are a specific example of remote populations with unique health care needs. Health workforce shortages tend to be more pronounced in remote areas, characterized by higher turnover and lower retention rates *(43, 44)*, which may be due to geographical isolation, sociocultural incompatibility and unsuited community preferences. These characteristics of remote populations are important for policy-makers, health planners, health workers, educators and the implementers of interventions *(44)*.

2.1.3 Outcomes of interest

A framework to measure the outcomes and impact of the recommendations was developed for the 2010 recommendations. This used the inputs–outputs–outcomes–impact evaluation model. A similar approach is adopted here. The recommendations in this guideline focus on the same outputs as the 2010 recommendations: attractiveness, recruitment and retention, with the addition of workforce development.

For the outcomes, emphasis is placed on health workforce performance indicators on availability and competence, which can be tracked by indicators in the National Health Workforce Accounts *(37)*, while for health system performance, the focus is on access to services and service coverage, which can be tracked by the universal health coverage index as shown in Table 2.1 (see section 4 for more details). Impact remains *improved health service delivery contributing to improved health status in rural and remote areas*.

2.2 Process for reviewing this guideline and methodology

The Health Workforce Department at WHO led the revision of this guideline in conformity with the process and requirements outlined in the *WHO handbook for guideline development (45)*.

2.2.1 Contributors to the guideline

A WHO Steering Group was established to manage the update process. The Steering Group comprised colleagues from the six WHO regional offices and from the Health Workforce Department, Integrated Health Services Department, and Health Governance and Financing Department at headquarters. The WHO Steering Group identified the contributors to this guideline, including the evidence teams, guideline methodologist, GDG and External Review Group. In addition, the WHO Steering Group organized the GDG meetings and drafted and finalized the guideline document. The Steering Group will also contribute to the management of guideline dissemination, implementation and impact assessment.

Table 2.1 Outputs and outcomes of interest

Outputs of interest	Outcomes of interest
Workforce development: effective training and production **Attractiveness:** preferences for rural work **Recruitment:** effective recruitment and posting **Retention:** health workers remaining in rural and remote areas for certain periods of time	**Workforce performance:** appropriate and competent multidisciplinary teams to provide primary health care based on national priorities and local health needs **Health systems performance:** improving universal health coverage index

The members of the WHO Steering Group are listed in Table A3.1 (Web Annex C).

The Steering Group formed the **Guideline Development Group** (GDG) with consideration for balance in terms of gender, region, and expertise. The result was a 12-member group with a mix of policy-makers, academics, technical experts and rural health workers. The GDG appraised the evidence that was used to inform the recommendations, advised on the interpretation of that evidence, and reviewed and reached consensus on the recommendations and good practice statement. The members of the GDG are listed in Table A3.2 (Web Annex C). Declarations of interest were collected from GDG members and managed according to WHO policy. The conflicts declared are outlined in Table A3.4 (Web Annex C). There were no cases where the interests declared were considered to hinder participation in the process of developing or reviewing recommendations.

The Steering Group also formed an **External Review Group** with consideration for balance in terms of gender, region, and expertise. Twenty technical experts with a wide array of expertise in rural and remote health, Indigenous health, economic development and local development, health workforce, nursing, midwifery, physiotherapy and rehabilitation sciences, gender, equity and rights, and policy development were selected to peer review the guideline. The External Review Group reviewed the final document to identify any factual errors or missing information; comment on the clarity of language; provide input into the scope of the policy recommendations; identify errors or missing information; identify and give input on setting-specific issues; and give input on contextual issues and implications for implementation. The External Review Group did not change any recommendations formulated by the GDG. The members of the External Review Group are listed in Table A3.3 (Web Annex C). Declarations of interest were collected from External Review Group members and managed according to WHO policy. There were no cases where the interests declared were considered to hinder participation in the process to develop or review recommendations.

2.2.2 Sources of evidence for the guideline

Several sources of evidence were used in the development of this guideline, including evidence on the effects of interventions on development, attraction, recruitment and retention of health workers in rural and remote areas.

The evidence review of the effects of interventions of interest compiled the results from the original systematic review of evidence (covering 1995–2009) and the updated systematic review (covering 2010–2019). Together these systematic reviews were the primary source of evidence on the effects (harms and benefits) of each intervention. The original electronic search was conducted in August and September 2009 in PubMed, the Cochrane database, Embase and LILACS. The updated search was conducted in the Cochrane Database of Systematic Reviews, PubMed, Embase, LILACS, Web of Science and Scopus. These were initially searched on 28 June 2017, and then on 21 February 2018 and 4 November 2019. In addition, Google and Google Scholar were searched to identify government reports and other grey literature. Further snowballing of reference lists for any additional eligible records supplemented the search strategy. The final search results were exported into EndNote, and duplicates were removed by a librarian.

The review team included articles that reported on the results and effects of the interventions on the outcomes of interest in rural or remote areas, including a clear description of the study design and methods used. There were no exclusions to health worker occupation, country or language. The systematic review team produced for each PICOS question a summary table of the evidence and the certainty of evidence using the GRADE (Grading of Recommendations Assessment, Development and Evaluation) methodology (see Web Annex B). The senior author on the systematic review team participated in the GDG meetings as an observer, presenting a summary of the evidence and responding to any questions regarding the systematic review from GDG members.

According to GRADE, the certainty of evidence is categorized as "high", "moderate", "low" or "very low" *(46)*. The certainty of the evidence ranking is based on the following factors: the study design; factors that lower the certainty of evidence (risk of bias, indirectness, inconsistency, imprecision, publication bias); and factors that increase the certainty of evidence. These studies evaluated complex interventions with varying levels of overlap between the criteria for each category of intervention, for example rurally located health worker education institution admitting rural background students and using a curriculum relevant for practice in rural areas. The primary studies to different degrees took this into account in trying to rule out effects from other factors.

Evidence on resource use, values, preferences, feasibility, acceptability and equity.
For questions relating to the values of stakeholders (including rural and remote community members), equity, acceptability and feasibility, findings were derived from two key sources. The first was a systematic review (commissioned by WHO) on values, preferences, feasibility and acceptability related to policies for recruiting and retaining health workers in underserved areas, which was conducted with the aim of informing the GDG on the stakeholders' valuation of these health workforce policies (see Web Annex G.3). Eighteen studies met inclusion criteria. These studies assessed perceived acceptability or feasibility of eight of the included interventions. No studies identified stakeholders' valuation of the outcomes of interest for recruitment and retention of health workers. The second was a survey of stakeholders (conducted by WHO), which was carried out from 25 September 2019 to 31 December 2019 to assess stakeholders' perceptions of the relative importance of different outcomes, and of the feasibility and acceptability of the interventions from the 2010 recommendations. The target group of the survey were individuals involved in policy formulation, administration or management of health workers serving in rural areas. These were health workers themselves, or decision-makers appointed by governments and authorities to manage health worker services in rural and remote areas. Almost two thirds of the respondents were living in rural and remote communities, bringing a perspective of rural community members into the assessments. The online survey was disseminated in the six WHO languages through multiple channels, including the World Organization of Family Doctors (WONCA) rural health expert database, the Healthcare Information For All online community, the WHO Global Health Workforce Network and the WHO health workforce and regional office websites and newsletter distribution outlets. A total of 336 respondents from different countries in all WHO regions participated in this process. More information on the survey can be found in Web Annex G.4 and in the published study *(47)*.

2.3 Results

2.3.1 Systematic review of results

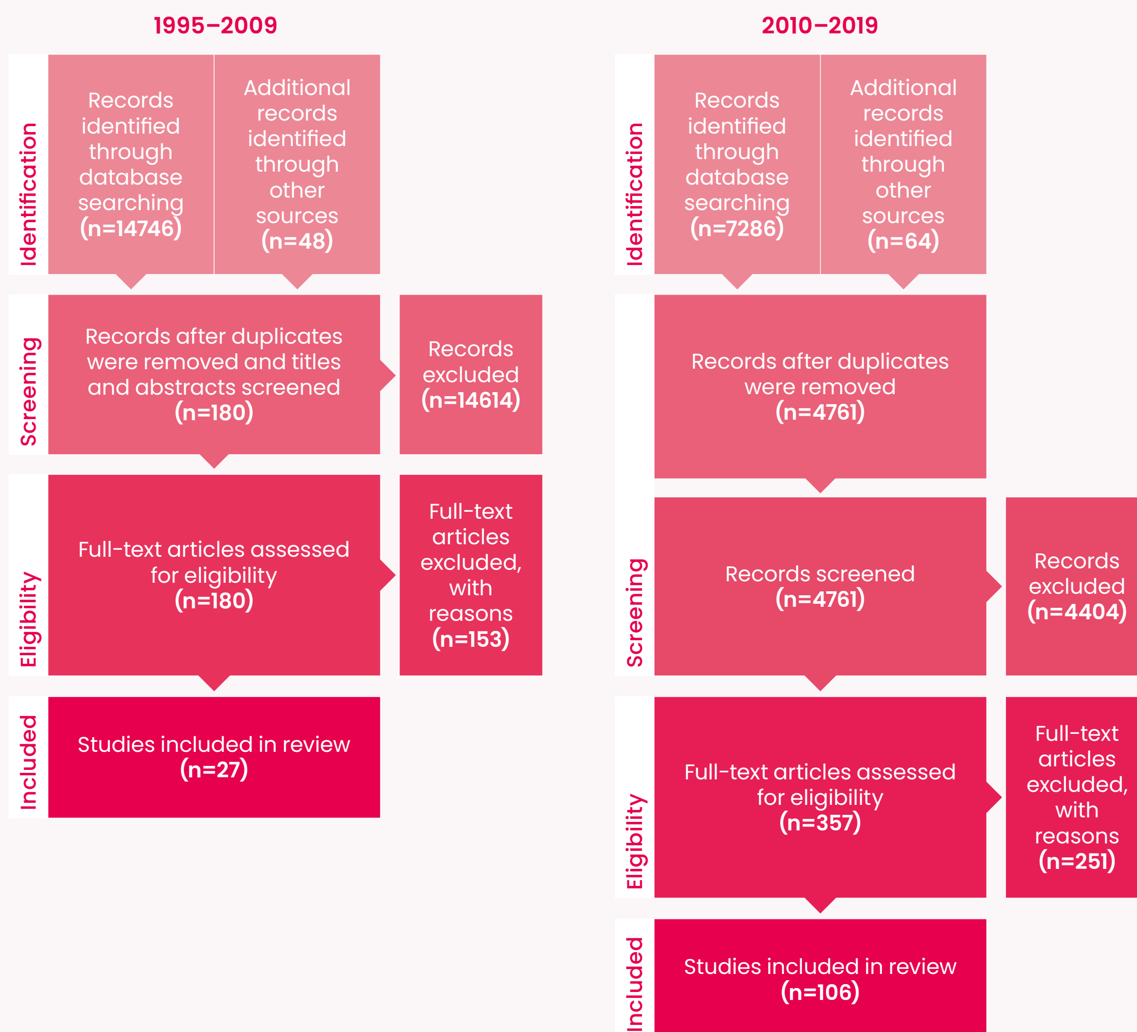
In the original systematic review (covering 1995–2009), 27 studies were evaluated. The results reported by these studies were presented against a framework for monitoring and evaluating retention interventions *(48)*. This framework proposes four dimensions on which various policy interventions can have a direct effect: attractiveness of rural and remote areas for students or health workers; recruitment and deployment; retention; and health workforce or health system performance *(49)*. The 2010 policy recommendations highlighted the need for additional research to fill key research gaps and presented a research agenda.

The updated evidence review (covering 2010–2019) now includes 106 studies *(50)* (Figure 2.1). The updated evidence pertains to many of the research gaps highlighted in 2010, such as the need to study more health worker occupations and the need for more research in low-income countries. The updated systematic review includes evidence from a much broader range of health worker occupations, as well as an increased number and wider range of countries representing individual country studies and multiple country studies. The evaluations are related to 39 countries with individual country studies and 11 multicountry studies that include over 110 countries. The single-country studies make up about 90% of the research evidence.

Table 2.2 gives a breakdown of the countries that had single-country studies and the number of studies. About half of the single-country studies are notably from the Americas (Canada and the United States of America) and Western Pacific (Australia).

The evidence from the systematic reviews now covers over 30 health worker occupations compared to only nine occupations in 2010. These are outlined in Table 2.3.

Figure 2.1 PRISMA charts: original systematic review (left) and updated systematic review (right)



Source: The flow diagrams were adapted from the PRISMA statement *(51)*.

Table 2.2 Geographical distribution of single-country studies included in the original and updated systematic reviews by WHO region

Africa		Americas		South-East Asia		Europe		Eastern Mediterranean		Western Pacific	
18%		35%		9%		6%		2%		30%	
South Africa	5	United States	25	Thailand	4	Norway	3	Pakistan	2	Australia	32
Ghana	4	Canada	17	India	3	United Kingdom	2	Afghanistan	1	China	4
Mali	2	Brazil	5	Bangladesh	3	France	1			Philippines	2
Uganda	2	Ecuador	1	Indonesia	1	Germany	1			Cambodia	1
UR Tanzania	2	Chile	1	Nepal	1	Spain	1			Japan	1
Zambia	2					Israel	1			Marshall Is.	1
Burkina Faso	1									New Zealand	1
DRC	1										
Kenya	1										
Liberia	1										
Malawi	1										
Mozambique	1										
Niger	1										
Swaziland	1										

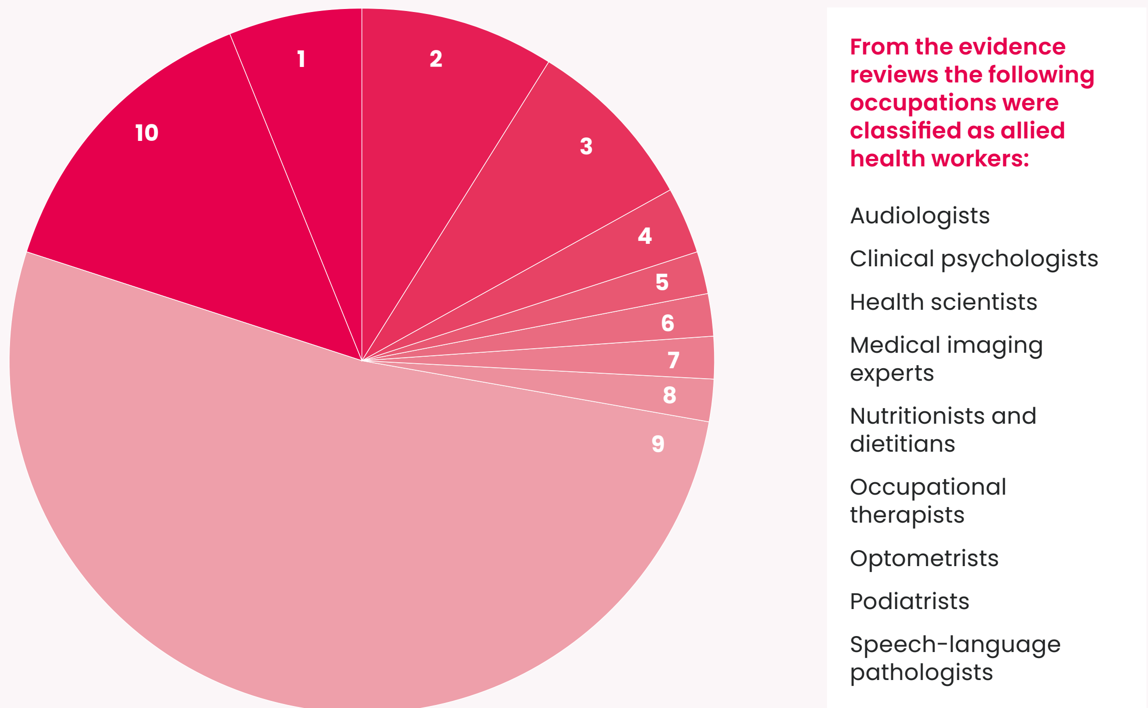
Table 2.3 Health worker occupations represented in studies included in the systematic reviews

Doctors	Nurses	Pharmacists	Community health officers
Surgeons	Nurse practitioners	Audiologists	Community health workers
Anaesthetists	Auxiliary nurses	Occupational therapists	Medicine distributors
Hospitalists	Nurse aides	Dietitians	Disease control officers
Dentists	Clinical officers	Speech language pathologists	Tuberculosis health workers
Dental therapists	Clinical supervisors	Podiatrists	Laboratory technicians
Clinical psychiatrists	Physiotherapists	Paramedics, emergency responders	Health technologists
Physician assistants	Optometrists	Newborn care officers	Traditional medicine practitioners
Rural academics	Midwives		

In 2010, 72% of the studies included in the systematic review pertained to doctors, while in this newly compiled evidence just over half the studies pertain to doctors. Figure 2.2 shows the distribution between difference health worker occupations.

Over 70% of the studies included were from high-income countries; studies from the Americas and Western Pacific regions were most common. The geographical distribution of single-country studies is presented in Table 2.2.

Figure 2.2 Studies of different health worker occupations



1 Midwives **6%**

2 Allied health workers **9%**

3 CHWs **8%**

4 Dentists **3%**

5 Health officials **2%**

6 Pharmacists **2%**

7 Physician assistants **2%**

8 Others **2%**

9 Doctors **52%**

10 Nurses **14%**

2.3.2 Stakeholder perception survey results

Overall, 336 participants completed the survey across the six WHO regions between September 2019 and December 2019. The respondents generally rated the interventions to be acceptable. Acceptability levels were higher than feasibility ratings across all the interventions. More information is provided in section 3.

2.4 Formulation of the recommendations

The GDG evaluated the entirety of the compiled research in formulating the recommendations. This included the combined results of the two systematic reviews of evidence and one systematic review of values, feasibility and acceptability, and the stakeholders' survey on values, acceptability and feasibility. The WHO Steering Group supervised and finalized the preparation of the summary of findings tables and narrative evidence summaries in collaboration with the Evidence Synthesis Group using the GRADE evidence to decision framework. These were used to guide the deliberations for each recommendation considering the available evidence on benefits and harms, certainty of the evidence, values and preferences, balance of benefits and harms, cost, cost–effectiveness, the effect on equity, feasibility, and acceptability. Consideration of contexts, populations or other groups was addressed where necessary. For each recommendation, the GDG addressed implementation considerations, monitoring and evaluation, and research gaps. In sum, the recommendations represent the evidence and the expert judgement of effects.

Two GDG meetings were held to consider the recommendations. The first was a face-to-face meeting on 25–27 February 2020, while the second was a virtual meeting on 6 April 2020. Although the PICOS questions remained the same, the recommendations were developed blinded to the 2010 recommendations. This was done to avoid being unduly influenced by the 2010 recommendations, notably in terms of the strength of the recommendations, and to allow the GDG to independently evaluate the body of evidence.

In its deliberations, the GDG arrived at decisions on the direction of effects and the strength of recommendations through a process of consensus, defined as agreement by 70% or more of the participants. None of the GDG members expressed opposition to the recommendations. Strong recommendations can be adopted as policy in most situations, while conditional recommendations raise the need for consideration of the factors involved in implementation, with the involvement of relevant stakeholders.

Despite the method of forming recommendations without explicitly considering those made in 2010, and the substantially increased body of evidence, the recommendations remained largely similar to the 2010 recommendations. One important difference was that the recommendation on providing a good, safe and supportive working environment was split into two distinct recommendations – one on workplace safety and the other on decent work and supportive working conditions. Another important addition to this review was the introduction of a good practice recommendation highlighting the importance of bundling interventions and adopting a holistic approach to the development, attraction, recruitment and retention of health workers in rural areas.

2.5 Formulation of a good practice statement for guidelines

Good practice statements are overarching principles for guideline recommendations. A good practice statement is a central recommendation to the guideline, but one that does not lend itself to the standard ratings of the certainty of evidence process *(52)*. The checklist of the criteria developed by the GRADE Working Group (see Web Annex E) was considered and addressed by the GDG before making the good practice statement (outlined in section 3). The evidence on developing a contextually relevant bundle of interconnected interventions did not lend itself to the standard ratings of the certainty of evidence process, notably due to the importance of the local context and the large number of bundles that could be employed. It was found that the proposed good

practice statement was clear and actionable, was necessary, and resulted in large positive consequences, and that a clear and explicit rationale connecting the indirect evidence was available.

In addition, there is a growing consensus that multifaceted and intersectoral policies are important to health workforce policies and planning. The 2010 *Global policy recommendations* encouraged bundling of strategies, and there is increasing evidence of the synergistic effect of bundled interventions *(53, 54)*. In addition, the WHO Global Strategy on People-Centred and Integrated Services, the Astana Declaration on Primary Health Care (2018) and the objectives of the Global Strategy on Human Resources for Health: Workforce 2030 *(39)* emphasize the importance of a concerted multilayered approach to improving health service coverage. Insight into the use of multiple versus single interventions is provided by two systematic reviews on the effectiveness of strategies for improving implementation of complex interventions at primary health care level *(55)* and improving health care provider practices in low-income and middle-income countries *(56)*. Both reviews show that multifaceted strategies, compared to single strategies, have a significant positive effect on outcomes.

The principle of multifaceted policies, or "bundling", is apparent in the literature. The systematic review found 24 studies that evaluated intervention packages. There were other studies where pairs of interventions were implemented. For example, a study in France showed that rural regions with primary care teams (multiprofessional group practices) with financial incentives and supportive environments had an average of 3.5 general practitioners per 100 000 inhabitants more than regions without *(57)*. In Australia, students experiencing the additive effects of a rural background, and attendance at a rural clinical school, and a bonded service agreement were 3.5 times more likely to practise in a rural area than students belonging to only one of those three categories *(58)* (further supporting evidence can be found in Web Annex H).

2.6 Guiding principles for the formulation of policies to improve access to health workers in rural and remote areas

This section describes the interconnected principles and overarching themes that should form the foundation of efforts to develop the rural health workforce, improve the attractiveness of rural areas to health workers, increase recruitment and retention of health workers in rural and remote areas, and improve access to health care for rural and hard-to-reach populations. Commitment to the actions outlined in this section form the basis for successful implementation of the recommendations.

2.6.1 Sustainable development, universal health coverage, primary health care and decent work

In the Astana Declaration on Primary Health Care: From Alma-Ata towards Universal Health Coverage and the Sustainable Development Goals, Member States committed to develop the health workforce. This commitment is highly beneficial to rural, remote and disadvantaged communities, as primary health care emphasizes community-based services and enables access to these communities through an inclusive approach. Realizing this commitment requires application of the principles of decent work, as expressed in a number of global resolutions and agreements, including Article 23 of the Universal Declaration of Human Rights (1948), the World Summit for Social Development (1995), the high-level segment of the United Nations Economic and Social Council (2006), the Second United Nations Decade for the Eradication of Poverty (2008–2017), and the 2030 Agenda for Sustainable Development. It is not just the creation of rural health jobs, but the creation of decent rural health jobs that is needed. Timely and adequate remuneration of health workers is an important issue, particularly in rural and remote areas. In addition, governments need to ensure adequate long-term investments in education and training, recruitment, motivation

and retention of the primary health care workforce in rural and remote areas *(59)*. Health workers with a broad range of knowledge and clinical skills working together in cohesive multidisciplinary teams are required to deliver local comprehensive primary health care *(60)*.

Progress on improving access to health workers in rural and remote areas requires a coordinated and cooperative approach. Multisectoral and multifaceted actions are therefore needed for maximizing impact in rural communities, including the following:

- community engagement and participation of relevant stakeholders throughout the process to ensure the success of primary health care-oriented systems;
- sustainable health system and service design in consideration of stakeholders' preferences and values, and the acceptability and feasibility of recommendations;
- building multidisciplinary fit-for-purpose teams of health and social workers in rural practice and supporting intersectoral collaboration;
- consideration of sociodemographic factors such as gender, age, class, ethnicity, migration status, civic status, language, sexuality, disability and religion, which may affect the acceptability and feasibility of services and impact the rural recruitment and retention of health workers;
- a whole-of-government approach, with multisectoral collaboration at all levels in planning, implementing, and monitoring strategies.

The United Nations High-Level Commission on Health Employment and Economic Growth highlighted the potential of the health sector to create employment opportunities and enhance economic development *(61, 62)*. Investing in health workforce development in rural areas positively impacts the achievement of the SDGs. Decent jobs created (in health and other sectors) as a result of the recommendations in this guideline will help reduce rural poverty (SDG 1), while fulfilling the goal of creation of decent work and economic growth (SDG 8). They will ensure the good health and well-being of rural residents as a result of improved access to health workers, while also building resilient health systems and preparing communities to handle outbreaks of diseases (SDG 3). The investments in rural education will improve the quality of education and contribute to empowerment, particularly for women and youths (SDG 4 and SDG 5). The gender implications of these outcomes are diverse, ranging from health benefits to education and employment opportunities.

2.6.2 Gender, equity and rights

The principle of equity aims to remove avoidable, unfair or remediable differences between groups of people, including differences between urban and rural or remote populations. This extends to ensuring equity in such areas as gender, ethnicity, and other areas of marginalization relevant to the local context. Policies need to be developed in ways that reflect equity and respect for the human rights of different groups. To ensure the protection of health as a human right regardless of where one lives, the principle of equity should be adopted by national authorities at all levels in addressing the gaps in health coverage and access for rural, remote and hard-to-reach populations. This principle requires giving prioritization to improving rural health access to ensure universal health coverage through the reduction of inequities in the geographical distribution of health workers. All relevant efforts in terms of effective retention strategies, based on available resources, should be channelled to the removal of avoidable or remediable differences in access to health care.

Rural and remote communities have a right to the factors needed for human capital development, particularly health and education. Promotion of health workforce education presents an opportunity to engage women and girls in STEM (science, technology, engineering and mathematics) education and employment, thereby redressing some of

society's inequalities in opportunity. When done in an inclusive way, health worker education can provide opportunities to some of those being left behind, especially when matched with labour market opportunities. The United Nations Secretary-General's High-Level Commission on Health Employment and Economic Growth found that investments in the health and social workforce have a powerful multiplier effect on economic growth *(62)*. Around 70% of the global health workforce are women *(63)*; gender dynamics thus play an important role in the health sector, including in such areas as unpaid care, compensation, bias and harassment in the workplace, occupational choice and career advancement *(63)*. Gender also has implications for the availability and acceptability of health workers in rural communities. More research on outcomes of female health workers across different occupations in rural communities is needed *(64–66)*.

All health workforce policies, including those to develop, attract, recruit, and retain health workers in rural and remote areas, should include women in decision-making and apply a gender lens. Although gender needs to be mainstreamed, there are specific areas where a gender analysis may be important, including safe and secure work environments, with protection against all forms of violence and harassment in line with SDG target 5.2 (eliminate all forms of violence against women and girls in public and private spheres) and SDG target 8.8 (protect labour rights and promote safe and secure working environments for all workers) *(67)*. Support in terms of flexibility in working hours, creation of part-time employment opportunities, and provision of family-friendly work conditions enhances retention. The right to decent and safe work should be upheld for all workers regardless of gender, age, class, ethnicity, migration status, civic status, language, sexuality, disability and sociodemographic background. The formulation of policies related to the rural and remote health workforce should include women, take gender into account and where possible use health occupations as a catalyst for gender-transformative policies.

2.6.3 Harmonization with national health plan

Rural health workforce development, attraction, recruitment and retention policies should ideally be embedded in a costed and validated national health plan. A national health plan provides the framework for holding all partners accountable for producing tangible and measurable results; it is at the heart of health development that is country led, country owned, and fully aligned with national priorities and capacities. A national health workforce plan, which is an integral part of a country's national health plan, sets out the projected numbers and types of health workers needed in the future, the policies and strategies to scale up needed health workers, the strategies to retain and motivate them, and the costs of implementing all the required interventions *(8)*. This will be one of the indicators to monitor the uptake of recommendations at country level.

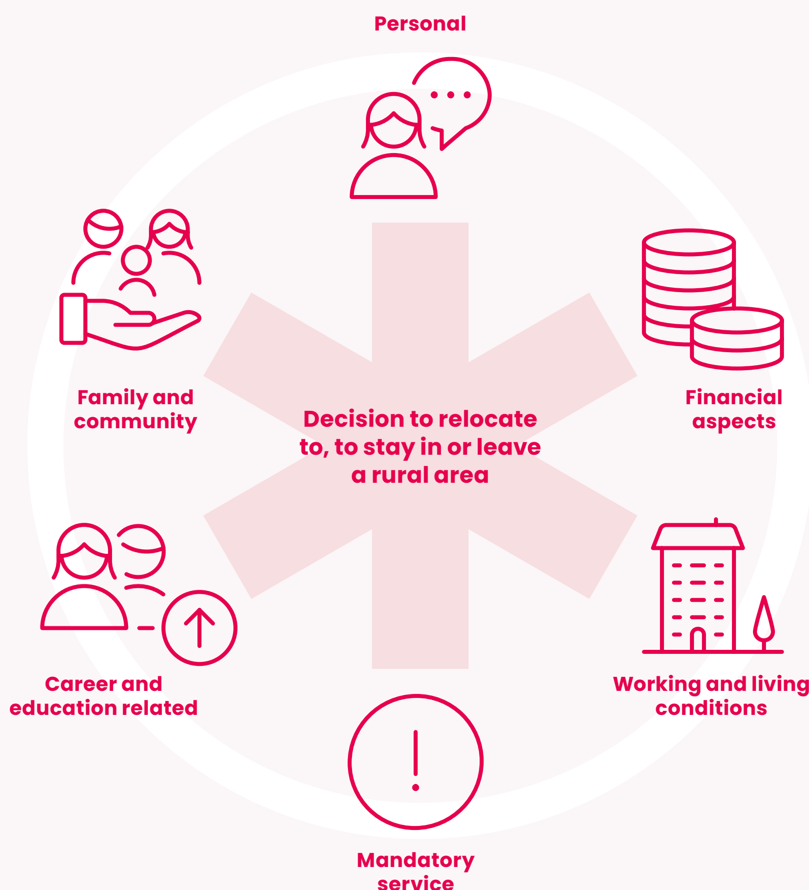
2.6.4 Understanding the health workforce

A clear understanding of the health workforce (current levels of distribution, demographics, geographical region, sector, speciality and scope of practice) is fundamental to improving access to health workers in rural and remote areas. Ideally, the first step to developing a rural health workforce development, attraction, recruitment and retention plan is a comprehensive situation analysis and health labour market analysis that identifies potential mismatches between need, demand and supply and measures equity in the distribution of health workers.

Local data, along with the health workforce indicators from National Health Workforce Accounts *(37)*, will prove helpful for collating secondary data that can facilitate a rapid analysis and monitoring. Further primary studies (such as discrete choice experiments or other qualitative studies), including an analysis of the factors that influence the decisions of health workers to relocate to, stay in or leave rural and remote areas, and identification and weighting of the factors that influence those decisions, may be necessary to ensure that the selected bundle of policies will be most effective. It is important to assess the possible role of gender and its influence on health workers' decision-making.

The known factors related to health workers' decisions to relocate to, remain in or leave a rural or remote area are wide reaching, covering workplace, personal and family spheres. Figure 2.3 illustrates the more well known factors relevant to health workers' decisions to relocate to, stay in or leave a rural area.

Figure 2.3 Factors related to decisions to relocate to, stay in, and leave a rural area



Personal
Rural background (origin), family ties, values, altruism, stage of career cycle

Financial aspects
Benefits, allowances, salaries, payment system

Working and living conditions
Infrastructure, working environment, safety, access to technology or medicines, housing conditions, availability of supportive supervision, workload, and stress

Mandatory service
Whether obligated to serve there

Career and education related
Rural training and exposure, access to continuing education opportunities, supervision, professional development courses or workshops, senior posts in rural areas

Family and community
Provision of schooling for children, employment for spouse, sense of community spirit, community facilities available, standing within community, recognition of role

Source: adapted from 2010 *Global policy recommendations (8)*.

In addition to understanding the health workforce, rural health workforce development plans should be aligned to the primary health care health workforce requirement of having effective and coordinated multidisciplinary teams with a range of skills and competencies to address the majority of the health needs of the rural populations where they live. Primary health care teams may include care managers, community health workers, dentists, family and general doctors, language therapists, midwives, nurses and nurse practitioners, nutritionists, occupational therapists, pharmacists, physician assistants, physiotherapists, speech therapists and support staff, among other health occupations that are important and relevant to the context.

2.6.5 Strengthening human resources for health management

Effective health workforce management capacity is a basic requirement for successful implementation of retention strategies. Some evidence suggests that establishment of a central human resources for health unit may be necessary to successfully coordinate efforts needed to develop a rural retention strategy *(68)*. Strengthening human resource for health management capacity through components such as workforce planning, efficient health workforce information management, recruitment and hiring practices, work conditions and performance management can increase the success of retention strategies. This in turn can improve health outcomes for rural populations.

Outlined in the Global Strategy on Human Resources for Health: Workforce 2030 is the policy for all countries to develop a human resources for health unit or department within the ministry of health *(39)*. This unit should have the capacity, responsibility for financing, and accountability to perform the functions of human resources for health policy, planning and governance, data management and reporting. Countries with weak management of health sector human resources risk failure in implementing interventions. At the central level, strengthened oversight and organizational capacity is important for continuity in the implementation of strategies. This helps strengthen commitments even as changes in administration or government occur. Human resource managers and policy-makers need to engage with stakeholders to understand their concerns and interests and to negotiate compromises vital to the development of sustainable and feasible human resources for health retention strategies. Investments in career development programmes (training, coaching, mentoring and professional support) and leadership capacities for health workforce and health managers will be beneficial at all levels, especially local levels (Box 2.1).

Box 2.1 Elements of an effective health workforce management system

The key functions of an effective human resource management system are:

- personnel: workforce development, planning (including staffing norms), recruitment, hiring and deployment;
- work environment and conditions: employee relations, workplace safety, job satisfaction and career development;
- human resource information: data and information for planning and decision-making;
- performance management: performance appraisal, supervision, and productivity.

An effective human resource management system is characterized by the availability of professionally prepared and competent health workforce managers who are able to perform the human resource functions described below.

- **Workforce planning.** Lead and support processes for effective health workforce planning based on sound human resource information; promote data-driven decisions; link human resource profiles and types of health workers needed to achieve strategic health goals (for example, make decisions on such issues as task sharing, reprofiling staff, redistribution, incentives, and relief); align workforce needs with health workforce strategic plans; contribute to sound overall health workforce strategic planning processes; support good costing practices so that workforce projections can be budgeted appropriately.
- **Health workforce recruitment, hiring and deployment practices.** Use their knowledge of effective practices in areas such as recruitment and selection, orientation, deployment, staff development and retention to promote positive change in the system by working with policy-makers to identify barriers to effective and efficient recruitment, hiring, deployment, and retention; ensure the procedures and criteria for postings, deployment and transfers are fair and transparent.
- **Work environment and conditions.** Monitor and support workforce environment practices that contribute to high job satisfaction, including effective employee relations, workplace safety and career development.
- **Health workforce information.** Integrate information and data sources to ensure timely availability of accurate disaggregated data required for planning, training, appraising and supporting the workforce; report on the core set of health workforce data and progressively implement National Health Workforce Accounts; ensure that information collected and analysed is based on demographics such as gender and age to inform human resources for health policy.
- **Performance management, leadership and staff development.** Ensure there is an effective performance appraisal system in place within the health system; lead and support systemic productivity improvement interventions; use knowledge of up-to-date approaches to leadership and management to promote good practices; assess the state of leadership and management within the system, and organize or champion improvement programmes as needed; in general, make sure health staff have the right competencies and the means to do whatever they are required to do.

Source: 2010 *Global policy recommendations* (8).

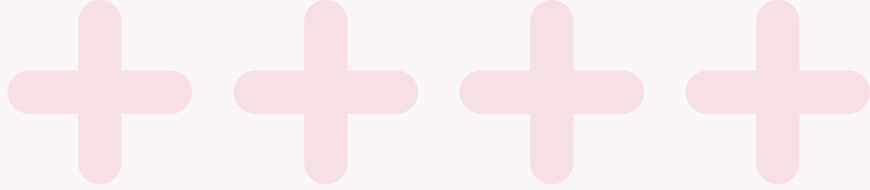
2.6.6 Social accountability in health workforce education

The social accountability of health workforce education facilities is defined as "the obligation to direct their education, research and service activities towards addressing the priority health concerns of the community, region, or nation that they have a mandate to serve. The priority health concerns are to be identified jointly by governments, health care organizations, health professionals and the public" *(69)*. Hence, education institutions and facilities have an obligation to be aligned with health service needs while partnering with health systems to develop a relevant and appropriate workforce *(70)*.

To facilitate the achievement of universal health coverage through the development of a health workforce fit for the purpose of addressing the health needs of populations, it is important that all health workforce education institutions adopt social accountability as a core part of their mandate. This can be achieved through the involvement of communities in defining their needs and developing context-specific strategic solutions to meet those needs.

The following social accountability strategies have been shown to increase rural recruitment and retention: alignment of education curricula with community needs, targeted student selection with priority given to underrepresented populations, interprofessional training in areas of need, expansion of faculty in rural areas and building close partnerships with communities *(71)*.

Due to the wider challenges existing in rural and remote communities, such as lower quality of primary and secondary education compared to urban areas, economic disadvantages, and location and distance challenges, implementing such strategies requires sustained efforts and reform, together with investments at all levels and a whole-of-government approach. The economic advantage of such investment lies in the return on investment, taking into account the cost of health workforce maldistribution and the brain drain, and the value added by recruiting people from rural and remote areas, particularly women and youths, into health jobs *(62)*.



3.0 Good practice statement and recommendations

The following section outlines the good practice statement and policy recommendations. The evidence to decision tables summarizing the balance between the desirable and undesirable effects and the overall certainty of the supporting evidence, values and preferences of stakeholders, resource requirements, cost–effectiveness, acceptability, feasibility and equity that were considered in determining the strength and direction of the recommendation are presented in Web Annex H.

To ensure that the good practice statement and recommendations are correctly understood, additional remarks reflecting key issues raised by the GDG are included under each recommendation.

This is followed by a short narrative rationale for the recommendation. Finally, to ensure the recommendations are appropriately implemented in practice, implementation considerations are also provided for each recommendation.

Good practice statement for the development, attraction, recruitment and retention of health workers in rural and remote areas

+ **Interventions should be interconnected, bundled and tailored to the local context.**

Remarks

- A whole-of-government (multisectoral collaboration at all levels) approach is needed in planning, implementing and monitoring the strategies. Single interventions, adopted in isolation, are not sufficient to address the multifaceted nature of developing, attracting, recruiting and retaining health workers in rural and remote areas.
- The appropriate bundle of interventions should be determined by considering the relevance, acceptability, feasibility, affordability, effectiveness and impact of the recommendation in the local context.
- The community and relevant stakeholders should be involved in the planning, implementation and evaluation of the interventions.
- When selecting the bundle of interventions, it is important to consider gender, equity and rights, along with the roles and responsibilities of health workers and rural communities.
- The impact of policies on different health occupations, career stages, sociodemographic characteristics (such as gender, age, class, ethnicity, migration status, civic status, language, sexuality, disability and religion) and expectations of health workers also need to be taken into account.
- The outputs, outcomes and impacts of efforts to increase the numbers of health workers in rural and remote areas should be rigorously monitored and evaluated.

3.1 Recommendation 1: Enrol students with a rural background in health worker education programmes

WHO recommends using targeted admission policies to enrol students with a rural background in health worker education programmes	
Strength of recommendation – strong	Certainty of evidence – moderate

Remarks

- Ensure community engagement and participation of local stakeholders in the systematic, equitable and transparent designation of the rural catchment areas and enrolment of students.
- Ensure policy respects national and local rules and regulations with regard to non-discrimination.
- Account for the entire education pathway (primary, secondary and tertiary).
- Accompany targeted admission policies with support mechanisms that address barriers that rural and remote background students face.
- Rural background should be the primary enrolment criteria, but ensuring diversity and equity in terms of gender, ethnicity, language and sociocultural background is key to building a diverse and inclusive health workforce.

3.1.1 Rationale for recommendation

Having a rural background has been described as the single factor most strongly associated with rural practice *(72)*. The positive effects of selecting students with a rural background and other educational and training interventions designed to channel students to rural practice was highlighted by the United States Council on Graduate Medical Education's 1998 report *(73)* and presented as the rural physician training pipeline in 2000 *(74)*. This strategy is widely referred to as the "rural pipeline" or "rural pathway" approach. Evidence demonstrates that having a rural background (that is, having spent some childhood years in rural areas) and rural exposure during the programme (that is, being trained in rural environments, with rurally relevant curriculum and support) have both individual and synergistic effects on rural development, attraction, recruitment and retention *(58, 75)*. The concept of a rural pathway is gaining recognition among policy-makers, as exemplified by the intersectoral ministerial call for a rural pipeline strategy by countries in the West African Economic and Monetary Union *(76)*.

Improved availability of health workers in rural and remote areas and improved accessibility to health care are highly rated as the core values of the outcomes on health workforce and health system performance; the outcomes of this intervention were therefore considered to be highly valued. It is expected that this intervention will result in a positive impact on equity for rural and remote populations. In addition, increasing access to health workers through targeted admission can increase the diversity of health workers and result in positive impacts on the acceptability of care. The acceptability and feasibility of this intervention are rated high by stakeholders *(47)*.

A moderate certainty of evidence exists for this intervention. Evidence from 18 out of 20 observational studies, mostly on medical students and also on nursing students from high-, middle- and low-income countries, suggests a strong positive association between rural background and recruitment and retention in rural practice *(58, 77–84)*. Although the resources needed to recruit and support rural students in health programmes may be

moderate, a strong positive net balance of desirable over undesirable effects by enrolling rural and remote background students is expected. There was a unanimous decision by the GDG to make this a strong recommendation.

3.1.2 Implementation considerations

The definition of "rural" varies across Member States. The criteria for eligibility as a person with a rural background will therefore need to be decided at the national or local level. To help prevent opposition to targeted enrolment policies for students with a rural background, the eligibility criteria can be decided in collaboration with the relevant stakeholders. It may also be important to consider adherence to national and local rules and regulations with regard to non-discrimination. To help ensure that the policy is equitable and results in a health workforce that is diverse, representative and acceptable to rural populations, admissions can also be considered from an intersectional angle, with impact on gender, equity, and rights taken into account. When implementing this policy it therefore may be relevant to explore the potential catalytic role that using targeted admission policies to enrol students with a rural background in health worker education programs could play in developing human capital and skills in rural areas and contributing to the wider SDG agenda. Investment in rural human capital development has the potential to contribute to inclusive economic growth and greater economic stability and security *(85)*.

Consideration of the entire education pathway (primary, secondary, and tertiary) is important. It may be helpful to expose rural secondary school students to health facilities and health occupations at an early stage *(86)*. Sometimes rural primary and secondary educational systems are different to their urban counterparts, so additional support may be required to ensure that rural secondary schools can produce students that can be admitted to and succeed in health worker education programmes. This could prove to be an important component of the success of this policy. Language barriers may also need to be addressed, if the primary language in rural or remote areas is different from that of the health worker education programmes.

Setting up support systems such as scaffolded learning, bridging or remedial classes at facility level to enable rural students to train alongside their counterparts from other backgrounds may be an important consideration. Another important implementation consideration is the supportive academic and social orientation and integration programmes available to students from rural and remote backgrounds. If rural students face economic or academic challenges and need to earn credits over a longer term, consideration may need to be given to setting up flexible academic programmes and schedules outside the regular academic framework. Another consideration may be to train and equip administration and faculty of schools to invest in the education of students from rural and remote backgrounds.

If the economic situation of rural and remote students is an obstacle, financial support for students from disadvantaged rural backgrounds may be important. In addition, considerations could be made regarding the cost of training, notably to ensure that training in both public and private health worker education institutions is accessible and affordable. Provision of scholarships, bursaries, or other education subsidies, potentially with return of service agreements, could be used (Recommendation 9) to increase access to such education for disadvantaged rural students.

It will be important to synergize this policy with policies on attracting and motivating students from rural communities into health occupations. Evidence suggests that this policy, when combined with policies to support rural training (Recommendation 2), rural clinical exposure (Recommendation 3), and rural-relevant curriculum (Recommendation 4), could have multiplier effects on rural retention; the interconnectedness of the policies within the contextually relevant bundle is therefore an important implementation consideration *(58, 79)*.

The success of this recommendation involves proactive whole-of-government, multisectoral collaboration spanning health, education, administration, and finance, among other relevant ministries and partners. The financial implications should be shared between the different ministries and sectors, such as health, education, development, and local government, and the sustainability of health system and service design should be considered.

3.2 Recommendation 2: Locate health worker education facilities closer to rural areas

2. WHO suggests locating health education facilities closer to rural areas	
Strength of recommendation – conditional	Certainty of evidence – low

Remarks

- Engage local stakeholders and the community in the development of health education facilities and programmes.
- Ensure health education facilities and programmes are socially accountable and sustainable.
- Ensure training responds to the needs of the local communities.
- Link with investments in rural infrastructural development and with goals for sustainable development.
- Accompany with policies to train and retrain faculty in these areas.

3.2.1 Rationale for recommendation

This recommendation is also a component of the rural pipeline for producing rural health workers *(58, 79)*. Having health worker training schools closer to rural areas and operating according to the principles of social accountability is expected to benefit local communities, in terms of economic diversification, human capital development and improved health outcomes. Social accountability is an important element of this recommendation. It can be described as schools fulfilling the obligation to direct their education, research and service activities towards addressing the priority concerns of the community, region or nation they have a mandate to serve *(87)*.

This intervention will probably have a positive impact on equity in access to health workers in rural and remote communities, with potential positive outcomes for the local economy and economic diversification in rural and remote areas. However, the costs of setting up, staffing, and maintaining these institutions was ascertained to be high. Although they may be cost-effective investments with a large return on investment, more research is needed to understand the dynamics of this process. While the intervention is expected to be broadly acceptable and feasible, evidence suggest that it may be relatively less acceptable and feasible compared to some of the other interventions *(47)*.

In addition, a low certainty of evidence exists for this intervention. The systematic review of effects identified 13 studies on the effect of locating health education facilities outside major cities on the outcome of availability of health workers in rural and remote areas. All 13 studies were on medical students or residents, leaving an evidence gap with regard to other health occupations. However, the evidence, mostly from high-income populations but also from low- and middle-income populations, shows that locating health worker education facilities or programmes in rural areas improves the recruitment and retention of graduates.

Overall, the low certainty of evidence, notably for a wide array of health occupations, and the potential large costs of implementation, along with relatively lower acceptability and feasibility, led to a conditional recommendation being adopted. Particular consideration should be given to implementation modalities.

3.2.2 Implementation considerations

When implementing this policy of locating health worker training programmes closer to rural and remote areas, it will be important to take into account context and setting. There are various possibilities and approaches that can be considered, including rural health training schools; rural campuses of schools in urban centres, such as the Northern Ontario School of Medicine *(88)*; and rurally based training programmes, such as the Wisconsin Nurse Residency Programme *(89)*, which can be supported by developing collaborations between communities and training institutions. Another approach to accelerating the production of health workers in rural and remote areas was that adopted by Ethiopia, where 20 non-teaching hospitals were converted to training centres through partnerships with five nearby universities *(90)*.

Community engagement and local stakeholder support are considered to be essential for the long-term success of such interventions. Involving local communities from the onset in the development of multidisciplinary rural health worker education facilities and programmes can help to ensure social accountability. It is also important to consider benefits to, impacts on and equity outcomes for the rural communities when making decisions on the location and infrastructure of such facilities. When the community is deeply involved, acceptable and feasible cost-reducing plans may emerge, as in the case of the Zamboanga Medical School Foundation in the Philippines, where local doctors support teaching *(78)*, and the University Departments of Rural Health programme in Australia, which provides rural clinical training opportunities for medical, nursing, occupational therapy, optometry, pharmacy, physiotherapy, and podiatry students and others *(91)*.

Investments should have a long-term vision and a focus on sustainability. Developing and strengthening faculty in rural and remote areas is very important. Rural-oriented faculty recruitment should be targeted when possible. Efforts should be made to create protected time from clinical engagement for the faculty to perform their academic duties, and to ensure the availability of enablers of distributed learning models, such as adequate information and communication technology infrastructure and equipment.

The economic and developmental impact of these institutions could result in a high return on investment, which could be used to bolster multisectoral cooperation.

To maximize the effectiveness of health worker education facilities in rural areas, alignment is needed with policies on targeted student selection (Recommendation 1) and policies to develop a curriculum that is relevant to the local context (Recommendation 4). Attention should be given also to the living, training and studying facilities of students and faculty to make them more conducive based on the accepted standards of the local context (Recommendations 11, 12 and 13). By integrating qualified rurally based health workers in the faculty of training schools and programmes, this recommendation could complement policies on career development and raising the profiles of rural health workers (Recommendations 15 and 17).

3.3 Recommendation 3: Bring students in health worker education programmes to rural and remote communities

3. WHO recommends exposing students of a wide array of health worker disciplines to rural and remote communities and rural clinical practices	
Strength of recommendation – strong	Certainty of evidence – low

Remarks

- Enable harmonization and coordination between rural and urban education facilities.
- Ensure policy respects national and local rules and regulations with regard to non-discrimination.
- Employ a fair, targeted, well considered and equitable process for selecting students for rural experiences.
- Provide a broad experience in rural and remote areas, including clinical and practical components, local community engagement and interprofessional exposure.

3.3.1 Rationale for recommendation

Education and training of health workers has historically been based in urban centres, where more facilities are located. In such settings, the teaching of specific skills for situations where resources might be more limited, such as rural and remote locations, is often overlooked. Even when such skills are imparted, opportunities to practise them or to practically apply the knowledge gained may be limited, leading to health workers building competencies or confidence in areas that are more frequently applied in urban areas. However, practical experiences in rural areas can provide opportunities for students to learn and gain confidence by working under guidance in rural health facilities, which could potentially link to quality of care and preparedness for practice. Bringing students to rural communities can also provide exposure to primary health care delivery models. One of the likely ways this intervention influences recruitment and retention is through the development of rural practice self-efficacy, defined as people's belief in their capabilities to produce designated levels of performance in rural settings *(92)*. Rural self-efficacy is strongly positively associated with intention to remain in or return to small rural practice, independent of sex, rural background, current career status, current location of practice, speciality decision time or experience–expectation gap *(92)*.

The desirable effects of this intervention, such as the development of rural practice self-efficacy, were deemed vital for the development, attraction, recruitment and retention of fit-for-purpose health workers in rural and remote areas. Benefits were identified across the range of development, attraction, recruitment and retention of high-quality motivated health workers. Evidence from the stakeholders' survey suggests that stakeholders highly valued the outcomes, and this intervention was rated as highly acceptable and feasible *(47)*.

A low certainty of evidence exists for this intervention. Six observational studies *(93–98)*, all in high-income countries, were identified that evaluated the effect of rural community exposure on health worker availability in rural and remote areas. These studies covered several health worker occupations (including medical doctors, dentists and allied health professions). They all showed a significant positive effect of the intervention. In addition, two observational studies found that health workers who had rural placements during training performed well academically and had more confidence *(93, 94)*, and one observational study found that rural placements had the positive outcome of preparing for interprofessional rural practice *(99)*. This intervention is also expected to improve equity in access to well trained health workers in rural and remote communities.

The resources required for implementation and those needed to ensure that the living and learning conditions of trainees and trainers are of a high standard were deemed to have moderate costs, but the desirable effects for rural communities were seen as significant. Stakeholders highly valued the outcomes, and the intervention was rated by stakeholders as highly acceptable and feasible. The GDG found that the balance of effects strongly favoured the intervention. The GDG made a strong recommendation.

3.3.2 Implementation considerations

A harmonized approach is vital when exposing students to rural and remote communities and rural clinical experiences. As such, health education facilities, irrespective of their location, could create or strengthen rural clinical experiences to familiarize students with rural areas, rural health and rural practice. Through immersion in community settings, students can observe or participate in the provision of care in clinics, hospitals, long-term care facilities, emergency facilities, patients' homes or other community settings *(60)*. If rural health facilities are used for teaching, the time allotted to consultation, bedside rounds, procedures and investigations should be considered. Protected time could be allocated to rural health staff for both continuing professional development and teaching within their working hours.

It is also important to ensure that policy respects the rights and dignity of community members and health workers. Community engagement and stakeholder buy-in are therefore crucial for successful implementation.

Prioritization may be given to the selection of students who are favourably inclined towards rural practice and specialities to ensure largest impact on rural recruitment. The school's programme and local context can guide the length of the rural experience, but multiple and longer duration rotations could be considered, as they could offer students an opportunity to belong to a rural community and gain interprofessional experience beyond the academic setting. The opportunity to "grow roots" in a rural location appears to be a critical aspect of rural exposure, and can also build trust within the community. In contexts where language might be a barrier, it will be beneficial to provide students with the opportunity to learn the language of the rural community.

Training, support and remuneration of instructors, supervisors and teachers is required to ensure they can carry out their roles effectively. This recommendation has synergies with a rurally relevant curriculum (Recommendation 4) and the provision of conducive living and working conditions for health workers, faculty and students (Recommendations 11, 12 and 13) to give participants a positive experience. A relevant consideration is how this policy facilitates the building of multidisciplinary rural teams.

3.4 Recommendation 4: Align health worker education with rural health needs

4. WHO recommends including rural health topics in health worker education	
Strength of recommendation – strong	Certainty of evidence – low

Remarks

- Bolster social accountability by enabling the development of competencies needed in rural and remote areas.
- Incorporate rural health topics that are context specific and include consideration of rurality, epidemiology, social and cultural aspects of rural practice, and practicalities, such as challenges in transport.
- Mainstream rural health topics into current courses when possible and include rural health topics in curricula of both rural and urban health worker education facilities.
- Address the dynamic nature of rural health and maintain relevance by investigating, evaluating and updating rural health topics.

3.4.1 Rationale for recommendation

The practice of health workers in rural areas can differ from that of their urban counterparts. In some contexts where resources are limited, a different approach to clinical assessment and management may be required. Rurally oriented curricula and outcomes, defined in the context of meeting health needs for rural populations and containing rural health topics, can equip students with the knowledge, attitudes, skills and competencies necessary for rural practice *(100)*. This match between curricula and outcomes is key to ensuring preparedness for rural practice. Education with a primary health care focus or a generalist perspective is conducive to producing practitioners willing and able to work in rural areas *(101)*.

Increased availability and competence of health workers in rural and remote areas, and greater responsiveness of health workers to community needs, were highly rated as the core values of the outcomes on health workforce and health system performance *(47)*. Better meeting community health needs should increase the acceptability of care and enhance equity.

Certainty of evidence was low, with two observational studies suggesting a positive impact on the outcome of availability of health workers when the curriculum is aligned to rural health needs *(102, 103)*. Two other observational studies suggested a positive impact on competency *(104, 105)*.

The effects of including rural health topics in the education of health workers on development, attraction, recruitment and retention were viewed as important, while the cost and undesirable effects were deemed trivial. A positive impact on equity, notably in terms of increasing access to and acceptability of health workers in rural and remote areas, is expected. Although no direct evidence is available, moderate costs are anticipated. Evidence suggests that the intervention is highly acceptable and feasible *(47)*. A highly favourable balance of effects is expected. A strong recommendation was adopted.

3.4.2 Implementation considerations

The goal of competency-based education is to ensure that the outcomes achieved by health learners through study programmes enable them to provide the health services that meet population needs in the areas in which those health workers will practise. This requires an approach that defines those outcomes in the context of rural and remote population health needs, and the services within the scope of practice to be provided. The outcomes also need to reflect the working environment in

rural communities, for example the presence of multidisciplinary primary health care teams, use of telehealth, and the cultures, customs and languages of the communities. Non-technical, leadership and communication skills should be promoted to develop a primary health care workforce that can effectively engage with communities to respond to the health needs of the population *(60)*.

Revision of the curricula of health worker education institutions should be carried out through multisectoral collaboration and community and stakeholder engagement, notably with the ministry of education, rural health workers, and health professional and regulatory bodies. Country- or subnational-level minimum requirements for courses will probably need to be developed, taking into account disease profile, health system organization and socioeconomic conditions, in order to ensure social accountability.

Rural practice, due to constrained access to other health workers and specialities, is often associated with a broader scope of practice (Recommendation 6), and this could be an important element to consider in the development of course content. The need for curricula to be periodically re-evaluated and revised should be built into relevant policy to ensure that the curriculum remains relevant.

Another implementation issue is whether teachers have first-hand rural experience. In contexts where this can be a challenge, virtual learning tools could be employed. Learning could include the competencies needed, beyond health and knowledge, for successful practice in rural or remote contexts, for example how to conduct clinical assessment and management without sophisticated tools and equipment for both regular and emergency cases, and how to collaborate with other rural or remote professionals and communities. This may also involve some familiarity with the cultures, customs, traditions and health-seeking behaviour of the rural community.

This policy complements policies that bring students to rural and remote areas (Recommendation 3), providing them with an opportunity to implement and consolidate the knowledge they have acquired.

3.5 Recommendation 5: Facilitate continuing education for rural and remote health workers

5. WHO recommends designing and enabling access to continuing education and professional development programmes that meet the needs of rural health workers to support their retention in rural areas	
Strength of recommendation – strong	Certainty of evidence – low

Remarks

- Engage with stakeholders, including rural health workers, health managers, professional regulatory bodies and associations, and educational institutions when developing or strengthening lifelong learning.
- Tailor continuing education and professional development programmes to the needs of rural health workers by involving experts and those with experience in rural practice in their design.
- Align health education with the knowledge and expertise needed for service delivery, rural career pathway development and promotion.
- Strengthen links between the national, subnational and local levels to facilitate timely information sharing, training and assistance for rural and remote health workers, notably in the case of health emergencies.

3.5.1 Rationale for recommendation

Continuing education and professional development programmes are considered vital for the maintenance of competence and improvement of performance for all health workers in order to ensure quality of care. Rural and remote health workers often struggle to access these programmes because they are usually distant from centres that conventionally offer them *(7)*. A focus is therefore required on ensuring that rural and remote health workers can easily access such continuing development programmes.

The certainty of evidence for this intervention was low. Observational studies on mental health workers, nurses, and doctors demonstrated a positive influence on the availability of health workers. Four observational studies and a pre- and post-interventional study on nurses and doctors showed a positive influence on recruitment and retention *(106–109)*. While the study on mental health workers did not find a statistically significant relationship between perceptions of continuing education and anticipated job retention of mental health workers, these were found to be overall predictors of job satisfaction *(110)*. There is also moderately certain evidence demonstrating that access to continuing education or professional development programmes develops competence, boosts confidence and enhances performance *(111–114)*.

Therefore, this intervention is expected to have a positive impact on equity in access to competent health workers. The stakeholder survey on feasibility and acceptability found this intervention to be highly feasible and acceptable. Although no direct evidence was identified, it is anticipated that the resource implications might be moderate. Given the positive balance of effects, the paramount importance of ensuring quality of care, and the expected positive influence on the availability of health workers, a strong recommendation was adopted.

3.5.2 Implementation considerations

The importance of continuing professional development can depend on age or stage in the professional life cycle, years of experience in rural practice, other professional elements such as regulation and licensing *(115)*, changing service needs, new approaches to care and emerging evidence. Therefore, as part of policy implementation, continuing education and professional development should be made relevant to the context in which services are delivered and organized. This requires the involvement of local health authorities, rural health workers, and managers of health services and professional regulatory bodies.

In addition, continuing education and professional development programmes should be made accessible to health workers where they live and work. Digital tools and remote learning tools can be employed where feasible to enable access to such programmes, enabling health workers to accommodate their learning to their work and home life. However, in-person training is still relevant where the focus is on the development of particular skills. Consideration should also be given to whether protected and paid time should be allocated for continuing education, and whether such activities should be compensated to avoid overburdening of health workers, particularly those who face higher costs in terms of travel time or the challenge of not meeting community health needs. The community may need to be engaged to understand the importance of continuing professional development to their health workers, and when and why protected time is allocated. Continuing education and professional development in addition to knowledge and skills acquisition can also provide a platform for rural health workers to interact with one another, thus maintaining professional networks and social contact. This policy can help reduce the sense of social or professional isolation that can be experienced by rural health workers *(116)*.

When implementing this policy, local and subnational approaches can be employed to bring different rural health workers together with the aim of strengthening primary health care team cohesion and development of local care protocols *(60)*, with potential benefits from economies of scale.

When implementing this policy, attention should be given to how the programmes will be revised to maintain relevance, for example by investigating, evaluating and updating continuing education and professional development programmes at the local level.

Alignment of programmes with enhanced scopes of practice (Recommendation 6) and career pathways (Recommendation 15) may help build synergies between policies.

3.6 Recommendation 6: Enable rural health workers to enhance their scopes of practice to better meet the needs of their communities

6. WHO suggests introducing and regulating enhanced scopes of practice for health workers in rural and remote areas	
Strength of recommendation – conditional	Certainty of evidence – low

Remarks

- Engage with stakeholders, including health workers, professional regulatory bodies, professional associations, health facilities, health education institutions, and local communities when planning enhanced scopes of practice based on the needs of the populations and available resources.
- Ensure that enhanced scopes of practice and working to top of scope are compensated adequately.
- Regulate existing enhanced scopes or newly developed enhancements of scopes of practice by rural health workers.
- Ensure appropriate supervision, support and a system of referral are available to rural health workers with an expanded or enhanced scope of practice.

3.6.1 Rationale for recommendation

Scope of practice is broadly defined as the health care services an individual health care worker is authorized to perform by virtue of professional licence, registration or certification *(117)*, or simply the limit to which the law, an organization or an employer permits a health care practitioner to provide care using procedures based on competence and experience *(118)*. Factors such as community or consumer needs, workforce needs, and financial and economic motivation influence the scope of practice *(117)*. In rural and remote areas, there is limited access to different types of health workers. This often places pressure on the available health workers to provide services sometimes beyond the scope of their formal training in order to meet the wider needs of their communities. Performing such roles without appropriate training and supervision could jeopardize the quality of care.

The certainty of evidence for this intervention was low. The reviews identified four observational studies, all from high-income countries, on doctors, nurse practitioners and physician assistants. All reported a positive effect of enhanced scope of practice and ability to work to the top of scope on the availability of rural health workers. In addition, there is some evidence to suggest that enhanced scopes of practice can lead to increased job satisfaction *(119)*. There is also compelling evidence that quality of care is unaffected when services are delivered by appropriately trained health workers with enhanced scope of practice *(120, 121)*. The review of evidence excluded studies assessing task shifting where the displacement of one group of health workers by another was the aim, as task shifting can have a negative impact on the drive to develop new multidisciplinary teams in rural practice. With this exclusion, the balance of effects favours the intervention. Evidence suggests that the intervention is considered feasible and acceptable by stakeholders *(47)*. However, negative effects, such as decrease in quality of care and increased burnout, can result if the policy is not implemented appropriately. The resources required will vary depending on context and the model of training, supervision and remuneration adopted. The GDG highlighted important implementation considerations. A conditional recommendation was adopted.

3.6.2 Implementation considerations

Ministries of health need to work with regulatory bodies, professional associations, health worker education institutions and other stakeholders in order to clearly stipulate the competencies, boundaries and guidelines for expanded scopes of practice that are based on the health needs of the population and clear models of care. Such definition of roles and responsibilities would facilitate the functioning of multidisciplinary teams, which are essential for improving rural health care. Resistance may be faced from certain groups of health workers; accordingly, the views and concerns of all stakeholders need to be voiced and carefully considered as part of this process. Person-centred models of service delivery need to be effectively implemented and resourced to reveal the benefits of other professionals, thus alleviating any perceptions of threats to jobs or decreased quality of care. In such cases implementers will need to consider ensuring adequate training, multidisciplinary team learning and supportive supervision *(122)*.

When implementing this policy, it may also be important to consider support for and coverage of local duties for health workers who are engaged in education to enhance their scope of practice either locally or away. Also of relevance is how this policy is linked to national health policies and policies promoting good working conditions and supportive supervision (Recommendation 13) to ensure that the workload of the health workers is justified and appropriate, the time allocated for training is protected, supervision and resources are available and teamwork is optimized.

The policy could be best implemented alongside policies pertaining to introduction of different types of health workers (Recommendation 7) and policies on recognition (Recommendation 17). This can help to ensure that all those working with an expanded scope of practice are recognized for the contribution and service they are delivering in remote and rural areas. Finally, the attractiveness of relocating to a remote and rural area is likely to increase if the post includes access to further education and training that is linked to a clear career pathway (Recommendations 5 and 15) and appropriately attractive remuneration (Recommendation 10).

3.7 Recommendation 7: Expand range of health worker occupations to meet rural health needs

7. WHO suggests introducing different types of health workers for rural practice to meet the needs of communities based on people-centred service delivery models	
Strength of recommendation – conditional	Certainty of evidence – low

Remarks

- Ensure new health workers have appropriate education and training.
- Consider regulation to ensure high quality of care.
- Prioritize the introduction of different types of health workers equipped with the appropriate skills to meet rural health needs.
- Add to multidisciplinary team development by complementing and strengthening the local health system rather than replacing or displacing the existing workforce.
- Engage local health authorities, local government, nongovernmental organizations, health worker education institutions and communities in introducing new health worker occupations into rural and remote areas.
- Support multidisciplinary education and practice to facilitate a team-based approach to care.
- Ensure clear roles and responsibilities for health worker occupations.
- Enable effective communication links between the different types of health workers to improve quality of care, patient safety and continuity of care.
- Collaborate across sectors, such as health, education, finance, civil service and labour, to facilitate education and employment of new health worker occupations.

3.7.1 Rationale for recommendation

With the increasing shortages of health workers in rural and remote areas, and the rising unmet needs, evidence from the early 2000s suggested that health workers, especially those that are faster to train and more readily deployed and retained in rural areas (for example, accelerated medically trained clinicians), could play substantial roles in service delivery in rural and remote areas *(123)*. There was convincing supporting evidence that different types of health workers, such as community health workers, could lead to improved health outcomes *(124)*.

The certainty of evidence for this intervention was low. Five observational studies across countries of all income groups showed a large positive impact on the outcome of availability of the rural health workforce with the introduction of different types of health workers. The introduction of different types of appropriate health workers was found to increase the numbers of and therefore enhance equity of access to health workers in rural and remote areas. The results from the systematic review of values, acceptability and feasibility suggest that competition and stress from promoting new roles may occur, and there could be a negative impact on quality of services if appropriate policy infrastructures are lacking *(125–127)*.

The balance of effects was deemed to favour the intervention. Although there is a potentially large impact of adopting this policy it needs careful implementation, with account taken of the resource implications of sustainably training, regulating and recruiting different types of health workers based on the needs of rural populations. The evidence on feasibility suggests that there are several implementation considerations that may impact how feasible this policy is to implement, and overall feasibility varied by context. A conditional recommendation was adopted.

3.7.2 Implementation considerations

In the planning and implementation of this intervention, the local context and long-term sustainability of policies to introduce health worker occupations in rural areas should be carefully considered. Implementation should be done with the engagement of all relevant stakeholders from the local level, health workforce and health regulatory bodies, community members, educational and civil service entities, financial ministries, and national authorities. The systemwide effects of new types of health workers should be considered. To strengthen human resources for health management and social accountability, newly introduced health occupations should be incorporated into local health systems from the onset, based on the needs of the local population and strategic planning of services, including where, when and which services are needed.

The needs of communities, available resources, time and cost of training, along with the potential for attraction, recruitment, deployment and retention in rural and remote communities, should be central elements in planning such an intervention *(123, 128)*, with the goal of developing robust multidisciplinary primary health care teams. Evidence shows that remote communities depend more on community-based health workers *(43, 44)*, and the process of health workforce development benefits from the introduction and support of health workers that can also be developed locally, such as community health workers, community aids, and accelerated medically trained clinicians. An important implementation consideration is to find out the values and preferences of the communities regarding the gender of community health workers, which was identified as an influencing factor in the development of a trusting relationship between members of the community and community health workers, with women generally preferring female workers *(129)*. The *WHO guideline on health policy and system support to optimize community health worker programmes (130)* is an important tool to be consulted when introducing community health workers.

The principles of fair and decent work, with appropriate remuneration and the right to social protection, should guide the introduction of new health worker types. Orientation, support and supervision should be components of the strategy (Recommendation 13). There should be clear communication of rights, roles and responsibilities, both across health workforce teams and within the community. Consideration should be given to implementing this intervention alongside policies to recruit students with a rural background (Recommendation 1), locate health worker education facilities closer to rural areas (Recommendation 2), introduce a curriculum relevant to the local context (Recommendation 4), and provide continuing education and support (Recommendations 5, 11, 12 and 13).

3.8 Recommendation 8: Ensure that compulsory service agreements respect the rights of health workers and are accompanied with appropriate support and incentives

8. WHO acknowledges that many Member States have compulsory service agreements. When compulsory service in rural and remote areas exists, WHO suggests that it must respect the rights of health workers and be accompanied with fair, transparent and equitable management, support and incentives	
Strength of recommendation – conditional	Certainty of evidence – low

Remarks

- When compulsory service agreements are employed to meet the health care needs of rural and remote areas, ensure that their success and the associated advancement of the right to health are balanced with the freedom of movement of health workers and aligned with their broader rights and responsibilities.
- Engage health workers and communities in the development and revision of policies regarding compulsory service.
- Ensure support and supervision for health workers during compulsory service.
- Ensure decent, safe and enabling working environments; incentivize health workers and take into account the specific context and working conditions.
- Promote rigorous impact evaluation studies.

3.8.1 Rationale for recommendation

In 2010, approximately 70 countries had previously used or were using compulsory service schemes, ranging from a minimum of one year to a maximum of nine years, to deploy health workers in rural and remote areas *(131)*. Compulsory service is the mandatory deployment of health workers (although such schemes are also used for other, mainly governmental workers such as teachers, military personnel, lawyers and engineers) in remote and rural areas for a period of time with the aim of ensuring availability of services in those areas. It is either imposed by the government or linked to other policies such as obtaining the licence to practise *(8)*. Although many consider this an act of social service, some health workers object to compulsory service programmes. Objection to compulsory rural service is attributable to poor rural services, lack of transportation, and poor living and working conditions; while support in terms of pay, housing, access to continuing professional development, clinical backup or supervision contribute to favourable experiences *(132)*. This recommendation focuses on the foundations for making compulsory service more effective. That is, the recommendation does not focus on whether there ought to be compulsory service, but rather on how it can promote retention of health workers, if it is an existing socially acceptable approach.

The certainty of evidence for this intervention is low and the evidence on the effects of compulsory service on the retention of participants remains limited. However, in some studies the participants found the experience both challenging and rewarding, overall resulting in positive impact on their competencies *(132, 133)*.

The GDG was unanimous that it is of utmost importance to consider the rights of health workers when using compulsory service as a recruitment strategy to provide access to health workers in rural and remote areas. The GDG felt it necessary to give guidance to the many Member States employing compulsory service in order to make the most of this policy approach. Compulsory service agreements are likely to improve health equity for communities; however, their acceptability and feasibility were relatively low. The GDG made a conditional recommendation aiming to urge Member States to carefully consider how such policies are implemented, along with supportive measures that respect the rights of health workers.

3.8.2 Implementation considerations

Governments employing this strategy should be committed to ensuring that rural service is a positive experience for health workers, and one that respects the rights of health workers. This will help increase the longer-term impact on retention.

It is clear that, where used, compulsory service agreements need to be part of a broader strategy that promotes rural service in tandem with a range of supportive measures, notably those that support and prepare health workers for rural practice; those that encourage schools to train health workers within rural areas (Recommendation 2); those that adopt rural-relevant training curricula (Recommendation 4); those that facilitate access to continuing professional development (Recommendation 5); and those that use appropriate incentives, especially for those posted to more remote locations (Recommendation 10). Policies on compulsory service should be complemented with efforts to improve living conditions (Recommendation 11), safe work environments (Recommendation 12), good working conditions with supportive supervision (Recommendation 13) and public recognition (Recommendation 17).

Close attention should be paid to ensuring these programmes meet decent working conditions and that the mental well-being and occupational health and safety of health workers completing compulsory service commitments are prioritized.

Compulsory service may affect certain individuals or occupational groups differently than others, hence due consideration should be given to gender, equity and human rights issues. Transparency and fairness in the process and guidelines for the assignment of service posts are necessary.

3.9 Recommendation 9: Tie education subsidies for health workers to agreements for return of service in rural areas and remote areas

9. WHO suggests providing scholarships, bursaries or other education subsidies to health workers with agreements for return of service	
Strength of recommendation – conditional	Certainty of evidence – low

Remarks

- Consider the rights, roles and responsibilities of the health worker, employers, education facilities and government.
- Ensure adequate supervision of and support for health workers fulfilling their obligations.

3.9.1 Rationale for recommendation

In many countries, tertiary education in public schools requires self-financing through out-of-pocket payments or other financing options such as student loans. As an alternative to compulsory service arrangements, governments around the world offer students in the health professions scholarships, bursaries, stipends or other forms of subsidies to cover the costs of their education and training in return for an agreement to work in a rural or remote location for a certain period after qualification.

The certainty of evidence for this intervention was low. A systematic review of programmes from mainly high-income countries mostly targeting medical students analysed the effectiveness of financial incentives given in return for medical service in underserved areas, including rural ones *(134)*. In 18 studies the schemes were linked to retention rates, which ranged from 12% to 90% of participants who remained in the underserved area after completing their obligatory service. Three additional observational studies further showed positive effects on the availability and retention of different types of health workers *(135–137)*. However, most evidence is from high-income countries with high out-of-pocket costs for tertiary education.

The balance of effects between the benefits and undesirable effects of implementing this intervention was deemed to vary depending on the duration of the service, availability of a buy-out option, and the living and working conditions. There could be some undesirable effects if adequate support and supervision are not provided to recent graduates, which will negatively impact the quality of care and equity. Such policies are perceived to be acceptable and feasible. Generalizability of the effect to low- and middle-income countries was a consideration. Based on this, a conditional recommendation was adopted.

3.9.2 Implementation considerations

When implementing a policy to provide scholarships, bursaries or other education subsidies with agreements for return of service, the rights, roles, and responsibilities of health workers, employers, education facilities and government need to be considered. Therefore, community engagement and participation of relevant stakeholders is important.

Implementers can consider the use of service-obligated (bonding) contractual agreements as a mechanism for the fulfilment of service obligation commitments. In addition, if there is a buy-out option for a service-obligated health worker to pay back a certain amount in order to be released from the commitment, inflation should be considered *(138)*.

Policies on education subsidies for agreements of return of service should be aligned with policies on targeting rural background students (Recommendation 1); training closer to rural areas (Recommendation 2); rural-relevant training curriculum (Recommendation 4); and access to continuing education (Recommendation 5). In addition, to adequately prepare the participants for practice in rural or remote areas, consideration of training for an enhanced scope of practice (Recommendation 6) might be a useful approach. To increase the likelihood of post-obligation retention, attention to living conditions (Recommendation 11), good working conditions and support supervision (Recommendation 13), and public recognition (Recommendation 17) should be considered.

3.10 Recommendation 10: Provide a package of attractive incentives to influence health workers' decisions to relocate to or remain in a remote or rural area

10. WHO recommends employing a package of fiscally sustainable financial and non-financial incentives for health workers practising in rural and remote areas	
Strength of recommendation – strong	Certainty of evidence – low

Remarks

- Engage with the local community, authorities, and health workers when developing the incentive package.
- Ensure a clear policy framework that carefully considers the designation of the areas and regions and occupations that qualify for the incentives.
- Ensure transparency, effective management, regularity and timeliness in the implementation of the incentive package.

3.10.1 Rationale for recommendation

Remuneration and incentives influence people's employment choices. Several studies indicate that salaries and allowances are key factors in the decision of health workers to stay in or leave a rural workplace *(139–143)*. Incentives include all benefits paid or provided to health workers to attract them to work in rural and remote areas, be it monetary or in-kind benefits (free housing or transportation).

The certainty of evidence for this intervention was low. However, several studies suggest that salaries and allowances are positively linked to health workers' decisions to locate in (or remain in) a rural area. This evidence covered a wide spectrum of countries *(144–147)* and health worker occupations, including doctors, nurses, midwives and rural medical assistants, physiotherapists, occupational therapists, speech and language therapists, radiotherapists, dietitians, and managers of multidisciplinary teams. Studies suggest a positive effect of financial incentives on the recruitment and retention of health workers in rural areas in both the short and medium term. Most are statistically significantly positive, but the size of the desired effect is likely to depend on the incentive package itself.

The size of the desired effects on recruitment and retention was found to be moderate to large. It was noted that the desired effects varied according to occupational group, age and career stage of the health workers involved. In addition, the size and scope of the incentive package (inclusion of financial and non-financial incentives that affect only work or work and living conditions) were deemed an important element of the resultant effect size, and therefore need to be carefully considered. The systematic review of values, acceptability and feasibility suggested that an undesirable effect of incentive packages was their potential to become a source of strain or conflict between locations when implemented inequitably *(148)*. This could also occur between occupational groups. These undesirable effects were considered nominal and were outweighed by the positive impact on access to health workers in rural and remote areas. Therefore, the overall balance of effects was found to strongly favour the intervention. With evidence demonstrating that incentives have a positive influence on attracting health workers to rural and remote areas, notably when targeting certain groups of health workers or when combined with other retention strategies, and taking into account the moderate costs involved, a positive balance of effects was determined. A strong recommendation was made.

3.10.2 Implementation considerations

When implementing this policy it is important to understand the opportunity cost (that is, the foregone benefit to a health worker of locating elsewhere) of working in rural and remote areas. Studies such as discrete choice experiments and health labour market analysis can be helpful to inform implementation. Such analyses may play a significant role in designing incentive schemes and understanding the demands, expectations and preferences of health workers. Once incentives are implemented it is important to monitor and evaluate these programmes and revisit incentive packages when necessary.

It is important that the adopted package be sustainable. Incentives should be developed in a fiscally sustainable, equitable way across the different health professions. Relevant stakeholders, including those within the community, should be involved in their design.

Political commitment to equity of health access for rural populations is crucial. With high-level political commitment, an incentive package can be funded from multiple sources and sectors, such as ministries involved in development, labour, finance and education, to enhance the resources available in the health budget. In addition to supplementing basic salaries and allowances, other incentives that could be used are loans or grants for housing and transportation *(149)*, additional leave, postgraduate sponsorship, expediting promotion, insurance coverage, tax relief, and education subsidies for health workers and their families, as well as employment opportunities for their spouses. Incentive packages should be carefully scrutinized to assess the cost and benefits of each option.

In order to maximize impact, policies can target certain health worker groups that are more positively influenced by incentives, such as recent graduates *(150, 151)* and unemployed or underemployed health workers. Since incentives have an impact on recruitment, relevant policies should be combined with other retention policies for maximum result, including policies targeting students and health workers with a rural background (Recommendation 1); policies related to rewarding the enhanced scope of practice (Recommendation 6); policies related to additional health worker occupational groups (Recommendation 7); policies related to improving the living conditions of rural health workers and their families (Recommendation 11); policies related to supportive supervision, which is vital for recent graduates and new rural recruits or for securing locum staff to cover leave (Recommendation 13); and policies related to continuing professional development assignments (Recommendation 14).

Careful consideration should be given to the potential unintended consequences of incentives. These include increases in cost and administrative burden, issues of lack of transparency and awareness of eligibility for schemes, payment delays, and equity, including possible lack of fairness and creating divisions within teams or within the community *(140, 152, 153)*.

3.11 Recommendation 11: Improve living conditions in rural and remote areas

11. WHO recommends investing in rural infrastructure and services to ensure decent living conditions for health workers and their families	
Strength of recommendation – strong	Certainty of evidence – low

Remarks

- Involve health workers, their families, and rural communities in the development of interventions to address their needs.
- Consider sanitation, electricity, housing, telecommunications, internet access, schools, safety and security along with other contextually relevant aspects of living conditions.
- Ensure intersectoral collaboration across health, education, transport, communication, energy, finance, and social and economic development.

3.11.1 Rationale for recommendation

Rural and remote areas may convey a sense of isolation. When asked what mattered most in making the choice to work in rural locations, students, recent graduates and health workers mentioned the need for support *(8)*. The main areas for support on a personal basis are good infrastructure (such as accommodation, running water, electricity, roads and internet access), social interaction opportunities, schooling for children and employment for spouses.

Studies suggest that deficiency or lack of basic amenities adversely affects attraction, recruitment and retention of health workers in rural and remote areas *(66, 149, 154, 155)*. However, the certainty of evidence for the intervention is low, since there are very few large-scale retention programmes focusing solely on the use of this strategy *(27)*. Hence, it is difficult to isolate its individual effect on attraction, recruitment and retention, as the studies identifying the implementation of this intervention are typically part of studies of larger retention packages *(156, 157)*.

The GDG highlighted that these support strategies revolve around the basic needs of health workers, such as suitable and safe living spaces for workers, students, trainees and their families. Not addressing these elements could undermine overall recruitment and retention efforts. The cost of not implementing such strategies was thought to be very high and is likely to lead to long-term deficiencies of rural health workers and increases in inequalities. Not addressing living conditions in rural and remote areas could undermine other policies to improve recruitment and retention of health workers in rural and remote locations. Rural infrastructural improvements not only positively affect the health sector but also have potential spillover benefits for rural development in general. The stakeholder survey suggested very high acceptability. This was supported by evidence from six studies in a systematic review of acceptability *(27, 148, 158–161)*. It is also considered a feasible intervention. This policy was considered to be crucial for attraction, recruitment and retention of health workers in rural and remote areas, with benefits beyond health. A strong recommendation was made.

3.11.2 Implementation considerations

This intervention should take all health occupations into consideration. It is vital to engage all relevant stakeholders, including the community, in the planning and implementation of this intervention to minimize dissatisfaction between direct beneficiaries and non-beneficiaries. The more hard-to-reach a location is, the more attention should be paid to the living conditions to increase the number of health workers that can be recruited and retained in that location.

Sanitation, electricity, housing, telecommunications, internet access, schools, safety and security, along with other contextually relevant aspects of living conditions, should be taken into account in deriving a context-specific policy that is seen by health workers, their families, and rural communities as acceptable and feasible. The families of rural health workers should be included in policy measures, for example by providing assistance with employment opportunities for spouses and educational and recreational opportunities for children, as these have been shown to strongly influence retention *(162)*.

Intersectoral collaboration is another positive factor. Resources for this may be sought from multiple sources, including locally generated and external funding, hence the importance of a multisectoral approach in planning and implementation. To ensure sustainability of implementation of this policy all costs should be accounted for, including capital and maintenance costs.

3.12 Recommendation 12: Ensure workplace safety in rural and remote health facilities

12. WHO recommends ensuring a safe and secure working environment for health workers in rural and remote areas	
Strength of recommendation – strong	Certainty of evidence – low

Remarks

- Protect health workers from violence, occupational hazards, bullying and sexual harassment.
- Provide psychosocial and mental health support to rural health workers.
- Take into account how workplace violence, harassment and bullying interact with relevant stratifiers of personal identity, such as occupation, gender, age, class, ethnicity, migration status, civic status, language, sexuality, disability and religion.
- Facilitate access to appropriate occupational health and safety and infection prevention control measures and training, notably access to needed equipment and supplies, including personal protective equipment.
- Monitor and address shortcomings in the safety of the work environment, particularly during emergencies such as infectious disease outbreaks or local disasters.

3.12.1 Rationale for recommendation

Having a sense of safety and security in the workplace while providing health services in the community is a motivating factor for health workers in rural and remote areas; when this is absent or suboptimal, it contributes to the loss of health workers from such locations *(163, 164)*.

Occupational health and safety is a multidisciplinary activity aimed at preventing occupational accidents or diseases by eliminating occupational factors and conditions hazardous to health and safety; promoting healthy and safe work and work environments; and enhancing the physical, mental and social well-being of workers to maintain their working capacity *(165)*. This entails protection from workplace violence, including incidents of abuse of, threats to or assault of health workers in circumstances related to their work (including commuting to and from work) that challenge their safety *(166)*. Such incidents could include physical or psychological violence in the form of assault, abuse, bullying, mobbing, harassment, sexual harassment, racial harassment or threats *(166)*.

Rural workplace safety challenges include working in isolation, long travel distances between the health worker's home, work, and patients' homes on sometimes dangerous roads, communication coverage limitations, work-related stress, logistical concerns around patient referrals, social isolation and being viewed as an outsider if not originally from the community where they work *(167)*. Violence or aggression may be vertical (between a person of authority and an individual of a lower rank) or horizontal (by individuals or groups towards their peers). In Australia, 86% of remote area nurses experienced violence or aggression within a year, compared to 43% of urban nurses *(163)*. These safety issues, coupled with higher demands on and workload of the available rural staff, contribute to stress and burnout *(163)*.

The certainty of evidence for this intervention is low, however. Safety and security are recurring themes strongly influencing the availability of health workers in rural areas *(64, 65)*. Observational studies across different health occupations show that real or perceived insecurity disrupts service delivery and increases attrition *(65, 154)*.

Safety of working conditions is a globally recognized human right, hence it was deemed to be highly important to the development, attraction, recruitment and retention of health workers in rural areas. This recommendation was found to be highly acceptable and feasible. In the stakeholders' survey, women found this intervention to be statistically significantly more acceptable than men *(47)*. Therefore, attention to gender considerations for this intervention could have positive impacts on equity. The balance of effects highly favours the intervention. A strong recommendation made.

3.12.2 Implementation considerations

When implementing policies to ensure occupational health, safety and security of health workers working in rural and remote locations, whether in a health facility or within the community, the specific context needs to be considered. Such policies should be developed and implemented with input from the relevant stakeholders (local government, security and law enforcement agencies, health management teams, health workers, the community). Ensuring that rural and remote health workers are safe while at work requires community engagement and a multisectoral approach in planning, budgeting for and financing the different strategies. Evidence suggests women find this intervention to be statistically significantly more acceptable than men *(47)*. Therefore, gender should be an integral part of these policies, for example through inclusion of gender-appropriate infection prevention and control measures.

Given that violence against health workers occurs both in facilities and in the community *(166)*, strategies to prevent violence in each setting need to be considered. For example, in the community health service managers could ensure that duties are done by groups or pairs of health workers to prevent working in isolation, and that safe means of transportation are provided for health workers responding to night calls or performing home visits. Within facilities, having a working telephone and intercom system can contribute significantly to safety and security. Consideration may be given to training of health workers, new recruits and locums on context-relevant workplace safety and security, risk management and management of aggression *(168, 169)*.

Measures to prevent, report and act upon sexual harassment should be put in place. There is a often a gender element to violence against female health workers, and gender-appropriate policies are therefore important *(170)*. Another necessary component of this recommendation is ensuring the psychological well-being of health workers in rural settings through the provision of mental health support, encouraging community and workplace participation, and maintaining a respectful work environment, free from coercion *(171)*.

Policies related to this recommendation should be implemented alongside policies on improving the living conditions of health workers (Recommendation 11), good working conditions and supportive supervision (Recommendation 13), and an active health service network (Recommendation 14).

3.13 Recommendation 13: Ensure decent work for health workers in rural and remote areas

13. WHO recommends providing decent work that respects the fundamental rights of health workers	
Strength of recommendation – strong	Certainty of evidence – low

Remarks

- Take account of all aspects of decent work: providing full productive employment, fair and adequate earnings, optimal working conditions, protection from discrimination, social protection, and promotion of social dialogue.
- Ensure that rural health workers are adequately compensated and receive regular and timely payment.
- Promote measures to enable women and men to balance work and family responsibilities (for example, through the provision of childcare services or flexible working time).
- Recognize the responsibility of supervisors and managers to ensure that rural health workers have a supportive environment, including the management of workload, taking into account such aspects as territory covered, caseload and population size.
- Ensure that supervisors and managers allocate protected time for documentation (such as reporting), continuing education and professional development.
- Ensure that medications, clinical supplies (including menstrual hygiene supplies), tools, communication and diagnostic technologies, and clinical equipment are always available.

3.13.1 Rationale for recommendation

Decent work is defined as "productive work for women and men in conditions of freedom, equity, security and human dignity" *(172)*. Achieving this involves creating a work environment upheld by four strategic pillars:

- full and productive employment: quality employment opportunities, fair and adequate earnings, pay equity;
- rights at work: freedom of association, elimination of forced labour, optimal working conditions, decent working time, combining work, family and personal life, protection from discrimination on the basis of sex, age, race, ethnicity, social origin, political affiliation;
- social protection: social security coverage;
- promotion of social dialogue: between employers and workers *(173)*.

Satisfaction surveys show that health workers are disinclined to apply for or accept assignments to practise in facilities in a state of disrepair or that lack basic supplies, such as running water, gloves, basic drugs and rudimentary equipment *(143, 174)*. These are suboptimal conditions that are below the standard expected of decent work conditions. Supportive supervision is highlighted as a key element of improved job satisfaction and performance and subsequent retention and practice in rural areas *(7, 175)*. Supportive supervision is a respectful and non-authoritative process of helping staff that improves their own work performance on a continuing basis through the improvement of knowledge and skills *(176)*.

The certainty of evidence for this intervention is low. However, evidence suggests that suboptimal working conditions, unfair or inconsistent financial remuneration, lack of supplies and equipment, lack of knowledge of entitlements, policies and procedures, poor support systems, and deficient supportive supervision are associated with an increased intention to leave and rural health worker attrition across multiple countries *(154, 155, 177)*, whereas a supportive work environment is shown to be associated with higher retention rates *(178)*.

The right to decent work is recognized in the Universal Declaration of Human Rights, which has provisions dealing not only with "the right to work" but also with the various aspects of decent work. As such, the GDG deemed it fundamental to health workforce policies. This recommendation was considered highly acceptable in both the stakeholder survey and systematic review of values, feasibility and acceptability. It was also considered feasible. A strong recommendation was made.

3.13.2 Implementation considerations

The improvement of working conditions not only affects the availability of health workers but also is likely to improve their performance and productivity *(8)*. To ensure that adequate resources are allocated for this intervention, a multisectoral approach should be adopted in planning, budgeting and financing. The principles of decent work, a healthy workplace and ''fair employment'' should be adhered to *(171)*. Consideration should also be given to the state of health facilities, including infrastructure, equipment, and furnishings, to ensure it is conducive to the well-being of health workers and patients alike. Attention should be paid to the maintenance of a dynamic and efficient supply chain, especially for remote and hard-to-reach areas, to avoid stock-outs of supplies.

Such policies may need to be context specific, developed and implemented with input from relevant stakeholders (local government, health management teams and health workers). Health management teams and human resource management units need to ensure that health workers are educated on their rights. Managers should also ensure that there is referral support for patients that have to be transferred for secondary or tertiary care.

Implementation of this policy requires the development or strengthening of human resources for health management systems at all levels, especially in rural and remote areas. The units in charge of postings, transfers and deployment of health workers should operate fairly and transparently, and should ensure that the working conditions of facilities are acceptable.

Supervision is one of the pillars for improving the performance and working conditions of health workers, and merits a specific budget and time allocation. Supervision of individuals and health facilities or programmes should be formative and non-punitive. Consideration should be given to improving the technical and pedagogical skills of supervisors and regular monitoring and evaluation of supervision.

Managers working in rural areas often have clinical duties and live and work in proximity with employees, who are at the same time co-workers: this requires specific skills, and mentoring and coaching of these managers would assist in improving their management and leadership capacity.

Attention should be given to the needs of different occupations and subgroups of rural health workers, for example female health workers or new graduates. For example, retention strategies may need to address younger and older health workers differently. Younger health workers and new rural recruits may need orientation and more supportive supervision. Special attention should be given to the unique needs of recent graduates and migrant workers (local or international) to aid their settlement process.

Consideration of gender roles and norms and support for family-friendly work environments is also important, for example by making work schedules more flexible to suit the needs of staff *(162)*. Policies should take into account workload and working hours, as some rural health workers can be subjected to daily extended working periods with or without on-call night duties. Coverage plans, such as locum support schemes to allow workers to rest and manage fatigue and take recreational breaks, also merit attention.

3.14 Recommendation 14: Foster the creation of health workforce support networks

14. WHO suggests identifying and implementing appropriate health workforce support networks for health workers in rural and remote areas	
Strength of recommendation – conditional	Certainty of evidence – low

Remarks

- Collaboratively develop appropriate health workforce networks, notably between primary, secondary and tertiary health care.
- Facilitate effective and ongoing communication within the network.
- Involve rural health workers, rural communities, and health worker education facilities in developing and sustaining health workforce support networks.
- Monitor the effectiveness of the health service network.

3.14.1 Rationale for recommendation

For this intervention the GDG deemed the term "health workforce network" as more appropriate than "outreach".

In places with critical shortages of health workers, limited infrastructure or sparse populations, the use of outreach support services from individual specialists or teams of specialists has been a way to provide access to these health services *(8)*. Distance-based technologies such as telehealth are deployed to assist rural health workers to diagnose and manage patients and also to enhance their knowledge and skills *(8)*.

The certainty of evidence for this intervention was low. However, observational studies show that outreach support from specialists or teams to their rural peers, through visits or the use of telehealth to assist with patient care and professional development, improved the competencies and job satisfaction of rural health workers *(179–182)*. The use of telehealth, mobile support and electronic health also had a direct impact on the recruitment and retention of health workers in rural and remote areas, with the added benefits of increased personalized access to health workers and health services for rural populations *(179, 181–186)*.

The balance of effects was expected to favour the intervention. However, feasibility was deemed to vary depending on the context and the resources available, for example reliable access to the internet. The systematic review of values, feasibility and acceptability had mixed results. One study suggested that health professional networks help to break professional isolation and reduce stress *(187)*. Another study suggested that there is hesitancy surrounding the use of telehealth, with concern for workload implications and external training opportunities *(183)*. Acceptability was therefore deemed to vary. A conditional recommendation was made.

3.14.2 Implementation considerations

This recommendation encourages the coming together of rural health workers to support themselves within their communities, and then expand to establish inter-rural community networks with neighbouring rural communities, with the aim of increasing access to health services for rural communities and patients. One advantage is encouragement to share innovative solutions to the many problems they face, particularly limited availability of resources. As "contextual experts", rural health workers can provide low-cost innovative solutions adapted to local contexts. These inter-rural networks can be supported with peri-urban and urban health centres, health workers, and health worker education facilities, through physical outreach and virtual means. Networks can be expanded to national, regional and international levels using communication technologies. It will also be important to consider the feasibility and sustainability of the networks.

The design of the strategy should be done in collaboration with all relevant stakeholders, including health workers (rural and urban), health managers (rural and urban), health authorities and rural communities. Implementers of this intervention should be cognizant of supporting the rural primary health care model.

Alternative options, such as the use of mobile health (mHealth) and electronic health (e-health), can boost the capabilities of community-based workers and extend the outreach of skilled professionals through the formation of teams connected by these new technologies. This will have implications for the education and training of health professionals, especially in terms of expanding the curriculum beyond traditional topics and including competencies in telehealth, communication and teamwork. Digital and mobile technologies also improve the access of patients and communities to health workers based in rural or remote and urban locations, thus improving quality of care at the point of care and reducing unnecessary referrals *(188)*.

When employing digital technologies such as telehealth, e-health, mHealth, electronic medical records, and decision support tools, implementers should consider their feasibility and acceptability. In some settings, issues with availability and reliability of information and communication technology structures, internet access, electricity, computer literacy and resistance to change may pose challenges *(29)*. Engagement with relevant stakeholders is needed to identify enablers, overcome challenges and promote and facilitate effective communication within the network to prioritize support.

This policy should be linked with other policies such as continuing professional development (Recommendation 5) and development of professional networks (Recommendation 16).

3.15 Recommendation 15: Develop and strengthen career pathways for rural health workers

15. WHO recommends a policy of having career development and advancement programmes, and career pathways for health workers in rural and remote areas	
Strength of recommendation – strong	Certainty of evidence – low

Remarks

- Engage with rural health workers, local health authorities, professional regulatory bodies, and labour and civil service departments in the development of career pathways.
- Create senior posts, rural faculty positions and promotion paths in rural and remote areas.
- Recognize and remunerate senior posts in rural and remote areas accordingly.

3.15.1 Rationale for recommendation

Among factors related to employment preference or those affecting the decision of health workers to leave rural and remote areas, a clear career pathway and opportunities for career advancement rank highly *(141, 142)*. When these are not provided in rural areas, health workers wishing to advance along their career pathways may be forced to move to towns and cities. However, if such pathways are present in rural and remote areas, they are likely to improve the morale and professional status of rural health workers, which could in turn improve their motivation, job performance and satisfaction.

Observational data suggest that clear career prospects are an important factor in the choice of health workers to practise or not in a remote or rural area *(189, 190)*, and their presence can have a positive effect on retention, motivation and job satisfaction *(162, 191, 192)*. However, the certainty of evidence is low.

The stakeholder survey results suggest that this is a highly feasible and acceptable intervention *(47)*, though there was no direct evidence that access to more experienced health workers in rural and remote areas would increase equity. In addition, there is a likely positive effect on rural health workers by bridging urban–rural career progression gaps, resulting in increased access to career advancement and growth. The benefits in terms of effect, improved fairness and equity for rural health workers are deemed to greatly outweigh the costs, which are likely to be moderate, especially for commensurate pay. A strong recommendation was made.

3.15.2 Implementation considerations

In designing the career pathway, it is important to check feasibility with the ministry in charge of the civil service, and then involve other stakeholders, including local authorities, education institutions and rural health workers, in the development of promotional ranks. Professional bodies should be involved if the career paths are linked to enhanced scopes of practice (Recommendation 6) or to technical supervisory roles and responsibilities. Lead rural health workers may be offered academic or supervisory positions in health institutions and health worker training programmes.

Full consideration should be given to gender, age, class, ethnicity, migration status, civic status, language, sexuality, disability and sociodemographic background of the workforce while developing a fair and equitable career pathway policy. The implementation of this intervention should be intersectoral, involving health together with education, finance and other relevant sectors. Account should be taken of the feasibility of the training, while making the most of technological advancements, ensuring that protected time is allowed for trainings and other professional developmental activities. This recommendation should be linked with policies on continuing education (Recommendation 5), decent working conditions (Recommendation 13), public recognition (Recommendation 17) and other context-relevant policies to support the recruitment and retention of health workers in rural areas.

3.16 Recommendation 16: Facilitate knowledge exchange between health workers

16. WHO suggests supporting the development of networks, associations and journals for health workers in rural and remote areas	
Strength of recommendation – conditional	Certainty of evidence – low

Remarks

- Promote interprofessional local initiatives and associations, and encourage subnational coalition of rural associations.
- Explore multiple sources of funding and revenue generation for the different activities of the groups, with the aim of ensuring long-term sustainability.
- Use networks during uncertain times and situations, such as during health emergencies, for peer-to-peer support.

3.16.1 Rationale for recommendation

The support for professional networking and academic activities, including specialized journals with a focus on rural areas, is considered beneficial to rural health workers *(193)* and the communities they serve. However, the activities of professional associations are usually clustered around larger towns and cities, and the small-scale nature of rural communities means that there are not sufficient numbers of people to warrant localized activities, unless these are interprofessional. Hence, for rural workers that would have to travel to engage in these activities, time and finances could be barriers.

While the certainty of evidence for this intervention is low, some evidence from observational studies in Mali, Thailand and Australia suggests that setting up professional associations to support rural doctors improves retention *(156, 194, 195)*.

The policy is considered highly acceptable and feasible, but the GDG agreed that there has been stagnation of evidence on its effectiveness, and it has been taken for granted that such policies will have a positive effect. Given the limited evidence base and potential variability in contexts, resource implications and stakeholder values, the desirable effects were deemed to vary. Therefore, a conditional recommendation was made.

3.16.2 Implementation considerations

To keep the associations, groups or journals viable, professional regulatory bodies, government entities and academic institutions should be involved in their development and support. The more remote a location is, the more effort needs to be made to keep the health workers connected to such associations to avoid professional isolation.

It is important to ensure that communities continue to have coverage when health workers attend professional networking and academic activities. This approach is likely to have a larger effect if associated with other interventions, such as policies to support continuing education (Recommendation 5), policies to improve living conditions (Recommendation 11), policies to provide a safe working environment with good working conditions (Recommendations 13 and 14), and policies on developing a rural career pathway (Recommendation 15), amidst other context-relevant interventions.

3.17 Recommendation 17: Raise the profile of rural health workers

17. WHO recommends adopting social recognition measures at all levels for health workers in rural and remote areas	
Strength of recommendation – strong	Certainty of evidence – very low

Remarks

- Raise the profile of (increase the attention given to) work and contribution by health workers in rural areas.
- Recognize individuals as well as teams across rural health at various levels, with measures such as awards, titles and rural health days at all levels.
- Implement this policy in collaboration with health workers, the media, the community and the government at all levels.

3.17.1 Rationale for recommendation

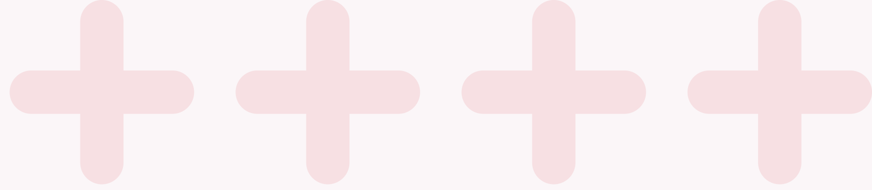
Recognition from managers, peers and the public is a major motivating factor for many health workers *(196)*. Public recognition of the work done by rural health workers and an appreciation of the rural health workforce aims to raise the morale and status of rural health workers and highlight their achievements. Such policies can demonstrate political and community support for rural health workers *(8)*, and can also be strengthened further where there are clear person-centred models of care planned for and organized by national and local health authorities.

A total of 17 observational studies suggest that recognition by the employer and community is a vital motivating factor that leads to retention of rural health workers. However, the certainty of evidence was considered very low.

The GDG noted that research in this area is limited, with the effect of raising the profile of rural health workers on retention lying between moderate and large, a consensus being reached on "moderate". It was nevertheless thought that the effect of this intervention could motivate younger people and students into considering rural practice at a negligible cost. This, along with the stakeholder survey suggesting high acceptability and feasibility, led to a balance of effects that strongly favoured the intervention. Overall, such measures were seen to have high potential benefits for very low cost and risk. Therefore, a strong recommendation was made.

3.17.2 Implementation considerations

It is important to consider multiple stakeholder buy-in, especially by the government, when implementing this policy. Consider celebrating rural health workers and teams at all levels, giving them awards and publishing and sharing their stories as a means of bringing rural practice to the spotlight as a prestigious practice, which will motivate more students and graduates to choose the rural career path. Local communities can be engaged in identifying ways to engage communities in appreciating their health workers.



4.0 Selecting and evaluating the bundle of interventions

This section presents the implementation and evaluation framework to measure results, and poses five questions to prompt and guide policy-makers through the process of identifying, selecting, implementing, monitoring and evaluating rural retention interventions.

The different levels of units or departments of the ministry of health in charge of human resources for health policy planning and governance should be involved in the planning, budgeting, implementation, and monitoring and evaluation phases of the adopted bundled interventions. Consideration will be given to capacity development of the staff involved. Collaboration and partnership with institutions and individuals should be encouraged.

The framework presented in Table 4.1 is an adaptation of the one developed for the 2010 *Global policy recommendations (8, 48)*. In building on the traditional inputs–outputs–outcomes–impact evaluation model, the framework focuses on the key outcomes and where possible uses indicators from the National Health Workforce Accounts handbook *(37)*. At the level of *inputs*, comprehensive analytical work should underpin the subsequent selection of the set of interventions. This includes a situation analysis or a more comprehensive health labour market analysis (including an assessment of the political economy, which can be an important element in rural health). An assessment of organizational and management capacity is also important. Selecting the appropriate set of interventions requires a process of understanding their relevance, acceptability, feasibility, affordability and effectiveness, first in terms of services provided and then in terms of the health workforce interventions, as well as elements of context that need to be considered.

Once appropriate interventions have been implemented, they will have a direct effect on one or more of four dimensions: development of health workforce, attractiveness of rural areas, recruitment of health workers in those areas, and retaining them for a certain period of time (*outputs*). The selected interventions also have a measurable effect on *outcomes*, for example improved access to health workers and services.

The final *impact* of the interventions is expected at the level of improved health status for rural populations, although health status, as well as health workforce and health system performance, has more determinants than just these interventions. However, it should be noted that all the proposed retention strategies are complex interventions, and none of the observed effects can be attributed solely to any one single intervention, but rather to an appropriate combination or bundle of interventions.

Table 4.1 Measuring the results of rural retention interventions

Context: Social determinants, political situation, stakeholder power and interests, economic situation (fiscal space, fiscal decentralization), individual factors (marital status, gender, age)

Level	Inputs (design and Implementation)	Outputs (with possible indicators)	Outcomes (with possible indicators)	Impact
Dimensions	Situation analysis, including factors influencing decisions for rural work Health labour market analysis *(36)* Organization and management capacity Stakeholder and community engagement Choice of relevant bundle of interventions Resources needed	**Development** *Effective training and production* Admissions: ratio of admissions to available places Training: continuing professional development **Attractiveness** *Preference for rural work* Preference: stated preference for rural and remote areas **Recruitment** *Effective contracting and posting* Entry: new graduates starting rural practice within one year Migration: foreign health workers starting rural practice **Retention** *Health workers remaining in rural areas for certain periods of time* Employment characteristics: Regulation on working hours and conditions	**Appropriate and competent multidisciplinary teams to provide primary health care based on national priorities and local health needs** Stock: density of active health workers per 10 000 population at subnational level (by age, sex, occupation, foreign born, foreign trained, facility type and ownership) Skills: occupation mix, teams, etc. Imbalance: vacancy rates in rural areas Exit: voluntary and involuntary exit from rural practice **Improving UHC service coverage index** Access: essential service coverage, access to health services in rural and remote areas	Improved health service delivery **Contributing to:** Improved health status of rural areas Sustainable and inclusive economic growth

Source: Adapted from Huicho et al. *(48)*.

4.1 Relevance: which interventions best respond to national priorities, and to the expectations of health workers and rural communities?

Specific methods can be used to elicit the preferences of health workers for rural work and to try to calibrate the relative contribution of each potential attribute of their job in a rural area. These methods – known as stated preference methodologies, of which the discrete choice experiment (DCE) approach is one example – are aimed at quantifying certain trade-offs that health workers would make when proposed hypothetical scenarios about future jobs in a rural area *(197–199)*. The strengths of DCE are that a wide range of attributes can be included, which means that health worker preferences can be elicited beyond the current situation, and also the effect of each individual attribute can be statistically analysed *(200)*. However, DCE is methodologically limited by choices being made between hypothetical alternatives with a limited set of characteristics. Conducting a sound DCE requires expertise that may not be readily available in all settings *(200)*. On the other hand, it can be very insightful to conduct in-depth and open-ended qualitative research to understand the job preferences of health workers. They can be valuable tools for policy-makers to understand the right combination of incentives to attract health workers to rural areas.

4.2 Acceptability: which interventions are politically and socioculturally acceptable and have the most stakeholder support?

A long-term vision, effective and sustained political commitment, and political will are important for successful implementation of the chosen package of interventions. High-level political support is essential to ensure planning and budgeting. Government leaders also need to act as champions, convene a diverse group of stakeholders and find the most equitable and sustainable solutions to improve rural retention of health workers. Taking account of distinctive social norms and cultural sensitivities is also key to defining how acceptable the interventions will be to stakeholders.

Many of the interventions are cross-cutting in nature, and a ministry of health or individual health care organization cannot solve the retention challenge on their own. Engagement of stakeholders across several sectors is a critical element for the success of rural retention policies, as it is for any type of health system or health workforce policy. Ministries of civil service, finance and education, unions and professional associations, civil society, education institutions, the private sector and, where appropriate, international development partners all have a role to play. Table 4.2 presents an overview of actors to involve in the design and implementation of the policy interventions recommended in section 3, together with their roles and responsibilities.

Table 4.2 Roles and responsibilities of stakeholders in the design and implementation of strategies to increase access to health workers in rural and remote areas (examples)

Strategies	Actors	Roles and responsibilities
Students from rural backgrounds	Ministry of education Ministry of health Ministry of finance Health worker education institutions Local authorities Community Civil society	Identifying students Strengthening primary and secondary education Exposing rural secondary students to health occupations Regulating preferential admissions Provision of financial subsidies Designing support mechanisms to assist students
Health worker education institutions closer to rural areas	Ministry of education Ministry of finance Tertiary institutions Local health authorities	Establishing accreditation standards Authorization of new schools Promoting social accountability of health worker education institutions
Bring students of health worker education institutions to rural and remote areas during studies	Ministry of health Health worker education institutions Local health authorities Rural and remote health facilities	Changing pedagogical approach (local community engagement, interprofessional, problem-based, etc.)
Curricula that reflect rural health issues	Ministry of health Health worker education institutions Accreditation bodies Local health authorities Rural health experts	Updating the curricula Periodic re-evaluation of curricula
Continuing professional development	Ministry of health Professional associations Ministry of education Local health authorities Non-State actors (private sector and nongovernmental organizations) Employers Rural health experts	Design and implementation of continuing professional development programmes Enabling access to continuing professional development for rural and remote health workers
Enhanced scopes of practice	Ministry of health Ministry of finance Ministry of education Regulatory bodies Professional associations Local health authorities Health worker education institutions Employers	Clarifying boundaries of scope of practice Instituting regulations to recognize extended scope of practice

Table 4.2 Roles and responsibilities of stakeholders in the design and implementation of strategies to increase access to health workers in rural and remote areas (examples)

Strategies	Actors	Roles and responsibilities
Introducing new types of health workers	Ministry of health Ministry of finance Ministry of education Ministry of public service Professional associations Health professional regulatory authorities Local health authorities Patients' associations	Clarifying functions of introduced health workers Instituting appropriate regulatory frameworks and mechanisms
Compulsory service agreements where they exist are supported and incentivized	Ministry of health Ministry of education Ministry of finance Professional associations Employers	Implementing regulation on compulsory service Preparing students for compulsory service Providing support for those in compulsory service
Subsidized education for return of service	Ministry of education Ministry of health Ministry of finance	Financing education in exchange for rural service
Appropriate financial incentives	Ministry of finance Ministry of health Unions, professional associations Local health authorities Local governments	Designation of areas that qualify for incentives Carefully designing incentive package Establishing budget needs and sources Establishing allocation criteria
Better living conditions	Ministry of finance Ministry of health Local authorities, managers Ministry of transport Finance sector Education sector Internal affairs, development Civil society	Providing housing, schooling for children, job opportunities for spouses
Safe and secure working environment	Ministry of health Human resources for health units Local health authorities and managers Professional associations Law enforcement agencies Unions Health workers	Ensuring provision of equipment, medicines, etc. Ensuring safety and security of health workers
Supportive working environment	Ministry of health Human resources for health units Local health authorities and managers	Ensuring good human resource support Ensuring good supervision

Table 4.2 Roles and responsibilities of stakeholders in the design and implementation of strategies to increase access to health workers in rural and remote areas (examples)

Strategies	Actors	Roles and responsibilities
Health service network	Ministry of health Human resources for health units Local health authorities and managers Professional associations Health workers	Providing outreach support Supporting local and subnational health networks
Career development programmes	Ministry of health Ministry of public service Local health authorities and managers Human resources for health units Professional associations	Creating career ladders
Professional networks	Ministry of health Professional associations	Supporting creation of professional networks
Public recognition measures	Ministry of health Civil society Professional associations Media	Creating and delivering awards, titles, etc.

Source: Adapted from the 2010 *Global policy recommendations (8)*.

4.3 Feasibility: which interventions face the fewest barriers to implementation?

Consideration of the practicality of relevant and acceptable interventions, and the extent to which they can be carried out in a particular setting or context, is important. Ways that this can be achieved include asking the following questions: Can the intervention work in this context? Does the intervention work in this context? Will the intervention continue to work in this context? *(201)*.

It is crucial to undertake extensive consultations with relevant stakeholders. Multisectoral consultations and analysis of the practicality of interventions in local contexts are also necessary. Existing information from research on interventions working in similar contexts will help address the question of whether an intervention will work in a particular context.

Feasibility sample studies can be conducted using surveys, interviews and focused group discussions with the relevant stakeholders, or other forms of studies. Small-scale sample projects can be set up, monitored and evaluated *(201)*.

4.4 Affordability: which interventions are cost effective and what is their fiscal impact?

In selecting the appropriate set of interventions, information about the costs (and the level of accuracy of that information), the sources of funds for those costs and their sustainability over time is needed to make the best use of limited financial resources, and for conducting sound evaluations of policy interventions.

Understanding costs associated with a policy intervention requires a monetary evaluation of all resources used to implement it. This may entail, for example, a financial transfer to subsidize education (Recommendation 9), or to pay allowances and other financial incentives (Recommendation 10), or to build a new school or upgrade facilities (Recommendation 2).

It may also include the cost of bringing faculty to rural areas for newly built schools (and their own subsequent retention), the cost of distance education programmes or of curriculum development (education-related interventions), or the administrative cost of managing an obligatory service in rural areas.

The source and mode of financing are also important. For countries with significant amounts of official development assistance it is particularly important to align sources of funding for retention strategies with national health budgets to ensure sustainability. From the planning stage, retention strategies must be aligned with national health and human resource development plans. Where the money comes from and how it is channelled is tightly linked to the issue of financial sustainability, which entails an analysis of the fiscal space, the timeline and the predictability of external funding. Most low-income countries will require sustained and predictable external funding to implement interventions, which is often difficult to secure because donors' funding cycles typically span one to three years, which is an insufficient period of time for assessing measurable effects. Where possible, these should be aligned and linked with service planning budgets.

A related issue is the fragmented funding of numerous small-scale or specific donor-driven initiatives, which, if not well integrated into the overall national health plan, can seriously disrupt the functioning of the health system. For example, in many countries health workers from rural areas or from the public sector are lured away by non-State providers, often driven by global health initiatives, which offer much more attractive employment conditions (including salaries and working conditions).

4.5 Effectiveness: have complementarities and potential unintended consequences between various interventions been considered?

The result of policy formulation may be a list of interventions that require further prioritization, especially in low-income countries, due to resource and capacity constraints. These priorities should be identified in close consultation with communities, local health service plans and health workers, and should be based on the needs of the local community. As with most public health strategies and policies, there is no one-size-fits-all solution, and the most appropriate combination will vary considerably from context to context.

The recommendations will be ineffective in isolation because health workers do not base decisions to go to, stay in or leave remote and rural areas on one single factor. For example, health workers may place a high value on remuneration in a rural post, but they also want access to continuing education and recognition of their enhanced scope of practice if they accept the position. Or, if a policy of preferential admission of students from rural areas is selected, then expanding the number of training schools in rural areas would be a complementary strategy, depending on the barriers to access.

Sequencing of the interventions is also an important aspect of complementarity. Some of the interventions recommended in section 3 will take several years to be fully established, whereas others can be implemented relatively quickly. For instance, provision of financial incentives for rural health workers is one policy that is frequently adopted by countries, given that it can be set up relatively quickly, whereas a policy to introduce different types of health workers, or a policy to build health worker education institutions or campuses in rural areas, may take far longer to implement and produce results. For rural health worker education institutions, the timeline may be further extended by the requirement to attract and retain a pool of potential rural health workers in rural areas. Quick-to-implement interventions with a fairly immediate impact are important to consider, as they can help to attract and retain rural health workers in the short term, while other interventions can be implemented in the longer term to build towards sustainable solutions. These time-to-effect variations in retention strategies are an important consideration when deciding how best to bundle interventions.

Potential unintended consequences should be taken into account before deciding on a policy to improve rural retention. For example, if too much emphasis is placed on accelerated promotion as an incentive for working in rural areas, this could have a negative effect on organizational development that relies on promotion according

to merit and potential. Likewise, indiscriminate distribution of postgraduate training awards could negate the effect of a retention strategy, and incentives for rural health workers may be met with negative reactions from other civil servants or other health workforce occupations who do not qualify for those incentives.

4.6 Impact: what indicators will be used to measure impact over time?

If all relevant stakeholders are clear on the intended effects of the interventions, the expected outcomes and the time it will take to implement and measure impact, then the interventions are more likely to be successfully implemented. Indicators to measure success, or at least progress, also need to be agreed upon from the early planning stage. Table 4.3 illustrates the questions that need to be asked when evaluating retention interventions, the proposed indicators to measure progress against the dimensions of development, attractiveness, recruitment, and retention, and the methods that can be employed in conducting such evaluations.

Detailed guidance about general principles and methods for monitoring and evaluation of human resource interventions have been developed and presented elsewhere *(202)*. In the present document, several definitions and explanations are worth considering. "Retention" is defined as an increase in the numbers of health workers staying in rural areas because of a specific policy intervention. Another way of measuring retention is to look at the duration in years of health workers' stay in a rural post. However, there is no benchmark for this duration: the few studies that have measured this indicator found an average duration of only four years *(109, 135)*.

Apart from traditional facility-based surveys and analysis of registry data, other methods can be used, such as survival curves or stability indices. Survival curves can be used to plot the time to any non-recurrent event. The event does not have to be death, so the term survival can be misleading. In the case of retention strategies, the non-recurrent event that is plotted can be the departure of the health worker or health workers being studied from the rural area *(82)*. The stability index, on the other hand, assesses the proportion of staff who were in a post at the beginning of the year who were still in the post at the end of the year *(203)*.

As mentioned previously, each intervention has more than one outcome, and no outcome can be achieved through only one intervention. This complexity adds to the task of measuring the results and attributing the perceived effects to specific interventions.

Further details about the challenges of research in this field are given in section 5. In addition, evaluation is not cheap; not only does it have to be planned at the beginning of implementing the strategies, it also has to be budgeted for when the interventions are costed.

4.7 Dissemination and implementation plans for this guideline

This guideline applies universally, regardless of region or income level. However, the GDG recognizes that it will be important to adapt and contextualize the guideline and the selection of policies to the local context. Improving access to health workers in rural and remote areas is a complex and multifaceted policy dilemma. Acceptability and feasibility of the policy interventions, their impact, and their consequences for policy-makers, health workers and local communities are all important factors. As such, what can be implemented with success in one area may not be appropriate for another. Accordingly, it is crucial to keep in mind the good practice statement included in this guideline – *A contextually relevant bundle of interconnected interventions is recommended to achieve maximal impact on the attraction, recruitment, and retention of health workers in rural and remote areas*.

Beyond adaptation to meet the needs of end users, simple, user-friendly key messages need to be developed for dissemination to a wider audience of relevant stakeholders and for use as advocacy tools. This is to enable a wide-reaching understanding of the importance of bridging the rural gap in access to health workers. As highlighted in this document, there is a need to ensure that rural populations thrive alongside urban populations, not only because of the principles of equity, but also because of the symbiotic relationship between the two.

Table 4.3 Questions and indicators for the evaluation and monitoring of interventions to increase access to health workers in remote and rural areas through improved retention

Stage	Questions to be asked	Indicators or measures of progress	Methods
Design	Did the intervention respond to a documented need? Is the choice of the intervention based on evidence or robust arguments?	Human resources for health situation analysis Human resources for health costed plan Stocks and flows of health workers Density of health workers in urban versus rural areas	Health labour market analysis Demographic analysis (health workforce stocks and flows) Surveys of intentions Stakeholder analysis Review of policy documents
Implementation	Relevance: were the preferred choices of health workers for rural work identified?	Factors that motivate health workers to go to, stay in or leave rural areas Stated preferences for rural job attributes	Survey of intentions Focused group discussions Discrete choice experiments
	Acceptability: have all stakeholders been engaged?	Stakeholder consultations and engagement	Stakeholder analysis
	Affordability: have all sources of funds been identified and secured?	Budgets allocated to the proposed interventions	Review of policy documents
Results	Did development and attractiveness of profession in rural and remote areas improve?	Total number of graduates of health professional schools Preferences for rural and remote areas	Analysis of registry data Surveys, focus group discussions
	Did recruitment of health workers in underserved areas improve?	Total number of health workers recruited to rural areas Proportion of new graduates entering rural practice	Analysis of registry data or facility data
	Did retention improve?	Turnover rates Vacancy rates Duration of stay, mean duration of service, survival rates Proportion of health workers staying in rural areas (stability index) Density of health workers in rural areas compared to urban areas	Facility-based surveys Analysis of registry data Survival curves
	Did health system performance improve?	Job satisfaction of rural health workers Patient satisfaction (remote and rural populations) Coverage of health services Referral times Health outcomes (e.g. maternal mortality ratio, infant mortality rate)	Health worker satisfaction surveys Patient or community satisfaction surveys Facility-based surveys Analysis of secondary data and statistics Household surveys

Source: Adapted from Huicho et al. *(48)*.

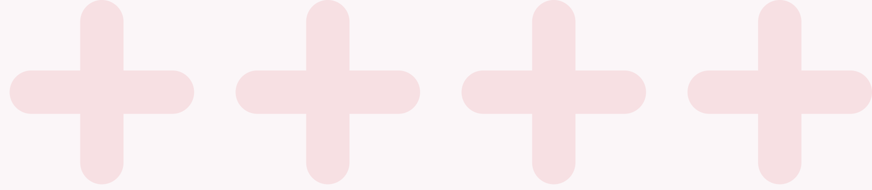
4.7.1 Dissemination

The recommendations and good practice statement presented in this guideline will be disseminated through WHO regional and country offices, ministries of health, education, finance, public administration, and labour, in addition to professional regulators, professional organizations and bodies, WHO collaborating centres and other United Nations agencies and partners. This guideline will be made available on the WHO website along with multimedia content to facilitate understanding. In addition, a summary of the guideline will be published in a peer-reviewed journal and multimedia content. Derivative products of this guideline are envisaged, such as toolkits for implementation, studies of further topics such as the rural pathway, policy briefs, and key messages.

4.7.2 Monitoring and evaluation

It is essential to make a commitment to monitor and evaluate strategies from inception, to capture lessons learned and contribute to building the evidence base, notably around bundles of interventions adopted, outcomes and impact. Monitoring and evaluation will help identify challenges and limitations during implementation, assess the degree to which the objectives and goals have been achieved, and identify the need for a new intervention or the need to redesign or modify an existing one. Monitoring and evaluation should be incorporated in the design implementation plan.

The WHO Health Workforce Department will support a stronger evidence collection network linked to National Health Workforce Accounts to enable better monitoring of the uptake of these recommendations. It will be important to track the progress of Member States with the disaggregated National Health Workforce Accounts data and an assessment of adoption of the guideline policy recommendations in national health workforce policies.



5.0 Research agenda

Research on the development, attraction, recruitment and retention of health workers in rural and remote areas has increased substantially in both size and scope since the 2010 *Global policy recommendations* were published.

There was a close to fivefold increase in the number of included studies (from 27 to 133), and a more than threefold increase in the number of health worker occupations included in the research base. In 2010 only nine occupations were included, with 72% of studies pertaining to doctors. The research base included in this update, although still skewed toward research pertaining to doctors, includes over 30 health worker occupations. In addition, in 2020, research evidence covers over 110 countries, with a notable increase in the proportion of studies from low- and middle-income countries. In 2010, only 29% of single-country studies pertained to low- and middle-income country settings; of the single-country studies included in this update, 43% pertain to low- and middle-income country settings. These are great achievements that go a long way to addressing the research gaps and research agenda outlined in the 2010 *Global policy recommendations*.

5.1 Expanding the evidence base

Research in this area is encouraged to continue to expand the evidence base to include a wider array of health worker occupations, teams and attributes. It remains essential that evidence covers all rural health occupations, as these occupational groups may differ in terms of sociodemographic characteristics (such as gender) or other attributes that may influence choice and preferences. In addition to occupational groups, it is also important that studies disaggregate findings by stratifiers of personal identity, such as gender, age, class, ethnicity, migration status, civic status, language, sexuality, disability, religion and sociodemographic background, to better understand the efficacy of policies on different groups of health workers and to be able to better implement policies that address gender, equity and human rights in a more tangible and evidence-based way. Research on rural teams is also important. In order to ensure policies are equitable and inclusive it is critical to understand the needs and expectations of different groups, occupations and teams through expanding research in low-and middle-income countries and non-English-speaking countries. Understanding what works best in different regions and income groups can help to better develop policies and select the most relevant bundle of interventions.

5.2 Mainstreaming rural access into health systems and health outcomes research

Building on this improvement in the size and scope of the research base observed since the publication of the 2010 *Global policy recommendations*, the foremost challenge going forward will be to strengthen partnerships to ensure rural research and subnational disaggregation are mainstreamed in health systems and health outcomes research more broadly.

The crucial next step for research and evidence generation will be measuring the impact of equitable access to health care on health outcomes, notably assessing what the impact of rural health workforce interventions is on health equity. Measuring outcomes and impacts in a rigorous manner to ensure the quality of research in this area is the main future challenge.

To reduce inequity in health workforce distribution, it is important to measure and monitor its link to health outcomes. This is key to bringing together partners to address the persistent rural health workforce gaps across the world.

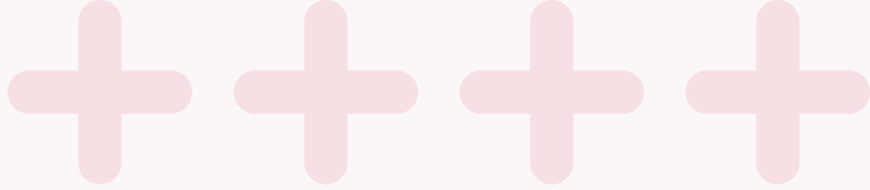
5.3 Ensuring evaluations are rigorous and well designed

Evaluations are key to help policy-makers choose which interventions to implement, yet there are few well designed evaluations in this field, despite the substantial descriptive evidence highlighting the issues and challenges of working in rural areas. This lack of continuous evaluation of policies from input to output to outcomes through to impact has great implications for the establishment of evidence-based policy. Methodological difficulties are one of the main reasons for this, along with potential financial barriers to fund such evaluations. Linking research to existing longitudinal data collection efforts, such as the National Health Workforce Accounts or the reporting mechanism for the WHO Global Code of Practice on the International Recruitment of Health Personnel, could help to reduce duplication of efforts. Having a baseline against which to measure progress is mandatory when conducting evaluations. It is also important to have a comparison group and to compare results before and after the intervention. In addition, agreeing upon specific and relevant indicators (see Table 4.3 for some guidance) at the beginning of the process is essential, as is the use of appropriate methods and data sources to measure these indicators *(48, 49)*.

As clearly demonstrated in the evidence profiles and the descriptive evidence tables, very little evidence in this field qualifies as high-certainty evidence. For example, the Cochrane systematic review found no randomized controlled trials, so the included studies consisted of quasi-randomized trials, before and after studies and observational studies *(72)*. Unlike clinical practice, it is very difficult to conduct randomized controlled trials to understand the effects of many of the interventions proposed in this document. These are complex interventions with multiple outcomes, and many confounders intervene and may influence the observed outcome of a certain intervention. In addition to quantitative studies, future research should include rigorously conducted qualitative studies *(204)*.

Therefore, conceptual information (addressing the why and how) was very important in developing these recommendations. The Steering Group for this guideline made the explicit effort to go beyond the systematic review of effects as the sole source of evidence and collected data from both a systematic review of contextual information and a survey of stakeholders to ensure that these elements were captured and included in the recommendations in a systematic manner.

This guideline is focused on access and supply-side issues, but it is important to look at this issue from multiple angles. For example, information on community preferences and acceptability of care, which influence the demand for care, was limited. It will be important to redress this gap to better understand the factors driving demand for care in rural and remote areas, including acceptability and barriers to access (such as cost), and how these vary by communities and members within communities, while at the same time addressing issues of race, gender, ethnicity, language, sexuality, disability and sociodemographic background of the community, which are important components of the demand for care.



6.0 Updating this guideline

The evidence on the development, attraction, recruitment and retention of health workers into rural and remote areas continues to grow. Nevertheless, some gaps in the evidence persist.

The GDG recommended reviewing and updating the guideline more frequently, with a possible expansion of the scope of the guideline. Therefore, this guideline will be updated and reviewed five years after publication. As the guideline nears the end of the proposed five-year period, the WHO Secretariat and the WHO Steering Group will assess the validity of the recommendations and the need for new or expanded guidance on the topic.

Future revisions should include a framework for monitoring the inputs, outputs, outcomes and impact. Consideration of the relevance of the existing categories should be made. If new questions are identified, the review should be updated and the evidence search and assessment expanded to include them while applying the WHO guideline development process. WHO welcomes suggestions regarding additional questions to be considered in updating this guideline.

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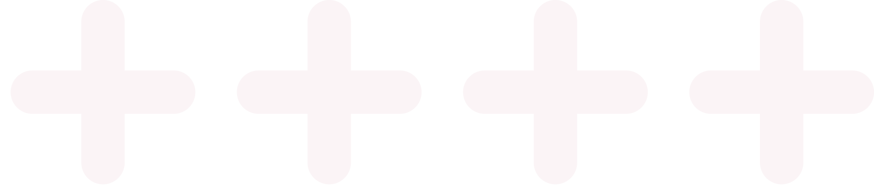

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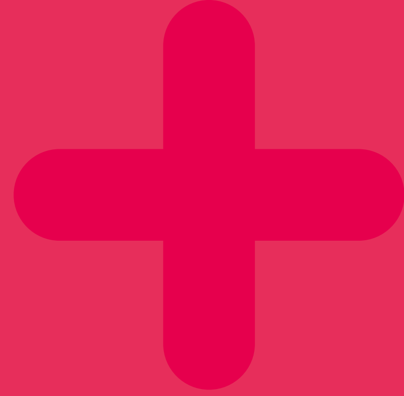

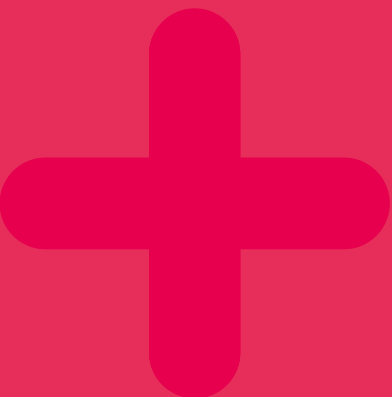

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