World Health Organization

Global strategy on human resources for health: Workforce 2030

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Introduction

1. In May 2014, the Sixty-seventh World Health Assembly adopted resolution WHA67.24 on Follow-up of the Recife Political Declaration on Human Resources for Health: renewed commitments towards universal health coverage. In paragraph 4(2) of that resolution, Member States requested the Director-General of the World Health Organization (WHO) to develop and submit a new global strategy for human resources for health (HRH) for consideration by the Sixty-ninth World Health Assembly.

2. Development of the Global Strategy was informed by a process launched in late 2013 by Member States and constituencies represented on the Board of the Global Health Workforce Alliance, a hosted partnership within WHO. Over 200 experts from all WHO regions contributed to consolidating the evidence around a comprehensive health labour market framework for universal health coverage (UHC). A synthesis paper was published in February 2015 *(1)* and informed the initial version of the Global Strategy.

3. An extensive consultation process on the draft version was launched in March 2015. This resulted in inputs from Member States and relevant constituencies such as civil society and health-care professional associations. The process also benefited from discussions in the WHO regional committees, technical consultations, online forums, a briefing session to Member States' permanent missions to the United Nations (UN) in Geneva, exchanges during the 138th Executive Board and a final round of written comments in March 2016. Feedback and guidance from the consultation process were reflected in the current version of the Global Strategy, which was also aligned with, and informed by the WHO Framework on integrated people-centred health services. *(2)*

4. The Global Strategy on Human Resources for Health: Workforce 2030 is primarily aimed at planners and policy-makers of Member States, but its contents are of value to all relevant stakeholders in the health workforce area, including public and private sector employers, professional associations, education and training institutions, labour unions, bilateral and multilateral development partners, international organizations, and civil society.

5. Throughout this document, it is recognized that the concept of universal health coverage may have different connotations in countries and regions of the world. In particular, in the WHO Regional Office for the Americas, universal health coverage is part of the broader concept of universal access to health care.

Global strategy on human resources for health: Workforce 2030 – Summary

Vision

Accelerate progress towards universal health coverage and the UN Sustainable Development Goals by ensuring equitable access to health workers within strengthened health systems

Overall goal

To improve health, social and economic development outcomes by ensuring universal availability, accessibility, acceptability, coverage and quality of the health workforce through adequate investments to strengthen health systems, and the implementation of effective policies at national,[a] regional and global levels

Principles

- Promote the **right to the enjoyment of the highest attainable standard of health**
- Provide integrated, **people-centred health services** devoid of stigma and discrimination
- Foster empowered and engaged **communities**
- Uphold the personal, employment and professional **rights of all health workers,** including safe and decent working environments and freedom from all kinds of discrimination, coercion and violence
- Eliminate **gender-based violence,** discrimination and harassment
- Promote **international collaboration and solidarity** in alignment with national priorities
- Ensure **ethical recruitment practices** in conformity with the provisions of the WHO Global Code of Practice on the International Recruitment of Health Personnel
- Mobilize and sustain **political and financial commitment** and foster **inclusiveness** and collaboration across sectors and constituencies
- Promote **innovation and the use of evidence**

Objectives

1. 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.

2. To align investment in human resources for health with the current and future needs of the population and of health systems, taking account of labour market dynamics and education policies; to address shortages and improve distribution of health workers, so as to enable maximum improvements in health outcomes, social welfare, employment creation and economic growth.

3. To build the capacity of institutions at sub-national, national, regional and global levels for effective public policy stewardship, leadership and governance of actions on human resources for health.

4. To strengthen data on human resources for health, for monitoring and ensuring accountability for the implementation of national and regional strategies, and the Global Strategy.

[a] Policy and actions at “country” or “national” level should be understood as relevant in each country in accordance with subnational and national responsibilities.

Global milestones (by 2020)

- All countries have inclusive institutional mechanisms in place to coordinate an intersectoral health workforce agenda.
- All countries have a human resources for health unit with responsibility for development and monitoring of policies and plans.
- All countries have regulatory mechanisms to promote patient safety and adequate oversight of the private sector.
- All countries have established accreditation mechanisms for health training institutions.
- All countries are making progress on health workforce registries to track health workforce stock, education, distribution, flows, demand, capacity and remuneration.
- All countries are making progress on sharing data on human resources for health through national health workforce accounts and submit core indicators to the WHO Secretariat annually.
- All bilateral and multilateral agencies are strengthening health workforce assessment and information exchange.

Global milestones (by 2030)

- All countries are making progress towards halving inequalities in access to a health worker.
- All countries are making progress towards improving the course completion rates in medical, nursing and allied health professionals training institutions.
- All countries are making progress towards halving their dependency on foreign-trained health professionals, implementing the WHO Global Code of Practice.
- All bilateral and multilateral agencies are increasing synergies in official development assistance for education, employment, gender and health, in support of national health employment and economic growth priorities.
- As partners in the United Nations Sustainable Development Goals, to reduce barriers in access to health services by working to create, fill and sustain at least 10 million additional full-time jobs in health and social care sectors to address the needs of underserved populations.
- As partners in the United Nations Sustainable Development Goals, to make progress on Goal 3c to increase health financing and the recruitment, development, training and retention of the health workforce.

Core WHO Secretariat activities in support of implementation of the Global Strategy

Develop normative guidance; set the agenda for operations research to identify evidence-based policy options; facilitate the sharing of best practices; and provide technical cooperation on – health workforce education, optimizing the scope of practice of different cadres, evidence-based deployment and retention strategies, gender mainstreaming, availability, accessibility, acceptability, coverage, quality control and performance enhancement approaches, including the strengthening of public regulation.

Provide normative guidance and technical cooperation, and facilitate the sharing of best practices on health workforce planning and projections, health system needs, education policies, health labour market analyses, and costing of national strategies on human resources for health.
Strengthen evidence on, and the adoption of, macroeconomic and funding policies conducive to greater and more strategically targeted investments in human resources for health.

Provide technical cooperation and capacity-building to develop core competency in policy, planning and management of human resources for health focused on health system needs.
Foster effective coordination, alignment and accountability of the global agenda on human resources for health by facilitating a network of international stakeholders.
Systematically assess the health workforce implications resulting from technical or policy recommendations presented at the World Health Assembly and regional committees.
Provide technical cooperation to develop health system capacities and workforce competency, including to manage the risks of emergencies and disasters.

Review the utility of, and support the development, strengthening and update of tools, guidelines and databases relating to data and evidence on human resources for health for routine and emergency settings.
Facilitate yearly reporting by countries to the WHO Secretariat on a minimum set of core indicators of human resources for health, for monitoring and accountability for the Global Strategy.
Support countries to establish and strengthen a standard for the quality and completeness of national health workforce data.
Streamline and integrate all requirements for reporting on human resources for health by WHO Member States.
Adapt, integrate and link the monitoring of targets in the Global Strategy to the emerging accountability framework of the UN Sustainable Development Goals.
Develop mechanisms to enable collection of data to prepare and submit a report on the protection of health workers, which compiles and analyses the experiences of Member States and presents recommendations for action to be taken by relevant stakeholders, including appropriate preventive measures.

Background

The 21st century context for a progressive health workforce agenda

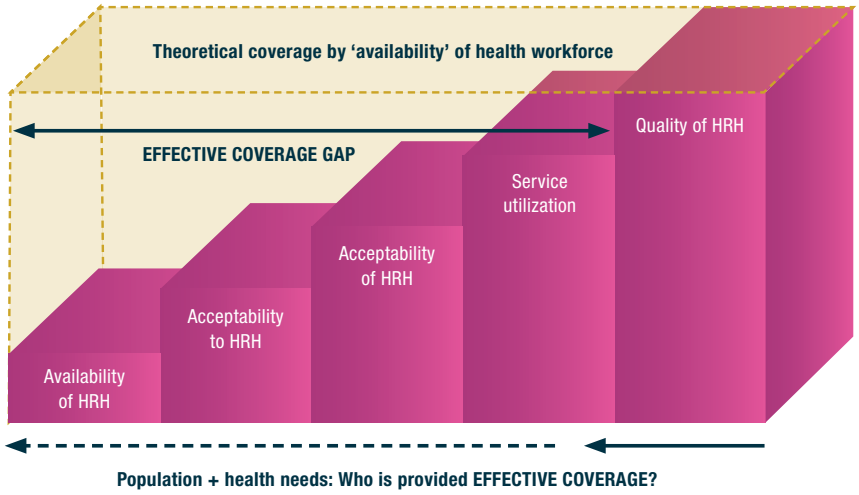
6. **Health systems can only function with health workers; improving health service coverage and realizing the right to the enjoyment of the highest attainable standard of health is dependent on their availability, accessibility, acceptability and quality.** *(3)* Mere availability of health workers is not sufficient: only when they are equitably distributed and accessible by the population, when they possess the required competency, and are motivated and empowered to deliver quality care that is appropriate and acceptable to the sociocultural expectations of the population, and when they are adequately supported by the health system, can theoretical coverage translate into effective service coverage **(Figure 1)**. However, countries at all levels of socioeconomic development face, to varying degrees, difficulties in the education, deployment, retention, and performance of their workforce. Health priorities of the post-2015 agenda for sustainable development – such as ending AIDS, tuberculosis and malaria; achieving drastic reductions in maternal mortality; expanding access to essential surgical services; ending preventable deaths of newborns and children under-5; reducing premature mortality from noncommunicable diseases; promoting mental health; addressing chronic diseases and guaranteeing UHC – will remain aspirational unless accompanied by strategies involving transformational efforts on health workforce capability. Countries in, or emerging from, armed conflict, natural or man-made disasters, those hosting refugees, and those with climate change vulnerability, present specific health workforce challenges that should be taken into account and addressed. Further, every Member State should have the ability to implement effective disaster risk reduction and preparedness measures, and fulfil their obligations envisaged in the International Health Regulations (2005). *(4)* This requires a skilled, trained and supported health workforce. *(5)*

7. **The health workforce has a vital role in building the resilience of communities and health systems to respond to disasters caused by natural or man-made hazards, as well as related environmental, technological and biological hazards and risks.** The health consequences of these events are often devastating, including high numbers of deaths, injuries, illnesses and disabilities. Such events can interfere with health service delivery through loss of health staff, damage to health facilities, interruption of health programmes, and overburdening of clinical services. Investment in the health workforce, in improving health service coverage and in emergency and disaster risk management not only builds health resilience and health security, it also reduces health vulnerability and provides the human resources required to prevent, prepare for, respond to, and recover from emergencies. Greater focus is required on the various roles of the entire health workforce in emergencies, for example in planning for staffing requirements (including surge capacity for emergency response [1]), training and protection, involving them in preparedness and response, and measures for adaptation to climate change in the health sector.

8. **Despite significant progress, there is a need to boost political will and mobilize resources for the workforce agenda** as part of broader efforts to strengthen and adequately finance health systems. Past efforts in health workforce development have yielded significant results: examples abound of countries that, by addressing their health workforce challenges, have improved health outcomes. *(6,7)* In addition, at the aggregate level, health workforce availability is improving for the majority of countries for which data are available, although often not rapidly enough to keep pace with population growth. *(3)* Overall, progress has not been

[1] Planning for surge capacity includes through global, regional and national emergency workforces, in line with the provisions envisaged in WHA68(10), 2014 Ebola virus disease outbreak and follow-up to the Special Session of the Executive Board on the Ebola Emergency (http://apps.who.int/gb/ebwha/pdf_files/WHA68-REC1/A68_R1_REC1-en.pdf#page=27).

Figure 1: Human resources for health: availability, accessibility, acceptability, quality and effective coverage



Source: Campbell et al., 2013.

fast enough or deep enough. Shortages, skill-mix imbalances, maldistribution, barriers to inter-professional collaboration, inefficient use of resources, poor working conditions, a skewed gender distribution, limited availability of health workforce data – all these persist, with an ageing workforce further complicating the picture in many cases. Reviewing past efforts in implementing national, regional and global strategies and frameworks, the key challenge is how to mobilize political will and financial resources for the health system and its critical HRH component in the longer term. *(8,9)*

9. **The health workforce will be critical to achieve health and wider development objectives in the next decades.** The United Nations General Assembly (UNGA) has adopted a new set of Sustainable Development Goals (SDGs) for 2016–2030. The SDGs follow the Millennium Development Goals of the period 2000–2015, with a call to action to people and leaders across the world to ensure a life of dignity for all. *(10)* The health workforce underpins the proposed health goal, with a target (3c) to "substantially increase health financing, and the recruitment, development and training and retention of the health workforce in developing countries, especially in least developed countries and small island developing States". In 2014, the World Health Assembly recognized that the health goal and its 13 health targets – including a renewed focus on equity and UHC – would only be attained through substantive and strategic investment in the global health workforce. In resolution WHA67.24, Member States requested the WHO Director-General to develop a global strategy on HRH and submit this to the Sixty-ninth World Health Assembly in May 2016. *(11)*

10. **Globally, investment in the health workforce is lower than is often assumed,** *(12)* **reducing the sustainability of the workforce and health systems.** The chronic under-investment in education and training of health workers in some countries and the mismatch between education strategies in relation to health systems and population needs are resulting in continuous shortages. These are compounded by difficulties in deploying health workers to rural, remote and under-

served areas. Shortages and distribution challenges contribute to global labour mobility and the international recruitment of health workers from low-resource settings. In some countries, in addition to major under-investment in education, particularly in underserved areas, imbalances between supply capacity and the market-based demand determined by fiscal space, and between demand and population needs, result in challenges in universal access to health workers within strengthened health systems, and even the paradox of health worker unemployment co-existing with major unmet health needs.

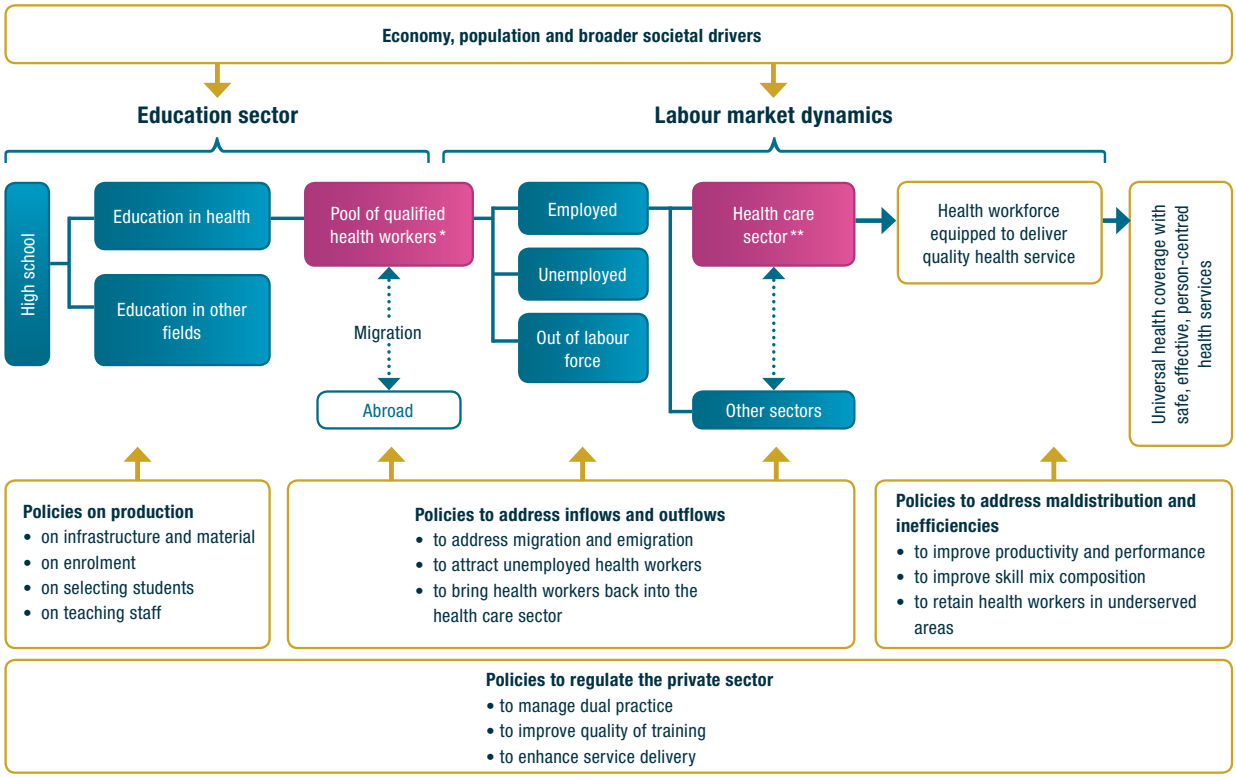
11. **The foundation for a strong and effective health workforce, able to respond to the 21st century priorities, requires matching effectively the supply and skills of health workers to population needs, now and in the future.** The health workforce also has an important role in contributing to the preparedness and response to emergencies and disasters, in particular through participation in national health emergency management systems, local leadership and the provision of health services. Evolving epidemiologic profiles and population structures are increasing the burden of noncommunicable diseases and chronic conditions on health systems throughout the world. *(13)* This is accompanied by a progressive shift in the demand for patient-centred care, community-based health services, and personalized long-term care. *(2)* Demand for the global health workforce is therefore expected to grow substantially. At the same time, emerging economies are undergoing an economic transition that will increase their health resource envelope, and a demographic transition that will see hundreds of millions of potential new entrants into the active workforce. Attaining the necessary quantity, quality and relevance of the health workforce will require that policy and funding decisions on both the education and health labour market are aligned with these evolving needs **(Figure 2)**.

12. **Persistent health workforce challenges, combined with these broader macro-trends, require the global community to reappraise the effectiveness of past strategies and adopt a paradigm shift in how to plan, educate, deploy, manage and reward health workers.** Transformative advances alongside a more effective use of existing health workers are both needed and possible through: the adoption of inclusive models of care encompassing promotive, preventive, curative, rehabilitative and palliative services; by reorienting health systems towards a collaborative primary care approach built on team-based care; and by fully harnessing the potential of technological innovation. In parallel, much-needed investment and reform in the health workforce can be leveraged to create qualified employment opportunities, in particular for women and youth. These prospects represent an unprecedented occasion to design and implement health workforce strategies that address the equity and coverage gaps faced by health systems, while also unlocking economic growth potential. Realizing this potential hinges on the mobilization of political will and building institutional and human capacity for the effective implementation of this agenda.

13. **The vision that by 2030 all communities have universal access to health workers, without stigma and discrimination, requires combining the adoption of effective policies at national, regional and global levels with adequate investment to address unmet needs.** Realistically, the scale-up required in the coming decades to meet increasing demand, address existing gaps and counter expected turnover is greater than all previous estimates. Projections developed by WHO and the World Bank **(Annex 1)** point to the creation of approximately 40 million new health and social care jobs globally to 2030 *(14)* and to the need for 18 million additional health workers, primarily in low-resource settings, to attain high and effective coverage of the broad range of health services necessary to ensure healthy lives for all.

14. **It has long been known what needs to be done to address critical health workforce bottlenecks; now there is better evidence than ever on how to do it.** The global strategy on human resources for health:

Figure 2: Policy levers to shape health labour markets



* Supply of health workers= pool of qualified health workers willing to work in the health-care sector.

** Demand of health workers= public and private institutions that constitute the health-care sector.

Source: Sousa A, Scheffler M R, Nyoni J, Boerma T "A comprehensive health labour market framework for universal health coverage" Bull World Health Organ 2013;91:892– 894

Workforce 2030 considers new evidence and best practices on what works in health workforce development for different aspects. These range from assessment, planning and education, across management, retention, incentives and productivity; several WHO tools and guidelines can support policy development, implementation and evaluation in these areas **(Annex 2)**. The Global Strategy addresses all these aspects in an integrated way in order to inspire and inform more incisive action by all relevant sectors of government and all key stakeholders, at national level by planners and policy-makers, and at regional and global level by the international community. Given the intersectoral nature and potential impacts of health workforce development, the Global Strategy aims to stimulate not only the development of national health and HRH strategies, but also the broader socioeconomic development frameworks that countries adopt.

15. **As human resources for health represent an enabler to many service delivery priorities, this Strategy complements and reinforces a range of related strategies** developed by WHO and the United Nations. The Strategy reaffirms in particular the importance of the WHO Global Code of Practice on the International Recruitment of Health Personnel,*(15)* which calls upon

countries to strive to use their own HRH to meet their needs, to collaborate towards more ethical and fair international recruitment practices, and to respect the rights of migrant health workers; it builds upon related regional strategies and frameworks such as the Toronto Call to Action *(16)* and the African Roadmap on Human Resources for Health; *(17)* and it provides a foundation for the work of the High-Level Commission on Health Employment and Economic Growth, *(18)* established by the United Nations Secretary-General following UNGA Resolution 70/183. *(19)* The Strategy also supports, among others, the goals and principles of the UN Global Strategy for Women's, Children's and Adolescents' Health, *(20)* the WHO framework on integrated people-centred health services, *(2)* the Every Newborn Action Plan, *(21)* the Family Planning 2020 objectives, *(22)* the Global Plan towards the Elimination of New HIV Infections, *(23)* the emerging UNAIDS 2016–2021 strategy, *(24)* the Global Action Plan for the Prevention and Control of Noncommunicable Diseases, *(25)* the WHO Disability Action Plan, *(26)* UNGA Resolution 69/132 on Global health and foreign policy *(27)* and the Sendai Framework for Disaster Risk Reduction 2015–2030. *(28)*

16. **This is a cross-cutting agenda that represents the critical pathway to attain coverage targets across all service delivery priorities.** It affects not only the better known cadres of midwives, nurses and physicians, but all health workers, from community to specialist levels, including but not limited to: community-based and mid-level practitioners, dentists and oral health professionals, hearing care and eye care workers, laboratory technicians, biomedical engineers, pharmacists, physical therapists and chiropractors, public health professionals and health managers, supply chain managers, and other allied health professions and support workers. The Strategy recognizes that diversity in the health workforce is an opportunity to be harnessed through strengthened collaborative approaches to social accountability, inter-professional education and practice, and closer integration of the health and social services workforces to improve long-term care for ageing populations.

17. **The Global strategy on human resources for health outlines policy options for WHO Member States, responsibilities of the WHO Secretariat and recommendations for other stakeholders** on how to:
- optimize the health workforce to accelerate progress towards UHC and the SDG **(objective 1)**;
- understand and prepare for future needs of health systems, harnessing the rising demand in health labour markets to maximize job creation and economic growth **(objective 2)**;
- build the institutional capacity to implement this agenda **(objective 3)**; and
- strengthen data on HRH for monitoring and ensuring accountability of implementation of both national strategies and the Global Strategy itself **(objective 4)**.

Each objective is described in detail in the following sections.

Objective 1

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

Milestones:

- 1.1 By 2020, all countries will have established accreditation mechanisms for health training institutions.
- 1.2 By 2030, all countries will have made progress towards halving inequalities in access to a health worker.
- 1.3 By 2030, all countries will have made progress towards improving the course completion rates in medical, nursing and allied health professionals training institutions.

18. **Addressing population needs for the SDGs and UHC requires making the best possible use of limited resources, and ensuring they are employed strategically through adoption and implementation of evidence-based health workforce policies tailored to the national health system context at all levels.** The ongoing challenges of health workforce deficits and imbalances, combined with ageing populations and epidemiologic transformations, require a new, contemporary agenda with an unprecedented level of ambition. Better alignment to population needs, while improving cost-effectiveness, depends on recognition that integrated and people-centred health-care services can benefit from team-based care at the primary level. *(29,30)* This approach exploits the potential contribution of different typologies of health worker, operating in closer collaboration and according to a more rational scope of practice, which entails health workers operating within the full scope of their profession while avoiding under-utilization of skills. For example, the nursing scope of practice has been shown to be adaptable to population and patient health needs, and has been particularly successful in delivering services to the most vulnerable and hard-to-reach populations. *(31)* Similarly, the midwifery scope of practice has the potential to provide 87% of the essential care needed for sexual, reproductive, maternal and newborn health services. *(32)* Realizing this agenda requires the following: adoption of more effective and efficient strategies and appropriate regulation for health workforce education; a more sustainable and responsive skills mix, harnessing opportunities from the education and deployment of community-based and mid-level health workers; improved deployment strategies and working conditions; incentive systems; enhanced social accountability; inter-professional collaboration; and continuous professional development opportunities and career pathways tailored to gender-specific needs in order to enhance both capacity and motivation for improved performance.

19. **Dramatic improvement in efficiency can be attained by strengthening the ability of national institutions to devise and implement more effective strategies and appropriate regulation for the health workforce.** There are major opportunities to ensure a more effective and efficient use of resources and a better alignment with community needs. This can be achieved by adopting a person-centred health-care delivery model and a diverse, sustainable skills mix geared to primary health care and supported by effective referral and links through all levels of care to the social services workforce. Similarly, major gains are possible in performance and productivity by improving management systems and working conditions *(33)* for HRH, and by using the support of, and collaboration with the private for-profit, voluntary and independent sectors. These sectors should be regulated, and incentives elaborated for closer alignment of their operations and service delivery profiles with public sector health goals. Realizing these efficiency gains requires institutional capacity to implement, assess and improve HRH planning, education, regulation and management policies.

Policy options for WHO Member States

20. Most of the proposed policy options in this and subsequent sections are of general relevance and may be considered by countries at all levels of socioeconomic development. Policy options that may be particularly relevant in some countries are explicitly indicated. This distinction is not rigid, given that the situation of countries can change over time, and that the broader socioeconomic conditions of a country do not necessarily and directly correspond to the status of health workforce policies. Furthermore, similar health workforce and health system challenges may apply in different settings, albeit with context-specific implications on funding, employment and labour market dynamics. Ultimately the relevance and applicability of policy options

must be determined and tailored to the specific reality of each WHO Member State, in relation to the needs of the population, education policies and health system requirements, including during emergencies. Similarly, the responsibilities of the WHO Secretariat are understood to be in relation to demand for support expressed by Member States.

Policy options to be considered in all countries

21. **Strengthen the content and implementation of HRH plans as part of long-term national health and broader development strategies to strengthen health systems,** ensuring consistency between health, education, employment, gender, migration, development cooperation and fiscal policies. This will benefit from intersectoral dialogue and alignment among relevant ministries (health, labour, education, finance, etc.), professional associations, labour unions, civil society, employers, the private sector, local government authorities, and other constituencies. Planning should take into account workforce needs as a whole, rather than treating each profession separately. Such an integrated approach has to consider population and health system needs, adjusting investment volumes, education policies on the intake of trainees, and incentive mechanisms as needed. This is required to redress prevalent labour market failures – such as shortages, maldistribution and unemployment of health workers co-existing with unmet health needs. HRH development is a continuous process that requires regular appraisal of results and feedback loops to inform and adjust priorities.

22. **Promote decent working conditions in all settings.**[2] Ministries of health, civil service commissions and employers should adopt gender-sensitive employment conditions, remuneration and non-financial incentives. They should cooperate to ensure occupational health and safety, fair terms for health workers, merit-based career development opportunities and a positive practice environment to enable their effective deployment, retention and adequate motivation to deliver quality care and build a positive relationship with patients. Gender-based discrimination, violence and harassment during training, recruitment/ employment and in the workplace should be eliminated. It is particularly important to ensure that public sector rules and practices are conducive to adequate incentive mechanisms, working conditions and career structures for health workers, with appropriate levels of flexibility and autonomy.

23. **Ensure the effective use of available resources.** Globally, 20–40% of all health spending is wasted, *(34)* with health workforce inefficiencies and weaknesses in governance and oversight responsible for a significant proportion of that. Accountability systems should be put in place to improve efficiency of health and HRH spending. In addition to measures such as improving pre-service training completion rates and removing ghost workers from the payroll, *(35)* it is critical to adopt appropriate, cost-effective and equitable population health approaches to provide community-based, person-centred, continuous and integrated care. This entails implementing health-care delivery models with an appropriate and sustainable skills mix in order to meet population health needs equitably. Health systems should thus align market forces and population expectations with primary health care needs, universal access to health care and people-centred integrated service delivery, supported by effective referral to secondary and specialized care, while avoiding over-medicalization and unnecessary interventions. There is a need to modify and correct the configuration and supply of specialists and generalists, advanced practitioners, the nursing and midwifery workforce, and other mid-level and community-based cadres. Enabling public policy stewardship and regulation are needed to formally recognize all these positions and allow them to practice to their full scope. Appropriate planning and education strategies and incentives, adequate investment in the

[2] The notion of decent work entails opportunities for work that is productive and delivers a fair income, security in the workplace and social protection for families, better prospects for personal development 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 (http://www.ilo.org/global/topics/decent-work/lang--en/index.htm).

health-care workforce, including general practice and family medicine, are required to provide community-based, person-centred, continuous, equitable and integrated care.

24. **Adopt transformative strategies in the scale-up of health worker education.** Public and private sector investments in health personnel education should be linked with population needs and health system demands. Education strategies should focus investment in trainers, for which there is good evidence of a high social rate of return. Priority should also focus on orienting curricula to balance the pressure to train for international markets, and on producing professionals capable of meeting local needs, *(36)* promoting technical, vocational education and social accountability approaches that improve the geographic distribution of health workers. A coordinated approach is needed to link HRH planning and education (including an adequate and gender-balanced pipeline of qualified trainees from rural and remote areas), and encourage inter-professional education and collaborative practice. Education standards and funding should be established and monitored in national policies: radical improvements in the quality of the workforce are possible if the higher education and health sector collaborate by implementing a transformative education agenda *(37)* grounded in competency-based learning. This approach should equip health workers with skills to work collaboratively in inter-professional teams, with knowledge to intervene effectively on social determinants of health and expertise in public health. This must include epidemic preparedness and response to advance the implementation of the International Health Regulations (2005). The social mission of health education institutions represents an opportunity to nurture in health workers the public service ethics, professional values and social accountability attitudes requisite to deliver respectful care that responds to local needs and population expectations. Particular account should be taken of the needs of vulnerable groups such as children, adolescents and people with disabilities; ethnic or linguistic minorities and indigenous populations; as well as the need to eliminate discrimination related to gender, ageing, mental health, sexual and reproductive health, and HIV and AIDS among others. Opportunities should be considered for North–South and South–South collaboration, as well as public–private partnerships on training and investment, maximizing opportunities for skills transfer and mutual benefit, and minimizing negative consequences of international mobility of health personnel. This includes advances in e-learning and putting in place mechanisms to track and manage education investments in individual health workers and their continuing professional development.

25. **Optimize health worker motivation, satisfaction, retention, equitable distribution and performance.** While urbanization trends and the potential of telemedicine may, in some contexts, reduce the acute challenge of geographical maldistribution, in the majority of settings access to health workers remains inequitable. The ‘decent employment’ agenda entails strategies to improve both performance and equitable distribution of health workers. Such an integrated package of gender-sensitive attraction and retention policies includes: job security, a manageable workload, supportive supervision and organizational management, continuing education and professional development opportunities, enhanced career development pathways (including rotation schemes where appropriate), family and lifestyle incentives, hardship allowances, housing and education allowances and grants, adequate facilities and working tools, and measures to improve occupational health and safety, including a working environment free from any type of violence, discrimination and harassment. The adoption of specific measures in a given country context has to be determined in relation to cost-effectiveness and sustainability considerations, and may be aided by employee satisfaction surveys to adapt working conditions to health worker feedback. Critical to ensuring equitable deployment of health workers are the selection of trainees from, and delivery of training in, rural and underserved areas, financial and non-financial incentives, and regulatory measures or service delivery reorganization. *(38)*

26. **Harness - where feasible and cost-effective - information and communication technology (ICT) opportunities.** New ICT tools can be of particular relevance in relation to e-learning, electronic health records, telemedicine, clinical decision-making tools, links among professionals and between professionals and patients, supply chain management, performance management and feedback loops, patient safety, *(39)* service quality control, and the promotion of patient autonomy. *(40)* New professional qualifications, skills and competency are needed to harness the potential of ICT solutions to health-care delivery. *(41)* Standards, accreditation procedures and evaluation activities should be established to certify and ensure the quality of training delivered through blended approaches that include e-learning; appropriate regulations should also be established for the provision of mobile health (m-health) services, and for handling workforce data that respects confidentiality requirements. *(42)*

27. **Build greater resilience and self-reliance in communities.** Engage them in shared decisions and choice through better patient-provider relations. Invest in health literacy, and empower patients and their families with knowledge and skills; this will encourage them to become key stakeholders and assets to a health system, and to collaborate actively in the production and quality assurance of care, rather than being passive recipients of services. Health workers should be equipped with the sociocultural skills to serve as an effective bridge between more empowered communities and more responsive health systems.

28. **Strengthen capacities of the domestic health workforce in emergency and disaster risk management for greater resilience and health-care response capacity.** Prepare health systems to develop and draw upon the capacities of the national health workforce in risk assessments, prevention, preparedness, response and recovery. Provide resources, training and equipment for the health workforce and include them in policy and implementation of operations for emergencies at local, national and international levels. Preparedness work should include efforts to build the capacity of national authorities at all levels in managing post-disaster and post-conflict recovery, in synergy with the longer-term health system strengthening and reform strategies.

29. **Enhance and promote the safety and protection of medical and health personnel.** Through UNGA Resolution 69/132, Member States, in cooperation as appropriate with relevant international organizations and non-State actors, have undertaken to develop effective preventive measures to enhance and promote the safety and protection of medical and health personnel, as well as respect for their respective professional codes of ethics, including but not restricted to:
    a. Clear and universally recognized definitions and norms for the identification and marking of medical and health personnel, their means of transport and installations;
    b. Specific and appropriate educational measures for medical and health personnel, State employees and the general population;
    c. Appropriate measures for the physical protection of medical and health personnel, their means of transport and installations;
    d. Other appropriate measures, such as national legal frameworks where warranted, to effectively address violence against medical and health personnel;
    e. Collection of data on obstruction, threats and physical attacks on health workers.

Policy options to be considered in some countries, depending on context

30. **Strengthen the capacity and quality of educational institutions and their faculty through accreditation of training schools and certification of diplomas awarded to health workers.** This should meet current and future education requirements to respond to population health needs and changing clinical practice. In some contexts, this may entail redesigning health workforce intake approaches through joint education and health planning mechanisms. In some countries, there is a particular need to collaborate with the

Ministry of Education and renew focus on primary and secondary education to enhance science teaching. This renewed focus should also ensure an adequate and gender-balanced pool of eligible high-school graduates, reflective of the population's underlying demographic characteristics and distribution, to enter health training programmes, in order to improve health workforce distribution and enhance a person-centred approach. The faculty of health training institutions represents a priority investment area, both in terms of adequate numbers and in relation to building and updating their competency to teach using updated curricula and training methodologies, and to lead research activities independently.

31. **Ensure that the foreseen expansion of the health resource envelope leads to cost-effective resource allocation.** Specifically, prioritize the deployment of inter-professional primary care teams of health workers with broad-based skills, avoiding the pitfalls and cost-escalation of overreliance on specialist and tertiary care. This requires adopting a diverse, sustainable skills mix, and harnessing the potential of community-based and mid-level health workers in inter-professional primary care teams. *(43,44)* In many settings, developing a national policy to integrate, where they exist, community-based health workers in the health system can enable these cadres to benefit from adequate system support and to operate more effectively within integrated primary care teams, *(45,46)* a trend already emerging in some countries. Support from national and international partners targeting an expansion of these cadres should align with national policies, regulations and systems. *(47)* In some contexts, primary health care teams need to identify strategies to collaborate effectively with traditional healers and practitioners.

32. **Optimize health workforce performance through a fair and formalized employment package, within an enabling and gender-sensitive working environment.** This includes providing health workers with clear roles and expectations, guidelines, adequate work processes, gender-balanced opportunities to correct competency gaps, supportive feedback, group problem-solving, and a suitable work environment and incentives. *(48)* In addition – and crucially – the package should comprise a fair wage appropriate to skills and contributions, with timely and regular payment as a basic principle, meritocratic reward systems and opportunities for career advancement.

33. **Governments to collaborate with professional councils and other regulatory authorities to adopt regulation** [3] that takes into account transparency, accountability, proportionality, consistency, and that is targeted to the population's needs. Advancing this agenda requires strengthening the capacity of regulatory and accreditation authorities. Regulatory bodies should play a central role in ensuring that public and private sector professionals are competent, sufficiently experienced and adhere to agreed standards relative to the scope of practice and competency enshrined in regulation and legislative norms; countries should be supported in establishing or strengthening them to provide continuous updates to accreditation and credentialing. Regulatory bodies should also be actively engaged in policy-setting processes to improve the development and enforcement of standards and regulations, and in introducing competency-based national licensing and relicensing assessments for graduates from both public and private institutions. To avoid potential conflicts of interest, governments, professional councils and associations should create appropriate mechanisms to separate their role as guarantor of the quality of practice for the benefit of public health objectives from that of representing the interests of their members, where there are no clear boundaries between these functions. *(3)*

[3] "*Right-touch regulation* means always asking what risks we are trying to address, being proportionate and targeted in regulating that risk or finding ways other than regulation to address it. It is the minimum regulatory force required to achieve the desired result." United Kingdom Professional Standards Authority.

Responsibilities of the WHO Secretariat

34. **Develop normative guidance, support operations research to identify evidence-based policy options, and facilitate technical cooperation** when requested by Member States and relevant stakeholders. These responsibilities may cover: health workforce education; preventive measures for the safety and protection of health workers; optimizing the scope of practice of different cadres; evidence-based deployment and retention strategies; gender mainstreaming; and availability, accessibility, acceptability, quality control and performance enhancement approaches, including the strengthening of public regulation.

Recommendations to other stakeholders and international partners

35. **Education institutions to adapt their institutional set-up and modalities of instruction to respond to transformative educational needs.** These should be aligned with country accreditation systems, standards and needs, and promote social accountability, inter-professional education and collaborative practice. Reflecting the growth in private education establishments, it is critical that quality standards are aligned across public and private training institutes. Both public and private education institutions need to overcome gender discrimination in admissions and teaching, and more generally to contribute to national education and student recruitment objectives.

36. **Professional councils to collaborate with governments to implement effective regulations for improved workforce competency, quality and efficiency.** Regulators should assume the following key roles: keep a live register of the health workforce; oversee accreditation of pre-service education programmes; implement mechanisms to assure continuing competence, including accreditation of post-licensure education providers; operate fair and transparent processes that support practitioner mobility and simultaneously protect the public; and facilitate a range of conduct and competence approaches that are proportionate to risk, and are efficient and effective to operate. *(49)* Governments, professional councils and associations should work together to develop appropriate task-sharing models and inter-professional collaboration, and ensure that all cadres with a clinical role, beyond dentists, midwives, nurses, pharmacists and physicians, also benefit in a systematic manner from accreditation and regulation processes. The sharing of experience among regulatory authorities across countries could facilitate the dissemination of best practices.

Objective 2

Align investment in human resources for health with the current and future needs of the population and health systems, taking account of labour market dynamics and education policies, to address shortages and improve distribution of health workers, so as to enable maximum improvements in health outcomes, social welfare, employment creation and economic growth

Milestones:

- 2.1 By 2030, all countries will have made progress towards halving their dependency on foreign-trained health professionals, implementing the WHO Global Code of Practice on the International Recruitment of Health Personnel.
- 2.2 By 2030, all bilateral and multilateral agencies will have increased synergies in official development assistance for education, employment, gender and health, in support of national health employment and economic growth priorities.
- 2.3 By 2030, partners in the Sustainable Development Goals will have made progress to reduce barriers in access to health services by working to create, fill and sustain at least 10 million additional full-time jobs in health- and social-care sectors to address the needs of underserved populations.
- 2.4 By 2030, partners in the UN Sustainable Development Goals will have made progress on Goal 3c to increase health financing and the recruitment, development, training and retention of health workforce.

37. **The demand for and size of the global health workforce are forecasted to grow substantially in the next decades as a consequence of population and economic growth, combined with demographic and epidemiologic transitions.** Health-care provision will also change in nature in order to cover a growing range of patient services such as community care. There are, however, significant mismatches in the needs of, demand for and supply of health workers nationally, subnationally and globally, leading to inequitable distribution and deployment of health workers. The objective to achieve universal access to health care at all levels requires an adequate and equitable distribution of health workers across and within countries. Efforts to scale up essential actions and programmes to achieve the health-related targets of the SDGs might be compromised by a massive needs-based shortage of health workers in some countries **(Annex 1)**. This shortage is, in turn, also leading to an overreliance and burden on mid-level and community-based health workers. In parallel, many countries struggle to match supply and demand of health workers under affordability and sustainability constraints, experiencing periodic swings between shortage and over-supply. These trends, sometimes exacerbated by ageing populations, often result in underproduction and/or maldistribution of health workers, and disproportionate recruitment of foreign-trained health personnel. *(50)* In order to overcome these challenges, socially responsible measures need to be developed and implemented towards strengthening in an integrated manner all aspects of health workforce planning, financing, education, regulation and management.

38. **Public sector intervention is needed to recast the insufficient provision of health workers, their inequitable deployment and/or poor motivation and performance.** Implementing an HRH agenda conducive to attaining health goals in the post-2015 period will require greater availability and more efficient use of resources. Domestic spending on HRH averages 33.6% of total government expenditure on health in countries with available data *(12)* in many countries, greater efforts to mobilize domestic resources are both necessary and possible, and should be supported by appropriate macroeconomic policies at national and global levels. Funding levels should reflect the value of effective HRH to the country's economy by factoring the potential for improved worker productivity in other sectors. *(51)* However, some countries will require overseas development assistance for a few more decades to ensure both adequate fiscal space and strengthened governance of health systems in order for the HRH investments required to meet population needs and guarantee universal access to care. In this context, a high-level policy dialogue is warranted to explore how to make international mechanisms for development assistance (across education, employment, gender and health) fit-for-purpose, and allow these mechanisms to provide sustained investment in both capital and recurrent costs for HRH.

39. **Evidence is starting to emerge on the broader socioeconomic impacts of health workforce investment.** Health-care employment has a significant growth-inducing effect on other sectors: *(52)* this, together with the expected growth in health labour markets, means that investing in health-care education and employment will increasingly represent a strategy for countries at all levels of socioeconomic development to create qualified jobs in the formal sector. *(53)* This should take place in the context of guaranteeing rights to all health workers, including a safe and decent work environment and freedom from all kind of discrimination, coercion and violence. This opportunity is likely to be harnessed in particular by women due to the trend of feminization of the health workforce. To exploit these opportunities fully, it will be critical to remove broader societal barriers that prevent women from joining the health workforce or confine them to its lower tiers. Such barriers include higher illiteracy levels, violence and sexual harassment in the workplace, traditional customs that require women to have permission from a male family member to work or be trained in a different location than their habitual residence, traditional social role expectations that translate in a greater burden of family responsibilities, and limited provisions for life course events such as maternity and paternity leave.

Policy options for WHO Member States

All countries

40. **Build planning capacity to develop or improve HRH policy and strategies that quantify health workforce needs, demands and supply** under different future scenarios. This should be carried out in order to manage health workforce labour markets and devise effective and efficient policies that respond to today's population needs while anticipating tomorrow's expectations. HRH needs should be quantified in terms of predicted workloads rather than by population or facility-based norms. HRH plans should be costed, financed, implemented and continually refined to address:
    a. the estimated number, category and qualification of health workers required to meet public health goals and population health needs;
    b. the capacity to produce sufficient and adequately distributed qualified workers (education and effective regulation policies); and
    c. the government and labour market capacity to recruit, deploy and retain health workers (economic and fiscal capacity, and workforce deployment, remuneration and retention through financial and non-financial strategies).

    Estimates should be based on full-time equivalents – rather than simple head counts – to reflect flexibility (job sharing, part-time engagements) in work arrangements; this is particularly important to plan for equality of opportunities for male and female health workers.

41. **Catalyse multisectoral action on health workforce** issues to generate the required support from ministries of finance, education and labour (or equivalent), collaborating with and facilitated by the health sector. This will also ensure alignment of different sectors, constituencies and stakeholders with the national health workforce strategies and plans, harnessing benefits for job creation, economic growth, social welfare and gender empowerment, in addition to health system strengthening.

42. **Invest in decent conditions of employment through long-term (10–15 years) public policy stewardship and strategies.** Such strategies should respect the rights of male and female workers, *(54)* promote better working environments, stimulate personal growth and fulfilment and include at the very least provision of a living wage (including for community-based health workers) and incentives for equitable deployment and retention, in line with the SDG Goal on Decent Work and Economic Growth. This should also develop and promote the elimination of stigma and discrimination by and towards health workers.

Policy options to be considered in some countries, depending on context

43. **Invest in the education and training, recruitment, deployment and retention of health workers to meet national and subnational needs through domestically trained health workers.** Educational investment strategies should match current and anticipated needs of the health system and health labour market, and take into account the implications of challenges related to an ageing workforce on the planning and education strategies. Strategies for destination countries to decrease reliance on foreign-trained health workers and mitigate the negative effects of health personnel migration on the health systems of developing countries may include:
    - increasing investment in domestic health professional education;
    - aligning government educational spending with employment opportunities;
    - adopting innovative financing mechanisms, allowing local and private entities to provide complementary funding to government subsidies to health worker training;
    - not hiring directly from countries with the lowest health care worker–to-population ratios;

- encouraging more cost-effective ways to educate health professionals to respond to population needs;
- planning a more diversified skills mix for health teams; and
- better harnessing the complementarity of different cadres, including mid-level providers. *(55)*

44. **Consider opportunities to strengthen the skills and employment agenda within countries.** This may include re-skilling workers from declining sectors and industries of the economy (e.g. manufacturing, agriculture) to be redeployed in the health and social care sectors, particularly in jobs and roles where the duration of training is short, and entry barriers are relatively low, without compromising the quality of education and care. Actions should also assist newly qualified students to enter the employment market, particularly during times of recession. *(14)*

45. **Increase investments to boost market-based demand and supply of the health workforce, and align them more closely with population health needs.** This includes appropriate strategies and incentives to deploy health workers in underserved areas. In many countries, this will entail increasing the capacity to supply health workers to cope with rising domestic demand fuelled by economic growth, while containing cost escalation. *(14)* The potential mutual benefits of international migration of health personnel for health systems of source and destination countries is acknowledged. However, education and retention strategies should aim to retain health workers in their country of origin and to attain an adequate geographic distribution. This should be done respecting the right to mobility of individuals, and in alignment with the principles of the WHO Global Code of Practice on the International Recruitment of Health Personnel.

46. **Mobilize resources for HRH from both traditional and innovative sources.** These comprise the general budget, progressive taxation, social health insurance, dedicated earmarked funds and innovative mechanisms of financing. *(56)* Such allocation of adequate resources to the health sector should be consistent with and aligned to the broader national health and social protection agenda. *(57)*

47. During complex humanitarian emergencies and in the post-conflict recovery phase, there is a need to **develop capacity to absorb and utilize effectively and transparently both domestic and international resources.** HRH support from development partners in these settings should be predictable and long-term.

48. **Countries with small or sparse populations, such as small island developing states, require creative strategies to overcome the challenges posed by their population or geographic structure.** These strategies should promote the strengthening of institutional capacities in all involved sectors and may include: long-term partnerships with other countries to pool health workforce education, accreditation and regulation needs (given the high capital investment and recurrent costs to establish and run domestic health training institutions and/or regulatory authorities); tailored staffing profiles for health-care units responsible for service delivery at the peripheral level; harnessing the potential of telemedicine to complement the services offer by primary health care teams; and enhancing the functionality of referral systems.

Responsibilities of the WHO Secretariat

49. **Provide normative guidance and facilitate technical cooperation when requested by Member States and relevant stakeholders.** WHO support under this objective covers health workforce planning and projections, education policies, health system needs (taking into account evolving population needs linked to epidemiological transition), health labour market analysis, costing of national HRH strategies, and tracking of national and international financing for HRH. Acknowledging the continued need for external assistance in some countries, WHO will also provide estimates of HRH requirements (and the socioeconomic impact of their education and employment) to global and regional financial institutions, development partners and global health initiatives. This should inform the adoption of macroeconomic and funding policies conducive to greater and more strategically targeted investments in HRH. To facilitate a progressive transition towards national ownership and financing of HRH policies and strategies, WHO will also provide technical assistance to Member States to identify approaches to mobilize sufficient domestic resources and to allocate them efficiently.

Recommendations to other stakeholders and international partners

50. **The International Monetary Fund, World Bank, regional development banks and others to recognize investment in the health workforce as a productive sector.** Investment in the health sector has the potential to create millions of new jobs and spur economic growth and broader socioeconomic development. These institutions could harness this opportunity to adapt their macroeconomic policies to allow greater investment in social services.

51. **Global health initiatives to establish governance mechanisms to ensure that all grants and loans include an assessment of health workforce implications.** This involves a deliberate strategy and accountability mechanisms on how specific programming contributes to HRH capacity-building efforts at institutional, organizational and individual levels, beyond disease-specific in-service training and incentives. Emphasis should be given to increasing sustainable investment and support for HRH. The recruitment of general service staff by disease-specific programmes weakens health systems, and should be avoided through integration of disease-specific programmes into primary health care strategies.

52. **Development partners to align their investments for HRH with coordinated, long-term national needs as expressed in national sector plans.** Investments should adhere to the principles of aid effectiveness, the International Health Partnership and related initiatives, and the Third International Conference on Financing for Development. *(58)* This support should align education, employment, gender and health with national human resource development and health system strengthening strategies. In addition, global health initiatives should realign their support to strengthen HRH in a sustainable way, including the possibility for investment in capital and recurrent expenditure (including salaries) for general service staff, and overcoming the current preferential focus on short-term, disease-specific, in-service training. *(59,60)* In this respect, development partners might consider establishing a multilateral funding facility to support international investment in health systems *(61)* as a means to support the realization of human rights and the SDG Goals. While continuing to advocate for an increase in allocation of domestic resources to HRH, development partners should also support countries to strengthen – where needed – their capacity for tax collection.

53. **Relevant institutions should be encouraged to establish mechanisms to track the proportion of development assistance for health allocated to HRH.** The Organisation for Economic Co-operation and Development and the Humanitarian Financial Tracking System, for example, should establish mechanisms to determine the proportion of development assistance for health that is allocated to HRH, as current processes and data requirements for tracking international aid flows to health do not allow a reliable and consistent capture of health workforce investments. *(62)*

54. **Regional or subregional bodies can bolster political and financial commitment to implementing this agenda.** Entities such as the African Union, European Union, Arab League, Union of South American Nations, and Association of Southeast Asian Nations play an important role in facilitating policy dialogue and peer review among countries with a comparable socioeconomic structure or cultural background. They also help to generate and sustain the political will that underpins supportive investment and policy decisions.

Objective 3

Build the capacity of institutions at subnational, national, regional and global levels for effective public policy stewardship, leadership and governance of actions on human resources for health

Milestones:

- 3.1 By 2020, all countries will have inclusive institutional mechanisms in place to coordinate an intersectoral health workforce agenda.
- 3.2 By 2020, all countries will have an HRH unit with responsibility to develop and monitor policies and plans.
- 3.3 By 2020, all countries will have regulatory mechanisms to promote patient safety and adequate oversight of the private sector.

55. **Effective governance and strengthening of institutional capacities are required for the implementation of a comprehensive health workforce agenda in countries.** Despite considerable advances in the last decades, progress in the HRH area has not been fast enough, nor deep enough. Health workforce development is partly a technical process, requiring expertise in planning, education and management, and the capacity to root this in long-term vision for the health system. But it is also a political process, depending on the will and power of different sectors and constituencies in society, and different levels of government to coordinate efforts. *(63)* Key challenges are, simultaneously, to ensure effective intersectoral governance and collaboration among stakeholders; strengthen technical capacity; and mobilize financial resources for the contemporary HRH agenda. *(64)* This requires the political will – and accountability – of heads of government.

56. **Technical and management capacities are needed to translate political will and decisions into effective implementation.** Public health workforce planning and management – from the national to local level – must be professionalized, ensuring equal opportunities across gender, race and linguistic/ethnic groups. Just as capable health professionals are needed, so are capable professional health managers, HRH scientists, planners and policy-makers. This capability, backed up by strengthened evidence and information, is essential to provide political leaders with solid evidence and technical advice, and to guarantee effective implementation and oversight of policies, norms and guidelines. *(65)* Crucially, this capacity needs to be built alongside accountability mechanisms and be available at the appropriate administrative level. In federal countries, or those with a decentralized health workforce administration, competency, human capital and institutional mechanisms need to be built at the subnational and local levels, including the training of personnel in management positions.

57. **Appropriate global health governance mechanisms can support the implementation of national HRH agendas.** Political commitment and action at the country level are the foundations of any effective response to health workforce challenges. However, some HRH issues are transnational and require a global approach underpinned by a commitment to international solidarity. These include the creation and sharing of global public goods and evidence; the provision or mobilization of technical and financial assistance when requested; the ethical management of health labour mobility and mitigating its negative effects; and the assessment of HRH implications of global health goals and resolutions.

Policy options for WHO Member States

All countries

58. **Ensure that all countries have an HRH unit or department reporting to a senior level within the Ministry of Health (Director General or Permanent Secretary).** Such a unit should have the capacity, responsibility, financing and accountability for a standard set of core functions of HRH policy, planning and governance, data management and reporting. These functions are, at a minimum, to: advocate HRH development; mobilize and use resources effectively and accountably; champion better working conditions, reward systems and career structures for health workers; set policies on regulation, service provision and education of health workers; lead short- and long-term health workforce planning and development; identify suitable strategies to engage in a collaborative manner with the private sector; analyse workforce data and labour economics; effectively track international mobility of health workers, managing migratory flows to maximize benefits for source

countries; monitor and evaluate HRH interventions and trends; and build alliances with data producers and users.

59. **Establish the national case for investment in HRH as a vital component of the SDGs, UHC and universal access to health care.** The national case should be used as a basis for plans and budgets to mobilize adequate resources, supported by necessary regulations and mechanisms for policy coordination and oversight. The effective implementation of a national workforce agenda requires support from ministries of finance, education and labour, civil service commissions, local government and the private sector, including through sound health-care economics and social welfare arguments. Countries should establish national mechanisms for HRH governance and policy dialogue. *(66)* These mechanisms should collaborate with civil society, citizens, health workers, health professionals and their unions or associations, regulatory bodies, employer associations, and insurance funds so as to broaden ownership and institutional sustainability of HRH policies and strategies.

60. **Strengthen technical and management capacity in ministries of health and other relevant sectors and institutions to develop and implement effective HRH policies, norms and guidelines.** This will encourage innovative processes, technologies, service organization and training delivery modalities, and a more effective use of resources.

61. **Ensure that the public health workforce aligns development efforts with the social services workforce** and wider social determinants of health. This includes access to housing, food, education, employment and local environmental conditions. The clinical health workforce should be educated on the social determinants of health and promote this agenda in their practice.

Policy options to be considered in some countries, depending on context

62. **Align incentives for health workforce education and health-care provision with public health goals and population needs.** This includes balancing the growing needs of the ageing population and new and ever more expensive health technologies with a realistic forecast of the available resource envelope; and adopting new interventions when cost-effective in the local context.

63. **Strengthen the institutional environment for health workforce education, deployment, retention and performance management.** In some countries, this entails building the human and institutional public capacity to design, develop and deliver pre-service and in-service education of health workers; develop health-care professional associations to support effective relationships with health workers; design effective performance management and incentive systems; and to develop collaboration with regulators of private sector educational institutions and health providers. In decentralized contexts, where these functions may be carried out at the subnational or peripheral level, the capacities will need to be built or strengthened at the relevant administrative level.

64. **Flexible approaches to HRH development must be tailored to the specific reality of each country.** HRH development is unequivocally an aspect of health system development and governance, which is the responsibility of the state. The exercise of this responsibility involves multi-stakeholder partnerships with a broad range of actors, including local authorities, international institutions, businesses, civil society organizations, the private sector, foundations, philanthropists and social impact investors, scientists, academics and individuals. In order to be efficient, health workforce interventions must take due account of the specific circumstances of each country.

Responsibilities of the WHO Secretariat

65. **Provide technical support and capacity-building to develop core public competency in HRH policy, planning, projections, resource mobilization and management, as requested by Member States and relevant stakeholders.** Capacity-building efforts may be facilitated by the development of an internationally recognized, postgraduate professional programme on HRH policy and planning, with international mentoring and a professional network to support the implementation of workforce science.

66. **Strengthen global capacity to implement the transnational HRH agenda.** This can be achieved by fostering effective coordination, alignment and accountability through a network of international HRH stakeholders and actors. Building on the experience and achievements of the Global Health Workforce Alliance over its 10 years of existence (2006–2016), WHO will support at all levels of the Organization the establishment of a global network for HRH collaboration, consistent with the principles and policies that govern WHO's engagement with non-state actors. This mechanism aims to: maintain high-level political commitment; facilitate the alignment of global health initiatives to the HRH investment priorities outlined in this Strategy; promote inter-sectoral and multilateral policy dialogue; encourage collaboration with the private sector for cost-effective, socially responsible and people-centred interventions; and foster global coordination and mutual accountability, effectively linked with UN system processes for monitoring the Sustainable Development Goals.

67. **Provide technical support to develop health system capacities and workforce competency to manage the risks of emergencies and disasters, as requested by Member States and relevant stakeholders.** This support will facilitate: assessment of HRH availability before, during and after emergencies; integration of emergency risk management into relevant policies, technical programmes and associated workforce development, education and training; and support to coordination mechanisms for planning and deployment of personnel for emergencies.

Recommendations to other stakeholders and international partners

68. **Parliaments and civil society to contribute to sustained momentum of the HRH agenda.** This can be achieved through oversight of government activities and accountability mechanisms to monitor performance, and by advocating the improvement of both public and private sector educational institutions and employers. Social accountability mechanisms should be encouraged.

69. **The international community, development partners, and global health initiatives to examine systematically the health workforce implications of any health goals that are considered and adopted.** As part of this, the WHO Secretariat should also cooperate with the mechanisms of its governing bodies to create the conditions whereby all future resolutions presented to the World Health Assembly and regional committees include an assessment of health workforce implications resulting from technical or policy recommendations. *(67)*

70. **The international community, development partners, and global health initiatives to work closely with states** to strengthen national and subnational public institutions and governance in a post-emergency or post-conflict recovery phase, when donor funding and opportunity for reform is greatest. *(68)* A coordinated mechanism will enable a common understanding of context and interventions, bring all stakeholders together and, with the state in a coordinating role, target interventions with an explicit capacity-building objective. In these settings, interventions to strengthen the domestic health workforce may be more effective if they target a decentralized level or are effected through non-state actors, where results and lessons for scale-up can be seen more quickly.

Objective 4

Strengthen data on human resources for health for monitoring and accountability of national and regional strategies, and the Global Strategy

Milestones:

- 4.1 By 2020, all countries will have made progress to establish registries to track health workforce stock, education, distribution, flows, demand, capacity and remuneration.
- 4.2 By 2020, all countries will have made progress on sharing HRH data through national health workforce accounts and submitting core indicators to the WHO Secretariat annually.
- 4.3 By 2020, all bilateral and multilateral agencies will have strengthened health workforce assessment and information exchange.

71. **Better HRH data and evidence are required as a critical enabler to enhance advocacy, planning, policy-making, governance and accountability at national, regional and global levels.** The evidence-to-policy feedback loop is an essential feature of resilient health systems, defined as those with the capacity to learn from experience and adapt according to changing needs. Projections of future workforce requirements should be informed by reliable and updated health workforce information, taking into account population needs, labour market analyses, and scanning of scenarios. Projections can support the development, implementation, monitoring, impact assessment and continuous updating of workforce plans and strategies. The evidence-to-policy field has potential for major improvements in the coming decade. Specific opportunities stem from technological innovation, connectedness, the Internet and the beginning of a "big data" era, characterized by dramatic growth in the types and quantity of data collected by systems, patients and health workers. These can represent a tool to improve the quality of data and exchange of information to strengthen national health systems.

72. **The post-2015 development objectives require aligning the public policy agenda on governance, accountability, availability, accessibility, acceptability, quality and equity with strategic intelligence on the national, regional and global health labour market.** Demand for, and proactive use of health workforce data in international public policy, need to be stimulated, and global discourse encouraged on assessing the health workforce implications of any public health objective. This, in turn, will trigger demand for, and analysis of workforce data, particularly on global health initiatives and programming linked to the health targets of the SDGs. Improvements in HRH information architecture and interoperability can generate core indicators in support of these processes. Data collected should include a comprehensive overview of workforce characteristics (public and private practice); remuneration patterns (multiple sources, not only public sector payroll); worker competency (e.g. the role of health workers disaggregated across cadres and between different levels of care); performance (systematic data collection on productivity and quality of care); absence, absenteeism and their root causes; labour dynamics of mobility (rural vs urban, public vs private, international mobility); attacks against health workers; and the performance of the HRH management system itself (the average time it takes to fill a vacancy, the attrition rate during education and employment, the outcomes of accreditation programmes, etc.). *(67)*

73. **The Strategy includes an accountability framework to assess progress on its recommendations.** At the country level, policy options identified as most relevant to individual Member States should be embedded in national health and development strategies and plans. Specific HRH targets and indicators should be included in these national policies, strategies and development frameworks, and multisectoral and multiconstituency mechanisms strengthened to reflect the key HRH interventions and accountability points from inputs to impact. Existing processes and mechanisms for health sector review at country level should include a regular assessment of progress in the health workforce agenda in the national context. Global accountability will include a progressive agenda to implement national health workforce accounts, *(69)* with annual reporting by countries on core HRH indicators against the milestones identified under the four objectives of this Strategy **(Annex 3)**. Reporting requirements for Member States will be streamlined by progressive improvement in HRH data, effectively linking monitoring of the Strategy with that of the WHO Global Code of Practice on the International Recruitment of Health Personnel, other HRH-focused Health Assembly resolutions, and strategic documents and resolutions adopted at the regional level. Global monitoring will also be linked and synchronized with the accountability framework of the SDGs.

Policy options for WHO Member States

All countries

74. **Invest in the analytical capacity of countries for HRH and health system data.** This should be based on policies and guidelines for standardization and interoperability of HRH data, such as those given in the WHO Minimum Data Set *(70)* and national health workforce accounts. National or regional workforce observatories and similar or related mechanisms can be a useful implementation mechanism for this agenda and serve as a platform to share and advocate best practices. Opportunities for greater efficiency can be exploited by harnessing technological advances, connectedness and the Internet, and the rise in new approaches for health workforce futures in the design of systems for HRH data collection, gathering and use. *(72)*

75. **Establish national health workforce registries of the competent and practising, rather than those that have simply completed a training programme.** The registries should progressively extend the minimum data set to a comprehensive set of key performance indicators on health worker stock, distribution, flow, demand, supply capacity and remuneration, in both the public and private sector. Data should be disaggregated by age, sex, ethnic or linguistic group, and place of employment, as a prerequisite to understand health labour markets and the design of effective policy solutions. In some contexts, the establishment of a register of practising workforce linked to the payroll can also facilitate excising ghost workers. Systems should also be put in place to enable the systematic collection of data on attacks on health workers.

76. **Put in place incentives and policies to collect, report, analyse and use reliable and impartial workforce data to inform transparency and accountability, and enable public access to different levels of decision-making.** In particular, countries should facilitate national and subnational collection and reporting of health workforce data through standardized, annual reporting to the WHO Global Health Observatory. Countries should invest resources to ensure they have the capacity to analyse and use the data for local decision-making. All workforce data (respecting personal confidentiality and relevant data protection laws) should be treated as a global public good to be shared in the public domain for the benefit of different branches of government, health-care professional associations and relevant stakeholders.

77. **Embed in national health or HRH strategies the relevant policy options included in this Strategy, and the corresponding monitoring and accountability requirements.** Accountability *for* HRH at the national level should be accompanied by mechanisms for accountability *of* HRH at the grassroots level, harnessing the voice and capacity of communities and service users to provide feedback to improve the quality of care and patient safety. The development of social accountability mechanisms should be nurtured through an enabling environment. Similarly, at the global level countries should request the UN Secretary-General's Office to ensure that the SDG accountability framework includes health workforce targets and indicators.

78. **Strengthen HRH information systems and build the human capital required to operate them** in alignment with broader health management information systems, including the ability to utilize such systems during emergencies and disasters. The capacity to use data effectively for dialogue with policy-makers and civil society should also be strengthened.

Policy options to be considered in some countries, depending on context

79. **Strengthen health systems by applying "big data" approaches to gain a better understanding of the health workforce,** including its size, characteristics and performance to generate insights into gaps and possibilities for health workforce strengthening. This should be done in compliance with national norms and legislative frameworks regulating the collection and use of personal data that will guarantee absolute confidentiality and anonymity of individual health workers.

80. **Exploit "leapfrogging" opportunities through the adoption of ICT solutions** for HRH data collation and storage, avoiding the capital-heavy infrastructure needed in the past.

Responsibilities of the WHO Secretariat

81. **Support the development and strengthening, review the utility of and update and maintain tools, guidelines and databases** relating to data and evidence on HRH for routine and emergency settings.

82. **Facilitate the progressive implementation of national health workforce accounts** to support countries to strengthen and establish a standard for the quality and completeness of their health workforce data. Improved HRH evidence will contribute to a global digital reporting system for countries to report on a yearly basis on a minimum set of core HRH indicators. This will include information on health workforce production, recruitment, availability, composition, distribution, costing and migratory flows, *(67)* disaggregated by sex, age and place of employment.

83. **Streamline and integrate all requirements for reporting on HRH by WHO Member States.** In their annual report on HRH, Member States would thus integrate progress on implementing the WHO Global Code of Practice on the International Recruitment of Health Personnel; other HRH-focused Health Assembly resolutions; and the Global strategy on human resources for health.

84. **Adapt, integrate and link the monitoring of targets in the Global Strategy** to the emerging accountability framework of the SDGs and other resolutions adopted by the United Nations General Assembly. For instance, WHO should develop mechanisms to enable collection of data to prepare and submit a report on the protection of health workers, which compiles and analyses the experiences of Member States and presents recommendations for action to be taken by relevant stakeholders, including appropriate preventive measures, as called for by UNGA Resolution 69/132 on Global health and foreign policy.

Recommendations to other stakeholders and international partners

85. **The International Labour Organization (ILO) to revise the International Standard Classification of Occupations** for greater clarity on delineation of health workers and health professions. *(72)* This will entail a move towards definitions that reflect worker competency together with the tasks they perform. Of particular urgency is the need to streamline and rationalize the categorization and nomenclature of community health workers and other types of community-based practitioners.

86. **Research and academic institutions to address priority evidence gaps.** Examples of areas where further research is required are approaches to regulate effectively dual practice, strategies to optimize quality and performance, and the optimal institutional and regulatory context for task sharing and skills delegation. *(73)* Further, there is a need to leverage strengthened HRH data and measurement for impact evaluations and research on cost-effectiveness and return on investment of health workforce interventions. *(74)* The early involvement of decision-makers and stakeholders in the setting of research priorities can be instrumental in scaling up and utilizing research results. *(75)*

87. **Professional associations and civil society to collaborate with the research community to facilitate the uptake and utilization of evidence in the policy-making process.** The advocacy, communications and accountability functions of these constituencies can play a major role in bridging the evidence-to-policy gap.

88. **Development partners to support national HRH data collection, analysis and use for improved planning and accountability,** in alignment with the national health workforce accounts framework. Further, bilateral and multilateral agencies should routinely make available in the public domain the health workforce information and evidence collected as part of the initiatives they support.

Annex 1

Health workforce requirements for implementation of the Global strategy on human resources for health

WHO has been facilitating since April 2015 a coordinated inter-agency, multi-constituency effort to estimate health workforce requirements and projections to 2030. **Annex 1** provides selected elements of this ongoing analysis. The final paper will be published on the WHO website (http://www.who.int/hrh/en/) once the analysis is completed.

Data on current stock and density of health workers for 193 countries were extracted from the WHO Global Health Observatory, which includes data provided by WHO Member States. Future simulations of supply, need and demand on the other hand represent modelled estimates. The modelling has significant margins of uncertainty related to both the assumptions made and the variability in quality and completeness of the underlying data.

Simulating future supply of health workers

The supply of physicians and nurses/midwives was projected to 2030 based on historical data on the increase in physician and nurse/midwife densities in each country. To forecast supply, a linear growth rate model was adopted, which assumes that the historical growth rate of physicians and nurses/midwives per capita for each country will continue into the future at the same rate each year.

Data points that represented obvious outliers due to misreporting were removed and replaced with missing data. Missing data points for physicians and nurses/midwives per 1000 population between any two real data points were linearly interpolated. The following equations were then estimated for each country from time t = {1990, … 2013}:

(Eq 1)

$$\text{Physicians per 1000 population}_t = \alpha_0 + \alpha_1 * \text{year}_t + \varepsilon_t$$

(Eq 2)

$$\text{Nurses/midwives per 1000 population}_t = \beta_0 + \beta_1 * \text{year}_t + \varepsilon_t$$

where ε_t is the random disturbance term and α_0, β_0, α_1 and β_1 are unknown parameters, with the last two parameters representing the linear growth rates to be estimated from the model.

The following rules were applied to predict future (2014–2030) values of worker densities:

- Where at least two data points were available, the estimated linear trend was extended into the future until 2030 using the estimated coefficients for α and β.
- If the estimated linear growth was found to be too large or too small, the country's growth rate was replaced with aggregate medians, and then the median growth rate was applied to the last available observation for that country (i.e. most recent year).
- For physicians: if a given country's linear growth rate was larger or smaller than 1 standard deviation from the mean growth rate for all countries, the median growth rate of a comparable group of countries was substituted.
- For nurses/midwives: for nurses and midwives, there was large over-dispersion of the linear growth rate distribution. Consequently, if a country's linear growth rate was larger than 80% or smaller than 20% of the growth rate distribution, then the median growth rate of a comparable group of countries was substituted.
- For both physicians and nurse/midwives: if the predicted density in 2030 resulted in a negative number, the country's growth rate was also replaced with the corresponding median aggregate value in a comparable group of countries.
- If there was just one point for a country (and thus linear growth rate could not be estimated), the same median substitution for the growth rate as described above was applied.
- When no observations were available before 2013 (i.e. no empirical data for both physicians and nurses/midwives), neither the physician nor nurse/midwife supply was projected. Instead, the mean 2030 predicted supply density across a comparable group of countries was substituted.

The estimates thus derived **(Table A1.1)** indicate that in 2013 (latest available data) the global health workforce was over 43 million. This includes 9.8 million physicians, 20.7 million nurses/midwives, and approximately 13 million other health workers. The global nurse/midwife to physician ratio was 2.1.

The supply projections, based on current trends and under the assumptions made in the model, point to a significant growth (55%) leading to an aggregate number by 2030 of 67.3 million health workers. This comprises approximately 13.8 million physicians, 32.3 million nurses/midwives and 21.2 million other health workers.

Table A1.1: Stock of health workers (in millions), 2013[a] and 2030[b]

WHO Region	Physicians		Nurses/midwives		All other cadres[c]		Total health workers		
	2013	2030	2013	2030	2013	2030	2013	2030	%
	N	N	N	N	N	N	N	N	Change
Africa	0.2	0.5	1.0	1.5	0.6	1.0	1.9	3.1	63%
Americas	2.0	2.4	4.7	8.2	2.6	3.4	9.4	14.0	50%
Eastern Mediterranean	0.8	1.3	1.3	1.8	1.0	2.2	3.1	5.3	72%
Europe	2.9	3.5	6.2	8.5	3.6	4.8	12.7	16.8	32%
South-East Asia	1.1	1.9	2.9	5.2	2.2	3.7	6.2	10.9	75%
Western Pacific	2.7	4.2	4.6	7.0	3.0	6.1	10.3	17.3	68%
Grand total	**9.8**	**13.8**	**20.7**	**32.3**	**13.0**	**21.2**	**43.5**	**67.3**	**55%**

[a] WHO Global Health Observatory

[b] Forecast

[c] Refers to the seven other broad categories of the health workforce as defined by the WHO Global Health Workforce Statistics Database, i.e. dentistry, pharmacy, laboratory, environment and public health, community and traditional health, health management and support, and all other health workforce categories. A multiplier for "all other cadres" was developed based on the values of countries with available data.

NB: Since absolute values are rounded to the nearest 100 000. totals may not precisely add up.

An updated, needs-based "SDG index" of minimum density of doctors, nurses and midwives

The 2006 World Health Report broke new ground by developing an evidence-based model for health worker need, based on achieving 80% coverage of assisted deliveries. The threshold of 2.3 skilled health workers per 1000 population has enabled advocacy and inter-country comparability. However, the model is clearly limited to one single health service (delivery by a skilled birth attendant). In considering a new health workforce threshold, the focus must shift to reflect the broader range of services that are targeted by UHC and the SDGs.

Tracers of indicators for UHC were selected to reflect noncommunicable diseases, maternal, newborn and child health, and infectious disease priorities. Table A1.2 lists the 12 indicators and their primary classification (5 indicators for infectious diseases, 3 for maternal, newborn and child health, and 4 for noncommunicable diseases). Coverage data for all countries available for the 12 indicators were combined in an aggregate coverage indicator (SDG index), which weighted the importance of specific indicators based on the contribution of the diseases they track to the global burden of diseases.

Table A1.2: SDG tracer indicators

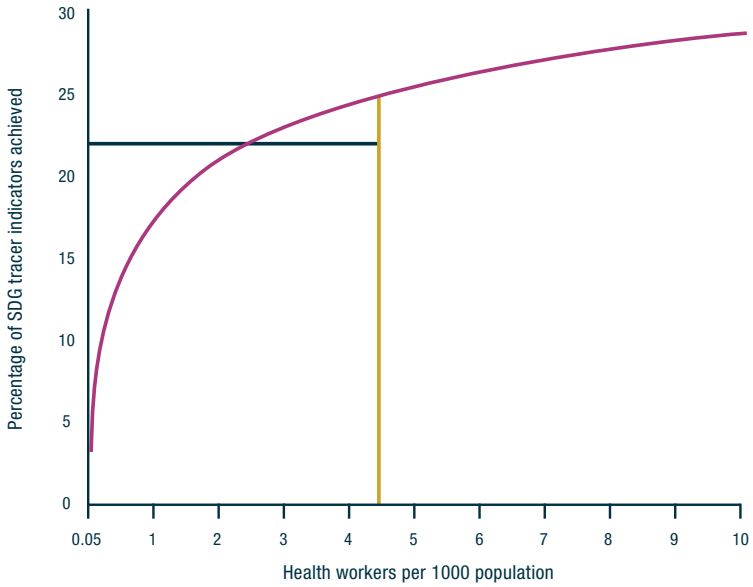
Indicator	Classification
Antenatal care	MNCH
Antiretroviral therapy	ID
Cataract	NCD
Diabetes	NCD
DTP3 immunization	ID
Family planning	MNCH
Hypertension	NCD
Potable water	ID
Sanitation	ID
Skilled birth attendance	MNCH
Tobacco smoking	NCD
Tuberculosis	ID

DTP3, third dose of diphtheria-tetanus-pertussis vaccine; ID, infectious diseases; MNCH, maternal, newborn and child health; NCD, noncommunicable diseases.

The coverage of this composite SDG index was analysed across countries, and a regression analysis performed to identify the aggregate density of doctors, nurses and midwives corresponding to the 50th percentile (median) rank of attainment. It was not possible to factor into the analysis other health worker cadres (such as community-based and mid-level health workers, and other allied health professionals) due to extensive limitations in data availability for these other cadres. On the basis of the analysis conducted according to the SDG index methodology described above, an indicative threshold of an aggregate density of 4.45 physicians, nurses and midwives per 1000 population was identified, as it corresponds to the median score of SDG tracer indicator attainment (25%). This value has been used for the needs-based estimates in this analysis.

Other thresholds have been developed in the past, and alternative methods are possible to estimate a threshold of minimum requirements for health workforce availability. It should be emphasized that this figure does not represent a planning target for countries, as it does not reflect the heterogeneity of countries in terms of baseline conditions, health system needs, optimal workforce composition and skills mix. Further, it is acknowledged that this threshold reflects only physicians, nurses and midwives, an inherent limitation caused by the paucity of data on other cadres. Planning targets for countries should rather be set based on national level policy dialogue, taking into account the context-specific needs of the health system, service delivery profile, and labour market conditions. They should reflect a more diverse skills mix, going beyond the cadres of doctors, nurses and midwives to harness the potential contribution of all health workers for a more responsive and cost-effective composition of health-care teams.

Figure A1.1: SDG index composite method: percentage of 12 SDG tracer indicators achieved as a function of aggregate density of doctors, nurses and midwives per 1000 population



Estimating health workforce requirements and needs-based shortages to 2030 in countries with a lower HRH density than the SDG index threshold

The index of 4.45 physicians, nurses and midwives per 1000 population was used to estimate the health workforce needs and needs-based shortages by 2030 (i.e. the additional number of health workers that would be needed to attain this threshold of health worker density, over and above the projected supply in 2030).

Table A1.3 examines the needs-based shortage of health-care workers in 2013 and 2030 by cadre and by WHO region. Needs-based shortages were calculated by subtracting the current/projected supply of health-care workers from the current/projected needs (as defined by the SDG index threshold of 4.45 physicians, nurses and midwives) in countries facing a shortage.

Table A1.3: Estimates of health worker needs-based shortages (in millions)[a] in countries below the SDG index threshold by region, 2013 and 2030

	2013				2030				
Region	Physicians	Nurses/ midwives	Other cadres	Total	Physicians	Nurses/ midwives	Other cadres	Total	% Change
Africa	0.9	1.8	1.5	4.2	1.1	2.8	2.2	6.1	45%
Americas	0.0	0.5	0.2	0.8	0.1	0.5	0.1	0.6	-17%
Eastern Mediterranean	0.2	0.9	0.6	1.7	0.2	1.2	0.3	1.7	-1%
Europe	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.1	-33%
South-East Asia	1.3	3.2	2.5	6.9	1.0	1.9	1.9	4.7	-32%
Western Pacific	0.1	2.6	1.1	3.7	0.0	1.2	0.1	1.4	-64%
Grand total	**2.6**	**9.0**	**5.9**	**17.4**	**2.3**	**7.6**	**4.6**	**14.5**	**-17%**

[a] Since all values are rounded to the nearest 100 000, totals may not precisely add up.

Globally, the needs-based shortage of health-care workers in 2013 is estimated to be about 17.4 million, of which almost 2.6 million are doctors, over 9 million are nurses and midwives, and the remainder represent all other health worker cadres. The largest needs-based shortages of health workers are in South-East Asia at 6.9 million and Africa at 4.2 million. The shortage in absolute terms is highest in South-East Asia due to the large populations of countries in this Region, but in relative terms (i.e. taking into account population size) the most severe challenges are in the African Region. The global needs-based shortage of health-care workers is projected to be still more than 14 million in 2030 (a decline of only 17%). Hence, current trends of health worker production and employment will not have sufficient impact on reducing the needs-based shortage of health-care workers by 2030, particularly in some countries: in the African Region the needs-based shortage is actually forecast to worsen between 2013 and 2030, while it will remain broadly stable in the Eastern Mediterranean Region.

Assessing health workforce needs in relation to service requirements in countries of the Organisation for Economic Co-operation and Development (OECD)

All countries in the OECD have a density of health workers above the SDG index threshold of 4.45 physicians, nurses and midwives per 1000 population. Their health systems, however, have a service delivery profile that goes beyond the provision of essential health services such as those to which the UHC tracer indicators refer. In the context of a global health labour market characterized by high mobility of physicians, nurses and midwives, it is necessary to consider also the health workforce implications of the service requirements in OECD countries to gain a more comprehensive overview of the global imbalances and deficits of the health workforce. A model was therefore developed to produce estimates of possible scenarios of health workforce trends in these contexts. The model is based on an approach that determines HRH requirements in relation to health system objectives and health services requirements. *(76)* A stock-and-flow approach was used to simulate future HRH supply in terms of head-counts. Projections factored expected inflows (e.g. new graduates) and outflows (e.g. due to retirement) of each country's current stock. These were then adjusted according to levels of participation (providing direct patient care) and activity (proportion of full-time hours spent providing direct patient care) for different types of health workers.

The model considers as parameters a number of policy variables, including health workforce education, participation, productivity and attrition. It also factors in other variables that go beyond the health workforce *per se,* such as demographic trends and changes in the health status of the population.

These simulations in the baseline scenarios sum to aggregate shortfalls against service requirements of about 50 000 midwives, 1.1 million nurses, and 750 000 physicians across the 31 included countries for 2030. These estimates are, however, highly sensitive to the assumptions on the parameters of the model: sensitivity analysis shows that by 2030 the shortfall against service requirements could be in excess of 4 million health workers (over 70 000 midwives, 3.2 million nurses and 1.2 million physicians).

Assessing market-based demand for health workers in 2030

Understanding health labour market trends also requires assessing demand for health workers as a function of countries' capacity to create funded positions (whether in the public or private sector) for them. The demand for health workers was modelled using supply projections, per capita gross domestic product (GDP), per capita out-of-pocket health expenditures, and population aged 65+. Estimates could be produced only for 165 countries with sufficient data to model demand. The result of these simulations (Table A1.4) indicates a growing demand for health workers.

Table A1.4: Estimated health worker [a] demand (in millions [b]) in 165 countries, by Region

WHO Region	2013	2030
Africa	1.1	2.4
Americas	8.8	15.3
Eastern Mediterranean	3.1	6.2
Europe	14.2	18.2
South-East Asia	6.0	12.2
Western Pacific	15.1	25.9
World	**48.3**	**80.2**

[a] Health worker refers to physicians, nurses/midwives, and other health workers.

[b] Since all values are rounded to the nearest 100 000, totals may not precisely add up.

Source: World Bank. Washington DC (forthcoming).

In the aggregate, the model to project demand forecasts that by 2030 there will be a global aggregate demand for some 80 million health workers in the 165 countries with sufficient data to produce estimates, with the potential for the creation of approximately 40 million additional jobs (the current stock is estimated at approximately 43 million in 193 WHO Member States – see Table A1.1). The additional jobs, however, will not necessarily be created in the regions and countries where they are most needed to address unmet population needs.

Interpretation

In contextualizing and correctly interpreting the findings of these analyses, it is necessary to acknowledge important limitations.

- The development of global estimates of needs has to rely on some level of standardization of the model specifications and its underlying assumptions. It is assumed, for instance, that different countries have similar health-care production functions, or that cadres of health workers that have the same or a similar classification have overlapping roles and tasks. The actual picture may be more varied.
- Similarly, needs have been estimated to be the same across all countries with a density below the SDG index threshold. However, national patterns of burden of disease, as well as their demographic structure, are known determinants of variance in health services use (and, indirectly, of health workforce requirements).
- The model assumes that the ratios between numbers of physicians, nurses/midwives, and other health workers will follow recent trends. A renewed focus on a more diverse skills mix and a greater role for community health workers in some settings *(77)* may conversely result in an increase of these relative to the number of nurses/midwives and physicians in future.
- While efforts were made to collect the best available evidence to inform the analysis, it was not possible to find a strong empirical basis for many key variables in the modelling strategy adopted. Therefore a number of assumptions had to be made.

Even in the case of OECD countries, data limitations make it imperative to consider these simulations with caution. Therefore the results should not be interpreted as precise predictions; instead they serve as compass bearings, showing the directions in which the HRH situation is heading, and may continue if the current trends continue.

Notwithstanding, by including coverage of noncommunicable diseases in the SDG index, this analysis represents a step forward in terms of identifying health workforce requirements for UHC and the SDGs. The identification of a higher threshold of minimum health workforce availability requirements resulted in greater needs (and needs-based shortages) than all previous estimates. The difference is particularly stark if the new threshold is compared with past analyses based on requirements for skilled assistance at birth, which resulted in the identification of a much lower requirement of 2.3 skilled health workers (physicians and nurses/midwives) per 1000 population. The SDG index threshold of 4.45 physicians, nurses and midwives per 1000 population represents almost a doubling of the recommended density of skilled health workers to meet health needs. This increase reflects the staffing needed to deliver a more comprehensive range of health services *(78)(79)* and it is not dissimilar to other benchmarks of HRH density developed in relation to the UHC goal (such as the 4.11 physicians, nurses and midwives per 1000 population threshold developed in the past by the ILO).

Considering jointly the needs-based shortage of over 14 million health workers in countries currently below the threshold of 4.45 physicians, nurses and midwives per 1000 population – and the shortfall against service requirements in selected OECD countries (possibly in excess of 4 million) – the aggregate projected global deficit of health workers against needs (defined differently in different contexts) could exceed 18 million (range: 16–19) by 2030.

However, global aggregate projections and trends mask important disparities: the estimates of the current and projected future supply of health workers show that, despite increased production, population growth in some contexts is outstripping the increase in health workers, resulting in lower densities. While needs-based shortages are forecast to reduce significantly in most regions of the world, on current trends they might remain unchanged in the Eastern Mediterranean Region, and worsen in the African Region. On current trends, by 2030 some parts of the world would face a substantial and widening mismatch between the number of health workers needed to provide essential services (need), the availability of health professionals (supply) and the countries' capacity to employ them (demand): in the African Region, where many countries are confronted with fiscal space challenges, a modest growth in the capacity to employ workers is likely to lead to a shortage based on economic demand, with the overall supply of health workers remaining constrained. Both demand and supply will, however, fall short of population needs. Greater investments will be required in these contexts to boost market-based demand and supply, and to align them more closely with population health needs. By contrast, emerging economies might see a narrowing gap between the supply of health workers and the numbers needed to provide essential health services. However, economic growth and demographic trends in these countries will likely boost the demand for health care beyond the essential services. The current pace of health worker production will need to be significantly accelerated to meet the demand. This tight labour market condition could potentially raise the cost of health workers, possibly stimulating labour movements across borders and fuelling cost escalation in the health sector in these countries. *(14)* These dynamics, together with a growing demand for health workers in advanced economies with an ageing population, and a persisting divergence in working and living conditions in different countries, point to growing international migration of health workers in the coming decades.

These projections and simulations should therefore be understood as a note of caution against complacency. Maintaining the status quo in health worker production and employment is expected to result in too slow a progress (or even a worsening gap, especially in countries that are already lagging behind in their health outcomes) and continuing global imbalances.

Annex 2

Annotated list of selected WHO tools and guidelines for human resources for health

The planning, design and implementation of the policy options described in this Strategy can be informed and supported by a number of tools, guidelines and other normative documents. The following is a list of selected products developed by WHO on human resources for health. It is envisaged that during the lifetime of the Strategy (2016–2030) this list will evolve dynamically and be updated to reflect new evidence and emerging priorities and opportunities. For more information and updated tools and guidelines please refer to http://www.who.int/hrh/tools/en/.

Workload indicators for staff need

The Workload Indicators for Staff Need (WISN) use business and industry planning principles for the health sector. This tool provides guidance for health managers on how to analyse and calculate the health workers' workload to derive health worker requirements in health-care facilities. The program software is simple to run and is supported by an easy-to-follow instruction manual and WISN case studies.
http://www.who.int/hrh/resources/wisn_user_manual/en/.

Task shifting for HIV and optimizing health workers' roles for maternal and newborn health

The guidelines for task sharing and delegation provide countries with guidance on how to use a more diverse skills mix, most efficiently and rationally, for the delivery of essential HIV/AIDS and reproductive, maternal, newborn, child health services. The guidelines highlight evidence-based, effective and cost-effective interventions to delegate service delivery tasks to other cadres of health workers.
http://www.who.int/healthsystems/TTR-TaskShifting.pdf and http://www.optimizemnh.org/.

Transforming and scaling up health professionals' education and training

These guidelines set out a vision of transforming education for health professions, and offer recommendations on how best to achieve the goal of producing graduates that are responsive to the health needs of the populations they serve. The guidelines encourage educational and training institutions to foster institutional and instructional reforms, and to enhance the interaction and planning between education, health and other sectors.
http://www.who.int/hrh/education/en/ and http://whoeducationguidelines.org./content/guidelines-order-and-download.

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

These policy recommendations examine the evidence base and outline policy options for maximizing retention of health workers in rural and underserved areas. They can be used in conjunction with other WHO resources, such as the WHO Global Code of Practice on the International Recruitment of Health Personnel. To ensure better health worker retention outcomes in countries, the best results will be achieved by choosing and implementing a bundle of contextually relevant recommendations, encompassing interventions on education, regulation, financial incentives, and personal and professional support.
http://www.who.int/hrh/retention/guidelines/en/.

WHO Global code of practice on the international recruitment of health personnel

In May 2010, the Sixty-third World Health Assembly (WHA63.16) endorsed the Code aiming to establish and promote a comprehensive framework that promotes principles and practices for the ethical management of international migration of health personnel. It also outlines strategies to facilitate the strengthening of the health workforce within national health systems, and the evidence and data requirements for tracking and reporting on international mobility of health personnel. The Code was designed by Member States to serve as a continuous and dynamic framework for global dialogue and cooperation.
http://www.who.int/hrh/migration/code/practice/en/ and http://www.who.int/hrh/migration/code/code_en.pdf?ua=1.

National health workforce accounts

The purpose of a national health workforce account (NHWA) is to standardize the health workforce information architecture and interoperability as well as track HRH policy performance towards universal health coverage. The implementation of NHWAs facilitates a harmonized, integrated approach for regular collection, analysis and use of standardized health workforce information to inform evidence-based policy decisions. vhttp://www.who.int/hrh/documents/15376_WHOBrief_NHWFA_0605.pdf.

Minimum data set for health workforce registry

This tool provides guidance on the minimum information fields required to develop or modify an electronic system for health workers at national or subnational levels. The minimum data set for health workforce registry (MDS) provided in this document can be used by ministries of health to support the development of standardized health workforce information systems.
http://www.who.int/hrh/statistics/minimun_data_set/en/.

Monitoring and evaluation of human resources for health with special applications for low- and middle-income countries

The handbook offers health managers, researchers and policy-makers a comprehensive, standardized and user-friendly reference for monitoring and evaluating human resources for health, including approaches to strengthen relevant technical capacities. It brings together an analytical framework with strategy options for improving the health workforce information and evidence base, as well as country experiences that highlight successful approaches.
http://www.who.int/workforcealliance/knowledge/toolkit/25/en/.

Analysing disrupted health sectors

This modular manual supports policy-makers in settings characterized by complex humanitarian emergencies to analyse and plan for their health systems. Module 10 of the tool reviews aspects to be considered in the study of a health workforce in these settings. In these irregular contexts, tailored strategies for planning, education, deployment, retention and staff performance management are required.
http://www.who.int/hac/techguidance/tools/disrupted_sectors/en/ and
Module 10 – Analysing human resources for health:
http://www.who.int/hac/techguidance/tools/disrupted_sectors/adhsm_mod10_en.pdf?ua=1.

Annex 3

Monitoring and accountability framework

The monitoring and accountability framework of the Global Strategy entails a regular process to assess progress on its milestones. At the national level, countries should consider reflecting relevant actions contributing to the milestones in national policies, strategies and frameworks, as relevant to context. Existing processes and mechanisms for health sector review should include a regular assessment of progress in the health workforce agenda in the national context. Global accountability will include a progressive agenda to implement national health workforce accounts (see objective 4), with annual reporting by countries on core HRH indicators to the WHO Secretariat. Reporting requirements for Member States will be streamlined by effectively linking monitoring of the Strategy with that of the WHO Global Code of Practice on the International Recruitment of Health Personnel, other HRH-focused Health Assembly resolutions, and strategic documents and resolutions adopted at regional level. Global monitoring will also be complemented by specific analyses – to be conducted by WHO in collaboration with OECD and other relevant institutions – on aspects relating to official development assistance for health and international mobility of health personnel.

Table A3.1: Monitoring and accountability framework to assess progress on the Global Strategy milestones

Global milestones (by 2020)	Baseline indicator (2016)	Numerator	Denominator	Periodicity of data collection	Source
1. All countries have inclusive institutional mechanisms in place to coordinate an intersectoral health workforce agenda.	The percentage of countries with institutional mechanisms in place to coordinate an intersectoral health workforce agenda.	Number of countries with an HRH unit or function that negotiate inter-sectoral relationships with other line ministries and stakeholders.	Total number of countries	Annual	NHWA
2. All countries have a human resources for health unit with responsibility for development and monitoring of policies and plans.	The percentage of countries with a human resources for health unit or functions, responsible for developing and monitoring policies and plans on human resources for health.	Number of countries with a human resources for health unit or functions, responsible for developing and monitoring policies and plans on human resources for health.	Total number of countries	Annual	NHWA
3. All countries have regulatory mechanisms to promote patient safety and adequate oversight of the private sector.	The percentage of countries with a national mechanism to promote patient safety and adequate oversight of the private sector .	Number of countries with a national mechanism to promote patient safety and adequate oversight of the private sector.	Total number of countries	Annual	NHWA
4. All countries have established accreditation mechanisms for health training institutions.	The percentage of countries with accreditation mechanisms for health training institutions.	Number of countries with accreditation mechanisms for health training institutions.	Total number of countries	Annual	NHWA
5. All countries are making progress on health workforce registries to track health workforce stock, distribution, flows, demand, supply, capacity and remuneration.	The percentage of countries with a health workforce registry to track health workforce stock, distribution, flows, demand, supply, capacity and remuneration.	Number of countries with a health workforce registry to track health workforce stock, distribution, flows, demand, supply, capacity and remuneration.	Total number of countries	Annual	NHWA

6. All countries are making progress on sharing data on human resources for health through national health workforce accounts, and submit core indicators to the WHO Secretariat annually.	The percentage of countries with established national health workforce accounts and that submit core indicators to the WHO Secretariat annually.	Number of countries with established national health workforce accounts and that submit core indicators to the WHO Secretariat annually.	Total number of countries	Annual	NHWA
7. All bilateral and multilateral agencies have participated in efforts to strengthen health workforce assessments and information exchange in countries.	The percentage of bilateral and multilateral agencies that have integrated health workforce assessments and information exchange.	Number of bilateral and multilateral agencies that have integrated health workforce assessments and information exchange.	Number of bilateral and multilateral agencies reporting via OECD's Creditor Reporting System	3 years	WHO survey

Global milestones (by 2030)	Baseline indicator (2016)	Numerator	Denominator	Periodicity of data collection	Source
1. All countries are making progress towards halving inequalities in access to a health worker.	Density of health workers (dentist, midwife, nurse, pharmacist, physician) per 1000 population by subnational (district) level distribution.	Number of health workers (dentist, midwife, nurse, pharmacist, physician) by subnational (district) x 1000.	Total population by subnational (district) x 1000	Annual	NHWA
2. All countries are making progress towards improving the course completion rates in medical, nursing and allied health professional training institutions.	Percentage of countries that have achieved at least an 80% student graduation rate across medical, nursing and allied health professional training institutions.	Number of countries that have achieved at least an 80% student graduation rate across medical, nursing and allied health professional training institutions.	Total number of countries	Annual	NHWA
3. All countries are making progress towards halving their dependency on foreign-trained health professionals, implementing the WHO Global Code of Practice.	Share of foreign-trained health workers (physician and nurse).	Number of foreign-trained health workers (physician and nurse).	Number of health workers	Annual	NHWA; OECD
4. All bilateral and multilateral agencies are increasing synergies in official development assistance for education, employment, gender and health, in support of national health employment and economic growth priorities.	Percentage of bilateral and multilateral agencies where official development assistance (e.g. education, employment, gender and health) supports the attainment of SDG 3c.	Number of bilateral and multilateral agencies where official development assistance (e.g. education, employment, gender and health) supports the attainment of SDG 3c.	Number of bilateral and multilateral agencies in OECD Creditor Reporting System	3 years	WHO survey

Global milestones (by 2030)	Baseline indicator (2016)	Numerator	Denominator	Periodicity of data collection	Source
5. As partners in the UN Sustainable Development Goals, to reduce barriers in access to health services by working to create, fill and sustain at least 10 million additional full-time jobs in health and social care sectors to address the needs of underserved populations.	Number of health workers (all reported cadres).	Number of health workers (all reported cadres).	Not applicable.	Annual	NHWA
6. As partners in the UN Sustainable Development Goals, to make progress on Goal 3c to increase health financing and the recruitment, development, training and retention of the health workforce.	WHO will collaborate with Member States, the Health Data Collaborative and relevant stakeholders to strengthen capacity to monitor the health-related Sustainable Development Goals.				WHO and partners

NHWA: national health workforce account; OECD: Organisation for Economic Co-operation and Development; SDG: Sustainable Development Goal; UN: United Nations; WHO: World Health Organization.

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