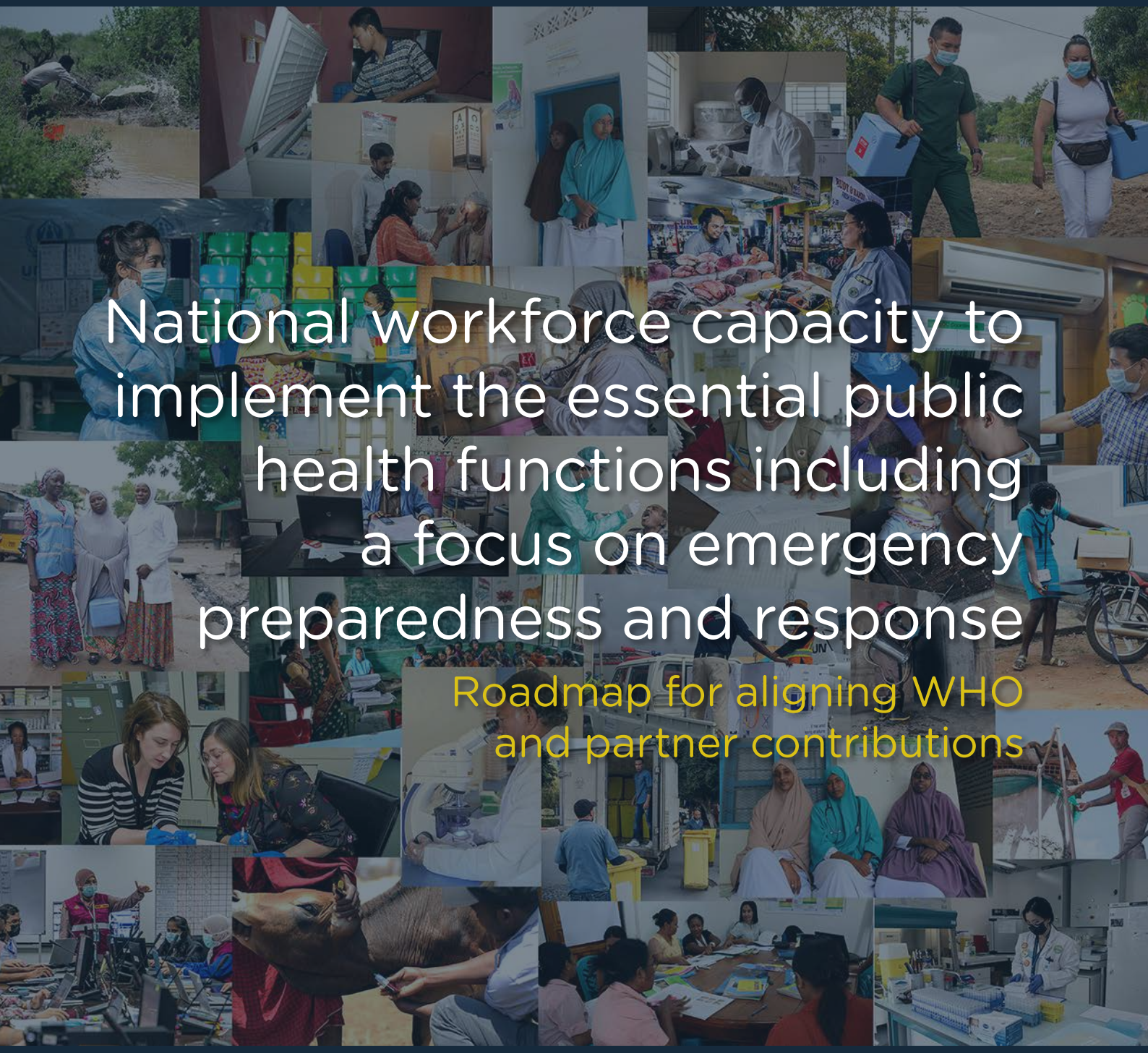

National workforce capacity to implement the essential public health functions including a focus on emergency preparedness and response

Roadmap for aligning WHO and partner contributions

World Health Organization

GOARN
Global Outbreak Alert and Response Network

Public Health Institutes of the World
IANPHI

TEPHINET
Training Programs in Epidemiology and Public Health Interventions Network

FACULTY OF PUBLIC HEALTH

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For further information and institutional participation/endorsements, please contact:

James Campbell
Director, Health Workforce
World Health Organization (WHO)
Avenue Appia 20
1211 Geneva 27
Switzerland
Email: workforce2030@who.int

Abbreviations

Africa CDC	Africa Centres for Disease Control and Prevention
AMR	antimicrobial resistance
ASPHA	Association of Schools of Public Health in Africa
ASPHER	Association of Schools of Public Health in the European Region
CDC	Centers for Disease Control and Prevention
COVID-19	coronavirus disease
CPHM (CMSA)	College of Public Health Medicine of the Colleges of Medicine of South Africa
ECDC	European Centre for Disease Prevention and Control
EPHF	essential public health functions
EPR	emergency preparedness and response
FPH	Faculty of Public Health (United Kingdom)
G7	Group of Seven
G20	Group of Twenty
GNAPH	Global Network for Academic Public Health
GOARN	Global Outbreak Alert and Response Network
HHS	United States Department of Human and Health Services
IANPHI	International Association of National Public Health Institutes
ILO	International Labour Organization
ISCO	International Standard Classification of Occupations
ISS	Istituto Superiore di Sanità
NCDs	noncommunicable diseases
NHWA	National Health Workforce Accounts
OECD	Organisation for Economic Co-operation and Development
PAHO	Pan American Health Organization
PHE	Public Health England
TEPHINET	Training Programs in Epidemiology and Public Health Interventions Network
UHC	universal health coverage
UKHSA	United Kingdom Health Security Agency
WFPHA	World Federation of Public Health Associations
WHO	World Health Organization

Preface

Achieving and sustaining progress towards global health goals such as universal health coverage and health security requires a health and care workforce that can deliver the full range of essential public health functions (EPHFs), including emergency preparedness and response (EPR). Implementation of the EPHFs is the most cost-effective, comprehensive, and sustainable way to enhance the health of populations and individuals and to reduce the burden of disease.

Health and care workforce development has typically focused on licensed occupations that are well defined under internationally recognized classifications, such as nurses, pharmacists and physicians. The same focus is required to systematically measure and build the diverse range of occupations and specialists that constitute the public health and emergency workforce and to identify gaps between their education and development, the needs of the populations they serve, and the organizations that employ them.

In response to the COVID-19 pandemic as well as other ongoing and future challenges such as climate change, rising noncommunicable disease burden, antimicrobial resistance and economic inflation, Member States face an unprecedented moment in human history. As countries recover and turn attention to investments in health systems to meet such challenges, now is an opportune time to bolster the public health workforce, including those personnel charged with EPR functions.

This roadmap is the result of joint efforts across leading public health and emergency response experts, organizations and associations. The collaboration process highlighted the importance of engaging policymakers, politicians, practitioners and professional associations; the need to focus on developing competencies and skills as well as mapping and measuring the diverse occupations involved in delivery of the EPHFs; identifying and understanding key stakeholders as well as defining roles from the outset; and contextualizing to regional, national and subnational settings.

Operationalizing the action areas outlined in this roadmap requires the support of a broad coalition of partners and stakeholders with diverse expertise; and collective collaboration and action from governments, funders, technical partners, academic institutions including schools of public health, national public health institutes and civil society organizations. We call upon all interested parties to join us in this roadmap and to build partnerships at country, regional and international levels so that all countries are equipped with the technical, financial and political resources to drive progress on EPHF and EPR in every country.

Laura Magaña
Chair
Global Network for Academic Public Health
(GNAPH)

Dale Fisher
Chair
Global Outbreak Alert and Response Network
(GOARN)

Duncan Selbie
President
International Association of National Public Health Institutes
(IANPHI)

James Campbell
Director
Health Workforce
World Health Organization
(WHO)

1. Introduction

The COVID-19 pandemic has exposed the weaknesses in the health systems of countries across the world. It has provided fresh impetus to strengthen health systems, revitalize the essential public health functions (EPHFs) and enhance emergency preparedness and response (EPR) capacities (*1*). Attaining universal health coverage (UHC) with investment in the EPHFs and ensuring health security through the implementation of the International Health Regulations (IHR 2005) are complementary goals; however, the essential role and impact of the workforce involved in these activities is often overlooked.

Many countries do not have a dedicated public health workforce policy or plan, or their plans have limited linkage to national health sector strategic plans, national action plans for health security and other disease-specific plans. In order to strengthen public health and emergency capability, it is important to understand the centrality of the public health workforce to their delivery. Monitoring the composition of the workforce which delivers the EPHFs (which includes a specific function and focus on EPR) is a key element of public health workforce planning to ensure the development of national capacity. It is important to avoid fragmented investments and efforts in building workforce capacity and instead utilize a system approach to ensure that the workforce is adaptive, agile and fit for purpose to meet diverse, ongoing and future public health challenges.

The Rome Declaration of 2021 (*2*), the G20 Italia Declaration of the G20 Health Ministers (*3*) and a series of World Health Assembly resolutions (*4–7*) call for investments in building workforce capacity and "readiness" to protect populations and accelerate progress towards UHC. This political consensus is welcomed. However, implementation must be grounded in:

- A shared understanding of the skills and competencies needed to deliver the EPHFs.
- A shared understanding of the composition of the workforce which delivers the EPHFs.

- Alignment with broader health workforce policy, planning and investment, including international standards of classification.
- Alignment and integration with broader health sector reforms, policies, plans and ongoing health system strengthening efforts.

The chronic underinvestment and lack of attention to public health has resulted in depleted country capacity to deliver the EPHFs and take integrated action within and outside the health sector. This includes, for example, using a One Health approach, which aims to design and implement research, programmes, policies and legislation in which multiple sectors (such as public health, veterinary, agriculture, environment, climate and planetary health) communicate and work together to achieve better public health outcomes. Building an integrated, multidisciplinary and multisectoral workforce which can perform part or all of the EPHFs (including EPR) through health system strengthening is a sound return on investment. This can help meet the challenges brought about by COVID-19 as well as better prepare the world to prevent future pandemics, and other public health threats that could have significant impact on economies and social development (e.g. climate-related events, zoonotic spillover, noncommunicable diseases [NCDs], antimicrobial resistance [AMR]).

Vision

A strengthened workforce in every country; delivering all the essential public health functions including emergency preparedness and response for UHC, health security and improved health and well-being.

Purpose of the roadmap

- Outline the actions to identify the skills and competencies needed to deliver the essential public health functions, including a specific focus on emergency preparedness and response.
- Develop a shared understanding on the definition, classification and scope of practice of the workforce engaged in delivering these functions.
- Provide high-level guidance and develop global public goods in public health workforce policy and planning, the measurement and assessment of workforce capacity, and competency-based education to help countries bolster their national workforce capacity and readiness.
- Mobilize global political leadership, stakeholder partnerships and collaboration around an integrated approach to strengthening the public health workforce for the achievement of UHC and global health security.

Target audience

Policy-makers, health workers and key stakeholders within and outside the health sector involved in public health and emergency preparedness and response.

2. Defining the skills, competencies and workforce needed to deliver the EPHFs

The EPHFs have been defined at a global level and are being adapted in their operationalization at national and regional levels to reflect varying contexts. Defining the specific skills and competencies required to deliver the EPHFs (including EPR) also requires a differentiated approach guided by population health needs. In Europe, the WHO Regional Office for Europe, the Association of Schools of Public Health in the European Region (ASPHER), the International Association of National Public Health Institutes (IANPHI) and other partners have developed competency-based frameworks and resources to strengthen the public health workforce (*8–10*). Similar work is under way in the WHO African and Eastern Mediterranean Regional Offices.

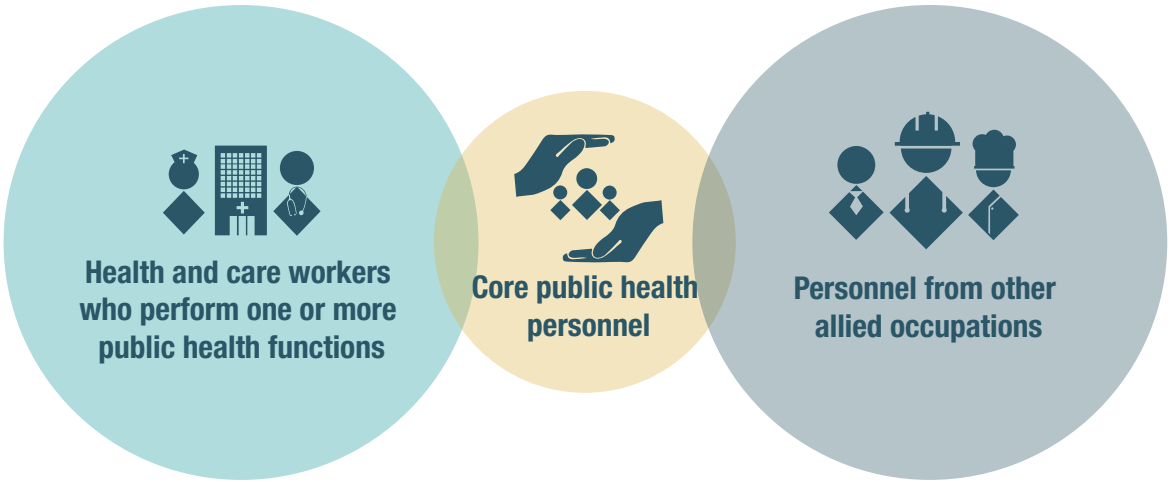
There is a need to consolidate evidence and build on existing resources from regional approaches for a consistent and concerted effort towards capacity building across all countries. A modular approach to public health workforce development will enable the identification of skills and competencies linked to the EPHFs and subfunctions as well as the occupational groups and subgroups which provide them. This roadmap is an opportunity to ensure that the institutions leading the education and training of the public health workforce link academic and technical skills with a defined set of competencies needed for employment. This enables a common approach for education and training institutions to be aligned with the expectations of health workers in practice in the delivery of the EPHFs.

The workforce which delivers the EPHFs comprises all individuals who contribute to the delivery of at least one of the functions as part of integrated services and systems. This workforce is not a single occupation, but a grouping of diverse occupations, from the health and other sectors.

This workforce can be conceptually framed as three overlapping circles:

- Core group of public health personnel who have undergone professional training and/or registration with professional bodies in public health and could be from either health or another background.
- Health and care workers who contribute to one or more public health functions as part of their clinical and/or social care roles.
- Personnel from a wide group of other allied occupations who contribute to addressing the determinants of health, for instance, personnel engaged in water and sanitation, food supply chains and road safety.

Fig. 1. Composition of the workforce which delivers the EPHFs



Practical considerations in defining and developing the public health workforce

To date, this broad interpretation of the workforce which delivers the EPHFs is not aligned with standardized international occupational classifications nor with WHO's and the International Labour Organization's (ILO) normative approach to the health labour market and workforce classification, based on occupational role profiles. One of the challenges is widespread variation across countries regarding which occupations and individual job titles are involved in the delivery of the EPHFs. A measurement challenge is that the personnel performing the EPHFs can have differing educational backgrounds, job titles, skills and responsibilities, and even be located outside the traditional health and care sector (for example, the occupations involved in preparedness for and protection against all hazards and emergencies, zoonotic diseases, One Health, and environmental and planetary health).

Published studies reveal varied approaches to how to measure the "public health workforce", quantify its number and assess competencies (*11–14*). These show a void in the use of standard definitions and limited data availability, even in high-income countries. Similarly, there are multiple approaches to how best to continuously develop this workforce through pre-service education, postgraduate studies and lifelong learning (*15,16*). A critical consideration for governments and policy-makers should be around developing the capacity of existing, and, where needed, building new, national public health schools, programmes of public health, regulatory institutions and frameworks for accreditation and licensing, and acknowledging their essential role in the context of post-pandemic preparedness and the future of public health (*17*).

The EPHFs themselves are diverse yet inter-related in nature, and hence the workforce charged with delivering them requires competencies, specialized knowledge and continuously evolving skills depending on their roles. There is a need for a progressive approach to developing the public health workforce aligned with country contexts and public health and health systems profile. For example, many EPHFs relate to EPR and require specific considerations tailored to national priorities (e.g. seasonal or frequently occurring public health hazards) and political and structural set ups. This signifies the importance of designing modular and integrated education and lifelong learning programmes incorporating the development of competencies related to communication, health diplomacy and management. This can also enhance opportunities for career progression and professionalization[1] of the core public health workforce (including those working on emergencies), leading to enhanced job satisfaction and retention.

1 Professionalization refers to the process of giving an occupation or group professional qualities, typically through training and qualification. In the context of the public health workforce, this includes values and standards and an organizational structure that reinforces desirable behaviours and actions in the delivery of public health functions.

3. The roadmap: conceptual approach

The proposed conceptual approach to scoping, defining and building the capacity of the public health workforce is to:

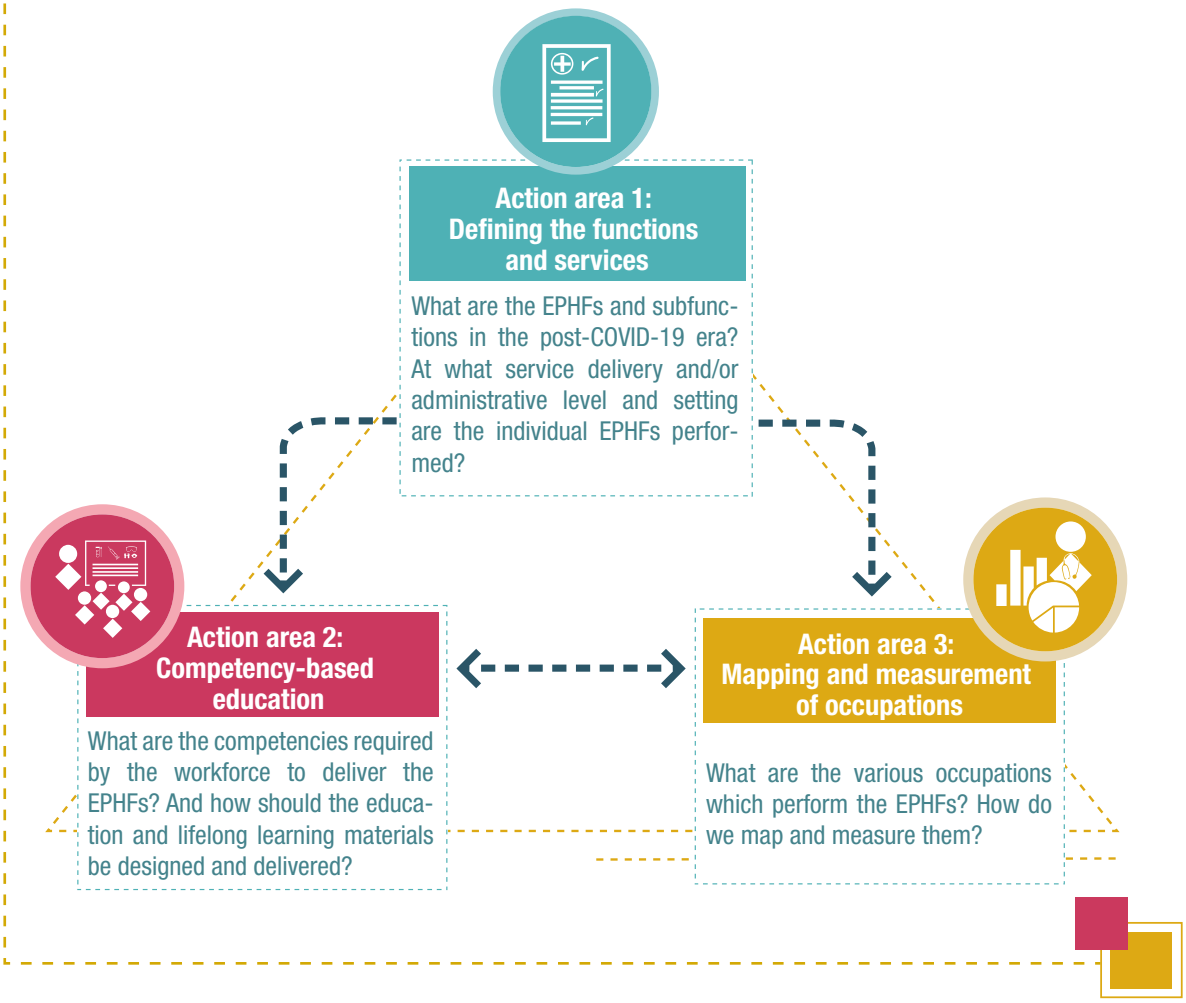
1. Define the EPHFs, subfunctions and services. These include service delivery and enabling functions that are most relevant to delivering a consolidated package of critical public health interventions, including a focus on EPR in national contexts.
2. Identify the skills and competencies required to deliver these functions and develop a suite of competency-based education tools oriented towards the delivery of the functions and services relevant to scope of practice and context.
3. Map and measure the size and profile of occupations engaged in the delivery of these functions and services.

The action areas are interlinked and not strictly sequential, and build upon existing national policies, plans, investments and capacities.

Action area 1: Defining the functions and services

The EPHFs are a set of fundamental actions needed to promote and protect health and prevent disease in populations. Since the first list was published by WHO in 1998, it has been used by WHO regions, Member States, and global health actors to define public health workforce requirements and chart public health reforms (*18,19*). In 2021, WHO reviewed all regional and authoritative EPHFs lists and

Fig. 2. Conceptual approach to scoping, defining and building capacity of the workforce which delivers the EPHFs



Box 1. A consolidated list of EPHFs developed by WHO (2021)

1. Monitoring and evaluating the population's health status, health service utilization and surveillance of risk factors and threats to health.
2. Public health emergency management.
3. Assuring effective public health governance, regulation and legislation.
4. Supporting efficient and effective health systems and multisectoral planning, financing and management for population health.
5. Protecting populations against health threats, including environmental and occupational hazards, communicable disease threats, food safety, chemical and radiation hazards.
6. Promoting prevention and early detection of diseases, including noncommunicable and communicable diseases.
7. Promoting health and well-being and actions to address the wider determinants of health and inequity.
8. Ensuring community engagement, participation and social mobilization for health and well-being.
9. Ensuring adequate quantity and quality of public health workforce.
10. Assuring quality of and access to health services.
11. Advancing public health research.
12. Ensuring equitable access to and rational use of essential medicines and other health technologies.

proposed 12 essential functions (see Box 1) (*20*). In operationalizing the EPHFs, and in the context of national public health workforce development, individual functions can be characterized as those that are service delivery focused and those that enable the delivery of population-based health services. For this roadmap, whilst recognizing the need for a holistic and integrated approach, the focus will be on those functions that are most relevant for workforce capacity and development in national contexts.

To support countries and partners, building from the 12 EPHFs, the next step is to disaggregate these into subfunctions for task analysis and local contextualization. This exercise can highlight synergies, such as in planning and policy-making, which are of relevance across multiple EPHFs as well as enable identification of delivery and administrative levels for subfunctions. This will inform Action Areas 2 and 3 on the development of competency-based learning tools and the mapping and measurement of the workforce.

With partners, WHO will continue to update and synthesize global guidance on EPHFs and their operationalization; and define EPHF subfunctions in the context of public health reforms, public health workforce requirements, One Health, and health systems strengthening for UHC and health security. This will build on existing technical resources and guidance developed by WHO and other stakeholders as well as leveraging on existing and new collaborations.

WHO and its partners will also advise and support national health systems to develop and define their recognition of the skills and competencies of public health as a profession. This part of the process includes recognizing the qualifications required by the public health professional, safeguarding the expertise of those working within the public health system and protecting the public from unsafe and inadequate practice (*9*).

Action area 2: Delivering competency-based education

The delivery of the EPHFs and their component tasks requires a workforce with the requisite competencies, knowledge, skills and attitudes. Building from the 12 EPHFs and the mapping of subfunctions and tasks in Action Area 1, participating agencies to this roadmap development will first develop a modular Competency and Outcomes Framework, oriented towards the provision of the 12 EPHFs. This builds on the conceptual approach for competency-based education developed as part of the WHO Global Competency and Outcomes Framework for Universal Health Coverage (*21*), whereby competencies are the abilities of individuals that underpin effective performance of tasks, and represent the integrated and applied knowledge, skills and attitudes, demonstrated through behaviours. Competencies are thus defined in relation to the skills-based practice activities towards the provision of the EPHFs, and a competency and outcomes framework will identify both the competencies of individual health workers as well as the practice activities towards the EPHFs, and foundational knowledge, skills and attitudes. To enable ease of use of such a broad framework, the outcomes will be organized

in a modular fashion linked to the subfunctions of the EPHFs so that the relevant outcomes can be identified and selected for use within and between education and employment. The competency and outcomes framework bridges education and employment, and as such can be used to inform both in-service and pre-service education programmes, but also as the benchmark for performance of current health workers, thus guiding needs for in-service skills development and capacity building.

An initial part of Action Area 2 aims to create a repository of competency-based learning materials and resources, building on the mapping work initiated by the Italian G20 Laboratorium, the Italian Istituto Superiore di Sanità (ISS) and the G20 network. WHO and participating agencies already have an extensive suite of training programmes and courses that target specific capacity-building initiatives for the public health and emergency workforce. Similarly, national, regional and other international bodies have developed country- or topic-specific materials.

A mapping of existing competency frameworks and competency-based standards and education materials developed for the public health workforce [e.g. those published by ASPHER, Africa Centres for Disease Control and Prevention (Africa CDC), European Centre for Disease Prevention and Control (ECDC), Public Health England (PHE)] will be used to inform initial drafts of the competency and outcomes framework for EPHFs. Partners will then invite subject matter experts including from governments, professional associations and academia to review and identify gaps, and reach consensus on the competency-based education outcomes.

Action Area 2 then focuses on the delivery of targeted competency-based learning towards priority areas. Partners will collaborate to develop a modular education programme towards defined and prioritized components of the EPHFs. This will be tailored to the priority areas covering foundational to specialized competency-based learning outcomes and the range of competencies required at national level to implement the EPHFs.

Action area 3: Mapping and measurement of occupations

In the present International Standard Classification of Occupations (ISCO-08), many of the occupations performing components of the EPHFs are not identified as such or properly classified. The main measurement exercise will first consist of:

- mapping the core group of public health personnel against the EPHFs and subfunctions found both in the health and care occupations as well as other occupations in all sectors involved in the delivery of the EPHFs (including EPR);
- understanding their roles and responsibilities as related to specific EPHF subfunctions; and
- finally, aligning them to the national standards of classification and ISCO-08.

This will facilitate a standardized measurement approach which all countries can apply to monitor the size of their workforce, as well as allow for cross-country comparability.

This work will be aligned with the standardized process of WHO's National Health Workforce Accounts (NHWA) (*22*) and incorporated into the annual reporting process with Member States. In the NHWA, the health and care workforce has been mapped and aligned with ISCO-08, and around 170 Member States have designated national focal points for annual reporting, as of March 2022. Over the last 5 years of NHWA implementation, there has been progressive improvement in the availability and quality of health workforce data, and countries have been using these data for effective workforce planning and policy-making.

Working with Member States and partners, WHO and its partners will develop guidance to identify, profile and enumerate this workforce as defined in Action Area 1, and test a standardized measurement approach across a range of settings. In addition, WHO will update the NHWA (NHWA v2.0) to better capture and measure this workforce.

Action Areas 2 and 3 are not intended to be sequential and can be carried out simultaneously.

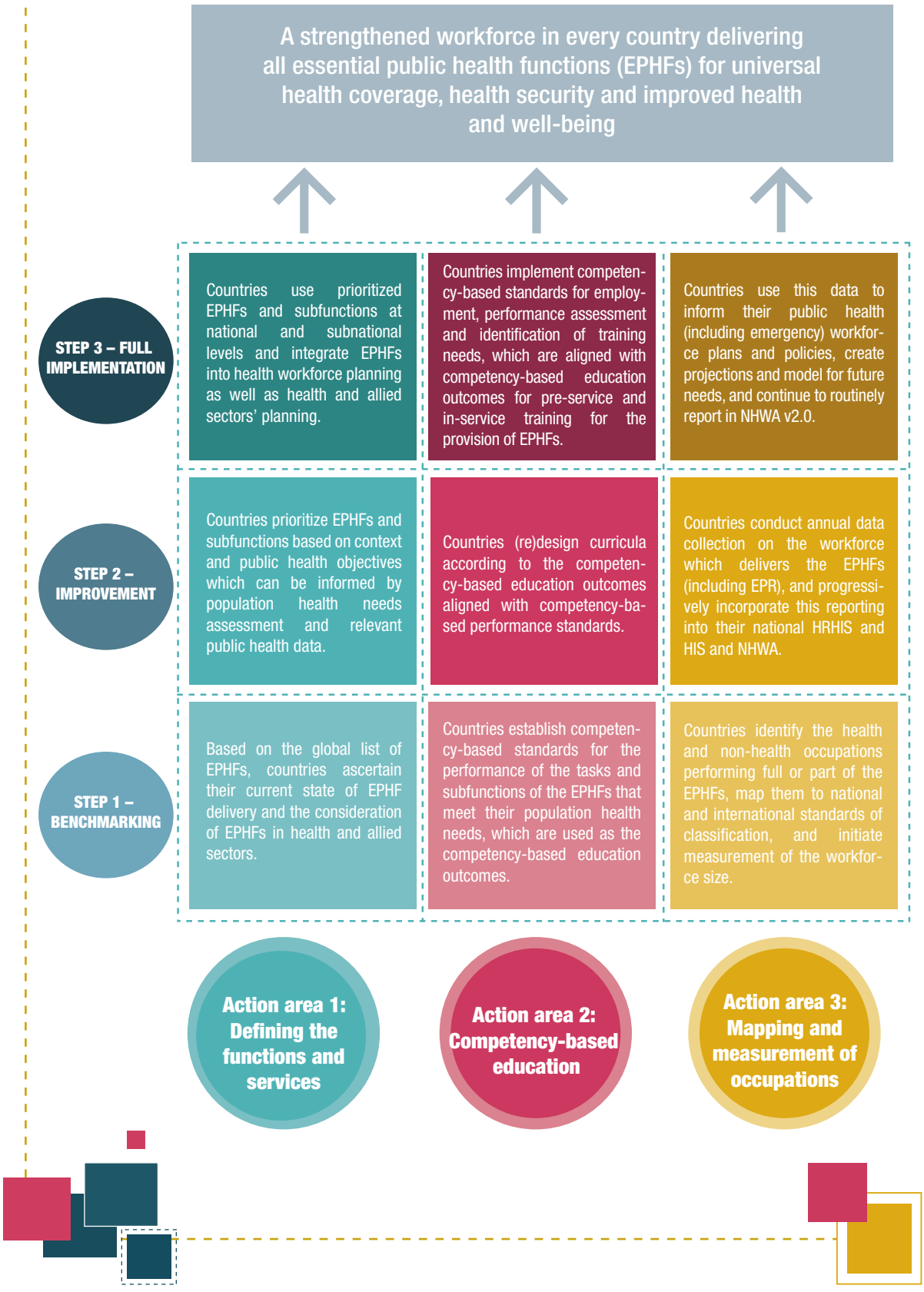
4. The roadmap: operationalizing the conceptual approach

Implementing the roadmap will require a differentiated approach at country level, depending on capacity and context. Each country may also be situated at different thresholds across the three action areas. Hence, we propose a progression matrix, which will:

- Aid countries to first benchmark themselves and assess their current situation on each of the action areas.
- Facilitate provision of guidance and tools to aid advancement along the progression matrix.
- Support progress to the “full implementation” level in each of the action areas.

Following development of the respective frameworks and resources, countries will be able to assess their progress, identify gaps and establish a national roadmap for full implementation. Countries may be at different steps in their progression matrix assessment depending on the action area.

Fig. 3. Progression matrix for countries to operationalize the roadmap

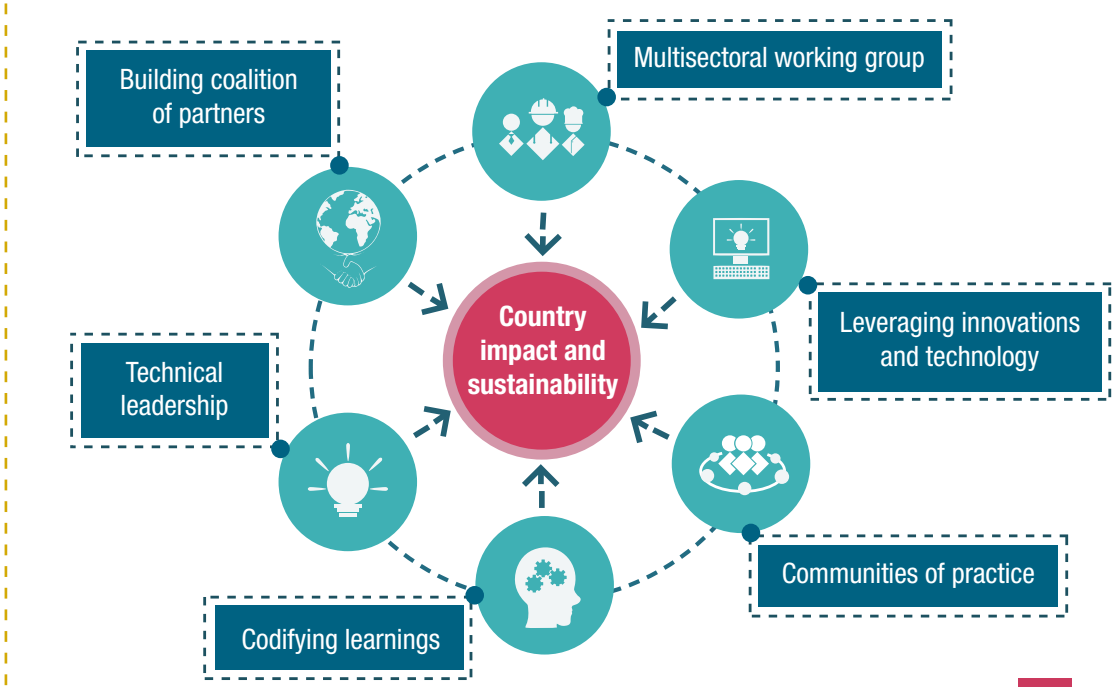


5. Way forward: country impact and sustainability

The COVID-19 experience coupled with ongoing and emerging threats such as the rising NCD burden, increasing climate-related events and AMR has demonstrated time and again the vital need for public health expertise in countries. This roadmap paves the way for countries, WHO and partners to work together to develop a critical mass of public health personnel capable of comprehensively delivering on the EPHFs (encompassing EPR) adapted to their national contexts.

To create the needed country impact and sustainability, WHO seeks to leverage and build ongoing and future collaborations with key national and regional partners and stakeholders. Guiding principles for collaborative action include identifying areas of synergy in the roadmap; co-creation of global public goods and technical guidance; joint support to country efforts for baseline assessment of the maturity of their systems; joint implementation and monitoring of progress at national level through multisectoral working groups, fostering a community of practice, codifying learnings, and sharing best practices, tools and resources (Fig. 4). Rapid action is needed across the three action areas of this roadmap through collective collaboration and consensus building, which will be realized through online stakeholder consultations and the use of the Delphi technique.

Fig. 4. Governance, principles and actions for maximizing country impact and sustainability



Key stakeholders and their roles in operationalizing the roadmap

Level	Illustrative stakeholders	Indicative roles and responsibilities
National	Government (politicians, ministry of health and other ministries), national public health institutes, WHO country offices, professional associations, regulatory bodies, professional licensing bodies, accrediting agencies, public health training institutions, academia, research institutes, trade unions, private health service organizations and other employers	• Develop national public health workforce policies, planning and strategies which are aligned with: - EPHFs - population health needs - broader health and allied sector planning • Develop laws and regulations to support public health workforce development • Finance public health workforce development • Generate public health workforce data and evidence for planning and forecasting
Regional	Regional associations for public health, regional public health institutes, regional political unions, WHO regional offices	• Promote regional coordination and cooperation in the development of the public health workforce • Contextualize the EPHFs, subfunctions and the competencies required to deliver them according to regional priorities and population health needs • Provide technical support to countries in public health workforce development
Global	For instance, G7, G20, IANPHI, Organisation for Economic Co-operation and development (OECD), World Federation of Public Health Associations (WFPHA), WHO, development partners and others	• Advocate for, mobilize resources, coordinate and provide technical support to regions and countries to facilitate public health workforce development including a standardized approach to mapping and measuring the public health workforce • Develop normative guidance on the EPHFs, subfunctions and competencies required by the public health workforce to deliver them • Facilitate sharing of learning and best practices across regions and countries

6. Targets

Timeline	Targets
Short term	Member States, partners and key stakeholders agree on a shared understanding on the key activities for the three action areas and align their respective workplans: • Global guidance developed on EPHFs concept and application • Technical guidance developed to map and measure the workforce which delivers the EPHFs • Completed systematic crosswalk of authoritative public health workforce competencies and skills against EPHFs
Medium term	Partners and key stakeholders develop a package/toolkit of technical products and guidance which countries can access and adapt based on their context-specific needs: • EPHF subfunctions defined in relation to health systems strengthening for UHC and health security • NHWA v2.0 developed to better capture and measure the public health workforce • Evidence generated to inform the ongoing ISCO-08 revisions • Competency and outcomes framework for the EPHFs developed
Long term	Countries make systematic efforts to attain the “full implementation” level on all three action areas in the progression model: • EPHFs considerations are integrated in national health and allied sectors planning and policy-making • Countries report on their public health workforce through NHWA v2.0 and use this data for effective workforce planning, policy-making and forecasting for future needs • Modular competency-based education programmes delivered, e.g. through the WHO Academy for priority EPHF subfunctions

7. Measures of success

1. Within one year from the finalization of this roadmap, the necessary tools and guidance are available for country contextualization and endorsed by the participating organizations.

2. Two years from the finalization of this roadmap, at least 100 countries have benchmarked themselves on the three action areas and developed action plans for implementation.

3. Five years from the finalization of this roadmap, at least 50 new countries have achieved full implementation.

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Health Workforce Department
World Health Organization
20 Avenue Appia
CH 1211 Geneva 27
Switzerland
https://www.who.int/teams/health-workforce

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