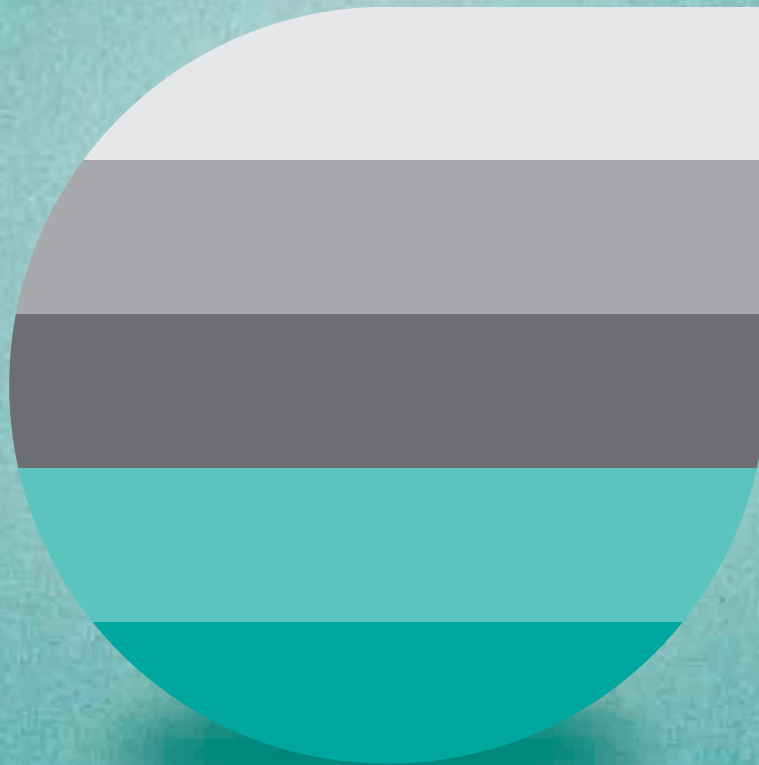


Transforming and scaling up health professionals' education and training

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Transforming and scaling up
health professionals' education and training
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Foreword



With this publication, WHO issues its first guidelines for ‘Transforming and Scaling up Health Professionals’ Education and Training’. The guidelines are expected to give rise to regional and country based policy and technical dialogues with key stakeholders in education, health, finance and labour, on how best to finance health professionals’ training and prepare health professionals for the 21st century.

The guidelines draw on the most recent evidence on what underpins the concept of transforming health professionals’ education to frame the recommendations. The global health community has been made aware through reports, global meetings and policy dialogues, that there is a severe health workforce crisis in 57 countries globally as stated in the 2006 World Health Report. However these workforce shortages are by no means confined to the 57 countries most severely affected. In virtually every country, shortages have been accompanied by an imbalance in skill mix of teams and uneven geographical distribution of health professionals, leaving millions without access to health services.

More professional health workers are needed, but it has become clear that efforts to scale up health professionals’ education must not only increase the quantity of health workers, but also address issues of quality and relevance in order to address population health needs. Educational institutions need to increase their capacity to teach in terms of infrastructure but also: improve the competencies of existing staff and increase their numbers; reform admissions criteria; strengthen health professionals’ competencies by revising and updating curricula on a regular basis; and link the disease burden to training needs. For persons wishing to change careers mid-stream, or even students of other disciplines wishing to become health professionals, there should be pathways that make these changes possible. The international community has an important role to play by partnering in support of country-led efforts to achieve these reforms.

These recommendations should attract strong political commitment to regular and structured mechanisms for better collaboration between the education and health sectors, other national authorities and the private sector with the intent to improve the match between health professionals’ education and the realities of health service delivery. There are therefore recommendations which address: political commitment to reform of health professionals’ education; formal collaboration and shared accountability between ministries of health, education and other related ministries; linkage to a national planning process; and the creation or strengthening of national and sub-national institutions.

It is the intention that these guidelines spark many dialogues in the public and private sector, including non-governmental organizations and fuel a growing movement to tackle the challenges facing the professional health workforce and contribute to a new era for health professionals’ education.

Dr Margaret Chan

Director-General
World Health Organization

Contributors and acknowledgments

These guidelines are part of the World Health Organization (WHO) programme on the Rapid Scaling Up of the Health Workforce. This programme is an essential component of WHO's efforts to support the attainment of the Millennium Development Goals, strengthen health systems and achieve universal coverage in the context of primary health care.

These activities have been supported by Margaret Chan, Director-General of WHO and Carissa Etienne, formerly Assistant Director-General for Health Systems and Services. Manuel M. Dayrit, Director, of the former Department of Human Resources of Health (HRH), Francesca Celletti formerly leading the guidelines development process and Rebecca Bailey of the former Department of Human Resources of Health and more recently by Mario Dal Poz, former Coordinator, HRH.

The writing of these guidelines and recommendations was shared by a team from the WHO Collaborating Centre for Health Workforce Policy and Planning, Portugal, led by Gilles Dussault (Instituto de Higiene e Medicina Tropical, Lisbon) with Claudia Leone and Inês Fronteira.

The WHO headquarters team was led by Erica Wheeler with support from Mwansa Nkowane. Editorial assistance was provided by Joanne McManus (independent consultant, UK) for all aspects of the writing of the guidelines. The guidelines were copy edited by Diana Hopkins (independent consultant, Geneva).

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Peer review: The guidelines were peer reviewed by: Prof. Jan De Maeseneer, M.D., Ph.D. Head Department of Family Medicine and Primary Health Care, Ghent University, Belgium; Dean Fernando Caballero, School of Medicine and Health Sciences, Universidad Francisco de Vitoria, Madrid, Spain; Dr. Juan Perez-Miranda Department of Institutional Relations, School of Medicine and Health Sciences, Universidad Francisco de Vitoria, Madrid, Spain; Jean-Luc Eiselé, Executive Director, FDI World Dental Federation, Geneva, Switzerland; Dr Joy Fraser, Associate Professor, Athabasca University, Athabasca, Canada; Julian Fisher, Assistant Professor, Dental Faculty, University of Lyon, Lyon, France; and Margareta Skold, WHO Representative, Kingston, Jamaica. Their comments were sent electronically to the HRH team. The WHO Secretariat then made all the appropriate amendments/and or modifications to the text following discussion or email exchanges with peer reviewers. A complete list with contact addresses of peer reviewers is in Annex 10 of these guidelines.

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The views expressed in these guidelines can in no way be taken to reflect the official opinion of PEPFAR, USAID, IntraHealth, CapacityPlus or any partners involved in their development.

Abbreviations

CGDG	Core Guidelines Development Group
CPD	Continuing professional development
GHWA	Global Health Workforce Alliance
GRADE	Grading of Recommendations Assessment, Development and Evaluation
HRH	Human resources for health
ICM	International Confederation of Midwives
ICN	International Council of Nurses
MEPI	Medical Education Partnership Initiative
PEPFAR	The United States President's Emergency Plan for AIDS Relief
PICO	Population/intervention/comparison/outcome
WFME	World Federation Medical Education
WHO	World Health Organization

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Executive Summary

The World Health Report 2006 'Working Together for Health' pointed to an estimated 57 countries globally that have a critical shortage equivalent to a global deficit of 2.4 million doctors, nurses and midwives which by implication suggests millions of people worldwide who do not receive the essential health care and services that are desperately needed. Simply training and graduating more health professionals is not the answer to this vexing issue. Concerted and immediate efforts to transform and scale up health professionals' education are required to attain the right mix of skills and competencies of health professionals who can respond to the ever changing and evolving needs of populations around the world. Building on an approach of global collaborative leadership, efforts that are adaptive and flexible in various cultural and socio-economic settings will be key to the successful implementation of these evidence-informed guideline recommendations.

These guidelines call for new approaches in health professionals' education. Approaches are needed that transform systems and encourage the move away from the traditional focus on tertiary care hospitals to initiatives that foster community engagement. The guidelines recommendations support and advocate for implementation considerations in efforts to involve communities and countries collectively for this transformational change in health professionals' education. It is the intent of the Guidelines to encourage educational and training institutions to foster and enhance the relational activity and the interaction and planning between education, health and other sectors.

To achieve this transformational process, The WHO *Initiative on transforming and scaling up health professionals' education and training* becomes a major contribution to the challenging task of reshaping the health workforce of countries for the benefit and well-being of their citizens (Box 1).

Box 1. Defining transforming and scaling up health professionals' education

Transformative scaling up of health professionals' education and training is defined as the sustainable expansion and reform of health professionals' education and training to increase the **quantity, quality and relevance** of health professionals, and in so doing strengthen the country health systems and improve population health outcomes.

These guidelines set out a vision of such a transformation of education for the health professions, and offer recommendations on how best to achieve the goal of producing graduates responsive to the health needs of the populations they serve. Specifically, the guidelines aim to: provide sound policy and technical guidance in the area of pre-service education, particularly to countries experiencing shortages of doctors, nurses, midwives and other health professionals; and guide countries on how to integrate continuing professional development (CPD) as part of medical, nursing, midwifery and other health professionals' education scale-up in order to ensure excellence of care, responsive health service delivery and sustainable health systems. Country ownership in determining priorities and setting policy is required in each of the five identified guideline domains:

- 1) **Education and training institutions,**
- 2) **Accreditation, regulation,**
- 3) **Financing and sustainability,**
- 4) **Monitoring and evaluating, and**
- 5) **Governance and planning.**

The recommendations cover a wide range from development of community-engaged relevant curricula through to equipping health professionals with the skills to be high quality competent clinical teachers and academic faculty, all of which contribute to preparing high quality competent health graduates to practice in areas of need. Hence, a greater alignment between educational institutions and the health care system will be the necessary ingredient to bring about transformative change and leadership in preparing future graduates who have an affinity to work in rural and remote areas where the challenging issues of health equity and equality remain.

Box 2. The vision for transformative education

- Greater alignment is needed between educational institutions and the systems that are responsible for health service delivery.
- Country ownership of priorities and programming related to the education of health professionals with political commitment and partnerships to facilitate reform at national, regional and local levels.
- Promotion of social accountability in professional education and of close collaboration with communities.
- Clinicians and public health workers who are competent and provide the highest quality of care for individuals and communities.
- Global excellence coupled with local relevance in research and education.
- Vibrant and sustainable education institutions with dynamic curricula and supportive learning environments, including good physical infrastructure.
- Faculty of outstanding quality who are motivated and can be retained



Adapted from Celletti et al. (2011).

The guidelines deal with the complex issues for transforming health professionals' education through the presentation of key policy issues, summarizing available evidence and providing recommendations and a commentary, which includes guidance for implementation. This guidance is underpinned by good practice recommendations which provide a supportive context for implementation. The following section describes the twelve recommendations, which are a culmination of evidence-informed decision interventions to guide a focused transformational process of and for scaling up health professionals' education and training globally.

Recommendations to transform and scale up health professionals' education and training

Faculty development

Recommendation 1:

Health professionals' education and training institutions should consider designing and implementing continuous development programmes for faculty and teaching staff relevant to the evolving health-care needs of their communities.

The **quality of the evidence supporting these recommendations is moderate**, and the **strength of the recommendation is conditional**.

Recommendation 2:

Governments, funders and accrediting bodies should consider supporting the implementation of higher education policies for mandatory faculty development programmes that are relevant to the evolving health care needs of their communities.

The **quality of the evidence supporting these recommendations is low**, and the **strength of the recommendation is conditional**.

Recommendation 3:

Health professionals' education and training institutions should consider innovative expansion of faculty, through the recruitment of community-based clinicians and health workers as educators.

The **quality of the evidence supporting this recommendation is low**, and the **strength of the recommendation is conditional**.

Curriculum Development

Recommendation 4:

Health professionals' education and training institutions should consider adapting curricula to the evolving health-care needs of their communities.

The **quality of the evidence supporting this recommendation is low**, and the **strength of the recommendation is conditional**.

Simulation methods

Recommendation 5:

Health professionals' education and training institutions should use simulation methods (high fidelity methods in settings with appropriate resources and lower fidelity methods in resource limited settings) of contextually appropriate fidelity levels in the education of health professionals.

The **quality of the evidence supporting these recommendations is moderate**, and the **strength of the recommendation is strong**.

Direct entry of graduates

Recommendation 6:

Health professionals' education and training institutions should consider direct entry of graduates from relevant undergraduate, postgraduate or other educational programmes into different or other levels of professional studies.

The **quality of the evidence supporting this recommendation is moderate**, and the **strength of the recommendation is conditional**.

Admission procedures

Recommendation 7:

Health professionals' education and training institutions should consider using targeted admissions policies to increase the socio-economic, ethnic and geographical diversity of students.

The **quality of the evidence supporting this recommendation is low**, and the **strength of the recommendation is conditional**.

Streamlined educational pathways and ladder programmes

Recommendation 8:

Health professionals' education and training institutions should consider using streamlined educational pathways, or ladder programmes, for the advancement of practising health professionals.

The **quality of the evidence supporting this recommendation is low**, and the **strength of the recommendation is conditional**.

Interprofessional education

Recommendation 9:

Health professionals' education and training institutions should consider implementing Inter-professional education (IPE) in both undergraduate and postgraduate programmes.

The **quality of the evidence supporting this recommendation is low**, and the **strength of the recommendation is conditional**.

Accreditation

Recommendation 10:

National governments should introduce accreditation of health professionals' education where it does not exist and strengthen it where it does exist.

The **quality of the evidence supporting this recommendation is low**, and the **strength of the recommendation is strong**.

Continuous professional development (CPD) for health professionals

Recommendation 11:

Health professionals' education and training institutions should consider implementing continuous professional development and in-service training of health professionals relevant to the evolving health-care needs of their communities.

The **quality of the evidence is moderate**, and the **strength of this recommendation conditional**.

Governance and planning

Four good practice recommendations that were identified include:

1. **Government at the highest level demonstrates political commitment to reform and takes leadership of its implementation.**
2. **There is formal collaboration and shared accountability between the ministry of health, the ministry of education, and other related ministries (e.g. finance, labour, public service), at national and/or sub-national level, in the education and training of health professionals.**
3. **A national plan to produce and retain graduates is developed in consultation with stakeholders, informed by the needs and absorptive capacity of the labour market, and aligned with the national health plan.**
4. **The creation or strengthening of national or sub-national institutions, capacities or mechanisms to support the implementation of the reform and scale-up plan (e.g. legislation, policies, procedures).**

1. Introduction

1.1 Introduction

This report on the Guidelines for Transforming and Scaling up Health Professionals' Education and Training provides a set of recommendations that are evidence-informed, practical, and relevant to ensure that globally there is a health professional workforce that meets the health care needs of the 21st century.

The primary goal in developing the Guidelines was to provide health policy-makers and other important stakeholders with evidence-informed guidelines to better understand the issues and to provide strategies to achieve transforming and scaling up of the education and training of health professionals that will contribute to health system strengthening and improve health outcomes.

The key objective for creating this report was to develop guidelines that would provide concrete implementation considerations that ensure equitable access to health services and aim at policy development for a workforce, with the right skills-mix and deployed rationally across different levels of care. A workforce is needed that is accessible to all citizens, and stays motivated to produce high quality services efficiently.

The guidelines aim to:

- 1. provide sound policy and technical guidance in the area of pre-service education, particularly to countries experiencing shortages of health professionals;**
- 2. foster the integration of continuing professional development (CPD) as part of health professionals' education scale-up, in order to ensure excellence of care, responsive health service delivery and sustainable health systems;**
- 3. define and provide guiding principles for transforming and scaling up health professionals' education and training.**

Before developing the recommendations, the following definitions were used to guide the process:

“The transformative scale-up of health professionals' education and training is defined as the expansion and reform of health professionals' education and training to increase the quantity, quality and relevance of health professionals so as to best meet population health needs and expectations in an equitable and efficient manner and, in so doing, strengthen countries' health systems and improve population health outcomes.”

Transformation and scaling up of education and training is a multidimensional process that involves not only increasing the number of health professionals, but also more importantly, ensuring that they have the knowledge, skills and competencies relevant to the needs of the population. This process also requires building the institutional capacity to produce and employ the desired number and skill mix of health professionals in a sustainable manner. Additionally, this process includes the development of a sufficient and competent workforce of educators and trainers, the utilization of effective education methods, and access to adequate infrastructure, equipment and learning tools.

Why is WHO developing Guidelines?

In 2006, the World Health Assembly (WHA) called on all Member States to contribute to a rapid scaling up of the production of health workers (resolution WHA59.23, Box 3). The resolution also called for the development of national comprehensive health workforce strategies.

Box 3. Excerpts of WHA Resolution 59.23 – Rapid scaling up of health workforce production

The Fifty-ninth World Health Assembly,

(...)

Recognizing that shortages of these health workers are interfering with efforts to achieve the internationally agreed health-related development goals, including those contained in the Millennium Declaration, and those of WHO's priority programmes;

(...)

Recognizing the importance of achieving the goals of self-sufficiency in health workforce development, ...URGES Member States to affirm their commitment to the training of more health workers by:

(...)

(2) promoting training in accredited institutions of a full spectrum of high-quality professionals, and also community health workers, public health workers and paraprofessionals;

(...)

(4) promoting the concept of training partnerships between schools in industrialized and developing countries involving exchanges of faculty and students;

(...)

(6) using innovative approaches to teaching in industrialized and developing countries, with state-of-the-art teaching materials and continuing education through the innovative use of information and communications technology....

Source: WHO (2006b).



1.2 The domains for action: focus of the guidelines

The Guidelines Development Group members identified five main 'domains' for attention and action by policy-makers:

1. **Education and training institutions**
2. **Accreditation and regulation**
3. **Financing and sustainability**
4. **Monitoring, implementation and evaluation**
5. **Governance and planning.**

The guidelines describe each of these domains, summarize available evidence and provide recommendations and implementation considerations. The last section identifies gaps in knowledge indicative of the need for further research, either at country or at global level.

To seek transformation in these five areas, the Group's work was guided by a series of principles considered fundamental for success (Box 4).

Box 4. The fundamental principles for the transformation success

- Be country-owned, country-led, context-specific, and embedded in the broader socio-economic and development characteristics of communities and populations.
- Respond to population health needs and expectations, and adapt to evolving epidemiological profiles and burden of disease.
- Aim at health equity, delivery of people-centred services, responsiveness and inclusion.
- Foster the use of effective strategies of promotion, prevention, education and rehabilitation.
- Contribute to universal access to health services.
- Be designed and implemented system-wide and through multi-sectoral coordination and inclusion of all relevant public and private sector stakeholders and policy-makers.
- Be aligned with national health objectives and strategies and human resources for health plans (evidence-based, costed and sustainable).
- Apply a combination of context-specific interventions, applicable in both the public and private sectors, in broad areas such as: governance; education and training institutions; regulatory frameworks; financing; and planning.
- Produce health professionals who are globally competent and locally relevant, able to serve their local communities in an effective manner.
- Ensure that increased production of health professionals is accompanied by an increased absorptive capacity of the labour market to employ and retain additional health workers.
- Be supported by significant long-term financial investment, and effective leadership and management, good information systems and political commitment.
- Be monitored and assessed with respect to the quantity, quality and relevance of professionals practicing within the health system, and not simply on the numbers of new graduates.

Source: Guidelines Development Group, 2012

1.3 Scope of the Guidelines

The Guidelines encompass the education and training of all groups of health professionals (see Annex 1 for definitions). The recommended considerations and interventions, thereby, apply to all levels of education and training of health professionals across the continuum of undergraduate, postgraduate, faculty development and continuing professional development in both the public and private sectors in all countries.

1.4 Methodology of Evidence-Informed Guidelines

The process of developing WHO guidelines encompasses the synthesis of all available published research and grey literature evidence; formal assessment of the quality of evidence; consideration of resource use and costs; and consideration of values and preferences. The formal assessment of quality of evidence includes the use of a transparent system for assessing evidence and rating recommendations following the GRADE methodology. This process links evidence to recommendations and explains the reason that judgements were taken at each step along the way. By design, the process was steered by the WHO secretariat with the support of the core guideline development group that included content experts for specialties involved, a methodologist and representatives of potential stakeholders and that maintained a geographic and gender balance.

Using a multi-pronged methodological strategy for creating evidence-informed guidelines, the approach was inclusive of a comprehensive scoping literature review and analysis of systematic reviews covering other related published evidence, in addition to a review of the grey literature.

The process of developing the guidelines began in 2009 with an extensive scoping of the literature on health professionals' education, gathering expert opinion through the formation of a large reference group that met three times in 2010, and building consensus that culminated in the first meeting of the core guidelines development group in Divonne, France in May 2011. The

guidelines have been developed in parallel with a strong implementation platform with the Medical Education Partnership Initiative (MEPI), the Nursing Education Partnership Initiative (NEPI), the United States President's Emergency Plan for AIDS Relief (PEPFAR), and other partners. The secretariat is also engaging additional multi-sector stakeholders and civil society to galvanize support for a global advocacy movement around the need for health professionals' education and training reform.

The second meeting of the group was called to:

- **advise on the priority of questions and scope of the guideline;**
- **advise on the choice of important outcomes for decision-making;**
- **comment on the evidence used to inform the guideline;**
- **advise on the interpretation of evidence, with explicit consideration of the overall balance of resource use, values and preferences, benefits and risks;**
- **formulate recommendations, taking into account diverse values and preferences according to GRADE.**

Every effort was made to comply with standards for reporting, processing and using evidence as set by the WHO Guidelines Review Committee (GRC). The Guidelines Development Group used a multi-pronged methodological approach to bring together the evidence available in support of the guidelines, so that countries can use them with reasonable assurance that they will facilitate sound policy development in matters of health professionals' education. The following steps were taken:

- **An outcomes framework, based on the guiding principles for transforming and scaling up health professionals' education and training, was designed to inform the development of the recommendations (Annex 14).**
 - **A comprehensive literature review was undertaken to provide as wide an understanding of the areas involved as possible initially, followed by the drafting of PICO (population/intervention/comparison/outcome) questions and the commissioning of systematic reviews, covering other related published evidence and grey literature relating to these questions. A template was used for conducting systematic reviews in order to ensure uniformity and comparability and the data collected was recorded in a decision table (see Annex 7 for decision tables).**
 - **Evidence tables were developed based on the systematic reviews (see <http://www.who.int/hrh/education/planning/en/index.html>).**
The systematic reviewers assessed the risk of bias in each of the randomized studies included, guided by the following criteria:
 - Inadequate sequence generation;
 - Inadequate allocation concealment;
 - Lack of blinding of participants, providers data collectors, outcome adjudicators and data analysts;
 - Incompleteness of outcome data;
 - Selective outcome reporting, and other bias.
- The systematic reviewers assessed the risk of bias in each included non-randomized studies guided by the following criteria:**
- Failure to develop and apply appropriate eligibility criteria (e.g. under- or over-matching in case-control studies, selection of exposed and unexposed subjects in cohort studies, selection of exposed and unexposed in cohort studies from different populations);
 - Flawed measurement of both exposure and outcome (e.g. differences in measurement of exposure such as recall bias in case-controlled studies, differential surveillance for outcome in exposed and unexposed in cohort studies);
 - Failure to adequately control confounding (e.g. failure of accurate measurement of all known prognostic factors, failure to match for prognostic factors and/or adjustment in statistical analysis);
 - Incomplete follow-up.
 - With regard to how the data was synthesized, it should be noted that the same PICO question did not necessarily assess the same outcomes. Even when they did, they did not necessarily use the same measurement instruments or approaches. Even when using the same instruments or approaches, they did not report enough statistical data to allow a meta-analysis of the data. As a consequence, we report the results in a narrative manner and when available, we describe the statistical results as reported by the authors of the original studies. This means in some cases a range of relative effects (e.g. odds ratio or relative ratio) may be presented, while in other cases a relative effect with or without a confidence interval may be presented.
- **In addition to the above, and in order to strengthen the issue of relevance, which is one of**

the three outcomes guiding these recommendations, two surveys were conducted¹.

A feasibility and acceptability survey gathered the views of 136 stakeholders and potential beneficiaries of the recommendations from all WHO regions; and a civil society survey (169 respondents) provided views and expectations on the main areas of interest in the guidelines. This was also a strategy to identify better the roles and contribution of civil society to the transformational education agenda and movement and, at the same time, to deepen its engagement as a key stakeholder in the work of the Core Group. Discussions were conducted via e-mail and during two workshops that took place in Divonne-les-Bains (France) in May 2011 and in Washington D.C. (USA) in March 2012.

- Decision tables were developed by the Guidelines Development Group based on all the evidence provided from the evidence tables based on systematic reviews, literature reviews and the feasibility and acceptability study.

1.5 Expected beneficiaries and benefits

The primary beneficiaries of these Guidelines are policy and decision-makers in the health and education sectors, educators, and future and current health professionals. However, the Guidelines are conceived for the ultimate benefit of users of health services, whose needs should determine the quantity, quality and relevance of the education of health professionals. The Guideline recommendations can be strong or conditional depending on the quality of the supporting evidence, the balance of benefits and harms, resource use, feasibility and acceptability. *In no case should the guidelines be seen as a blueprint, which can be applied without taking into account the context.* They are orientations that stakeholders should consider in developing their own responses to their country's problems. Not all needs to change; some practices may be maintained and improved, others should be abandoned and new ones introduced. Policy-makers must decide what is most relevant for their population.

Civil society can also benefit from these recommendations and can contribute to their successful implementation through advocacy and policy dialogue, and by demanding accountability from government, training institutions and development partners.

1.6 Dissemination process

The Guideline document will be printed and made available on the WHO website. It will be complemented by an interactive ePlatform linked to the website for feedback and comments. It will also be available on CD-ROM and circulated through WHO channels for adaptation and implementation at country level.

An NGO in official relations with WHO has agreed to set up a Task Force consisting of representatives of education and training institutions, as well as NGOs involved in working with universities to improve governance of academic institutions and make curricula more relevant.

Because there were a number of policy makers, regulatory bodies, collaborators and country partners who were members of the Guidelines Development Group, they have committed, in the second meeting of the Guidelines Development Group, to implement the guidelines through mechanisms and activities in their own institutions. They have also indicated willingness to provide advocacy for the guidelines by inserting discussions into the guidelines in to the agendas of their global or regional meetings, with the objective of identifying areas in which their institutions can embed the guidelines into their work at the county level.

Given the involvement and interest of civil society organizations who are also service providers, they have also agreed to establish working groups in the areas of education and training institutions; governance of training institutions; accreditation and regulation, financing and sustainability; and performance and social accountability to provide global and country advocacy messages using the recommendations of the guidelines.

It is planned that the guidelines will be translated into all the UN languages and disseminated. The recommendations given in this document are expected to remain valid until 2016. The Human Resources for Health Team at WHO Headquarters in Geneva will be responsible for initiating a review of these global recommendations at that time, based on new evidence and research and feedback from countries that have been using the recommendations.

¹ <http://www.who.int/hrh/education/planning/en/index.html>

1.7 Conflicts of interest

The WHO Secretariat reviewed all declarations, and found no case where there was involvement in remuneration that was seen as a compromising factor. There was also a further declaration at the Guideline Development Group meeting. Overall, the WHO Guideline Steering Group and WHO Secretariat were satisfied that there had been a transparent declaration of interests, and that no case necessitated exclusion from the deliberations. The broad range of constituencies represented on the Guideline Development Group was also noted, and that the majority of members had no declared interests. All individuals with declared interests therefore proceeded to participate fully in the Guideline Development Group meetings or to act as peer reviewers. Please see Annex 15 for further details.

1.8 Peer review process

A full draft of the Guidelines was circulated for comment to members of the Guideline Development Group and the external peer review group. All members of the Guideline Development Group and peer review group completed WHO declaration of interest forms (which included requests for information on receipt of payment for consultations and participation in advisory panels). A total of 37 Guideline Development Group members (excluding WHO staff) and all peer reviewers signed declarations of interest. In order to contain costs for attendance at the meeting employers of members of the group who could afford to were requested to sponsor their travel and others who could not were sponsored by WHO. This arrangement was made very clear in correspondence to Guidelines Development Group Members. Seven members of the Guidelines Development Group declared receipt of remuneration (via consultancy) from another university and five of the seven peer reviewers.

1.9 The Guideline Development Group

The composition of the Group was in accordance with WHO procedures for developing guidelines and included health professionals, academics, pedagogical experts, policy makers, representatives of regulatory bodies and professional associations, technical experts in human resources for health, development agencies, UNESCO, World Bank representatives, guideline methodologist and civil society representatives. Appropriate representation by geography and sex was also considered. Regional Advisers/programme managers of human resources for health of all the WHO Regional offices were also represented.

1.10 Structure of the document

The Guidelines discuss issues that are broader than the areas for which recommendations have been made, but the body of the document is largely grouped around the five 'domains': education and training institutions, accreditation and regulation, financing, monitoring and evaluation, and governance. Each domain includes various sub-dimensions. Recommendations are made in four of these five domains; for each, a summary of the evidence tables and a commentary on implementation considerations is presented.

A final section identifies gaps in available knowledge, which should be further researched at country and global levels.

Transforming and scaling up health professionals' education and training: Why is it urgently needed?

The vexing issue of the chronic and severe lack of health professionals worldwide is devastating for those countries where millions of people are without access to appropriate health services, principally primary care. This is the most critical challenge to achieving universal coverage of health services. If competent appropriately skilled health professionals are not available in adequate numbers and distributed proportionately to the population, many citizens will not receive the services corresponding to their health needs.

The World Health Report 2006 estimated that an additional 2.4 million doctors, nurses and midwives were needed globally (WHO, 2006a). There is no indication that this deficit has been significantly reduced since that estimate was first published. The health workforce is one of the six building blocks of the health-care system that countries need to strengthen if the objective of universal equitable access to good quality health services is to be achieved (WHO, 2007). Producing more health professionals alone will not be sufficient; what a population needs is a health workforce with the right competencies to respond to its evolving needs. In most countries, rich and poor, the education of health professionals has traditionally been isolated from health service delivery needs and has not been adapted to rapidly changing population health profiles. The excessive focus on hospital-based education and education that is segregated into professional silos do not prepare health professionals for team work, and for leadership skills required in 21st century health services (Joint Learning Initiative, 2004; WHO, 2006a; GHWA, 2008; Frenk, et al., 2010).

Undoubtedly, more health professionals are needed with new competencies and motivation to serve the needs of society. The transformation of health professionals' education can be achieved by competent and dedicated leaders focusing on health needs and the objectives of the health services system. The WHO *Initiative on transforming and scaling up health professionals' education and training* is a contribution to this difficult but inspiring task.

Policy discussions on health workforce education initially focused on the need for increased educational capacity and production. The problems of insufficient health workers were perceived to be exacerbated by migratory flows, largely from low-income to high-income countries, which resulted, in 2010, in the adoption by the WHA of a *WHO Global Code of Practice on the International Recruitment of Health Personnel* (WHO, 2010a²). A related issue, the inequitable geographical distribution of the available health workers, led to the publication of the WHO policy recommendations on *Increasing Access to Health Workers in Remote and Rural Areas through Improved Retention* (WHO, 2010b). Soon, the need was raised to address the shortcomings in current approaches to the education of health professionals in a more systematic manner. The Independent Commission on Education of Health Professionals for the 21st Century (Frenk, et al., 2010) directly addressed the issue.

As a global normative and technical health agency, WHO has assumed responsibility for providing guidance to countries on the transformative scaling up of health professionals education. In 2009, WHO began collaboration with the United States President's Emergency Plan for AIDS Relief (PEPFAR) and the United States Agency for International Development (USAID) who shared the objective "to strengthen the quality and capacity of nursing, midwifery, and medical education in Africa" with sound policy and technical guidance in order to build a quantitatively stronger health workforce with a greater capacity to respond to the health needs of individuals and communities.

Scaling up education and training is a critical component of the strategies to strengthen the health workforce, but much of its effectiveness will be lost if it is not complemented with policies to retain the graduates, and to provide them with working conditions that will enable them to use their knowledge and skills productively (GHWA, 2008).

A strategic decision was made by the WHO Secretariat and endorsed by the Guidelines Development Group to broaden the range of health professionals from doctors, midwives and nurses to cover a wider range of health professionals (Annex 1), and not to confine the geographical focus to Africa, despite the high concentration of countries in human resources for health (HRH) crisis in the region. The intent of the guidelines is to serve the needs of a variety of groups: government leaders and policy-makers in health, education, finance, labour and the civil service; public and private education and training institutions; students, health practitioners; educators and researchers; professional associations and regulatory bodies; health services managers; civil society, and development partners intervening in the health sector.

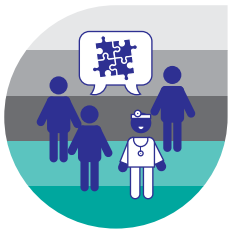
² Member States also called for WHO Resolutions on Health workforce strengthening (EB128.R9) and Strengthening nursing and midwifery (EB128.R11) which were adopted at the 64th World Health Assembly, May 2011.

3.

Transforming and scaling up health professionals' education and training: What are the key policy issues and possible responses?

This section presents the main policy issues that face decision-makers in the five domains for interventions to transform and scale-up the education of health professionals identified by the Core Group, these being: education and training institutions, accreditation and regulation, governance and planning, financing and sustainability, and monitoring, implementation, and evaluation.

The policy recommendations do not cover all areas of health professionals' education and training. Only those seen as priority areas by both WHO and the Core Group were included. Furthermore, there are a number of areas where more research is needed even with regard to the five main domains and these are outlined in Section 5 *Knowledge gaps and research agenda*.



3.1

Education and training institutions

There are health workforce imbalances in terms of deficits, shortages or inequitable distribution of workers in all countries (Celletti, et al., 2011; Frenk, et al., 2010). Together with the imperative to deliver more and more effective health services, these imbalances create an urgent need to scale up the number of human resources for health, to adapt the education and training of health providers to the new epidemiological and demographic challenges, and ensure a proper skill mix, and to adopt measures and incentives to make the geographical and organizational distribution of health professionals more equitable (Frenk, et al., 2010). In many countries,

this need has to be met in a context of difficult economic circumstances.

The link between education and health systems is close, as the former provides an essential resource to the latter: health professionals. There is consensus that, in most countries, there are insufficient health care providers, and many are deficient in terms of the quality and relevance of their training. New generations of health professionals equipped with appropriate competencies and capable of leading change must be educated and integrated into health systems in a continuous process of adaptation to a new reality in health.

The Lancet Commission has identified a series of reforms of education processes necessary for health systems to effectively answer population needs (Frenk, et al., 2010). These reforms aim at the acquisition of competencies responsive to local needs but connected globally, which include a culture of critical enquiry and the effective use of information technologies. Reforms should also trigger a renewal of professionalism. The ultimate goal is a transformative³ and interdependent⁴ professional educational system for health professionals to provide equity in health. To achieve that goal, it is essential to mobilize leadership within the educational and health systems, to invest more, to develop robust quality control mechanisms and to strengthen global learning.

In the process of building stronger education institutions, policy-makers face key questions such as: How to recruit the right type of students? Which competencies should they equip their graduates with? What profile of educators and trainers and which learning strategies are more appropriate? The Lancet Commission has identified four key policy issues corresponding to these questions: (1) admission; (2) competencies; (3) channels of instruction; and (4) career pathways (Frenk, et al., 2010). Additionally, there is the question of which institutions are best prepared to produce the desired quantity and quality of health professionals.

3 "... the highest of three successive levels [of education] (...) it is about developing leadership attributes; its purpose is to produce enlightened change agents." (Frenk, et al., 2010:6.)

4 "... involves three fundamental shifts: from isolated to harmonized education and health systems; from standalone institutions to networks, alliances, and consortia; and from inward-looking institutional preoccupations to harnessing global flows of educational content, teaching resources, and innovations." (Frenk, et al., 2010:6.)

3.1.1 Key Policy Issue #1:

Which competencies should students acquire?

In 1910, following the recommendations of the Flexner Commission and other major commissions of enquiry (e.g. the Gies Commission on the education of dentists in 1926) that explored the quality of the education of health professionals (Frenk, et al., 2010), the principles of current medical curricula were established. The emphasis was put on the acquisition of core competencies, e.g. a minimum set of scientifically based knowledge and skills, needed to deliver health care. As a result, Flexnerian reforms centralised training of health professionals in hospital settings, with the emphasis placed on a biomedical approach to education, at the expense of a more comprehensive understanding of social and community health problems. Although not all educational institutions followed this biomedical model at the same pace, the result overall has been a *“...mismatch of competencies to patient and population needs, poor team work, persistent gender stratification of professional status, narrow technical focus without broader contextual understanding; episodic encounters rather than continuous care; predominant hospital orientation at the expense of primary care; quantitative and qualitative imbalances in the professional labour market; and weak leadership to improve health system performance.”* (Frenk, et al., 2010:5) More overtly, over the past century, the demographic, epidemiological, socioeconomic and technological environment has changed dramatically with increasingly complex and new demands on the health professional workforce. For all of these reasons, Frenk and his colleagues argue that curricula need to be adapted to produce professionals with the capacity to identify and adjust to new environments in a continuous process of learning and adapting their competencies.

Meanwhile, it is widely recognized that it is not sufficient to adapt the curricula in line with the changing environment and technologies, but what is more critical today, is that health professionals must be able to adapt to cultural variations and values, as well as attitudes to the different health problems of populations. A good example of the sort of adaptation required is HIV/AIDS where health workers are often faced with providing health care in an environment where the stigma of having HIV hinders their access to patients.

3.1.2 Key Policy Issue #2:

Which teaching and learning strategies are relevant?

The reflection on which competencies should be taught and developed is still going on, but a consensus exists that an important type of competency needed by all health professionals is the capacity to collaborate across professional boundaries. Traditionally, the education of the various categories of professionals has been conducted in silos, each group developing its own set of competencies within a culture of ownership of a specific area of work. In today's health environment, teamwork is increasingly the model for care delivery⁵, where boundaries need to be expanded and inter-professional education considered as a step towards that collaborative practice model of care. Interprofessional education is the process by which students from different professional programmes learn together during certain periods of their education with a view to enhancing collaboration and team work, and ultimately improving patient-centred care. Interprofessional education aims to ensure that all members of the health team understand each other's roles, core competencies, basic language and mind-sets, and that they develop attitudes and behaviours that facilitate collaboration. Although these objectives are obviously appropriate, there remains a need for further research evidence on the effectiveness of inter-professional education in improving collaboration and patient care outcomes. Initial research studies reveal that IPE increases confidence in health professionals' identity and appreciation of the roles of other professions, and improves communication and team-working skills.

Another innovative teaching and learning strategy considered for IPE is e-learning. The richness of e-learning is that it can be used in both high-income and resource-constrained countries and serve as a tool for interprofessional education, particularly if it is delivered in an open access environment. Several studies have demonstrated an overall positive effect of e-learning or blended learning courses compared to the more traditional didactic teaching, in the acquisition and retention of knowledge. Another advantage to be considered for e-learning is that it is accessible by health professionals working in remote areas whereby they can continue developing their competencies through such means as a versatile distance education. Because of its role in alleviating professional isolation, distance learning can be a component of a strategy to retain health workers in rural and remote areas. However, not all competencies can be developed without some interaction with trainers or peers; the utilization of blended and even traditional strategies should be considered in such cases⁶.

Some health professional programs incorporating interprofessional learning experiences are being developed using a community-based learning approach, so that not all experiences are limited to institutional formal hospital settings.

⁵ Virani (2012) identifies five types of inter-professional care models: inter-professional team models, nurse-led models, case-management models, patient-navigation models and shared-care models.

⁶ WHO commissioned a paper that was published in the Journal of Human Resources for Health entitled 'E-learning in Medical Education in Resource Constrained LMIC Countries'.. Seble Frehywot*#, Yianna Vovides*, Zohray Talib, Nadia Mikhail, Heather Ross, Hannah Wohltjen, Selam Bedada, Kristine Korhumel, James Scott. Human Resources for Health 2013, 11:4

3.1.3 Key Policy Issue #3:

Which educators and trainers? Which career pathways?

The selection and recruitment of qualified educators and trainers is a crucial part of the scaling up and transformation of the education of health professionals. Recruited staff should have adequate clinical and scientific competencies, but they rarely have the pedagogical preparation (communication, adult learning principles, use of new information technology, etc.) required to function in the transformed environment.

Faculty development is, therefore, important to ensure that teachers and trainers are well prepared to assume their responsibilities as educators. Faculty development is defined as a planned programme of events aimed at preparing individuals for their roles as teachers, clinicians, researchers and administrators with the purpose of enabling the institution to meet its goals, vision and mission, and its social and moral responsibilities to the communities it serves (Frenk, et al., 2010; Couper, et al., 2012). Another relevant issue is that, in many instances, teaching is not the most important activity of teachers, being considered complementary to, or even a diversion from, patient care and research which are perceived as more rewarding. The current and proposed effort to train more doctors, nurses, midwives and other health professionals puts an extra burden on institutions and their staff; more educators are needed and their function must be made more attractive. Incentives such as access to faculty development are part of the response to bridge the gap between teaching and clinical work by allowing interaction between monitoring and coaching, relationships and networks, organizations, systems and cultures, and tasks and activities. In order to facilitate the attraction and retention of educators career structures and incentive and reward systems need to be developed or improved. Specific efforts are needed to train and attract teaching staff with competencies in primary care in order to provide future health professionals not only with knowledge in the field, but also with role models which can stimulate them to choose this career orientation.



3.2

Accreditation and regulation

Regulation and accreditation are essential components of any strategy to improve the performance of a health-care system. Laws and regulations directly and indirectly affect “who in the health care world can do what to whom and where”. Policy-makers can view regulation as a tool in addressing workforce imbalances and other challenges, and meeting the objectives of scaling up health professionals’ training and education. Key issues to be considered are: 1) Why regulate? 2) What to regulate? 3) What extent of regulation and accreditation? 4) Who should regulate? 5) How should the effects of regulation be measured?

3.2.1 Key Policy Issue #1:

Why regulate practice and accredit courses?

Market failures in the health workforce are well known and not correcting them may result in severe harm to populations: for example, if there were no minimum qualification requirements to entering the health labour market, populations would be exposed to incompetent providers and to individuals misrepresenting themselves as qualified health-care providers. Also, an unregulated market would not respond to the needs of the poorer sections of the population, or to health-service needs that are not financially attractive, such as primary care, public health or diseases more prevalent among the poor. Training institutions would have an incentive to give priority to professions and specialities more sought after by potential students. There would be little interest in recruiting from minority groups or training for underserved regions. The rapid growth of private-for-profit actors in the health sector, not only as health-service providers but also as trainers of health professionals has made these concerns increasingly acute. For example, in India, 147 of the 191 new medical schools established in the last 30 years are in private universities (Uys & Coetzee, 2012). As guardian of the public interest, the state has a responsibility for ensuring that citizens are protected against poorly qualified or unqualified providers of health services, and therefore should act as a facilitator of the quality of education of health professionals, as well as insuring that sufficient health professionals are being trained and that their training meets the needs of the community. In human services, such as health, the need for protection is enhanced by the information asymmetry between provider and patient, and regulation is needed to guarantee that health professionals do not take advantage of the relative dependency of their clients

Key Policy Issue #2:

The scope of regulation and accreditation

Typically, the following aspects of health professions that are regulated rather than left to the market are: (i) access to education institutions; (ii) curricula; (iii) access to practice and the scope of tasks that can be performed; (iv) quality of professional education and respect of ethical norms; and (v) continuing maintenance of competencies. Regulatory mechanisms include accreditation, licensure (and sometimes periodical re-licensure), professional inspection and compulsory continuing education. As regards the education of health professionals, important questions are: who can set up a training/educational institution; should there be international/national standards for programmes, curricula, qualification of educators? How can regulation contribute to scaling up the quantity of health professionals and the quality and relevance of their education and training?

The most common approach to accreditation of institutions and programmes is the process model that includes: self-evaluation based on agreed standards; a peer review that usually includes a site visit; and a report indicating the outcome of the accreditation (full accreditation, conditional accreditation and no accreditation). A ministry, a professional regulatory body, a national accrediting body or a professional society may carry it out. However, in more than half the countries of the world, reviews of schools and programmes are not done at all or not adequately (Uys and Coetzee, 2012). There is only weak evidence of a causal link between accreditation and higher quality. When accreditation is voluntary, the likelihood of such an association is higher, but the explanation may be that it is higher quality institutions that choose to become accredited (Sutherland & Leatherman, 2006).

In low-income countries, the existence of a statutory authority for the regulation of the medical, dental, pharmaceutical, nursing and midwifery professions is common, but rare for mid-level health workers, leaving them in a legal limbo. In a small number of countries, there exists a Council for Professions Allied to Medicine, which, in certain cases, does cover clinical officers and medical assistants. In terms of effectiveness, there are sometimes grave deficiencies in the processes of determining competence to practice. Two deficiencies in particular are highlighted: the evolving roles of health workers are not adequately recognized (an example is the emergence of new prescribers in response to the HIV epidemic); and lifetime registration implying that there is a major risk of skill decay over time. This is particularly likely to occur when the regulatory body is a branch of the same entity responsible for training health workers (e.g. ministry of health) where graduates of the training programmes are automatically licensed to practice with no independent assessment of competency (Johnson, 2012).

However, good practice in the shape of the shift from a single lifetime registration or licensure to a pattern of periodic re-licensure subject to evidence of continuous professional development and/or re-assessment of competence to practice is increasingly encountered.

3.2.3 Key Policy Issue #3:

What is the right balance between regulation and autonomy of institutions?

Regulation can be a barrier to innovation if it is too rigid, excessive or not responsive to evolving needs. Rules and norms can also be too costly to implement and therefore deprive institutions of resources that could be devoted to improving their performance. A balance between flexibility and effectiveness needs to be found. For example, a recommendation to regulate the creation of schools and programmes should ensure that the conditions for doing so do not generate disincentives and subsequently hinder the expansion of the supply of educational opportunities. When there is no mechanism to ensure that students in the same profession receive the same quality of education, some form of regulation is needed; but to what extent should there be standardization of curricula and teaching strategies, without limiting space for innovation and adaptation to changes in the environment or allowing for cultural variations between countries or regions within countries? There is no easy answer to the question of the extent of regulation. Each country has its own cultural and legal traditions and specificities, and what is acceptable in one country may not be in another. However, the criterion that policy-makers should use is the same everywhere: which regulation will contribute more to improving the quantity, quality and relevance of health professionals?

3.2.4 Key Policy Issue #4:

Who should regulate?

States with a tradition of centralization tend to assume this function through their ministries of health or education, or agencies created for that purpose. In others, the state has the ultimate responsibility for protecting public interest, but it delegates regulation rights and duties to professional councils. Regulation is done by peers instead of bureaucrats or the market (Girardi, 2008). However, increasingly in these situations, there is greater oversight and accountability of the regulator and a move to greater public engagement in regulation. This is because it is increasingly recognized that the original impetus to statutory recognition was to secure a professional monopoly, the continued protection of which is not necessarily in the public interest.

3. WHAT ARE THE KEY POLICY ISSUES AND POSSIBLE RESPONSES?

There are also independent organizations, such as professional associations, which in some countries may regulate access to medical specialties, or accreditation agencies which regulate educational institutions and programmes. In general, countries use a combination of these mechanisms. The effectiveness of each modality depends on numerous factors and varies according to the country, period and even the professional group (Friedson, 2001). The ability of the professions to govern themselves and to balance their self-interest with the public interest is an issue of continuing debate. To determine who should be the regulator and what should be its role, with what powers, and how and to whom it should be accountable is a matter of acceptability as much as of effectiveness. For example, in Australia and Canada, accreditation is a bottom-up peer-managed process whereas in France, it is government-led. In some instances, educational institutions apply the standards of international accreditation bodies, in addition to or in substitution of national mechanisms. This is the case for medical education in Canada, for public health in Europe⁷, and for health services management in Canada and the United States of America, and increasingly in Asia, Europe and Latin America⁸.

3.2.5 Key Policy Issue #5:

How should the effectiveness of regulation be measured?

In assessing whether a health workforce that fulfils its social accountability mandate to the population it serves, the education regulation system of health professionals should be assessed in terms of its impact on quantity, quality and relevance on the basis of appropriate indicators. A robust, transparent process of accountability and public reporting mechanisms should be in place to ensure that regulation produces the expected results and that it is not monopolized by interest groups. Evaluation tools produced by the Training for Health Equity Network (2011) or by the Global Consensus for Social Accountability of Medical Schools (2007) may serve as basis for the development of such measures that fit the objectives of regulators in a specific country.



3.3 Financing and sustainability

Financing is at the heart of enabling actions that make scaling up the education of health professionals feasible (Frenk, et al., 2010:35). With regard to financing, policy-makers need to address several key issues: (1) how much education changes will cost and how much the country can afford; (2) sources of funding; (3) where to allocate the funds; and (4) how to ensure a flow of funds to make scaling up sustainable.

3.3.1 Key Policy Issue #1:

Estimating the costs of scaling up and their affordability

The Taskforce on Innovative International Financing for Health Systems estimated that nine per cent of the total costs of scaling up health systems were related to pre-service training of health workers (WHO, 2009). The Lancet Commission estimated current global spending in education and training of health professionals at 100 billion US dollars, or less than two per cent of total health expenditure. The Commission described this level of investment as “not only insufficient but unwise, putting the remaining 98% at risk.” (Frenk, et al., 2010:35.) If two per cent is not enough, the question arises of how much should a country spend?

Producing more health workers requires more training, strategic marketing and recruiting, remunerating more educators and trainers, and additional infrastructure (laboratories, classrooms, dormitories) financial resources and equipment. There are two categories of costs that need to be considered in planning the expansion of the health workforce. First, there are the costs of expanding training capacity, which are a mix of capital costs for additional infrastructure and equipment, and recurrent costs for staff salaries and operating costs. Second, there are the costs associated with the employment of an expanded workforce, which are largely recurrent⁹. The high proportion of recurrent costs in the total costs of scaling up presents a problem for low-income countries dependent on external aid, since donors are generally reluctant to take on long-term financing commitments. The affordability of additional expenditures generated by the scaling up is a matter for political decision based on value choices as well as on economic criteria, and consideration of the benefits in terms of health outcomes. Spending more on the education

7 Association of Schools of Public Health in the European Region (ASPHER) – <http://www.old.aspher.org/> (accessed 29 November 2012)

8 Commission on Accreditation of Healthcare Management Education (CAHME) – <http://www.cahme.org/> (accessed 29 November 2012) and the Association of University Programs in Health Administration (AUPHA) – <http://www.aupha.org/> (accessed 29 November 2012).

9 Increasing numbers of one category has implications on the need for more of other categories e.g. more physicians require more nurses; more midlevel workers may require more professionals to supervise or support them. But more nurses could also mean a reduction in the number of doctors needed.

of health professionals would be acceptable if addressing the health needs of the population were considered a priority. There are strong arguments to do so, as evidence shows that the strengthening of health systems to make them more effective in tackling population needs, namely through stronger primary care services, leads to better health outcomes and to economic development (Commission on Social Determinants of Health, 2012; Figueras and McKee, 2012; McKee, Basu and Stuckler, 2012). However, care is needed to ensure that the fiscal space is sufficient to cover the new expenditures, which raises the second issue.

3.3.2 Key Policy Issue #2:

Where will the money come from?

The issue of the source of financial resources will be addressed differently in accordance with the level of wealth of a country. In high-income countries, domestic resources will likely be the only source of funding. Options available to policy-makers are: (i) to use existing public revenues, by shifting resources within the health or education sectors, for instance from costly hospital services to education, or from other sectors to the education of health professionals; (ii) to look for efficiency gains, for instance by increasing the utilization of mid-level and community workers, by reducing attrition (GHWA, 2008:72), and by making savings in the current educational system to increase its productivity; (iii) to generate revenue through higher taxes; (iv) to mobilize private funds through fees paid by students or creating incentives for the opening or expansion of private educational institutions, which are largely funded by student fees; (v) a combination of the former. Whatever the choice, the process will be politically sensitive because of vested interests and particularly difficult in the context of economic and financial crisis in many countries. In lower income countries, the same domestic options exist, but they are unlikely to yield sufficient resources and external aid will be needed.

3.3.3 Key Policy Issue #3:

Where should the money go?

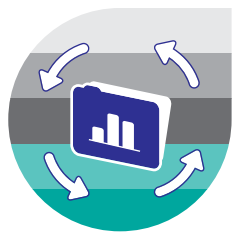
Spending more is important, but spending better is even more so. Funds should be used to increase the quantity, quality and relevance of health workers and thereby have the highest impact on the type and volume of services that the country needs. This is an issue of efficiency in the allocation of available funds: in what proportion should the funds be allocated to training physicians (and among them specialists or family practitioners), nurses and other technical personnel, or community workers? Evidence on allocation of resources among schools is scarce. Most studies compare the efficiency of different health workers in providing the same type of services, such as midwives/nurses/gynaecologists (Matendo R. et al, 2011, Rana TG et al, 2003). When studies on cost are performed, it is generally found that investing in midwives and nurses is cost-effective (Anderson RE , Anderson DA, 1999, Fagerlund K, 2009) although the evidence is mixed in highly developed health-care systems (Hendrix MJC et al, 2009).

What is the right balance between investing in infrastructure, compensation and working conditions, including continuing education, for health professionals? In the case of small countries without a faculty of medicine or specialty training, should they opt for training abroad or for developing their own training capacity?

3.3.4 Key Policy Issue #4:

How to ensure a flow of funds that makes scaling up sustainable?

In order to circumvent the risk that decisions on the expansion of training capacity are taken without adequate consideration of the long-term cost consequences, it is suggested that countries prepare a series of plans with both long-term or prospective timeframes, and short-term or operational timeframes. The training plan should be consistent with the human resources for health plan, which in turn should be consistent with the health sector plan. This plan should set out health improvement objectives and the strategies by which they would be achieved, including the respective roles of public and private sector actors, and should be compatible with the predicted available resources, both capital and recurrent. The HRH plan should derive from the health sector plan and provide realistic estimates of the effective demand for different categories of health workers, taking into account employment in both public and private sectors. It should then formulate strategies for matching available supply to anticipated demand, also taking account of attrition from all causes, including emigration and employment outside the health sector. The HRH plan may well call for expansion in training outputs, which is the starting point for the formulation of a plan for the development of training capacity. This plan would review existing capacity, including the human resources dimension, and make proposals for the quantitative and qualitative improvements necessary to meet the training outputs specified in the HRH plan, within the available resource envelope.



3.4

Monitoring, implementation and evaluation

The implementation of transformative changes in the education of health professionals is justified by clear objectives: to ensure the availability of a workforce that is sufficient in number and skills mix, and has the competencies and professional outlook that correspond to the needs of the population it will serve. To ensure that these objectives are being achieved, mechanisms to track changes and their effects must be in place so that policy-makers can be informed in good time if their policies need adapting. To that end, valid and updated information is needed in an easily accessible and interpretable format. Monitoring and evaluation are key components of change implementation, but making them effective is often a challenge. Leaders planning

the transformation of the health workforce's education will face a number of challenging policy issues: what to monitor, how to do it, who should be responsible, and how to ensure that the information produced by monitoring and evaluation will be used?

3.4.1 Key Policy Issue #1:

What to monitor, for what purpose, and how to do so?

Monitoring is not an end in itself; there is little value in producing information that will not influence decisions. Also, not all information has the same weight and potential influence on decision-making. Therefore, it is critical that policy-makers and implementers of change identify their information needs. There is no need to monitor everything and thereby accumulate data that will be unused. The issue here is to identify what data and information are critical for decision-making, whether to adjust an intervention to changing circumstances (formative evaluation) or whether to continue or stop its implementation (summative evaluation). Typically, information is needed on the inputs, processes and results of interventions, the latter always being the most difficult to measure as they take time to produce.

The WHO Handbook on monitoring and evaluation of human resources for health proposes that monitoring of entry into the health labour market focus on seven dimensions, of which four concern education: (i) the pool of eligible candidates for health education and training; (ii) recruitment and selection of students; (iii) accreditation of education and training institutions; (iv) capacity and output of education and training institutions (Tulenko, Dussault and Mercer, 2012). Do we need to include the subsequent employment of graduates? There is no point having educated health care graduates with no jobs. This framework can be a starting point for the definition of what is worth monitoring. Indicators can be defined for each dimension to provide the information needed for the effective monitoring of the implementation process and the results.

3.4.2 Key Policy Issue #2:

How to conduct monitoring and evaluation and who should be responsible?

Effective monitoring requires information systems that produce relevant and reliable data in a timely and easily accessible manner (Dal Poz, 2012). In most countries, basic health workforce data, including those relating to the process of being educated, are deficient. Typically, data are dispersed among numerous organizations that collect information on different parameters, and use different definitions and timeframes, with the result that data quality varies in terms of consistency, validity, reliability, comprehensiveness and comparability over time. In general, data on health professionals employed in public services are more complete than on those in the private sector. Few countries produce data on multiple employment, productivity, or on the mobility of health workers. The introduction of transformative changes in education is an opportunity to review the strengths and weaknesses of current information systems, and to build systems that will make it possible to monitor and assess the effects of changes on the quantity, quality and relevance of new health professionals. In order to interpret data and to evaluate policy implications, explicit criteria and targets for these expected results are needed.

Data collection is best done by organizations closely involved, e.g. training institutions (for quantity), professional regulatory bodies such as accreditation agencies and professional councils (for quality and relevance), and employers (for quantity, quality, and relevance). A high level of collaboration between key stakeholders is needed to reach agreement on the data to be collected, the definition of indicators, and on the sharing of the results. Some sort of clearinghouse that gathers data from different sources is needed. It can take different forms, such as an independent public institute (Canadian Institute for Health Information¹⁰, the UK Centre for Workforce Intelligence¹¹), or a health workforce observatory (Brazil's network¹²), for example. Whatever the type of organization, its goal should be to ensure the quality and relevance of data, which should allow tracking graduates, in particular their professional options, such as their field and location of practice. This may be best done centrally rather than at an institutional level, by an accrediting body or a relevant government agency.

10 Canadian Institute for Health Information (CIHI): <http://www.cihi.ca> (accessed 29 November 2012).

11 Centre for Workforce Intelligence (CFWI): <http://www.cfwl.org.uk/> (accessed 29 November 2012).

12 Rede Observatório de Recursos Humanos em Saúde do Brasil (ObservaRH): <http://www.observarh.org.br> (accessed 29 November 2012).

3.4.3 Key Policy Issue #3:

How to facilitate the utilization of information for policy development and implementation?

A major challenge is to bring the information to those who can best use it for policy and decision-making purposes, and to ensure that it is properly interpreted and used. Policy decisions are not based only on “evidence”, but valid data can be a critical input. Some countries have shown the way in how to build bridges between data collection and analysis and decision-making. Leaders of change in education can learn much from the experience of organizations such as the Canadian Health Services Foundation¹³, the Health Foundation in England¹⁴ or the Center for Advancing Health in the USA¹⁵ which show that knowledge brokering and exchange can be carried out systematically. Lower income countries may not be able to afford the investments that have been made in Canada, the United Kingdom or the USA, but low-cost actions are feasible; not doing anything to inform decisions costs more.



3.5 Governance and planning

The success of a radical transformation in any complex system requires strong leaders and policy entrepreneurs (champions) as well as solid governance, e.g. planning and policy/decision-making rules and processes, regulation and accountability mechanisms, at all levels of implementation of the proposed changes. To change the education of health professionals is not a mere technical exercise. It is a very political process that takes place in a complex environment; it affects the values, objectives, power and interests of numerous stakeholders. A new model for the education of health professionals supposes major cultural and organizational changes, and it requires important new investments. All this requires a strategic approach to transforming and scaling up, and some form of planning, in terms of clearly defining the expected results, what needs to be done to achieve them, how it will be done and with what resources. A plan is certainly useful but far from sufficient: stakeholders must commit and stay committed to implementing it, resources need to be mobilized, and political support maintained. This is where leadership and good governance become critical to progress on education reform, which is “*a road strewn with obstacles*” (Jolly, Louis and Thomas, 2009).

The leaders who are most needed are those who can grasp the multiple dimensions and interconnections of the components of the transformation and scaling up of education and training, as well as the complex relationships between the various stakeholders. Governance also needs to be adjusted. By this we refer to the formal and informal rules and norms that define roles, responsibilities, and policy and decision mechanisms in a certain sector (Brinkerhoff and Bossert, 2008).

Good governance results from the combination of institutional and organizational mechanisms that support change, and the technical and political capacity and will to conduct change. Often governance in matters relating to the health workforce is concentrated in ministries of health at levels where capacity is weak, as is the case in sub-Saharan Africa, which has the greatest number of countries experiencing a human resources crisis (Nyoni and Gedik, 2012).

Lack of good governance is an open door to ineffectiveness, haphazard and politically motivated decisions, lack of transparency and accountability, and corruption. “Smart governance” in health has been defined as governing by collaborating, by engaging citizens/stakeholders, by mixing regulation and persuasion, through independent agencies and expert bodies, and by adaptive policies, resilient structures and foresight (Kickbush, 2012). This is a major departure from top-down, centralized governance based on coercion, and it requires leaders who understand change, who believe in it and who can engage others.

3.5.1 Key Policy Issue #1:

Will a national education plan to produce and retain graduates have an effect on quantity, quality and relevance?

Should the plan be developed in consultation with all stakeholders? Must the plan be informed by the needs and absorptive capacity of the labour market, and be aligned with national HRH plans and national health plans?

13 Canadian Foundation for Healthcare Improvement: <http://www.chsrf.ca> (accessed 29 November 2012).

14 The Health Foundation Inspiring Improvement: <http://www.health.org.uk> (accessed 29 November 2012).

15 Centre for Advancing Health (CFAH): <http://www.cfah.org> (accessed 29 November 2012).

3. WHAT ARE THE KEY POLICY ISSUES AND POSSIBLE RESPONSES?

In reviewing the literature for evidence, four different interventions have been identified and analysed¹⁶ which include the following:

- Intervention 1:** The mere existence of a health professionals' education plan.
- Intervention 2:** A health professionals' education plan that is integrated into a larger national health plan/policy.
- Intervention 3:** Strong collaboration efforts between all stakeholders involved in education plan development.
- Intervention 4:** Strategic steps in considering and taking into account the workforce market needs and absorptive capacities for the education plan development.

Concerning **Intervention 1**, the question of the necessity of an education plan for health workers to improve their quantity, quality and relevance still raises debate. First, to justify focusing on HRH and thus on the necessity of planning, the main issues related to HRH must be highlighted such as: imbalances in numbers, inadequate or inappropriate training, and the poor functional and geographical distribution, (Hall, et al., 1998).

These issues leading to the HRH crisis worldwide might be addressed through HRH plans and education planning among others (Mullan, et al., 2010; Ueffing, et al., 2009; Kabene, et al., 2006; Dovlo, 2005). It is well documented that education plans have to be defined according to national health policies, standards and/or recommendations (Gaye and Nelson, 2009). One concrete example is the Liberia's Emergency Human Resources for Health Plan developed in 2007 (Varpilah et al, 2011), for which training reforms were defined within a national-wide reform. A number of authors have mentioned the relevance and necessity that an education plan must be part of a larger national health plan and aligned with national health goals and objectives (Hall and Mejia (1998), Dussault and Dubois (2003), Hofler (2008), Stordeur and Leonard (2010), Schiffbauer et al. (2008)). Moreover, an education plan is nearly always part of a broader HRH plan. Justifications mentioned by Dussault and Dubois (2003) imply that a HRH education plan is useful to facilitate planning, to support decision-making, to provide a framework for evaluating performance, and to let professionals and other sectors rally around health problems and to legitimize actions. For instance, in the case of high shortages due to migration of health workers and HIV/AIDS (South Africa) or in countries in conflict (e.g. Afghanistan, Southern Sudan) improved education of health workers and professionalization of management and leadership have been identified as requirements to address HRH imbalances (Schiffbauer, et al., 2008).

Nevertheless, HRH plans might present some limitations (Simoens and Hurst, 2006 – Box 3, p. 20) and thus, labour market forces can be more effective than HRH planning (thanks to lower costs, non-governmental accountability involved, and because other sectors and/or several countries apply this kind of regulation – Hall, et al., 1998). For instance, Buchan, et al. (2011) concluded that, in Brazil, it was not necessary to develop “a single detailed long term ‘plan’ or strategy for HRH change”. In Belgium, the education plan for HRH failed and led to HRH shortages in the Flemish Community, whereas the French Community was beyond its quota (Stordeur and Léonard, 2010). Instead of developing a national HRH education plan to regulate numbers and skills of health workers, focusing on Human Resources Management within health facilities has been highly successful in the USA (Buchan, 2004 – the magnet hospital example).

Finally, Simoens and Hurst (2006) also presented several failures of health labour market forces (physician monopoly power thanks to licensing and regulatory requirements, pay structures potential excess demand due to modified price signals that health insurance may imply, induced demand by asymmetry of information and reimbursement structures). That is why HRH planning seems to be relevant according to some situations and will thus keep being useful: for instance, Hall, et al. (1998) define criteria for selection of HRH planning rather than labour market forces to determine at least the numbers of health workers. Interventions presented in the following paragraphs outline three main criteria that should lead to relevant and efficient HRH education plans: integration in the national health policy, strong collaboration between all stakeholders and definition of a plan that answers assessed needs and absorptive capacities of the national health labour market.

Regarding **Intervention 2**, it is well documented that education plans have to be defined according to national health policies, standards and/or recommendations (Gaye and Nelson, 2009). One concrete example is the Liberia Emergency HR Plan developed in 2007 (Varpilah, et al., 2011) for which training reforms were defined within a national-wide reform. Stordeur and Léonard (2010), Hofler (2008), Schiffbauer, et al. (2008), Dal Poz, et al. (2006), Dussault and Dubois (2003) all mentioned the relevance of and need for an education plan to be part of a larger national health plan and be aligned with national health goals and objectives. Moreover, an education plan is nearly always part of a broader HRH plan.

About **Intervention 3**, this review of literature illustrates the usefulness of national intersectoral collaboration: Gaye and Nelson (2009) identify one of the major traps related to training initiatives as the: “lack of country-level coordination of health training among donors, ministries and other key actors”. Thus, they also propose promising practices related to HRH planning, such as “engaging stakeholders” and “ensuring coordination of training activities”. Several authors mentioned the necessity of strong collaboration between all relevant stakeholders (Buchan, et al., 2011; Mullan, et al., 2010; Hofler, 2008; Dussault and Dubois,

16 See <http://www.who.int/hrh/education/planning/en/index.html>: Evidence table on recommendation 10.

2003). To rely on other countries' experiences can be one way of improving collaboration (Varpilah, et al., 2011; Mullan, et al., 2010.) The Vancouver case study (Purkis, et al., 2009) and the Afghanistan and Southern Sudan case studies (Schiffbauer, et al., 2008) well illustrate this positive impact of collaborative work between stakeholders involved in education plan development.

Eventually, **Intervention 4** reflects the necessity for HRH education plans to be based on needs and absorptive capacities of labour markets. Mullan, et al. (2010) recommended that, in sub-Saharan African countries, educational planning should focus on national health needs in order to improve the ability of medical graduates to meet those needs. Indeed, certain countries such as Liberia completed a HRH census to define Liberia's health worker needs (Varpilah, et al., 2011). Buchan et al. (2011) illustrated that in Brazil, the assessment and alignment with real needs was necessary. Another good example is the planning process based on population and health worker needs assessment undertaken in the USA (Thompson, et al., 2009). According to O'Brien et al. (2001), three different approaches are available to assess HRH needs: the needs-based approach, the utilization-based approach and the effective demand-based approach to human resources planning.

Moreover, labour market absorptive capacities must also be assessed. Relevant indicators of weak absorptive capacities in a country are underemployment, both in public and private sectors, and migration of medical workers. For instance in Mali and Benin, health workers are obliged to work in both the private and public sectors highlighting the lack of labour absorptive capacity in both sectors (Country Status Reports (CSR) of Mali, 2011, and Benin, 2009 – The World Bank). Other countries such as Belgium (Stordeur, et al., 2010), or Togo (CSR Togo, 2011) suffer from high rates of health workers' migration, illustrating the lack of jobs for health professionals both in public and private sectors. Health education plans can be used to regulate this phenomenon, often observed in developing countries (Kabene, et al., 2006). For instance, to address over supply of medical workers in Mexico (Frenk, 1982), the medical residency programme had to be first implemented and then regulated to absorb increasing numbers of students.

There are clearly some questions for which we need to continue building evidence.

3.5.2 Key Policy Issue #2:

How to secure political commitment across political cycles, e.g. government change, substitution of ministers?

- **Should the mandate come from the government and from parliament in order to stress the political commitment to reform?**
- **How can the various national stakeholders be engaged?**
- **Is there a role for international professional associations such as the International Council of Nurses (ICN), Secrétariat International des Infirmières et Infirmiers de l'Espace Francophone (SIDIIEF), World Medical Association (WMA), World Federation for Medical Education (WFME), International Confederation of Midwives (ICM), associations of educators, e.g. Conférence Internationale des Doyens des Facultés de Médecine d'Expression Française (CIDMEF)?**
- **In the case of lower income countries, what is the role of international technical agencies (e.g. WHO), financial agencies (e.g. World Bank, regional banks, bilateral cooperation agencies), or foundations (e. g. Bill and Melinda Gates, Rockefeller, W.K. Kellogg), and how can their support be mobilized?**

4.

Recommendations to transform and scale up health professionals' education and training

Based on the best evidence available, but also noting that transforming the education and training of health workers requires changing a system that has not worked and using the evidence of that same deficient system to bring about change, due to the quality of most of the evidence, the strength of the majority of the recommendations was conditional. It was the opinion of the Guidelines Development Group however, that in the recommendation 10 on accreditation, although the quality of the evidence was assessed as low it was proposed as a strong recommendation. This was the same for the recommendation 5 on simulation methods. Although the quality of the evidence was moderate a strong recommendation was proposed.

The direction and strength of the recommendation reflects the extent to which the Guideline Development Group was confident that the desirable effects of following a recommendation are greater than the potential undesirable effects. In terms of implications, a strong recommendation can be adopted as a policy in most situations. A conditional recommendation implies the need for substantial debate and involvement of stakeholders in deciding whether or not to adopt the recommendation. In some cases, the panel may have decided to qualify the conditional recommendation by providing the "conditions" under which it should be considered. Examples of these conditions include: ensuring availability of experienced staff, space or equipment, conducting needs assessment and integrating the new intervention within existing programmes. One specific type of condition is implementing the intervention "in the context of close monitoring and evaluation". This is appropriate when monitoring of the feasibility of implementing of the implementation of the intervention and evaluation of some short-term outcome can ensure optimal implementation and adaptation if necessary. Another specific type of condition is implementing the intervention "only in the context of rigorous research". This is appropriate when there is a relatively high degree of uncertainty whether the desirable effects of following the recommendation is greater than the potential undesirable effects and the panel feels that the intervention should be adopted only when there is an opportunity to generate the needed evidence.

With respect to health service recommendations, the GRADE framework considers the following factors when deciding on the direction and strength of the recommendation: the magnitude of the problem, the balance of benefits and harms, resource use, equity, acceptability and feasibility (recorded in the decision tables at Annex 7). The decision table is a tool that: provides a systematic and explicit approach to making recommendations; makes transparent the judgements about the factors affecting the recommendations; provides supporting evidence to judgements; and provides guidance to policy makers on what to take into account when considering a recommendation.

4.1.1 Faculty development

RECOMMENDATION 1

Health professionals' education and training institutions should consider designing and implementing continuing professional development programmes for faculty and teaching staff relevant to the evolving health-care needs of their communities.

Quality of the evidence: **Moderate**

Strength of the recommendation: **Conditional**

We recommend the option in the context of close monitoring and evaluation

Key considerations:

- the promotion and reward of teachers and trainers should consider taking into account their participation in such programmes
- understand the institutional / organizational culture
- determine appropriate goals and priorities
- conduct needs assessments to ensure relevant programming
- develop different programmes to accommodate diverse needs
- incorporate principles of adult learning and instructional design
- offer a diversity of educational methods
- promote 'buy-in' and market effectively
- work to overcome commonly encountered challenges
- prepare staff developers
- evaluate and demonstrate effectiveness
- provide and offer peer programme consultation to enhance faculty development initiatives.

RECOMMENDATION 2

Governments, funders and accrediting bodies should consider supporting the implementation of higher education policies for mandatory faculty development programmes that are relevant to the evolving healthcare needs of their communities

Quality of the evidence: **Low**

Strength of the recommendation: **Conditional**

We recommend the option in the context of close monitoring and evaluation

Key considerations:

- determine appropriate goals and priorities
- conduct needs assessments to ensure relevant programming
- develop different programmes to accommodate diverse needs
- incorporate principles of adult learning and instructional design
- offer a diversity of educational methods
- promote 'buy-in' and market effectively
- evaluate and demonstrate effectiveness.

RECOMMENDATION 3

Health professionals' education and training institutions should consider innovative expansion of faculty, through the recruitment of community-based clinicians and health workers as educators.

Quality of the evidence: **Low**

Strength of the recommendation: **Conditional**

We recommend the option in the context of close monitoring and evaluation

Key considerations:

- these educators must come from and be based in the context in which health professionals are needed, in order to ensure socially accountable training;
- up-skilling and in-service education (faculty development) for these educators is a critical need as part of the implementation;
- there needs to be a support structure for the scaling up of educators. Without better infrastructure or ensuring the right level of relevant training with supervision and/or mentoring, there may only be temporary benefits.

Summary of the evidence¹⁷

Most health educators are expected to fulfil dual roles of clinical practitioner and teacher, and thus have at least two challenging sets of competencies to acquire. However, it is not clear that the expected high level of clinical practice competence is a feasible and sustainable goal of education in today's increasingly complex health care system.

Supportive evidence linking two competencies shows that students' or residents' ratings of faculty clinical excellence and teaching effectiveness were significantly correlated. In contrast, some controversial reports show that there was no significant relationship between measures of faculty clinical efficiency and teaching effectiveness scores for either resident or senior medical student learners. Additionally, comparative study of teaching effectiveness between senior faculty and student or resident teachers reported that tutees taught by student or resident teachers during clinical practical sessions performed just as proficiently, and in some cases possessed more clinical skills, than senior faculty. The results could be explained by the fact that the exact determination of what constitutes competent clinical practice for health educators is elusive; so various methods of evaluation were used in each report. Another reason is that the student and resident teachers may be closer in experience and be more enthusiastic in teaching clinical procedures, using a systematic step-by-step approach in teaching a skill compared to senior clinicians who may use a more constructivist approach.

Physicians who were farther in years from their training did poorly on the EBM knowledge and were less likely to incorporate EBM into their teaching. By contrast, young clinical faculty, who tended to be more enthusiastic for teaching, use of evidence-based medicine, and rapport with patients and other team members, received higher evaluation by the tutees. In association with these results, it was also reported that community-based physician faculty members were not as equipped or motivated to incorporate EBM into their clinical teaching as were academic full-time faculty.

Faculty development programmes can be an asset in recruiting and retaining teachers as they offer valued professional development opportunities. There is evidence that, in most countries, educators of health professionals are insufficiently prepared as teachers and trainers, even though their clinical knowledge and skills may be good. Their capacity to prepare future professionals for evidence-based practice, interdisciplinary team work, or management and leadership is often deficient. There is however, little evidence on how to prepare health professionals for their new roles.

Faculty development should be designed to help reach the objective of scaling-up the quality and relevance of the education of future health professionals, while covering key areas such as clinical teaching, small group facilitation, large group presentations, feedback and evaluation, personal and organizational development, leadership and scholarship, and change management. All categories of teachers and trainers should be targeted. Strategies and formats for faculty development can vary widely as long as they are adapted to the specific needs of the country, institution and learner. They can include ad hoc and continuing education activities, be work-based or classroom-based, face-to-face, via the Internet or tele/videoconferences, self-learning, mentorship and communities of practice, or a combination of all of these. Whatever the strategy, organizational structures and mechanisms should be created or developed to support its implementation. However, the cost effectiveness of different faculty development programmes is yet to be determined.

¹⁷ See Annex 4 on which this summary is based.

Implementation Considerations:

Experienced community clinicians in primary care are often excluded from teaching by the requirements of universities in terms of research or postgraduate qualifications, or because they are considered outside of the realm of academic teaching hospitals. Community clinical teachers represent a major educational resource that can be harnessed. When faculty is composed of mostly theoretically oriented teachers, a “theory-practice gap” appears.

Novice students require close supervision to effectively apply their theoretical knowledge and to develop their clinical practice safely, and this in turn requires educators interested in maintaining both teaching and clinical practice abilities. Faculty development programs can encourage and support the acquisition of a balanced mix of competencies by full-time educators and clinical practitioners engaged in teaching and training.

Policy-makers should be aware that making faculty development programmes mandatory entails important cultural and organizational changes. Faculty development should be promoted as a means of improving the performance of education programmes in terms of their quality and relevance, and will be more readily accepted if the leaders of institutions and representatives of the teaching staff are engaged in the planning of faculty development policies. Such policies should reward change both at the level of the institution and of the individual. Financial and professional incentives have the potential to facilitate the implementation of these programmes as well as adherence to their objectives. There is no blueprint for the development of incentive systems, but there is consensus that they are needed and that if some basic steps in developing programmes are followed, they can facilitate success. Box 5. Programmes and strategies should be evaluated and, as far as possible, be based on evidence of their effectiveness.

Faculty development requires a supportive work environment and therefore closer links between education institutions and the health services system; this should help ensure that educational institutions are more responsive. Role models can be of importance in transmitting professional values to students which transcend the formal curriculum. Universities can utilize on campus and e-learning training of teaching skills to clinicians working in clinical settings that cover topics such as:

- **relating theoretical models of teaching practical skills to the physician’s own practice;**
- **planning a teaching session in different clinical environments;**
- **training on assessment methods commonly employed to assess clinical skills¹⁸.**

Finally, programmes should be submitted to an accreditation process to ensure that quality is maintained and continuously enhanced. Care must be taken to focus on outcomes rather than only on process, so that each institution retains the flexibility to adapt its programme to its specific needs.

Box 5. Important steps in designing a faculty development programme

- Understand the institutional/organizational culture
- Determine clear goals and priorities
- Conduct needs assessments to ensure relevant programming
- Develop different programmes to accommodate diverse needs
- Incorporate principles of adult learning in instructional design
- Use a diversity of educational methods
- Promote ‘buy-in’ and market effectively
- Prepare staff developers
- Evaluate and demonstrate effectiveness
- Encourage faculty initiatives
- Ensure ability to conduct meaningful formative and summative assessment of student performance

Source: Steinert (2009)

International financial and technical organizations can help by developing and supporting international inter-professional innovative experiences in faculty development, and by facilitating the exchange of good practices and lessons learned, for example by providing open-access, web-based faculty development programmes.

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4.1.2 Curriculum development

RECOMMENDATION 4

Health professionals' education and training institutions should consider adapting curricula to population needs through identifying and defining the core competencies that are required to meet the evolving needs of their populations.

Quality of the evidence: **Low**

Strength of the recommendation: **Conditional**

We recommend the option in the context of close monitoring and evaluation

Key considerations:

- regularly review and update core competencies.
- regularly review curricula and programme delivery to determine if the programme prepares students to attain the core competencies needed.
- resistance to curriculum change can occur; significant changes may have implications on faculty who may be uncertain of new understanding and practices, and will need to take into account issues of timelines for the rollout and faculty development.
- establishing or working with existing institutional structures including community placements for learning.
- continuous evaluation.

Summary of the evidence

Curricula are not only the means by which health professionals acquire knowledge, but can act as a vehicle for participation in interprofessional education and evidence-based practice. Core competencies have been used to refine curricula across health professionals' education in recent decades. The definition of competencies has been discussed widely in health professionals' education and practice (Gonczi, et al., 1990; Hird, 1995; Redfern, et al., 2002). Fleming and Holmes (2005) do however, point to the fact that there has been lack of a clear definition in much of the literature on nursing and midwifery.

All of the studies reviewed in the systematic review exhibited limitations in design. In some cases, this was a lack of a control group, comparison group, or validation of studies; others were limited only to one professional group, either doctors or nurses. An additional review of studies that addressed curriculum development (taken from the scoping of the literature on education of doctors, nurses and midwives by George Washington University) cast light on attempts to transform the curricula in health science institutions in many parts of the world. These studies mainly focused on attempts to make curricula more community-oriented and were primarily related to quality and relevance of curricula.

There was also consideration given to the findings of work on 'THEnet Evaluation Framework for Socially Accountable Health Professionals' Education' to transform their curricula and is aimed at, "identifying key factors that affect a school's ability to positively influence health outcomes and health systems performance and to develop ways to measure them across institutions and contexts." (The Training for Health Equity Network, 2011). This framework addresses issues that are related to transforming health professionals' education, i.e. by ensuring quality and relevance, although it is interpreted through the lens of social accountability. The Network consists of health professional schools working in marginalized urban, rural and remote regions in high and low income countries. It is clearly stated that the goal of the implementation of the Framework is to "build evidence to support effective and credible change towards greater impact and accountability of academic institutions."

Implementation Considerations:

In a rapidly changing environment, competencies quickly become outdated and therefore there is a need to adapt curricula. There are many factors to be considered when seeking to change health professional curricula. Critical factors for the process of curriculum adaptation include commitment by senior management and academic leaders, motivation of faculty and support staff, mechanisms to facilitate the evaluation of curricula and the implementation of necessary changes, including freeing staff time and securing adequate funding.

Much of the evidence on changes in curricula to make them more relevant has been mostly in the area of community-based or rural medicine. A shift is occurring in both developing and developed countries in pedagogical approaches. The following appear to be important factors influencing changes towards relevance in the curriculum:

- **more community-oriented approaches to delivering the curricula involving community placements/ learning;**
- **greater use of problem based learning;**
- **orientation of the curricula to work in rural settings;**
- **special curricula for rural students;**
- **curricula aimed at preparing health professionals to work in underserved areas and with disadvantaged and diverse communities.**

Institutional leaders and faculty members therefore need formal mechanisms to assess new needs and identify the changes curricula may require in terms of content and methods of learning.

4.1.3 Simulation methods

RECOMMENDATION 5

Health professionals' education and training institutions should use simulation methods (high fidelity methods in settings with appropriate resources and lower fidelity methods in resource limited settings) in the education of health professionals.

Quality of the evidence: **Moderate**

Strength of the recommendation: **Strong**

In spite of the moderate quality of the evidence the panel decided to issue a strong recommendation because a very high value was placed on an uncertain, but potentially important impact on both the quality and relevance of the health workforce.

Key considerations:

- availability of experienced staff
- availability of space and equipment
- cost of equipment
- seamless integration with the curricula and a focus on developing priority competencies, based on population health needs.

Summary of the evidence

There is robust evidence from systematic reviews done in developed countries on the effectiveness of simulation methods with different groups of health professionals. Several studies were done with medical, nursing and midwifery personnel but also with dentists, chiropractors and veterinarians. Medium to high fidelity simulators were used in the studies reviewed. Although in seven of the 11 sets of systematic reviews the countries in which the studies were done was not clear, it would not be unreasonable to think that they were in more developed countries, as seen from the results of the studies in identified countries that were similar in nature.

Simulation methods are useful in helping students to acquire skills and to accelerate learning. They allow for a variety of situations and are specially designed for the development of manual skills that can only be learned through repetition. Simulation methods seem to improve competencies and performance, as well as learner satisfaction, but for the benefits to last, practice in real-life situations must follow sooner rather than later. The integration of simulation methods supposes the availability of space, equipment and experienced staff to teach, supervise and evaluate. It may also require access to proxy or real patients. Simulators are particularly useful for practicing procedures and techniques that otherwise could not be performed for practical or ethical reasons.

Implementation Considerations:

The introduction of simulation methods in the pedagogical arsenal should only be dictated by their expected positive impact on the acquisition of competencies. As they require additional resources, their cost-effectiveness needs to be measured. More information is needed on the utilization of these methods, their comparative advantages and risks, and their impact on the performance of learners.

4.1.4 Direct entry of graduates

RECOMMENDATION 6

Health professionals' education and training institutions should consider direct entry¹⁹ of graduates from relevant undergraduate, postgraduate or other educational programmes into different or other levels of professional studies

Quality of the evidence: **Low**

Strength of the recommendation: **Conditional**

We recommend the option in the context of close monitoring and evaluation

Key considerations:

- Educational institutions should give consideration to the type of studies students have undertaken prior to a degree course, as a number of studies were identified that evaluated the predictors of success; these studies were excluded because they did not match with the outcomes under review, but should be considered in any implementation process.

Summary of the evidence

This review of the evidence was approached in two stages. The first identified studies of midwifery only, but it was thought that this was too narrow a search; subsequently a further literature review identified studies of other categories of health workers and this is also reported here.

With regard to the evidence from the studies on direct entry for midwifery, the studies included in the review are likely to be at some risk of bias. The data from the studies was limited and the results of the review should thus be interpreted with caution. No data was available for some of the review's pre-specified outcomes (e.g. actual comparative effect of cost reduction, quantitative change of midwives, career progression rates, retention and attrition rates). There were no randomized controlled studies that analysed the effects of direct entry programmes.

Findings confirm other observations that showed a skewed geographical distribution of studies that analysed the effectiveness of direct entry. There is a dearth of published research in this area and we cannot therefore draw conclusions on the efficacy of direct entry midwifery in a variety of country contexts. Most evidence comes from high-income countries, such as USA, England, Scotland and New Zealand, with only one study originating from a developing country, i.e. Zambia. There were no evaluations from Latin America, Southeast Asia or the Eastern Mediterranean region. Notwithstanding the paucity of published evidence, there is a wealth of anecdotal evidence from many regions, and some may have been missed that were published in languages other than English.

Additional literature reviews of health professionals other than midwives only included studies where a traditional programme was compared to an accelerated programme. Most of these studies showed a general low level of evidence due to poor study quality. There were no randomized controlled trials and no well-designed quasi-experimental studies. Some studies were retrospective quasi-experimental, some cross-sectional surveys with historical or parallel group comparison. They were also labelled differently and only two had pre- and post-tests (critical thinking in student group). The studies also contained heterogeneity of participants (medical students, graduate nurses, student nurses and midwives). There were also different pre-entry criteria such as: a non-nursing degree; prior degree with science specification; prior degree with entry points; college credits; RN (Diploma or Associate Degree) as well as foreign medical doctors doing an accelerated programme.

¹⁹ See Annex 2.

Despite these limitations, in general, the results of the review for midwives suggest that direct entry programs may play an important role in increasing the number of midwives. There is a clear need to expand evaluation and operational research efforts in low- and medium-income countries. Further studies are needed and should be designed as prospective cohort studies to examine ways in which direct entry programmes contribute to increasing the numbers of midwives while maintaining the quality and relevance of their education.

Implementation Considerations:

The current severe shortage of health workers and the maldistribution of these professionals have led to the need to rapidly and effectively increase the number of registered health professionals. A number of direct entry programmes already exist in Australia, the United Kingdom and the USA. They appear to produce good outcomes in terms of critical thinking, pass rates for national examinations, professional practice, clinical competence and leadership. However, more evidence is needed about the benefits of these programmes in low- and middle-income countries and whether they are effective both in urban and underserved geographical areas.

There are admissions systems that build on previous learning experience and provide a way for individuals from relevant undergraduate, postgraduate, or other educational programmes to make the transition to higher levels of health professional studies. This has been tried in nursing and midwifery programmes, but the mid- and long-term effects of direct entry programmes are only now being studied. In all cases, the recruitment of high-quality students implies the existence of a solid secondary education system and attractive study and future professional life conditions.

There are other options to increasing the number of health professionals which also address the areas of quality and relevance. These are outlined in the table in Annex 2. They cover the areas of: graduate entry programmes; accelerated programmes; Registered Nurse (RN) to Master of Science in Nursing (MSN); and direct entry. The quality of the published supporting evidence varies across these programmes for the different categories of health workers and with the graduate entry programmes for medical students, but it was agreed that there was sufficient evidence to recommend direct entry of graduates from relevant undergraduate, postgraduate or other educational programmes into professional studies.

4.1.5 Admissions procedures

RECOMMENDATION 7

Health professionals' training institutions should consider using targeted admissions policies to increase the socio-economic, ethnic and geographical diversity of students.

Quality of the evidence: **Low**

Strength of the recommendation: **Conditional**

We recommend the option in the context of close monitoring and evaluation

Key considerations:

- Targeted admission policies should include mechanisms to ensure completion of education programmes:
 - they should be consistent with decisions concerning the supply of particular cadres of health workers and take into account the likely numbers of each cadre needed;
 - they should be accompanied by curriculum reforms to reflect different levels of certification depending on the entry qualifications and types of health workers needed;
 - the preferences of applicants should be taken into account (research shows students from rural areas are most likely to serve in rural areas).

Summary of the evidence

Extensive literature exists on recruiting and retaining trained health workers for service in rural and remote areas. However, less well documented are published studies on minority groups, nursing and allied professions, and medical mid-level providers.

Several studies have shown that health professionals do not always have the social and cultural profile and competencies corresponding to the needs of the population they serve: “health professional students are disproportionately admitted from higher social classes and dominant ethnic groups.” (Frenk, et al., 2010:24.) The admission of students from rural or poorer areas is insufficient to produce a balanced workforce. There is, however, a substantial amount of evidence that shows the association between rural background before health professionals’ training and rural practice following professional training.

A Cochrane review from which most of the evidence that links practice in rural areas to admission of students from rural areas is cited in Increasing access to health works in remote and rural areas through improved retention (WHO, 2010b) and states that “It appears to be the single factor most strongly associated with rural practice.” (Grobler, et al., 2009.) The evidence on the ethnicity of the health professional in a rural area is not as strong, i.e. that coming from an ethnic minority group or being a member of an underserved population leads to practice in a rural area. However, if one wishes to change the dominant trend of recruiting based almost solely on academic qualifications, then it will be necessary to not only choose potential health professionals from rural and underserved areas but also, where necessary, from ethnic groups that best match the populations to be served. Reed (1999) argues that although under-represented minority applicants to medical school tend to have lower grade-point averages and admission test scores, success in postgraduate training as a practising physician is equivalent to that attained by the majority of students. Under-representation can be corrected by the proactive recruitment of underrepresented groups and by selection procedures that give more weight to social skills.

Implementation Considerations:

Unanimous agreement is evident in the literature regarding the direct association between students’ rural backgrounds prior to admission to health professions and their choice of employment location after graduation. Broader consideration of the influence of entry criteria on eventual career choice would also look at the increasingly complex mixture of financial variables on entry. The evidence on the direct entry of doctors, midwives and nurses gathered for the previous recommendation, in addition to, the literature review in Annex 4 also informed this recommendation. However, given the influences on admission to health professional categories and the importance of preparing people who aspire to such professions, and the link to their preparation through the quality and choices in secondary school education, it was felt to be sufficiently important to include a recommendation requiring separate treatment. It is here where the interface between health and education in what is referred to as the “pool of eligibles” in the “pipeline to generate and recruit the health workforce” is acutely important. As the 2006 World Health Report observes, this “pipeline” spans “primary, secondary and tertiary education institutions and health services facilities that produce a range of workers from auxiliaries to technicians and professionals”.

Selection of medical students can present a challenge to universities. One medical school that provided feedback has tried to avoid selecting students who have what are considered unprofessional personal characteristics likely to affect their ability to care for patients and work in a team. In order to provide such an assessment candidates are assessed for non-cognitive attributes that may be indicative of future professional behaviours in addition to the prior academic achievement. A specific test has been designed to consider potentially relevant character traits²⁰.

In addition, entry requirements may be modified according to the financial contribution the student is able/prepared to make. Bonding or other long-term commitments may also impact on the attributes and qualities of students on entry, and the financial and other commitments on exit. The effect of these changes on the proportion of graduates choosing general practice as a career remains unclear as does training and rural employment subsequent to that training, although many other factors influence the choice of location and career. This evidence is summarized and characterized as strong (in the case of rural origin) or weak (in the case of ethnic diversity) (Walker, et al., 2012; Bowman, 2008).

There is also a considerable literature on admission criteria as a predictor of performance within the training experience, which takes as the end point course completion or attainment of a qualification. Student performance, does not directly bear on the outcomes of interest, that is, the quantity, quality and relevance of graduates. There are strong indications that the predictive power of pre-admission academic performance declines as students’ progress through their basic training and postgraduate training.

It is clear that admission procedures by themselves will not overcome inequalities in health-care systems. Where targeted admission policies are used, support mechanisms must be in place to ensure conditions in which students are able to complete programmes. These may include adjustments to the curriculum, teaching and learning methods and financial support. Currently, many of the students who do not complete their courses do so for financial reasons, so disadvantaged students would need financial support (e.g. the South Africa subsidy system).

²⁰ School of Medicine and Health Sciences, Universidad Francisco de Vitoria, Madrid, Spain

4.1.6 Streamlined educational pathways and ladder programmes

RECOMMENDATION 8

Health professionals' education and training institutions should consider using streamlined educational pathways, or ladder programmes, for the advancement of practising health professionals.

Quality of the evidence: **Low**

Strength of the recommendation: **Conditional**

We recommend the option in the context of close monitoring and evaluation

Key considerations:

- avoid duplication of programmes – if its implementation is limited, this guideline can reinforce its implementation;
- regulations should be carefully examined;
- demonstrated commitment by senior management and faculty;
- interest and expertise among faculty and administrators;
- budget plan for increasing salaries of faculty;
- community contributions to implement the programme.

Summary of the evidence

Globally, health systems need health professionals who adapt to the health demands of clients and can address the multi-faceted needs of patients. Health system strengthening goals include improving professional development access and the retention of health care providers who can function in multiple settings and have a broad array of competencies.

Educational ladder programmes or other streamlined educational pathways such as clinical career ladder programmes have been utilized to develop an expanded array of competencies for health workers in underserved areas and to promote advancement of practicing health professionals.

Examples of documented educational ladder programmes are curricular innovations stringing together several health professionals' development curricula into one integrated undergraduate programme. These develop multiple competencies of health professionals who follow the continuum of learning through the entire ladder. Programmes like these promote retention and effectively address mal-distribution of health professionals especially in underserved areas. On the other hand, clinical ladder programmes have provided frameworks for recruiting, developing and evaluating health professionals, notably nurses, to promote career progression and retention.

A documented ladder curriculum programme was established by the University of the Philippines Manila – School of Health Sciences (SHS) in Tacloban, Leyte in 1977. This programme is radically different from those found in standard medical schools with the objective of producing a broad range of health workers to serve depressed and underserved communities. It designed and tested new programme models for health human resources development that would be replicable in different parts of the country, and in other countries with the same situation as in the Philippines.

The five levels in the ladder-type structure are: Barangay Health Workers programme (which was later incorporated into the first quarter courses of the Community Health Workers programme or midwifery course); Community Health Workers programme; B. S. Nursing programme; B.S. Community Medicine (Bachelor's degree on a par with baccalaureate degrees awarded by the University) and Medical Doctorate programme. Students are eligible to enroll in the programme if they come from depressed and underserved areas. They are nominated by their own communities for admission and do not go through normal university entrance admission screening processes. The students and their communities forge a social contract that ensures that upon graduation from a specific ladder programme, they return and serve in their community as a health worker. Service leaves between ladders are important components of the programme, providing opportunities for the student to serve and learn at the same time. During the service leaves, the school ensures a firm linkage between the student, the rural health unit and his/her village or barangay. Upon performing his/her tasks satisfactorily, the student returns to the school to move up the ladder again and is nominated by his/her community if there is a need for a health worker with more complex skills. Graduates of the ladder – type curriculum said that SHS had helped them recognize the importance of education and return service. They had learned

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discipline and they had become conscious of the need for service to the Filipino community. With the SHS education, they had been able to understand and address the real needs of their people (Tayag and Clavel, 2011).

The step-ladder approach provides for less attrition and waste of resources as one may enter and exit at any level, and become a functional health provider in the health-care system. This continuum approach also allows for the progressive, unified and continuous development of competencies of a health worker. The ladder-type curriculum addresses brain drain and maldistribution of health manpower (Tayag and Clavel, 2011).

Clinical ladder programmes provide a professional framework for developing, evaluating, and promoting registered nurses (Gustin et al., 1998; Krugman, Smith and Goode, 2000; Bjørk et al., 2007; Cook, 2008). Clinical ladders are designed to recognize and reward skills in nursing practice, and also aim to promote the administrative and education roles of nurses (Goodrich and Ward, 2004). Buchan (1999) considers them as grading structures which facilitate career progression and associated differentiation of pay through defining different levels of clinical and professional practice in nursing. Advancement through the ladder depends upon meeting the criteria of clinical excellence, skills and competency, professional expertise and educational attainment defined at each level.

In the 1970s, to enhance the ongoing process of growth in the practice of professional networking, clinical ladder programmes that focused on the retention, recognition and recruitment of nurses were established (Goodloe et al., 1996; Krugman, Smith and Goode, 2000; Drenkard and Swatwout, 2005; Ward and Goodrich, 2007). At first, the programmes were not well received by health professionals because they saw them as complex processes that were difficult to comprehend (Krugman, Smith and Goode, 2000). To address this issue, many hospitals started modifying clinical programmes to best suit the needs of the institution and health professionals.

Most of the mechanisms of clinical ladders (mostly three- or four-level systems) often refer to the work of Zimmer and Benner (Goodloe et al., 1996; Buchan and Thompson, 1997; Gustin et al., 1998; Krugman et al., 2000; Robinson et al., 2003; Goodrich and Ward, 2004; Drenkard and Swatwout, 2005; Buchan, 1999; Korman and Eliades, 2010; Pierson et al., 2010). Studies revealed that hospitals offering career ladders have higher levels of personal satisfaction among medical personnel than those who lack internal opportunities for professional advancement (Gustin et al., 1998; Krugman, Smith and Goode, 2000). Positive outcomes from clinical ladder programmes include improvement of staff satisfaction, patient satisfaction, physician satisfaction, professional development (Ward and Goodrich, 2007), increased diversity in the health care workforce coupled with a low drop-out rate (Dodgson et al., 1998). The literature reveals that the use of clinical ladders results in decreased costs (Drenkard and Swatwout, 2005), decreased use of nursing sick time, decreased turnover, and decreased use of agency nurses (Buchan, 1999). The intent to stay at the hospital for more than a year increased as nurses moved upward in the career ladder program. No quantifiable measures were reported, although authors hypothesized retention might be due to intrinsic motivation factors, such as updating of nursing knowledge and skills, personal development and the possibility of salary increase when moving up the ladder (Bjørk et al., 2007).

Participants in the ladder program showed a higher involvement in leadership ($p < 0.001$) quality improvement ($p < 0.02$) and preceptorship ($p < 0.001$) compared to non-career ladder professionals in the same job role (Nelson and Cook, 2008). Qualitative research results described less attrition and waste of resources, as one may enter and exit at any level and become a functional health provider in the health care system. It also allowed for the progressive, unified and continuous development of competencies of a health worker. However, negative consequences of the ladder programmes are not well studied.

Additional evidence from a feasibility and acceptability survey showed that 92 per cent of all respondents agreed that the introduction of streamlined educational pathways and ladder programmes was acceptable but rather complicated to implement, only 78 per cent stated that it could be feasible. The mean score for acceptability was 6.92 and for feasibility 5.86. Respondents at the national and district levels ranked this intervention as more acceptable and equal (95 per cent) than at the regional level (84 per cent). Qualitative evidence showed "...There is potential interest from regulators but the idea is not completely accepted by educational institutions..."; "The feasibility would depend on acceptability among different groups of health professionals. This intervention needs an agreement or consensus among all health professions." (WHO, 2012).

Implementation Considerations:

Changes in the workforce generally occur much more rapidly than educational institutions can adjust to them, however, educational institutions can foster and drive change, such as the case in the development of the clinical associates programme in South Africa (Doherty et al., 2013). Regulations can fix rigid professional boundaries and create conditions that hinder a rapid response to new needs. This is often the case in low-income countries where the need for scaling up is greater.

To respond to the urgent problem of augmenting the quantity of health professionals without depreciating the quality of their education, initiatives can be taken that streamline educational pathways and adapt them to the needs of individuals already in the labour market who wish to upgrade their competencies and enter, or progress in a health career. This is often difficult

because of the rigid entry regulations in professional educational programmes or in the profession itself. The creation of 'career ladder programmes' for undergraduate or postgraduate education allows individuals in lower positions, within or outside the health sector, access to training programmes that will take them step-by-step to a career in health, or allow them to advance their career in health. Box 6 illustrates how this works.

Box 6. Career ladder case study: Maria

Maria is 19 years old. She graduated from high school with average grades. She works in the Environmental Services department at the local hospital. She earns US\$10 per hour cleaning patients' rooms. Maria likes working at the hospital. She dreams of becoming a nurse, but she cannot afford to go to college. Through the hospital's career ladder programme, Maria can train to become a nurse's aide in less than a year. She will complete three months of classroom training in order to qualify for a position as a nursing assistant. While she works as a nursing assistant, she will learn new skills to help her qualify as a nurse extender. Her work will be closely monitored by a nursing supervisor, and she can get extra tutoring if she needs it. As a nurse extender, Maria can earn up to US\$14 per hour. She will work directly with patients, helping the nurses provide care. If Maria wants to continue her studies to become a registered nurse, the hospital will provide tuition assistance and a flexible work schedule to enable her to attend classes at the local college.

Source: ExploreHEALTHCareers.org (2007).

These programmes promote retention and help address maldistribution of health professionals (Tayag and Clavel, 2011) by providing opportunities for students to serve in underserved areas, learn by doing, and receive recognition and rewards as they acquire new competencies and experience. They allow for career progression, and are particularly used in nursing (Buchan, 1999; Krugman, Smith and Goode, 2000; Bjørk, et al., 2007) although available in other fields, such as physical therapy or pharmacy. Its direct costs are compensated by lower turnover and sick leave rates, and by higher levels of satisfaction among personnel (Gustin, et al., 1998; Buchan, 1999; Krugman, Smith and Goode, 2000; Drenkard and Swatwout, 2005).

4.1.7 Interprofessional education (IPE)

RECOMMENDATION 9

Health professionals' education and training institutions should consider implementing Inter-professional education (IPE) in both undergraduate and postgraduate programmes.

Quality of the evidence: **Low**

Strength of the recommendation: **Conditional**

We recommend the option only in the context of rigorous research.

Key considerations:

- IPE may be relevant not only to quantity but also to quality and relevance. IPE may be resource-efficient in a way that allows more health workers to be educated; there is a need to obtain much better evidence in institutions with both programmes and resources available to support the necessary research.

Summary of the evidence

A large body of evidence exists that provides data and perspectives from the different health professions. Data illustrates that education provided by different categories of health professionals requires a substantial amount of coordination among the educators and the curriculum developers. Evidence has also shown that making attendance compulsory and developing flexible scheduling can prevent logistical challenges from becoming a barrier to effective inter-professional collaboration. A review of the recent literature from 2005 to 2010 identified at least 30 studies that evaluated the impact of IPE. These published reports were on studies done in Australia, Belgium, Canada, Japan, Norway, Sweden, the United Kingdom and the USA. These countries have incorporated IPE in the curricula in the basic training of health professionals. Data drawn from the research ranges from cross-sectional surveys to longitudinal follow-up surveys and intervention studies.

The evidence derived from cross-sectional studies demonstrated that the students from the different professions participating in the programme felt a perceived improvement in their knowledge and appreciation of the roles of other professions (Ateah, et al., 2011; Dumont, et al., 2010; Nango and Tanaka, 2010; Cameron, et al., 2009; Ogawara, et al., 2009; Almas and Barr, 2008; Art, et al., 2008; Hamilton, et al., 2008). In specific practice areas, such as paediatrics and cardiovascular care, students felt that the IPE approach led to improved clinical and practice-based skills (Coster, et al., 2008). Evaluative studies on interprofessional focused workshops for specific subject areas revealed pre- and postexposure statistics of significant increased knowledge and awareness of the subject area, including students improved communication and team working skills (Dumont, et al., 2010). Similar findings were shown among medical students, student nurses and student midwives (Dacey, et al., 2010). In addition, in multi-disciplinary student workshops, shared learning before and after qualification was shown to be helpful in becoming better team members.

In longitudinal surveys, specifically those involving students in undergraduate professional training, there was a significant increase in the students' views of the knowledge and benefits gained from a compulsory 45-hour IPE programme (Furber, et al., 2004). This remained true even when training was carried out through a problem-based approach during clinical training (Nango and Tanaka, 2010). In settings where joint learning took place over a long period of time and included at least eight professional groups with communication skills and ethics in the curriculum, the strength of professional identification declined over time. With the exception of student nurses, enthusiasm for IPE remained high for all categories of students (Steward, et al., 2010). The benefits of an integrated primary care experience through IPE, as well as the enhancement of collegial support and resources to community-based and academic training, have been well documented, and have led to important educational collaboration and successful IPE initiatives (Muller, et al., 2008). Longitudinal studies that evaluated the impact of IPE show that at qualification, professionals were more confident about their communication skills and inter-professional. This reinforces the argument that IPE should be included in pre-qualifying curricula (Pipas, et al., 2004). Students in non-clinical professional categories such as biomedical sciences were less appreciative of IPE and felt that they needed more explicit learning objectives (Lewitt, et al., 2010).

Finally, intervention and experimental studies based on controlled trials where the impact of IPE was evaluated were analysed. Most of the studies compared groups that were allocated to IPE with those that were not. In all studies except one that compared students from one school with those from another, no significant difference was shown in the group that had experienced IPE

(Cameron, et al., 2009). Other studies showed an increase in first year students' confidence in their own professional identity and IPE helped them to be better prepared for clinical placement (Terry, et al., 2009). In another intervention, a group's experiences in a course where students met weekly for three hours during one semester showed positive attitudes to team collaboration (Hamilton, et al., 2008). Yet another interdisciplinary community-oriented exercise offered unique opportunities for students to appreciate health problems as they occurred in the community (Pollard, et al., 2006).

Implementation Considerations:

WHO identifies IPE as the process by which a group of more than two profession specific students from health-related occupations with different educational backgrounds learn together during certain periods of their education with interaction as an important goal (WHO, 2010c). The strategies and considerations for introducing or improving IPE have been well described in the document Framework for Action on Interprofessional Education & Collaborative Practice (WHO, 2010c). Essentially, IPE is shaped by mechanisms that can be broadly classified into those driven by: (a) staff responsible for developing, delivering, funding and managing IPE; and (b) educator mechanisms (the term 'educator' includes all instructors, trainers, faculty, preceptors, lecturers and facilitators who work within any education or health-care institution, as well as the individuals who support them). Developing IPE curricula is a complex process, and may involve staff from different faculties, work settings and locations. More important however, is maintaining IPE. This can be equally complex and requires careful consideration. The following key issues should be considered as priority for policy-makers when introducing, improving and sustaining IPE.

- **Supportive institutional policies and managerial commitment.**
- **Good communication among participants.**
- **Enthusiasm for the work being done.**
- **A shared vision and understanding of the benefits of introducing a new curriculum.**
- **A champion who is responsible for coordinating educational activities and identifying barriers to progress.**
- **Careful preparation of instructors for their roles in developing, delivering and evaluating IPE.**
- **For most educators, teaching students how to learn about, from and with each other is a new and challenging experience.**
- **For IPE to be successfully embedded in curricula and training packages, the early experiences of staff must be positive. This will ensure continued involvement and a willingness to further develop the curriculum based on student feedback.**
- **Curricular development and delivery mechanisms should be fully appreciated. Health-care and education around the world are provided by different types of educators and health workers who offer a range of services at different times and locations. This adds a significant layer of coordination for interprofessional educators and curriculum developers.**

In interprofessional education, students from various professions learn together as a team. Their collaborative interaction is characterized by the integration and modification of different professions' contributions in light of input from other professions. The hallmark of IPE is the type of cognitive and behavioural change that occurs when participants understand and are familiar with the basic language and mind-sets of various disciplines. Prior to participating in IPE students must have basic knowledge and skills related to their own profession. IPE is an essential step in development of a collaborative health workforce.

A number of principles are believed to be important in the design of IPE curricula include:

- (a) **relevance to learners' current or future practices;**
- (b) **use of typical, priority health problems that require interprofessional approaches for their solution;**
- (c) **interprofessional learning based on clinical practice**
- (d) **learning methods that facilitate interaction between learners from different professions including small group learning. Formats such as case-based and problem-based learning have been shown to be particularly effective.**

4.2 Accreditation

4.2.1 Accreditation

RECOMMENDATION 10

National governments should introduce accreditation of health professionals' education where it does not exist and strengthen it where it does exist.

Quality of the evidence: **Low**

Strength of the recommendation: **Strong**

We recommend the option

Key considerations:

- strengthen existing health professional accreditation
- accreditation must be based on standards
- it must be supported by legislation
- it should be done independently
- the process should be transparent
- the system and process should be periodically evaluated.

In spite of the low quality of the evidence, the panel decided to issue a strong recommendation because a very high value was placed on an uncertain but potentially important impact on both the quality and relevance of the health workforce.

Summary of the evidence

Accreditation is defined as a process of review and approval by which an institution or programme is granted time-limited recognition of having met certain established standards (Uys and Coetze, 2012). Accreditation, if properly used, is a key tool for quality management of professional education and for ensuring that graduates have the competencies that correspond to accepted professional standards and to the needs of the population. The alignment of accreditation with health goals is one of the four enabling actions that contribute to scaling up the education of health professionals (Frenk, et al., 2010). Accreditation is particularly important at a time when private health professionals' education is proliferating, often in an unregulated environment.

There is no systematic assessment of accreditation practices worldwide; there is variation in its utilization and, in some countries, it is absent or exists only on paper. Accreditation mechanisms "*exist in three quarters of Eastern Mediterranean countries, just under half of the countries in Southeast Asia, and only about a third of African countries*" (Frenk, et al., 2010:29). Even in an integrated economic region such as the European Union (EU), there are important variations in how accreditation is conducted (Frenk, et al., 2010). There does not seem to be a relationship between the Gross National Income (GNI) level of countries and whether or not they have accreditation systems (Uys and Coetze, 2012). Also, private schools are less likely to undergo accreditation procedures (Frenk, et al., 2010).

In some countries, accreditation is performed by the government, in others by professional councils or associations, or private agencies (Uys and Coetze, 2012). Accreditation may target specific programmes or whole institutions. There is limited literature on the respective advantages and disadvantages of each modality, or on the impact of accreditation on quality improvement.

Nevertheless, it is generally considered that accreditation can have a significant positive effect on the quality and relevance of the health workforce in that it can guide professional education in addressing the priority health concerns of the community. A global strategy that incorporates the best of all practices with clear targets and outputs could encourage regions to create and reinforce national accreditation systems.

In order to be effective, such a global system should be based on standards developed and accepted by all stakeholders. The process of accreditation should be independent and transparent so as to be a stamp of quality (Baumann and Blythe 2008). Accreditation status should be time-limited, and the accreditation system itself should be periodically evaluated.

Implementation Considerations:

Accreditation, and similar mechanisms such as regular programme reviews, are well established in some countries (Australia, Canada, South Africa, USA), developing in others, and weak or absent in quite a number, particularly among lower income countries. A first action might be to raise awareness of the potential gains in quality and relevance that come with well-conducted accreditation practices. Political commitment to higher quality education is the first component to be considered in developing accreditation mechanisms, as some educational bodies may feel that accreditation threatens their vested interests, particularly if the objective is to sanction rather than to help institutions to improve their performance. Examples of successful practices need to be analysed and disseminated. Fostering voluntary accreditation may increase the commitment of participating institutions and the legitimacy of the whole process, which can be seen as a “social contract” between institutions and the community (Dussault, 2008). Being accredited by a reputable mechanism and accrediting body brings status and recognition, and can be a strong incentive to maintaining high standards.

Global cooperation and collaborative efforts aid in setting standards and assisting countries in developing the capacity for local adaptation and implementation, and in facilitating information exchange (Frenk, et al., 2010). The Global Consensus on Social Accountability and the long-standing WHO agenda on social accountability of health professionals’ schools can serve as basis for such cooperation.

In many countries, the essential components of internationally accepted regulatory good practices are missing. This is especially true in low-income countries where regulators, in particular professional councils, may lack the authority, resources or even technical capacity to ensure effective regulation. In such cases, the state should be the regulator and gradually delegate licensure and authority as professional groups’ capacity develops (Dussault 2008). Care must be taken that quality assurance regulation does not restrict flexibility in the delegation of tasks or in the co-sharing of certain rights to practice. This would have negative effects such as making team work less effective, or limiting the possibility of creating new cadres who could help mitigate the shortages of certain professional groups, and provide essential care particularly to underserved populations. There is broad consensus that the accreditation of institutions is needed to ensure quality of care and patient safety, but there is no universal way of doing it.

The lack of evidence and studies assessing the impact of health professionals accreditation as part of regulation does not mean that there should be no regulation. Indeed, in spite of the low quality of evidence, the panel decided to issue a strong recommendation because a very high value was placed on an uncertain but potentially important impact on both the quality and relevance of the health workforce.

4.3 Continuous professional development (CPD) for health professionals

RECOMMENDATION 11

Health professionals' education and training institutions should implement continuous professional development and in-service training of health professionals relevant to the evolving health-care needs of their communities.

Quality of the evidence: **Moderate**

Strength of the recommendation: **Conditional**

We recommend the option in the context of close monitoring and evaluation

Key considerations:

- CPD would be transformative education if focused in areas where there are resource shortages.

Summary of the evidence

As part of a changing health services system, health workers need to keep up with the evolving health needs, policies, technologies and knowledge (WHO, 2006a; Frenk, et al., 2010). The exponential progress in technology, diagnostic tools and treatment methods, as well as changing population demographics and disease burden, makes updating and maintaining the knowledge and skills of health workers throughout their professional life more important than ever. Continuing professional development (CPD) refers to educational activities conducted after graduation to maintain, improve and adapt the knowledge, skills, attitudes and practices of health professionals, so that they can continue to safely and effectively provide health services.

There is some evidence of positive effects, for example, improvements in knowledge, skills and attitudes, as well as in clinical practice and health outcomes (weight gain or child-carers' retention of nutrition advice), but the effects of CPD have not been systematic. In some studies, knowledge had improved, but clinical habits had not always changed (Johnson, 2012). Stakeholders' acceptability was good and access to CPD was much valued and could be an important factor in retaining health professionals (WHO, 2010b).

The relative effectiveness of CPD methods depends on numerous factors, such as the intended target, the purpose (transfer of knowledge, acquisition of new skills, familiarity with a new technique), the techniques used, who delivers the training, and the subject. Reviews of studies of CPD programmes for medical professionals indicate that interactive techniques, reminders, patient-mediated interventions, outreach visits, multifaceted activities, audit with feedback, conferences, printed information and didactic activities without practice were found to be ineffective, though they are widely used (Davies, 1995; Bloom, 2005). The use of case studies and a combination of techniques, including multiple exposure, was found to be more effective (Mariannopoulos, et al., 2007; Forsetlund, et al., 2009). Effectiveness is also increased when CPD is linked to career progress and other educational interventions (WHO, 2010b). The strength of these conclusions is limited due to the variable quality of the methodologies used in the reviewed studies, but available evidence has good face validity and indicates credible trends.

Implementation Considerations:

Given the diversity of objectives CPD can pursue and the pedagogical approaches undertaken, CPD is difficult to standardize. CPD can be made mandatory, as is in place or being introduced in many countries, or can be include in accreditation criteria. In some countries, the educational institutions are accredited and left to decide how to organize CPD, and carry out periodic monitoring and reviewing by applying the same principles as for pre-service education. In other countries, professional councils are responsible for CPD.

Although warranting study, the cost-effectiveness of CPD interventions has had little attention. However, some impacts may be difficult to capture as CPD is not only an activity for knowledge acquisition or skills development, but it is also as an opportunity for health professionals to interact with other practitioners and to maintain professional and social networks, which is an important motivational factor. This is particularly important for professionals working in isolated regions (Van, et al., 2008).

4.5 Monitoring, implementation and evaluation

One of the main causes of shortages is inadequate numbers of persons with appropriate education and training entering the health workforce labour market. Many low and middle-income countries do not have the sophisticated data collection systems needed by ministries of health and education to assess unmet needs nor the capacity to analyse and utilize this data to inform and strategically envision, determine, and plan health workforce strategies.

4.4.1 Monitoring health workforce supply and planning for the future

It is critical to monitor and track each of the components of capacity and output. By drawing on assessments of oversupply or undersupply of various cadres of the active health workforce, institutional capacity for producing new health workers can be reduced or increased, or training programmes for new cadres can be developed. This information can be used to identify the specific bottlenecks in capacity so that if rapid increases in production are required, capacity can be increased accordingly.

4.4.2 Monitoring certification rates

Monitoring the intake of students into health professional programmes and pass/failure rates on licensing and certification exams may indicate problems with entry requirements, the curricula, the teaching methods used or a number of other issues such as the lack of clinical placements, or a combination of factors. Each situation would have to be evaluated to determine where the problems lie.

An important consideration, in addition to the number of graduates who are certified to practice, is their locale of practice upon graduation. High departure rates, through exit from the health sector or through migration to other countries, is an indicator of major retention problems that require the immediate attention of policy-makers. The same applies if data show an overconcentration of new graduates in well-served areas and organizations. There are cases where graduates succeed in the institutional proficiency tests, but fail the certification exam, indicating a mismatch in the level of proficiency expected at the institutional versus the certification level.

In settings with extreme shortages or maldistribution of highly skilled service providers, it is important to institute mechanisms to monitor the quality of the large cadres of lower skilled workers who are trained to meet the immediate needs for basic health services among unserved and underserved, mainly rural communities. Since these workers will often be the first point of contact with the formal health-care system, and therefore will represent the system at the community level, guaranteeing the quality of their training and practice through proper certification and supervision is of extreme importance.

4.5 Good practice recommendations: Governance and planning

In addition to the twelve cited recommendations in this report, there are four good practice recommendations proposed that are equally viewed as vital for successfully transforming health professionals' education.

4.5.1 Good practice 1

Government at the highest level shows political commitment to reform and takes leadership of its implementation.

4.5.2 Good practice 2

There is formal collaboration and shared accountability between the ministry of health, the ministry of education, and other related ministries (e.g. finance, labour, public service), at national and/or sub-national level in the education and training of health professionals.

4.5.3 Good practice 3

A national plan to produce and retain graduates is developed in consultation with stakeholders, informed by the needs and absorptive capacity of the labour market, and aligned with the national health plan.

4.5.4 Good practice 4

The creation or strengthening of national or sub-national institutions, capacities or mechanisms to support the implementation of the reform and scale-up plan (e.g. legislation, policies, procedures).

This section uses excerpts from the suggestions made by civil society based on the on-line survey that drew 160 responses out of 304 civil society organizations in low and middle-income countries²¹. To advance the contributions of what is termed 'Southern' civil society to the transformational education initiative, the results of the survey form the basis for the following suggestions:

1. **Research findings must be translated into practice to meet the needs and encourage the support of policy-makers and civil society advocates.**
2. **Cost-effectiveness studies on a larger scale are needed, but equal weight should be given to assessing and building up Southern civil society²² capacity and ability to support the initiative.**
3. **Given the scope of the initiative, standard methods and metrics should be developed for transformational education research and practice.**
4. **The implementation of national agendas for civil society research and evaluation processes should be enabled to foster comprehensive policies that subsequently enhance the sustainability of the civil society workforce and leadership in guiding policy recommendations.**
5. **The inclusion of Southern civil society perspectives should be a critical step in the process of improving and scaling up health professionals' education.**
6. **The integration of Southern civil society in health population programmes should be promoted and enabled.**
7. **A phased/tailored approach to scaling up should be used.**
8. **Scaling up should be tailored to contextual circumstances, and delivery should be decentralized.**
9. **An integrated approach to scaling up should be adopted.**
10. **Strong leadership and governance are needed for the entirety of the scale-up process.**
11. **Local implementers and other stakeholders should be encouraged and engaged.**
12. **Both state and non-state actors should be used as implementers.**
13. **Engaged and "activated" underserved communities are key to the success of scaling up.**
14. **Political will should be demonstrated for national policies.**
15. **The critical issue of country ownership should be addressed consistently throughout the transformative process.**
16. **Research results should be incorporated into implementation: learning and 'doing'.**

²¹ <http://www.who.int/hrh/education/en/>

²² Civil society organizations located in the economic South. Civil society here is understood broadly to include for example, faith-based organizations, popular movements, interest-based organizations, essentially 'non-state' actors.

5. Knowledge gaps and research agenda

Evidence supporting a transformational change in the education and scaling up of health professionals is incomplete. Knowledge gaps exist, but well-designed and coordinated research can help fill them. The existing literature often lacks methodological rigour, and in most cases research results have little external validity. Efforts are made in this and other complex fields to develop methodological approaches that augment the strength of the evidence produced by research. The following questions raised under each of the five domain areas during the search for evidence on which the recommendations could serve as a basis for further investigation.

5.1 Education and training institutions

- **Do health faculty development programmes increase confidence in teaching?**
- **How and why do they make a difference in students' learning and clinical performance? What areas the effects of faculty development initiatives on patient outcomes and the health of populations?** (Couper et al. 2012).
- **Do alternative pedagogical approaches such as problem-based learning, increased use of simulation methods, inter-professional education, improve student learning in the long term?**
- **What are the training needs of educators that are generated by the utilization of innovative learning strategies?**
- **Do changes in recruitment practices have an impact on the retention of health workers in underserved poor, isolated or rural zones?**
- **What is the impact of decentralizing education and training programmes on rural recruitment and retention of health professionals?**
- **What is the impact of inter-professional education on health professional practice (on teamwork for example)?**
- **What are the effects of simulation methods on patient outcomes?**

5.2 Accreditation and regulation

- **What are the impacts of accreditation and regulation mechanisms of the education and training of health professionals on their quantity, quality, and relevance?**
- **What factors influence the success or failure of accreditation and regulation mechanisms of the education and training of health professionals?**
- **Which indicators best capture success or failure?**
- **How feasible is creating career ladders? What are the benefits in terms of augmenting the availability of health professionals?**
- **What are the effects of different modalities of continuing professional development strategies on the performance of professionals, on their motivation and satisfaction, and on retention?**
- **What are the factors that influence their effectiveness?**

5.3 Financing and sustainability

- **What are the costs (and their components) and benefits of the different strategies for scaling up the production capacity of education and training institutions?**
- **What are the costs induced by the entry of more professionals on the health labour market?**
- **What financial and other incentives are more likely to maintain the motivation of educators?**
- **What are the comparative advantages of different modalities of financing the transformation and scaling up of the education and training of health professionals?**

5.4 Monitoring, implementation and evaluation

- Which indicators are more appropriate to monitor and evaluate the process of transforming and scaling up the education and training of health professionals? Which indicators have more capacity to alert implementers of the reform as to deviations from the expected course?

5.5 Governance and planning

- What are the constraints and facilitators of developing effective policies of transformation and scaling up of the education and training of health professionals?
- What are the effects of active participation of representatives from key stakeholder groups in the governance structures of health professional schools on the quantity, quality and relevance of health professionals?
- Which governance structures and mechanisms contribute better to the sustainability of reform, and to maintain political and stakeholders' commitment?

The above questions suggest a series of research activities that can help bridge the knowledge gaps identified and support the policy and decision-making processes. These are in addition to data collection on education and training institutions (infrastructure, personnel students, and financial resources) and to continuing and careful monitoring of the process of reform.

Examples are:

- Exploration of the advantages and disadvantages of more innovative methods to deliver CPD, such as internet-based or use of mobile phones.
- Long-term evaluation of the impact of new curricula through cohort analysis.
- Longitudinal studies linking the retention of health workers trained in community and rural settings to changes in recruitment practices and in the curricula.
- Assessment of the impact of decentralizing education and training programmes on rural recruitment and retention of health professionals.
- Evaluation of the impact of inter-professional education on health professionals' practice.
- Comparative studies on the process of accreditation, using criteria such as purpose, cost, transparency, and social accountability.
- Assessment of the impact of the regulation of health professionals' education on quality and relevance of practice.
- In countries where regulation is being introduced (e.g. Francophone West Africa) or strengthened, before-and-after studies comparing quality of education, professional practice, patient safety, etc.
- Economic research on the costs of: (1) training and of utilizing existing categories of professionals; (2) options of a mix of occupations to deliver the same services with the same quality; (3) induced costs of scaling up production; and (4) fiscal space for rapid scaling up.
- Expansion of research on professions other than medicine and nursing and on low- and middle-income countries.
- Case studies of governance structures and processes.

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Annex 1.

Definition and list of health professionals

Definition of health professionals

Health professionals maintain health in humans through the application of the principles and procedures of evidence-based medicine and caring. Health professionals study, diagnose, treat and prevent human illness, injury and other physical and mental impairments in accordance with the needs of the populations they serve. They advise on or apply preventive and curative measures, and promote health with the ultimate goal of meeting the health needs and expectations of individuals and populations, and improving population health outcomes. They also conduct research and improve or develop concepts, theories and operational methods to advance evidence-based health care. Their duties may include the supervision of other health workers (adapted from ILO 2008; WHO 2010; Gupta 2011).

List of health professionals considered within the literature review

Occupations in this sub-major group are classified into several minor groups. To facilitate the development of the WHO guidelines for transforming and scaling up health professionals' education and training, the literature review will focus on the following list of health professionals, as defined by the International Standard Classification of Occupations (ISCO) (ILO 2008; WHO 2010).

Medical Doctors – both **Generalist and Specialist Practitioners**, including **Public Health Doctors** (ISCO-08 minor group 221).

Nursing Professionals, including **Public Health Nurses** (ISCO-08 minor group 222, unit 2221).

Midwifery Professionals, including **Public Health Midwives** (ISCO-08 minor group 222, unit 2222).

Dentists (ISCO-08 minor group 226, unit 2261).

Pharmacists (ISCO-08 minor group 226, unit 2262).

To simplify and streamline the literature review, this list excludes several groups under the ISCO-08 definition of health professionals, such as traditional and complementary medicine professionals (ISCO-08 minor group 223) , paramedical practitioners (ISCO-08 minor group 224), dieticians and nutritionists (ISCO-08 minor group 226, unit 2265), physiotherapists (ISCO-08 minor group 226, unit 2264), and several other therapy-related occupations.

Annex 2.

List of terms used for graduate entry programmes

Term	Definition	Source
Graduate entry programme	Usually used in reference to medical education where mature candidates with a relevant undergraduate degree (and sometimes post-graduate) gain access to the traditional medical training programme which is not necessarily accelerated. Some may require prospective candidates to sit a graduate entry test, some require science in first degree while others accept full range of non-science undergraduate degrees. These candidates generally enter into the second year of the traditional programme, the length of which varies. GEP identified as an innovative mechanism by (one or more?) medical schools in SSA for reducing the barriers to increasing quality and quantity of medical education.	Calvert 2010; Price 2010; Chen et al., 20012
Accelerated programmes	Accelerated nursing degree programme" means a programme of education in professional nursing offered by an accredited school of nursing in which an individual holding a bachelors degree in another discipline receives a BSN or MSN degree in an accelerated time frame as determined by the accredited school of nursing.	http://definitions.uslegal.com/a/accelerated-nursing-degree-program/
	An accelerated nursing programme is usually an accelerated bachelors in nursing programme. Some schools may refer to it as the BSN express. This programme is for those individuals that currently hold a bachelors degree in another discipline and would like to obtain a second bachelors degree in nursing.	http://www.nurses-neighborhood.com/accelerated-nursing-program.html
	Accelerated baccalaureate programmes offer the quickest route to licensure as a registered nurse (RN) for adults who have already completed a bachelor's or graduate degree in a non-nursing discipline.	http://www.aacn.nche.edu/media-relations/fact-sheets/accelerated-programs
RN To MSN	RN to MSN programme ideal for nurses who intend to work in the nursing field for a decade or longer. Experienced nurses who hold their Registered Nurse license (and RNs who also hold bachelor's degrees in other fields) can apply their associate degree toward the MSN without having to first earn a BSN.	
Direct entry	Direct-entry midwife: A midwife who has entered the profession of midwifery as an apprentice to a practicing midwife rather than attending a formal school programme.	http://www.medterms.com/script/main/art.asp?articlekey=40489
	Direct entry accelerated BN or MN programme: This direct-entry accelerated programme is designed for individuals who have a college degree but no nursing experience.	
Educational pathways/ Ladder programme	A means of connecting education, training, and support services to prepare students for the next level of education and training. Each step on a streamlined pathway is designed explicitly to prepare students to progress to the next level of education. (e.g., through multiple entry points and innovative program delivery mechanisms such as flexible scheduling).	

Annex 3.

Final list of PICO questions

Faculty development

PICO 1: Should health professionals' education and training institutions design and implement continuous development programmes for faculty and teaching staff relevant to the evolving health-care needs of their communities, versus not design and implement such programmes?

PICO 2: Should governments, funders and accrediting bodies support continuous development programmes for faculty and teaching staff relevant to the evolving health-care needs of their communities, versus not support such programmes?

PICO 3: Should health professionals' education and training institutions use innovative expansion of faculty, through the recruitment of community-based clinicians and health workers as educators, versus not use such expansion?

Curriculum development

PICO 4: Should health professionals' education and training institutions adapt curricula to evolving health-care needs of their communities, versus not adapt these curricula

Simulation

PICO 5: Should health professionals' education and training institutions use simulation methods of varying levels of fidelity be used in the education of health professionals versus not use simulation methods?

Direct entry of students

PICO 6: Should health professionals' education and training institutions use direct entry of graduates from relevant undergraduate, postgraduate or other educational programmes into different or other levels of professional studies, versus not use direct entry of graduates?

Admission procedures

PICO 7: Should health professionals' education and training institutions use targeted admissions policies seeking to increase the ethnic and geographical diversity of students, versus not use targeted admissions policies?

Educational pathways and ladder programmes

PICO 8: Should health professionals' education and training institutions use streamlined educational pathways, or ladder programmes, for the advancement of practicing health professionals, versus not use them?

Interprofessional education

PICO 9: Should health professionals' education and training institutions implement inter-professional education in both undergraduate and postgraduate programmes versus not implement inter-professional education?

Accreditation

PICO 10: Should national governments introduce accreditation of health professionals' education versus not introduce accreditation?

Regulation

PICO 11: Should national governments introduce regulations (licensure and registration) aimed to ensure the quality and relevance of care provided by health professionals, versus not introduce such regulations?

Continuous professional development-Health workers

PICO 12. Should health professionals' education and training institutions implement continuous professional development and in-service training relevant to the evolving health care needs of their communities, versus not implement them?

Annex 4.

Glossary of intervention terms

Acceptability	The perception among implementation stakeholders that a given service, practice, or innovation is agreeable, palatable, or satisfactory. Acceptability should be assessed based on the stakeholder's knowledge of or direct experience with various dimensions of the intervention to be implemented, such as its content, complexity, or comfort. We refer here particularly to social acceptability, which addresses the acceptability of the intervention in the context of the culture of the society in which the users operate.
Accreditation	A particular form of quality assurance which leads to the formal approval of an institution or programme that has been found by a legitimate body to meet predetermined and agreed upon standards, eventually resulting in an accredited status granted to that provider or programme by responsible authorities. Accreditation can be awarded by an external quality assurance agency, such as in the United States, or both can be separated, as in the Dutch-Flemish accreditation system. As in the Australian system, accreditation can also be given by the institution itself, which is then "self-accrediting".
Active participation	Defines a high level of engagement in planning and proactive contribution with regard to governance and policy formation.
Active recruitment	The process of generating a pool of potential applicants (students) rather than merely tapping one, or of undertaking to favourably influence a potential student's decision to enter a programme of health professionals' education.
Adjunct faculty	Faculty hired on a part-time or temporary basis. (i.e., Any instructor teaching courses whose compensation in salary and/or fringe benefits is not equal to the compensation received by full-time contractual faculty.)
Certification	The process whereby a profession or occupation voluntarily establishes competency standards for itself. Certification plays a helpful role in protecting the public, especially in cases where the state legislatures have not opted to regulate the profession or occupation through licensure. However, there are broad variations in this voluntary process.
Competencies	A combination of the essential knowledge, abilities, skills and values necessary for the practice of health promotion.
Compulsory service	A country's law or policy that governs the mandatory deployment of health workers in remote or rural areas for a certain period of time, with the aim to ensure availability of services in these areas. It can be either imposed by the government (for positions that are under government employment), or linked to various other policies.
Continuing professional development (CPD)	Training which is beyond clinical update and includes wide-ranging competencies like research and scientific writing; multidisciplinary context of patient care; professionalism and ethical practice; communication, leadership, management and behavioural skills; team building; information technology; auditing; and appropriate attitudinal change to ensure improved patient service and research outcomes and attainment of the highest degree of satisfaction by stakeholders. CPD includes education methods beyond the didactic, embodies concepts of self-directed learning and personal development, and considers organizational and systemic factors.
Core competencies	The minimum set of competencies that constitute a common baseline for all health promotion roles (i.e. what all health promotion practitioners are expected to be capable of doing to work efficiently, effectively, and appropriately in the field).
Core curriculum	A curriculum, or course of study, which is deemed central and usually made mandatory for all students of a school or school system.
Direct admission	An admissions system which builds on previous learning experience and provides a way for individuals from relevant undergraduate, postgraduate, or other educational programs to transition into higher levels of health professionals' studies.
Feasibility	Whether or not something can be accomplished given specific conditions and criteria. Common variables suggestive of feasibility include economic cost and resources available in the area or community necessary to implement the program; organizational rules that may interfere in the implementation and carrying out of a given agenda, such as laws, ethics, and so forth; and receptivity of parallel, cooperative, or divergent agencies in the community necessary to sustain ongoing productivity of the new program.
Financial assistance	Encompassing all forms of monetary aid for students, including any grant, loan, tuition assistance, scholarships, fellowships, tax credits, savings subsidies, or other arrangement by which an entity provides or otherwise makes available monetary support to a student for undergraduate or postgraduate training.

Governance	The system, composed of structures and processes, through which faculty, administrators, and other campus constituents make collective institutional decisions. The concept of governance is meant to include not only the control of decisions about the operations of educational institutions, but also control over the decisions made regarding their objectives. Such structures might include, for example, advisory boards, governing boards, councils, boards of governors, boards of trustees, senates, or committees operating on various matters within an institution.
Infrastructure	Broadly defined as the underlying foundation or basic framework of a system or organization. We refer here specifically to material infrastructure, which includes the laboratory, office, lecture, and instrument room spaces that faculty, students and staff need for various learning activities.
In-service training	Training received while one is fully employed in the health sector. The aim is to equip health workers or the trainers of health workers with the skills to deliver specific interventions.
Inter-professional education	Faculty and students from two or more health professions engaged in learning with, from, and about each other in all components of curricula including the practical ones, to enable effective collaboration and improve health outcomes.
Joint appointment	A formalized agreement between two institutions where an individual holds a position in both institutions and carries out defined responsibilities.
Ladder programme	A system of employee salary progression that provides for advancement through a set of graded steps or levels. Progression on the ladder occurs in relation to achievement.
Licensure	The process whereby a governmental authority, in accordance with state statute, determines the competency of individuals seeking to perform certain services. Through licensure, state governments grant individuals the authority to engage in an area of practice, generally to the exclusion of others, based on demonstrated education, experience, and examination. As a general rule, state governments possess the authority to discipline licensees who fail to comply with statutes and regulations and to take action against unlicensed individuals who practice within the scope of a licensed profession or occupation.
Regulatory bodies	A national organization, external to an institution, charged with the responsibility of setting and maintaining educational and practice standards for a profession, and controlling entry into the profession (i.e. accreditation).
Research capacity	The collective capability of education faculty to conduct independent research or to contribute to interdisciplinary research.
Results-based financing	A cash payment or non-monetary transfer made to a national or sub-national government, manager, provider, payer or consumer of health services after predefined results have been attained and verified. Payment is conditional on measurable actions being undertaken.
Retention (of students)	A programme outcome involving the maintenance of a student's satisfactory progress toward his or her pedagogical objective until it is attained.
Return of service commitment	An arrangement whereby a health worker in training or a fully trained health worker enters into a contract to work for a number of years in an underserved area in exchange for a financial or in-kind incentive.
Rural population	A population of an area that is not urban in nature, where 'urban' delineates the contours of a contiguous territory inhabited at urban density levels without regard to administrative boundaries. Recognizing the absence of a universal or standardized definition of 'rural' meaningful in an international context, the diversity of definitions commonly utilized in the literature may also be accepted, based on factors including distance from nearest urban centre, population density, common nature of employment, government structures, degree of isolation, and distance from nearest 'major hospital' or high-level health care institution.
Scope of practice	The activities that an individual health professional performs in the delivery of patient care. Scope of practice reflects the types of patients for whom the health professional can care as well as what procedures/activities the health professional can perform, and influences the ability of the health professional to seek reimbursement for services provided. Determining scope of practice includes advanced practice education in a role and specialty, legal implications, and scope of practice statements as published by national professional specialty and advanced practice organizations.
Streamlined educational pathway	A means of connecting education, training, and support services to prepare students for the next level of education and training. Each step on a streamlined pathway is designed explicitly to prepare students to progress to the next level of education. (e.g., through multiple entry points and innovative programme delivery mechanisms such as flexible scheduling). Streamlined nursing education programme might, for example, ensure that registered nurses who wish to advance their nursing expertise and career by enrolling in a higher degree in nursing can do so without having to repeat the same courses and content they have already mastered; associated regulations would thus prohibit institutions from requiring a student who already holds a nursing license or relevant lower-level degree to complete coursework whose content they have already covered in a previous course of study.

Targeted admission policy	A policy that provides a number of reserved places in limited-entry undergraduate or postgraduate programmes for applicants from groups that are underrepresented and/or disadvantaged in terms of gaining access to a university education and for whom participation in the programme will assist in achieving equal educational opportunity.
Trans-professional education	Health professionals learning with, from, and about non-professional health workers, especially basic and ancillary health workers, administrators and managers, policy makers, and leaders of the local community. The intention is to break down professional silos while enhancing collaborative and non-hierarchical relationships in effective teams.
Twinning	The establishment of a formal link between a specific department/institution in a developed country and a corresponding department/institution in the developing world.
Underrepresented population	A racial or ethnic population that is underrepresented in healthcare professions relative to their numbers in the general population.
Underserved population	Interpreted in the broadest sense, a relatively poorer population inhabiting an area with limited access to qualified health care providers and health services of adequate quality. May include, for example, populations occupying the following types of settings: remote rural areas; small or remote islands; urban slum areas; areas that are in conflict or post-conflict; refugee camps; and areas inhabited by minority or indigenous groups.

Annex 5.

The WHO guideline development process

A WHO guideline is any document that contains WHO recommendations about health interventions, whether clinical, public health or policy related. A recommendation provides information about what policy-makers, health-care providers or patients should (or should not) do or consider doing. It implies a choice between different interventions that have an impact on health and that have ramifications for resource use.

Two Guideline Development Group meetings were held. The first meeting was held in Geneva, Switzerland 9-11 May 2011. Participants in the first meeting addressed and agreed on the scope, objectives, target audience, outcomes framework, categories and the potential PICO questions under each domain of the Guidelines. The group then proceeded to discuss and finalize PICO questions. A GRADE example using interprofessional education, one of the PICO questions, was presented to the group and provided the opportunity to discuss the methodology and ask questions.

The systematic reviews, evidence tables and GRADE profiles were prepared in accordance with GRADE as illustrated in Figure 5 below. 11 systematic reviews were commissioned and completed by August 2012. In addition a feasibility and acceptability survey gathered the views of 136 stakeholders and potential beneficiaries of the recommendations from all WHO regions about the acceptability and feasibility of each of the interventions being considered. A similar survey with civil society survey (169 respondents) provided views and expectations on the main areas of interest.

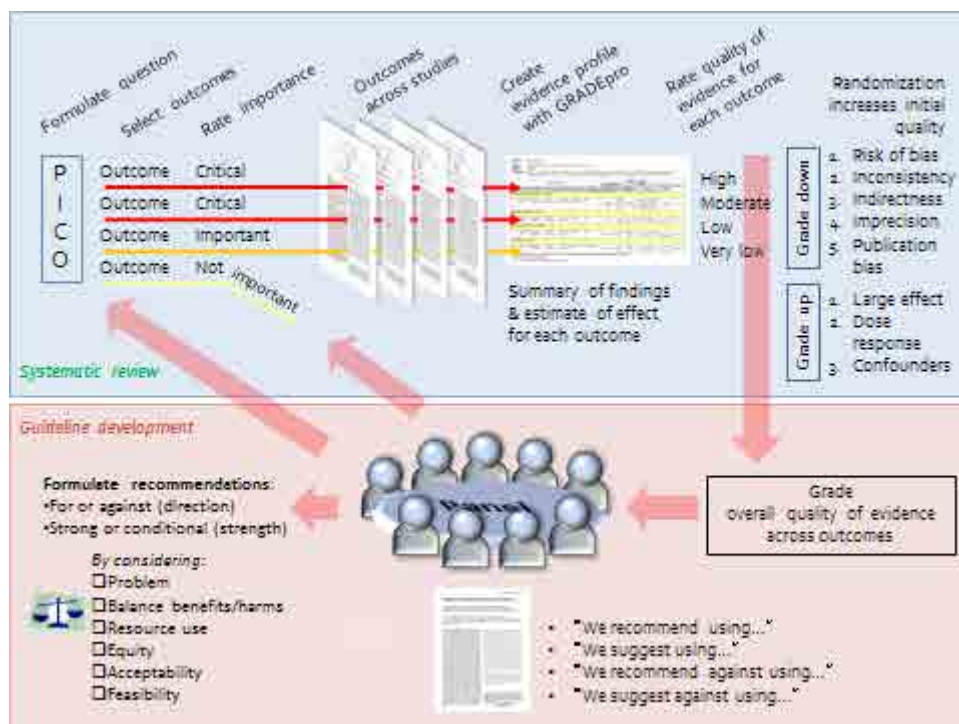
The second Guideline Development Group meeting was held at the Pan American Health Organization in Washington DC 20-22 March 2012. The purposes of the second meeting were as follows: review the findings from the systematic reviews and other evidence gathered; finalize decision tables and agree on the wording of draft recommendations; agree on each recommendation's direction and strength (conditional or strong); decide on next steps for finalizing the recommendations; and discuss strategies for launching and translating the recommendations into action. In the period between the two meetings, a Knowledge Gateway site was created where members of the Guideline Development Group could visit to download documents posted for comment/review by the WHO Geneva Secretariat.

WHO has followed the GRADE system for developing recommendations since 2008. The system separates the rating of the quality of the evidence from the rating of the strength of the recommendation. The quality of evidence reflects the extent of our confidence that the estimates of an effect are adequate to support a particular decision or recommendation. The GRADE system classifies the quality of evidence as high, moderate, low and very low. The GRADE framework considers the following factors when deciding on the quality of evidence: type of study design, risk of bias, imprecision, indirectness, inconsistency, publication bias, dose response, large effect size and plausible confounding.

The direction and strength of the recommendation reflects the extent to which the Guideline Development Group was confident that the desirable effects of following a recommendation are greater than the potential undesirable effects. In terms of implications, a strong recommendation can be adopted as a policy in most situations. A conditional recommendation implies the need for substantial debate and involvement of stakeholders in deciding whether or not to adopt the recommendation. In some cases, the panel may decide to qualify the conditional recommendation by providing the "conditions" under which it should be considered. Examples of these conditions include: ensuring availability of experienced staff, space or equipment, conducting needs assessment, and integrating the new intervention within existing programs. One specific type of conditions is implementing the intervention "in the context of close monitoring and evaluation". This is appropriate when monitoring of the fidelity of implementation of the intervention and evaluation of some short-term outcome can ensure optimal implementation and adaptation if necessary. Another specific type of conditions is implementing the intervention "only in the context of rigorous research". This is appropriate when there is a relatively high degree of uncertainty whether the desirable effects of following the recommendation are greater than the potential undesirable effects and the panel feels that the intervention should be adopted only when there is an opportunity to generate the needed evidence.

The Guidelines Development Group used a standardized decision table for transparently recording the panellists' judgments (Annex 7). All decisions were reached by agreement through discussion and consensus, including the direction and strength of recommendations and key considerations attached to the recommendations. Information from the evidence tables was used to develop the GRADE profiles for the final list of recommendations. The development of the Guidelines document was iterative with drafts of the Guidelines document circulated via email to the Guidelines Development Group, and then to peer reviewers for comment. Differences in points of view were resolved through email discussions. Questions and requests for clarification were also addressed prior to incorporation into the final draft.

Figure 5 Process of formulating recommendations



Acknowledgment: Dr. Holger Schunemann

Annex 7 provides the decision tables used by the Guidelines Development Group. The domains used to determine the strength of recommendations are described below in table 5.1

Table 5.1 Domains of decision tables


Problem	The magnitude of the problem in terms of the numbers of the target group affected.
Benefits and harms	of the options Desirable effects (benefits) need to be weighed against undesirable effects (harms). The more that the benefits outweigh the risks, the more likely that a strong recommendation will be made.
Resource use	Lower costs (monetary, infrastructure, incremental costs, equipment or human resources) or greater cost-effectiveness will more likely result in a strong recommendation.
Feasibility, acceptability, equity	These judgements give an indication of the likelihood of the implementation of the recommendation.

Annex 6.

Grade profiles

Recommendation 1

Author(s): Elie Akl
Date: 2013-09-23
Question: Should continuous development programmes for faculty and teaching staff relevant to the evolving health-care needs of their communities be used in health professionals' education and training institutions?
Settings: Undergraduate and postgraduate programs
Bibliography: See evidence table

Quality assessment							Results (narrative summary)*	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations			
Quality (assessed with: reported behavior, confidence in skills, surgical skills)									
4 ¹	randomised trials	no serious risk of bias ²	no serious inconsistency	serious ³	no serious imprecision	none	Residents assigned to the intervention group reported statistically significant changes in all behaviors (p<0.05). intervention group faculty were more stringent than controls in their evaluations	 MODERATE	CRITICAL
Relevance - not measured									
0	-	-	-	-	-	-	-	-	CRITICAL

1 Results of observational studies generally support the results of RCTs
 2 No major risk of bias described
 3 Studies from high income countries. Surrogate outcomes

* The results across studies were not meta-analyzed given the variability in the outcome measures used, and the way they were analyzed and reported.

Recommendation 2

Author(s): Elie Akl

Date: 2013-09-23

Question: Should governments, funders and accrediting bodies support continuous development programmes for faculty and teaching staff relevant to the evolving health-care needs of their communities, \in health professionals' education and training institutions?

Settings: Undergraduate and postgraduate programs

Bibliography: See evidence table

Quality assessment							Results (narrative summary)*	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations			
Quality (assessed with: reported behavior, confidence in skills, surgical skills)									
4 ¹	randomised trials	no serious risk of bias ²	no serious inconsistency	very serious ³	no serious imprecision ⁴	none	Residents assigned to the intervention group reported statistically significant changes in all behaviors ($p < 0.05$). intervention group faculty were more stringent than controls in their evaluations	LOW <input type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/>	CRITICAL
Relevance - not measured									
0	-	-	-	-	-	-	-	-	CRITICAL

1 Results of observational studies generally support the results of RCTs

2 No major risk of bias described


3 Studies from high-income countries. Surrogate outcomes. Moreover, the question relates to support by governments, funders, and accrediting bodies, which makes the evidence more indirect compared with the previous question

4 No pooled effect estimate and CI to assess precision

* The results across studies were not meta-analyzed given the variability in the outcome measures used, and the way they were analyzed and reported.

Recommendation 3

Author(s): Elie Akl
Date: 2013-09-23
Question: Should innovative expansion of faculty, through the recruitment of community-based clinicians and health workers as educators be used in the education of health professionals?
Settings: Health professionals' education and training institutions
Bibliography: Refer to decision tables

Quality assessment							Results (narrative summary)*	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations			
Quality (assessed with: perceived quality)									
3	randomised trials	no serious risk of bias	serious ¹	serious ²	no serious imprecision ³	none	Results suggest that quality of care provided by untrained professionals is inferior or equal to that provided by trained professionals	 LOW	CRITICAL
Relevance - not measured									
0	-	-	-	-	-	none	-	-	CRITICAL
Quantity - not measured									
0	-	-	-	-	-	none	-	-	

1 No statistical assessment of heterogeneity available, but appeared to vary across 3 studies

2 Studies conducted in high income countries. Outcomes are surrogate

3 No pooled effect estimate to evaluate

* No pooled effect estimates available

Recommendation 4

Author(s): Elie Akl
Date: 2013-09-23
Question: Should adapting curricula to the evolving health-care needs of their communities be used in education and training institutions?
Settings: Health professionals' education and training institutions
Bibliography: Refer to list of studies in Evidence table

Quality assessment							Results (narrative summary)*	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations			
Quality (assessed with: pass rates and performance on exams, report of target community members with improved health behavior)									
9	observational studies	no serious risk of bias ¹	no serious inconsistency	serious ²	no serious imprecision	none	Findings consist of improved pass rates and performance on exams, report of target community members with improved health behavior	○○○● VERY LOW	CRITICAL
Relevance (assessed with: choice of practice in community settings, primary care career)									
4	observational studies	no serious risk of bias ¹	no serious inconsistency	serious ³	no serious imprecision	none	Studies found both increased choice of practice in community settings, and increased chose of a primary care career	○○○● VERY LOW	CRITICAL

1 No adjustment for confounding
 2 No explanation was provided
 3 All studies conducted in high income settings. Some of the outcome measurements can be considered surrogates (self reported)

Recommendation 5

Author(s): Elie Akl

Date: 2013-09-12

Question: Should simulation methods of varying levels of fidelity be used in the education of health professionals?¹

Settings: Health professionals' education and training institutions

Bibliography: Cook, D. A., R. Hatala, et al. (2011). "Technology-Enhanced Simulation for Health Professions Education: A Systematic Review and Meta-analysis." *JAMA: Journal of the American Medical Association* 306(9): 978-988

Quality assessment							No of patients		Effect		Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Simulation methods of varying levels of fidelity	Control	Relative (95% CI)	Absolute		
Quality (measured with: Effects on patient care ² ; Better indicated by higher values)												
14 ³	randomised trials	no serious risk of bias ⁴	no serious inconsistency ⁵	serious ⁶	no serious imprecision ⁷	none ⁸	271	270 ⁹	.	SMD 0.37 higher (0.20 to 0.54 higher)	<div style="display: flex; align-items: center;"> <div style="width: 10px; height: 10px; background-color: #008000; border-radius: 50%; margin-right: 5px;"></div> <div style="width: 10px; height: 10px; background-color: #008000; border-radius: 50%; margin-right: 5px;"></div> <div style="width: 10px; height: 10px; background-color: #008000; border-radius: 50%; margin-right: 5px;"></div> <div style="width: 10px; height: 10px; border: 1px solid #008000; border-radius: 50%; margin-right: 5px;"></div> MODERATE </div>	CRITICAL
Relevance - not measured												
0	.	.	.	.	.	none	.	.	.	.	.	IMPORTANT

1 Systematic review included studies in medical students, physician trainees, physicians in practice, nurses, nursing students and other health professionals
 2 Meta-analyses for related outcomes (knowledge, skills, and behaviors) showed large effects consistent with results for patient-related outcomes
 3 Out of 38 included studies, 12 were randomized. Results of these 2 groups of studies were consistent, although effect size was lower for RCTs compared with non RCTs (0.37 vs. 0.50)

Recommendation 6

Author(s): Elie Akl

Date: 2013-09-19

Question: Should direct entry of graduates from relevant undergraduate, postgraduate, or other educational programmes into different or higher levels of professional studies be used in the education of health professionals?^{1,2}

Settings: Health professionals' education and training institutions

Bibliography: Please refer to list of studies in Evidence table

Quality assessment							Results (narrative summary)*	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations			
Quality									
40	observational studies	no serious risk of bias ³	no serious inconsistency ⁴	serious ²	no serious imprecision ⁵	none	Qualitatively, the effects of direct entry on quality were either equivalent and sometimes better than those of the control	 MODERATE	CRITICAL
Quantity									
7	observational studies	no serious risk of bias ³	no serious inconsistency ⁴	serious ²	no serious imprecision ⁶	none	Qualitatively, the effects of direct entry on quantity were either equivalent and sometimes better than those of the control	 LOW	CRITICAL

1 Studies assessed: graduate entry programs, accelerated programs, direct entry programs

2 Most studies come from high income countries

3 No detailed assessment of risk of bias for included studies was reported. We did not downgrade for risk of bias, but considered the potential risk of bias when downgrading for indirectness

4 Although no statistical assessment of heterogeneity is provided, the results were consistent in that the direct entry were at least equivalent (sometimes better) than control for this outcome

5 Although no meta-analysis is conducted, given the large number of included studies, and the apparent consistency of the results, the results were judged not to be imprecise

6 Although no meta-analysis is conducted, and although the number of studies was not that high, we did not downgrade for imprecision given the apparent consistency of the results and given we already downgraded for indirectness

* The results across studies were not meta-analyzed given the variability in the outcome measures used, and the way they were analyzed and reported.

Recommendation 7

Author(s): Elie Akl
Date: 013-09-19
Question: Should targeted admission policies seeking to increase the ethnic and geographical diversity of students be used in the education of health professionals?¹
Settings: Health professionals' education and training institutions
Bibliography: Laven 2003, De Vries 2003, Rabinowitz 2005, Woloshuk 2004

Quality assessment							Results (narrative summary)*	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations			
Quality (assessed with: measured as % of health workers with a rural background currently practicing in rural area)									
15 ²	observational studies	no serious risk of bias	no serious inconsistency	serious ³	no serious imprecision	strong association ⁴	<p>Laven: Rural background was associated with rural practice in 10 of 12 studies. The strength of association ranged from an odds ratio of 1.68–3.9, but in most cases was around 2–2.5.</p> <p>de Vries: It was found that 38.4% of the rural-origin graduates are currently practicing in rural areas, compared with 12.4% of urban-origin graduates practicing in rural areas (OR=3.09).</p> <p>Rabinowitz: Showing long-term retention rates and persistent effect, after 11-16 years, 68% of the physician shortage area programme graduates were still practicing family medicine in the same rural area, compared with 46% of their non-PSAP peers.</p> <p>Woloshuk: 32% of the 22 rural background students were practicing in a rural community, as were 13% of the 56 urban background students (RR=2.55;CI=1.01-6.42).</p>	LOW ●○○	CRITICAL
Quality									
0	no evidence available	.	.	.	.	none	.	.	IMPORTANT
Relevance									

Recommendation 8

Author(s): Elie Akl
Date: 2013-09-19
Question: Should streamlined educational pathways, or ladder programmes, for the advancement of practicing health professionals be used in the education of health professionals?
Settings: Health professionals' education and training institutions
Bibliography: Please refer to list of studies in Evidence table

Quality assessment							Results (narrative summary)*	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations			
Quality (assessed with: number of graduates/completion rate, turnover rate, physician to population ratio)									
6 ¹	observational studies	serious ²	no serious inconsistency ³	no serious indirectness	no serious imprecision ⁴	none ⁵	<p>Drenkard 2005: 5.2% turnover rate for the 268 clinical ladder promoted RNs with only 14 resigning compared to a general Inova wide turnover rate of 14.1%.</p> <p>Goldberger S. 2005: Participants under the employer-sponsored workplace advancement programme had a higher-than-average PN completion rate (82% for New Courtland's nursing aides and 83% for Golden Slippers).</p> <p>Goldberger S. 2005: Reduced staff turnover and vacancy rates; outstanding retention and completion rate for CNA-to-LPN programs</p> <p>Estrada 2011: physician-population ratio improved from 1:21 000 to 1:3222</p> <p>Goodrich 2004: Number of RNs at Level IV has doubled but still lower than the desired quantity by the committee</p> <p>Ward 2007: Number of nurses advancing to Level III has increased over the years. Number of nurses advancing to Level IV has increased over the years. Percentage of nurses at each level has remained relatively constant</p>	VERY LOW	CRITICAL
Quality (assessed with: involvement in activities)									
1 ¹	observational studies	serious ²	no serious inconsistency ⁶	no serious indirectness	no serious imprecision ³	none ⁵	<p>Nelson 2009: Career ladder RNs were more involved in leadership (p<0.001), quality improvement (p=0.02), preceptorship (p=0.001).</p>	VERY LOW	CRITICAL
Relevance									
1	observational studies	serious ²	no serious inconsistency ⁶	no serious indirectness	no serious imprecision ³	none ⁵	<p>Dodgson 1998: The programme effectively increased diversity within the nursing workforce and improved care for an increasingly diverse population</p>	VERY LOW	CRITICAL

- 1 Most studies included in the evidence table did not provide comparative results and were not considered in this evidence profile
- 2 Concerns about selection bias in a number of studies
- 3 Hard to assess in the absence of meta-analysis, but reported results tended to show benefit
- 4 Difficult to assess in the absence of pooled effect estimate
- 5 Undetected but possible
- 6 Only one study considered for this outcome

* Results across studies not meta-analyzed

Recommendation 9

Author(s): Elie Akl
Date: 2013-09-19
Question: Should interprofessional education be used in the education of health professionals?
Settings: Health professionals' education and training institutions
Bibliography: Reeves et al. Interprofessional education: effects on professional practice and healthcare outcomes. Cochrane database of systematic reviews 2013.

Quality assessment							Results (narrative summary)*	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations			
Quality (assessed with: patient outcomes (functional improvement, community discharge, length of stay))									
6	randomised trials ¹	no serious risk of bias ²	Serious indirectness ³	serious indirectness ⁴	no serious imprecision ⁵	none	"The care provided by use of 6 inter-professional education may lead to improved outcomes for patients" ⁶	LOW	CRITICAL

- 1 2 additional studies (interrupted time series analyses) also assessed this outcome
- 2 Cochrane risk of bias summary did not suggest significant risk of bias. The systematic review authors note that 3 RCTs were unclear or had evidence of selective outcome reporting
- 3 Systematic reviewers narratively reported that some studies showed benefits while others showed no effect
- 4 Studies conducted in HIC, "primarily USA and the UK"
- 5 Hard to assess in the absence of a meta-analysis
- 6 In addition, three studies provided low quality evidence that use of interprofessional education may lead to changes in the use of guidelines or standards

* Systematic review authors did not report a pooled effect estimate

Recommendation 10


Author(s): Elie Akl

Date: 2013-09-23

Question: Should accreditation by national governments be used in the education of health professionals?

Settings: Health professionals' education and training institutions

Bibliography: Please refer to list of studies in evidence profile; Greenfield. IJQHC. 2008;3;172-183

Quality assessment							Results (narrative summary)*	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations			
Quality									
3	observational studies	no serious risk of bias ¹	no serious inconsistency	no serious indirectness	no serious imprecision ²	none	“accreditation affiliation of a health education program has been shown to have a positive influence on individuals seeking professional organization membership	LOW 	CRITICAL
Quantity - not reported									
0	-	-	-	-	-	none	-	-	CRITICAL

1 No such risk described

2 Although no statistical assessment available

Recommendation 11

Author(s): Elie Akl
Date: 2013-09-23
Question: Should continuous professional development be used in health professionals?
Settings: Health professionals' education and training institutions
Bibliography: Refer to list of studies in Evidence table

Quality assessment							Results (narrative summary)*	Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations			
Quality (assessed with: clinical practices such as application of screening tests)									
1	randomised trials ¹	no serious risk of bias	no serious inconsistency	no serious indirectness	serious ²	none	Observed and self reported practices improved (main results from RCT and overall consistent results from 12 non randomized studies)	○ ● ● ● MODERATE	CRITICAL
Relevance - not measured									
0	-	-	-	-	-	none	-	-	CRITICAL

1 12 studies with non randomized design identified; results generally consistent with those of the RCT

2 Only one study identified

* Results not meta-analyzed

Annex 7.

Decision tables

7.1 Education and training institutions

7.1.1 Faculty development

Should education and training institutions implement faculty development programmes, which update and develop teaching and clinical skills, in both undergraduate and postgraduate programmes linked to promotion and reward versus no faculty development programmes linked to promotion and reward?

	CRITERIA	JUDGEMENT	EVIDENCE																				
PROBLEM	Is the problem serious?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Effective teaching may influence trainee performance. This impact may not only educational outcomes (e.g. student learning) but also on practice outcomes (e.g. a change in trainee practice) or health outcomes (e.g. an effect on patient or population health).								
	No	Probably no	Uncertain	Probably yes	Yes	Varies																	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>																		
Are a large number of people affected?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Most faculty and their students are affected, as well as people who seek health care.									
No	Probably no	Uncertain	Probably yes	Yes	Varies																		
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>																		
BENEFITS & HARMS OF THE OPTIONS	Are the anticipated desirable effects large?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<p>. No evidence for the undesirable effects</p> <table border="1"> <tr> <td>Quantity</td> <td>Quality</td> <td>Relevance</td> <td>Unintended effects</td> </tr> <tr> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> </tr> </table> <p>Quality</p>	Quantity	Quality	Relevance	Unintended effects	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
	No	Probably no	Uncertain	Probably yes	Yes	Varies																	
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>																	
	Quantity	Quality	Relevance	Unintended effects																			
<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>																				
Are the anticipated undesirable effects small?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Embedding faculty development in accreditation processes. If faculty development for teachers (and evidence of addressing teachers' needs through a variety of programmes) was embedded in on going institutional accreditation then it would be difficult for deans and educational managers to ignore the need for teachers to participate in faculty development and quality assurance of their training programmes (McLean et al., 2008; Hatem et al., 2011). At an individual level, requiring teachers to demonstrate achievement of evidence-based teaching competencies to maintain teaching accreditation would convince faculty of the importance of faculty development (Hatem et al., 2011).									
No	Probably no	Uncertain	Probably yes	Yes	Varies																		
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>																		
What is the certainty of the anticipated effects?	<table border="1"> <tr> <td>Very low</td> <td>Low</td> <td>Moderate</td> <td>High</td> <td>No evidence</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> </tr> </table>	Very low	Low	Moderate	High	No evidence	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Establishing a team of faculty members whose primary responsibility is to teach. Just as research staff are currently employed in positions primarily to undertake research, teaching staff should be funded, responsible and rewarded for good teaching (Hatem et al., 2011). At the same time teaching should not be the sole preserve of these faculty members; administrators, educators, researchers and clinicians should all be expected to share in the teaching role, just as teachers should contribute to these other roles.									
Very low	Low	Moderate	High	No evidence	Varies																		
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>																		
Are the anticipated desirable effects large relative to the undesirable effects?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Probably yes, because of the uncertainty of the size of the undesirable effects. N. B. Depends on the programme									
No	Probably no	Uncertain	Probably yes	Yes	Varies																		
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>																		
RESOURCE USE	Are the resources required small?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<p>Main resource requirements (not costed):</p> <ul style="list-style-type: none"> • Dedicated staff and faculty • Faculty time • Development programmes 								
	No	Probably no	Uncertain	Probably yes	Yes	Varies																	
<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>																		
Is the incremental cost small relative to the benefits?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Benefits gained from the policy are likely to outweigh the costs									
No	Probably no	Uncertain	Probably yes	Yes	Varies																		
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>																		

	CRITERIA	JUDGEMENT	EVIDENCE												
EQUITY	What would be the impact on health equity?	<table border="1"> <tr> <td>Reduced</td> <td>Probably reduced</td> <td>Uncertain</td> <td>Probably increased</td> <td>Increased</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	Reduced	Probably reduced	Uncertain	Probably increased	Increased	Varies	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Reduced	Probably reduced	Uncertain	Probably increased	Increased	Varies										
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>										
ACCEPTABILITY	Is the option acceptable to most stakeholders?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Based on stakeholders survey, on a 1–9 scale: Mean (sd) = 7.8 (1.5) See values and preferences survey for qualitative comments
No	Probably no	Uncertain	Probably yes	Yes	Varies										
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>										
FEASIBILITY	Is the option feasible to implement?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Based on stakeholders survey, on a 1–9 scale: Mean (sd) = 6.7 (1.9) See values and preferences survey for qualitative comments
No	Probably no	Uncertain	Probably yes	Yes	Varies										
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>										

PICO B3: Should education and training institutions implement faculty development programmes, which update and develop teaching and clinical skills, in both undergraduate and postgraduate programmes linked to promotion and reward versus no faculty development programmes linked to promotion and reward?

Balance of consequences	Undesirable consequences <i>clearly outweigh</i> desirable consequences in most settings <input type="radio"/>	Undesirable consequences <i>probably outweigh</i> desirable consequences in most settings <input type="radio"/>	The balance between desirable and undesirable consequences <i>is uncertain</i> <input type="radio"/>	Desirable consequences <i>probably outweigh</i> undesirable consequences in most settings <input checked="" type="radio"/>	Desirable consequences <i>clearly outweigh</i> undesirable consequences in most settings <input type="radio"/>
Recommendation	<i>We recommend against the option</i> <input type="radio"/>	<i>We recommend the option only in the context of rigorous research</i> <input type="radio"/>	<i>We recommend the option in the context of close monitoring and evaluation</i> <input checked="" type="radio"/>	<i>We recommend the option</i> <input type="radio"/>	
● Health professional schools should implement faculty development programmes, which update and develop teaching and clinical skills in both undergraduate and postgraduate programmes					
Justification	To address the misalignment of faculty with service delivery needs				
Implementation considerations	Considerations when designing a faculty development programme (Steinert 2009) <ul style="list-style-type: none"> • Understand the institutional / organizational culture • Determine appropriate goals and priorities • Conduct needs assessments to ensure relevant programming • Develop different programmes to accommodate diverse needs • Incorporate principles of adult learning and instructional design • Offer a diversity of educational methods • Promote 'buy-in' and market effectively • Work to overcome commonly encountered challenges • Prepare staff developers • Evaluate and demonstrate effectiveness • Provide and offer peer programme consultation to enhance faculty development initiatives 				
Key uncertainties	<ul style="list-style-type: none"> • Effect of faculty development programmes on the outcome of interest • Cost effectiveness 				
Monitoring and evaluation	<ul style="list-style-type: none"> • Accreditation process includes assessment of faculty development • Retention • Improvement of service delivery 				
Research priorities	<ul style="list-style-type: none"> • High quality research is needed to determine, inter alia, whether health professionals' education programmes make a difference to students' learning and throughput rates, whether developing teaching skills in students influences their abilities as future teachers • There is a pressing need to understand the effect of faculty development initiatives on patient outcomes and the health of populations 				

PICO B3: Should continuous development programmes for faculty and teaching staff, which update and develop teaching skills be mandatory (e.g. curriculum development and instructional design) in both undergraduate and postgraduate programmes, versus no mandatory CPD programmes, and linked to funding, promotion and reward?

Problem: Absence of higher education policies for mandatory faculty development in health professionals' education.

Option: Mandatory continuous development programmes for faculty and teaching staff, which update and develop teaching skills (e.g. curriculum development and instructional design), in both undergraduate and postgraduate programmes and linked to funding, promotion and reward.

Comparison: No mandatory policy on continuous development programmes for faculty and teaching staff.

Setting: Global, with focus on low- and middle-income countries.

	CRITERIA	JUDGEMENT	EVIDENCE	QUERIES TO PANEL												
PROBLEM	Is the problem serious?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Determining the impact of effective teaching is a challenge as many other factors may influence trainee performance. This impact may be measured as educational outcomes (e.g. student learning), practice outcomes (e.g. a change in trainee practice) or health outcomes (e.g. an effect on patient or population health; Ramani 2006). Cassel (2004) argues for a clear link between the quality of medical education and the quality of clinical practice, which should be the goal of that education.	
	No	Probably no	Uncertain	Probably yes	Yes	Varies										
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>											
Are a large number of people affected?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Overall, assessing the impact or outcomes of faculty development initiatives is difficult due to limited focus in the literature on systematic evaluations of interventions using rigorous methodologies. Those evaluations that have occurred, largely report on faculty satisfaction with the programme, or changes in faculty knowledge, attitudes or skills as a result of the intervention (Steinert et al., 2006).		
No	Probably no	Uncertain	Probably yes	Yes	Varies											
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>											
BENEFITS & HARMS OF THE OPTIONS	Are the anticipated desirable effects large?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Desirable effects are increased: quantity, quality and relevance of health professionals Possible resources used without an effect (opportunity costs)	<input type="radio"/>
	No	Probably no	Uncertain	Probably yes	Yes	Varies										
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>										
	Are the anticipated undesirable effects small?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Embedding faculty development in accreditation processes. If faculty development for teachers (and evidence of addressing teachers' needs through a variety of programs) was embedded in ongoing institutional accreditation then it would be difficult for deans and educational managers to ignore the need for teachers to participate in faculty development and quality assurance of their training programs (McLean et al., 2008; Hatem et al., 2011). At an individual level, requiring teachers to demonstrate achievement of evidence-based teaching competencies to maintain teaching accreditation would convince faculty of the importance of faculty development (Hatem et al., 2011).	
No	Probably no	Uncertain	Probably yes	Yes	Varies											
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>											
What is the certainty of the anticipated effects?	<table border="1"> <tr> <td>Very low</td> <td>Low</td> <td>Moderate</td> <td>High</td> <td>No evidence</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> </tr> </table>	Very low	Low	Moderate	High	No evidence	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>			
Very low	Low	Moderate	High	No evidence	Varies											
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>											
Are the anticipated desirable effects large relative to the undesirable effects?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Establishing a team of faculty members whose primary responsibility is to teach. Just as research staff are currently employed in positions primarily to undertake research, teaching staff should be funded, responsible and rewarded for good teaching (Hatem et al., 2011). At the same time teaching should not be the sole preserve of these faculty members; administrators, educators, researchers and clinicians should all be expected to share in the teaching role, just as teachers should contribute to these other roles. N. B Depends on the context and the programme.		
No	Probably no	Uncertain	Probably yes	Yes	Varies											
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>											

	CRITERIA	JUDGEMENT	EVIDENCE	QUERIES TO PANEL
RESOURCE USE	Are the resources required small?	No <input type="radio"/> Probably no <input checked="" type="radio"/> Uncertain <input type="radio"/> Probably yes <input type="radio"/> Yes <input type="radio"/> Varies <input type="radio"/>	Main resource requirements <ul style="list-style-type: none"> Financial Human resources Infrastructure 	Resources to implement the policy
	Is the incremental cost small relative to the benefits?	No <input type="radio"/> Probably no <input type="radio"/> Uncertain <input type="radio"/> Probably yes <input checked="" type="radio"/> Yes <input type="radio"/> Varies <input type="radio"/>		
EQUITY	What would be the impact on health equity?	Reduced <input type="radio"/> Probably reduced <input type="radio"/> Uncertain <input checked="" type="radio"/> Probably increased <input type="radio"/> Increased <input type="radio"/> Varies <input type="radio"/>		
ACCEPTABILITY	Is the option acceptable to most stakeholders?	No <input type="radio"/> Probably no <input type="radio"/> Uncertain <input type="radio"/> Probably yes <input checked="" type="radio"/> Yes <input type="radio"/> Varies <input type="radio"/>		Might not be acceptable to the current faculty (requires change)
FEASIBILITY	Is the option feasible to implement?	No <input type="radio"/> Probably no <input type="radio"/> Uncertain <input type="radio"/> Probably yes <input checked="" type="radio"/> Yes <input type="radio"/> Varies <input type="radio"/>		

PICO B3 RECOMMENDATION: Should continuous development programmes for faculty and teaching staff, which update and develop teaching skills be mandatory (e.g. curriculum development and instructional design) in both undergraduate and postgraduate programmes, versus no mandatory CPD programmes, and linked to funding, promotion and reward?

Balance of consequences	Undesirable consequences <i>clearly outweigh</i> desirable consequences in most settings <input type="radio"/>	Undesirable consequences <i>probably outweigh</i> desirable consequences in most settings <input type="radio"/>	The balance between desirable and undesirable consequences <i>is uncertain</i> <input type="radio"/>	Desirable consequences <i>probably outweigh</i> undesirable consequences in most settings <input checked="" type="radio"/>	Desirable consequences <i>clearly outweigh</i> undesirable consequences in most settings <input type="radio"/>
Recommendation	<i>We recommend against the option</i> <input type="radio"/>	<i>We recommend the option only in the context of rigorous research</i> <input type="radio"/>	<i>We recommend the option in the context of close monitoring and evaluation</i> <input checked="" type="radio"/>	<i>We recommend the option</i> <input type="radio"/>	
<p>● Governments, funders and accrediting bodies should implement higher education policies for mandatory faculty development programmes that are aligned with the goal of relevant health professionals' education (in developing teaching and clinical skills) and linked to funding, promotion and reward</p>					
Justification	To address the misalignment of faculty with service delivery needs				
Implementation considerations	<ul style="list-style-type: none"> determine appropriate goals and priorities conduct needs assessments to ensure relevant programming develop different programmes to accommodate diverse needs incorporate principles of adult learning and instructional design offer a diversity of educational methods promote 'buy-in' and market effectively evaluate – and demonstrate – effectiveness 				
Key uncertainties	The extent to which a policy can bring about change in faculty development				
Monitoring and evaluation	Changes in higher education policies				

Research priorities	<i>Addressing research gaps.</i> High quality research is needed to determine, inter alia, whether health professionals' education programmes do increase confidence in teaching, whether faculty development programmes to develop teaching skills make a difference to students' learning and throughput rates, whether developing teaching skills in students influences their abilities as future teachers, and the influence that teaching rewards have on faculty development. Further, as above, there is a pressing need to understand the effect of faculty development initiatives on patient outcomes and the health of populations.
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PICO B4: Should innovative expansion of faculty, through the recruitment of community-based clinicians and health workers as educators, be used versus no such expansion?

	CRITERIA	JUDGEMENT	EVIDENCE												
PROBLEM	Is the problem serious?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	One of the biggest barriers to scaling up is the inadequate number of faculty/educators. The reasons are twofold: lower salaries compared to clinicians and restrictive academic requirements. Very often, health professionals wanting to go into education need to take a basic education course and are also required to have postgraduate qualifications in science education. Unless innovative approaches are taken, the shortage will remain absolute and restrict the scaling up of health professionals' training.
	No	Probably no	Uncertain	Probably yes	Yes	Varies									
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>										
Are a large number of people affected?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Many health professional schools/training institutions are affected by this. There is good international evidence of this in Hense (1991) and Yordy (2006).	
No	Probably no	Uncertain	Probably yes	Yes	Varies										
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>										
BENEFITS & HARMS OF THE OPTIONS	Are the anticipated desirable effects large?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Desirable effect The desirable effect would be to increase the number of available educators and thus to be able to train more health professionals.
	No	Probably no	Uncertain	Probably yes	Yes	Varies									
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>									
	Are the anticipated undesirable effects small?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Undesirable effects The possible undesirable effect would be a "lowering" of standards in terms of training. This is based on the premise that researchers and scientists make better educators, which is not based on any evidence, although may depend to some degree on the topic is basic science (e.g. biochemistry) as different from clinical topics. As long as there is a balance in a faculty, with maintenance of a cadre of scientist-researchers, this should minimise undesirable effects (Ferreira, personal communication).
No	Probably no	Uncertain	Probably yes	Yes	Varies										
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>										
What is the certainty of the anticipated effects?	<table border="1"> <tr> <td>Very low</td> <td>Low</td> <td>Moderate</td> <td>High</td> <td>No evidence</td> <td>Varies</td> </tr> <tr> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	Very low	Low	Moderate	High	No evidence	Varies	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Although there are no systematic reviews, there is anecdotal evidence. Experience in Brazil suggests a dramatic effect is possible with massive recruiting through fellowships and ordinary PHC professionals to participate in a triangular teaching/learning process. This improves their quality, opens the minds of regular teachers towards community environment assistance and encourages students to become members of future 'Family Health' teams. This is seen as the only realistic option in areas where there is growth of students and/or undersupply of educators, because there is no reliable supply stream of educators, particularly for underserved areas. (Personal communication with Jose Roberto Ferreira, formerly a senior director of HR at PAHO for 30 years and currently Advisor to Fiocruz Foundation and to the Ministry of Health. He is in the process of assessing all the educational programmes in interaction with MOH; Ferreira et al., 2007; Haddad et al., 2008).	
Very low	Low	Moderate	High	No evidence	Varies										
<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>										
Are the anticipated desirable effects large relative to the undesirable effects?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>		
No	Probably no	Uncertain	Probably yes	Yes	Varies										
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>										

	CRITERIA	JUDGEMENT	EVIDENCE												
RESOURCE USE	Are the resources required small?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<p>Main resource requirements</p> <p>The main resources required are funding to pay for the increased numbers of educators and for their replacements in terms of some of their clinical duties, and the human resources i.e. sufficient numbers of clinicians who are interested and able to teach. There is also a need for incentives for teaching and development of teacher/preceptor training resources, which require funding.</p>
	No	Probably no	Uncertain	Probably yes	Yes	Varies									
<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>										
Is the incremental cost small relative to the benefits?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<p>The benefit this brings of increasing the numbers of health professionals that can be trained will rapidly outweigh the costs; although the increased numbers of health professionals will themselves bring about additional costs, this will be balanced by strengthening of the system with possibilities of enhancing recruitment and self-regeneration. The relative balance of these factors depends on training an appropriate mix of future health professionals.</p>	
No	Probably no	Uncertain	Probably yes	Yes	Varies										
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>										
EQUITY	What would be the impact on health equity?	<table border="1"> <tr> <td>Reduced</td> <td>Probably reduced</td> <td>Uncertain</td> <td>Probably increased</td> <td>Increased</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	Reduced	Probably reduced	Uncertain	Probably increased	Increased	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<p>If there was appropriate selection of educators familiar with and grounded in primary care and a socially accountable approach, there could be a major impact on equity. This would occur through training health professionals with a generalist focus, skills in working in teams and distributed according to population health needs. This could be the case particularly in rural areas where there are difficulties in retaining health professionals unless they are educated and trained in rural settings.</p>
Reduced	Probably reduced	Uncertain	Probably increased	Increased	Varies										
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>										
ACCEPTABILITY	Is the option acceptable to most stakeholders?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<p>There may be resistance from traditional health professional schools, with guarding of territory and suspicion from institutions where the hierarchy is based on scientific achievement and research. Desired cultural and attitudinal changes can be achieved by refocussing institutions on their core mission and responsibilities to the communities they serve.</p>
No	Probably no	Uncertain	Probably yes	Yes	Varies										
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>										
FEASIBILITY	Is the option feasible to implement?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<p>Dual appointments of educators in schools and health facilities, and adjunct appointments of educators from health facilities, are two examples of successful innovations that are being applied in many settings to rapidly scale up faculty. There is good international evidence for this.</p>
No	Probably no	Uncertain	Probably yes	Yes	Varies										
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>										

PICO B4 RECOMMENDATION: Should innovative expansion of faculty, through the recruitment of community-based clinicians and health-care workers as educators be used versus no such expansion?

Balance of consequences	Undesirable consequences <i>clearly outweigh</i> desirable consequences in most settings <input type="radio"/>	Undesirable consequences <i>probably outweigh</i> desirable consequences in most settings <input checked="" type="radio"/>	The balance between desirable and undesirable consequences <i>is uncertain</i> <input type="radio"/>	Desirable consequences <i>probably outweigh</i> undesirable consequences in most settings <input type="radio"/>	Desirable consequences <i>clearly outweigh</i> undesirable consequences in most settings <input type="radio"/>
Recommendation	<i>We recommend against the option</i> <input type="radio"/>	<i>We recommend the option only in the context of rigorous research</i> <input type="radio"/>	<i>We recommend the option in the context of close monitoring and evaluation</i> <input checked="" type="radio"/>	<i>We recommend the option</i> <input type="radio"/>	
<p>● Innovative expansion of faculty through the recruitment of community-based clinicians and health-care workers in the context of research and with close monitoring and evaluation</p>					
Justification	-				

Implementation considerations	<ul style="list-style-type: none"> • These educators must come from and be based in the context in which health professionals are needed, in order to ensure socially accountable training • Up skilling and in-service education (faculty development) for these educators becomes a critical need as part of the implementation • There needs to be a support structure for this. Scaling up without better infrastructure or ensuring the right level of training (relevance) and supervision/mentoring may only bring temporary benefits
Key uncertainties	The impact on quality of graduates of changing the requirements of educators
Monitoring and evaluation	<ul style="list-style-type: none"> • Numbers, locations and qualifications of educators • Numbers of health professionals produced and location/nature of their practice
Research priorities	<ul style="list-style-type: none"> • There is a need to assess the effectiveness of educators in terms of the skills that are most useful and valuable, and to explore the best ways to support them in developing these skills • There needs to be more case studies in countries who have tried to implement innovative education • There is also a need for longitudinal (prospective) studies for the future on the use of innovative education with a control group and with attention to confounding factors

7.1.2 Curriculum development

PICO B5/6: Should adapting curricula to evolving needs through the incorporation of core competencies and development of the curriculum be implemented versus no adaptation of curricula to evolving needs?

	CRITERIA	JUDGEMENT	EVIDENCE																				
PROBLEM	Is the problem serious?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Curriculum is a means by which health professionals can acquire appropriate knowledge and skills to respond to the needs of a given population. Most curricula for health professions are outdated and do not respond to the needs of the population (Frenk et al., 2010), compromising efforts towards achievement of key health targets such as the MDGs.								
	No	Probably no	Uncertain	Probably yes	Yes	Varies																	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>																		
Are a large number of people affected?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Affects all health professionals and the populations they serve									
No	Probably no	Uncertain	Probably yes	Yes	Varies																		
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>																		
BENEFITS & HARMS OF THE OPTIONS	Are the anticipated desirable effects large?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<table border="1"> <tr> <td>Quantity</td> <td>Quality</td> <td>Relevance</td> <td>Unintended effects</td> </tr> <tr> <td><input checked="" type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> </tr> </table> <p>A competency-based curriculum can help to define a specific training programme (Smith et al., 2009; Mullan et al., 2010).</p>	Quantity	Quality	Relevance	Unintended effects	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
	No	Probably no	Uncertain	Probably yes	Yes	Varies																	
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	Quantity	Quality	Relevance	Unintended effects																			
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Are the anticipated undesirable effects small?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<p>Measurable improvements in the knowledge, skills and attitudes of participants based on pre-and post-tests in a cancer care competency initiative were noted (Smith et al., 2009).</p> <p>Quantity could affect the effective delivery of the curricula. For example, there is need to balance the teacher student ratio. Allocation of learning and teaching hours may also have implications on quality.</p>									
No	Probably no	Uncertain	Probably yes	Yes	Varies																		
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>																		
What is the certainty of the anticipated effects?	<table border="1"> <tr> <td>Very low</td> <td>Low</td> <td>Moderate</td> <td>High</td> <td>No evidence</td> <td>Varies</td> </tr> <tr> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	Very low	Low	Moderate	High	No evidence	Varies	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<p>Effective curricula based on evidence entails:</p> <ul style="list-style-type: none"> • significant institutional groundwork taking into account underserved areas; • needs assessment to identify immediate and long-term educational and population needs; • clear articulation of rational and objectives, greater use of interactive methods /problem based learning. 									
Very low	Low	Moderate	High	No evidence	Varies																		
<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>																		
Are the anticipated desirable effects large relative to the undesirable effects?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Competency-based curricula have the potential of bringing about positive educational effects such as: improvements in curricula that entail revision of teaching modalities; focus on prevailing health needs and trends; addresses individual student needs; generates a comprehensive approach to infrastructure development to include infrastructure and technology development; and improvements in the curricula can lead to better health service delivery.									
No	Probably no	Uncertain	Probably yes	Yes	Varies																		
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>																		

	CRITERIA	JUDGEMENT	EVIDENCE												
RESOURCE USE	Are the resources required small?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<p>Main resource requirements</p> <ul style="list-style-type: none"> Resources for needs assessment, curricula review and adaptation Funding of staff time Resources for improving infrastructure for classroom and clinical teaching (urban/rural) Resources for improving faculty skills and knowledge, based on new curricula Resources for improvements in teaching/learning aids, technology, etc.
	No	Probably no	Uncertain	Probably yes	Yes	Varies									
<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>										
Is the incremental cost small relative to the benefits?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	There are uncertainties in the way the curricula can be implemented as it depends on the above resources, including the students themselves	
No	Probably no	Uncertain	Probably yes	Yes	Varies										
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>										
EQUITY	What would be the impact on health equity?	<table border="1"> <tr> <td>Reduced</td> <td>Probably reduced</td> <td>Uncertain</td> <td>Probably increased</td> <td>Increased</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	Reduced	Probably reduced	Uncertain	Probably increased	Increased	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	A well-designed curriculum which is responsive to population health needs could contribute to improving the quality of services and to social accountability (Bartlett et al 2011; Mullan et al 2010; Abdelrahman and Alfadil, 2008; Muula 2005)
Reduced	Probably reduced	Uncertain	Probably increased	Increased	Varies										
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>										
ACCEPTABILITY	Is the option acceptable to most stakeholders?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<p>Literature shows interest and willingness to change curricula to introduce core competencies (Edler et al., 2010; Mullan et al., 2010; Chan et al., 2010; Naylor et al., 2010; Smith et al., 2009; Abdelrahman, Alfadil 2008; Turner, Farquhar 2008; Smith, Lichtveld 2007).</p> <p>The mean score for acceptability was 6.92 SD was 2.019</p>
No	Probably no	Uncertain	Probably yes	Yes	Varies										
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>										
FEASIBILITY	Is the option feasible to implement?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<p>Yes, especially when closely linked to the needs of the national health system (Zaman et al., 2008; Elias, Devadasan 2008).</p> <p>The mean score for feasibility was 5.86 SD was 2.013</p>
No	Probably no	Uncertain	Probably yes	Yes	Varies										
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>										

PICO B5/6 RECOMMENDATION: Should adapting curricula to evolving needs through the incorporation of core competencies and development of the curriculum be implemented versus no adaptation of curricula to evolving needs?

Balance of consequences	Undesirable consequences <i>clearly outweigh</i> desirable consequences in most settings <input type="radio"/>	Undesirable consequences <i>probably outweigh</i> desirable consequences in most settings <input type="radio"/>	The balance between desirable and undesirable consequences <i>is uncertain</i> <input type="radio"/>	Desirable consequences <i>probably outweigh</i> undesirable consequences in most settings <input checked="" type="radio"/>	Desirable consequences <i>clearly outweigh</i> undesirable consequences in most settings <input type="radio"/>
Recommendation	<i>We recommend against the option</i> <input type="radio"/>	<i>We recommend the option only in the context of rigorous research</i> <input type="radio"/>	<i>We recommend the option in the context of close monitoring and evaluation</i> <input checked="" type="radio"/>	<i>We recommend the option</i> <input type="radio"/>	
	<p>● If an educational institution has an ongoing curriculum, or would like to develop a competency-based curriculum, it is important to pay attention to:</p> <ul style="list-style-type: none"> involvement of key members of the profession and other stakeholders taking stock of the national demographic health trends/health profile and population projections especially age 15–25 years recruitment, education, age and entry qualifications minimum period of study and level of academic award staffing and structural (physical infrastructure, skills labs, and technology) requirements leverage work of similar institutions (Drehobl et al., 2012). 				
Justification	Curricula review and adaptation provides a vehicle for a positive impact on quality and relevance of health professionals' education and consequently gaining support from educational institutions. It further provides an opportunity for faculty members to develop new perspectives, infrastructure development and stakeholder involvement in advocacy.				

Implementation considerations	<ul style="list-style-type: none"> Resistance to curriculum change can occur. Significant changes may have implications on faculty who may be uncertain of new understandings and practices, and will need to take into account issues of timelines for the rollout and faculty development Establishing or working with existing institutional structures including community placements for learning Continuous evaluation
Key uncertainties	Cost implications; timing for curricula changes; effect on quantity unknown; curriculum as a means to social accountability uncertain
Monitoring and evaluation	<ul style="list-style-type: none"> Numbers, locations and qualifications of educators Numbers of health professionals produced and location/nature of their practice
Research priorities	<ul style="list-style-type: none"> Impact on quantity, quality, relevance of competence-based curricula Links between the retention of health workers trained in rural settings and adapted competency-based curricula that take into account rural settings Evidence of improved proficiency attributed to new curricula Long-term evaluation of the impact of improved proficiency attributed to curricula by following former course participants, their residency programme directors and perhaps peers Longitudinal studies linking the retention of health workers trained in community and rural settings can be linked back to changes in the curricula Special case studies of universities such as Keele which have, from the outset aimed their curricula and training in rural GP practices

7.1.3 Simulation methods

PICO B8: Should simulation methods of varying methods of fidelity be used in the education of health professionals versus no simulation?

	CRITERIA	JUDGEMENT	EVIDENCE
PROBLEM	Is the problem serious?	<p>No Probably no Uncertain Probably yes Yes Varies</p> <p><input type="radio"/> <input type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/> <input type="radio"/></p>	<p>It is important to help trainees acquire necessary skills while minimizing adverse effects on patients they are taking care of.</p> <p>This search was based on the original question of the “Effectiveness of infrastructure materials and related resources (including information and communication technologies) necessary for health professionals’ education and training in producing quantity, quality and relevance”.</p> <p>A number of studies have shown a clear relationship between the availability of resources for education, the deployment of these resources and the production of health professionals. Although the availability of educational resources, whether in resource-poor or resource-high contexts, is a pre-condition for their deployment, it is not a pre-condition for efficient use. To this end, availability of infrastructure, materials and resources, and their efficient use in the education and production of health professionals are considered on two areas:</p> <ol style="list-style-type: none"> the infrastructure of interest researched were: classrooms; meeting rooms; libraries; clinical skills lab student housing; resources such as: audiovisual; technology; computers; e-learning; ICTs; Internet. <p>The systematic reviews for simulation were of high quality.</p> <p>Notes:</p> <p>How to define simulation:</p> <ul style="list-style-type: none"> anatomical models three dimensional video expert patients students practicing on students? <p>Could this include educational games?</p>
	Are a large number of people affected?	<p>No Probably no Uncertain Probably yes Yes Varies</p> <p><input type="radio"/> <input type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/> <input type="radio"/></p>	<p>Most health workers are affected, as well as people who seek health care</p>

	CRITERIA	JUDGEMENT	EVIDENCE																				
BENEFITS & HARMS OF THE OPTIONS	Are the anticipated desirable effects large?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<table border="1"> <tr> <td>Quantity</td> <td>Quality</td> <td>Relevance</td> <td>Unintended effects</td> </tr> <tr> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table> <p>A number of good quality systematic reviews identified a wide range of studies including RCTs in various professions (medical, nursing, multidisciplinary) of various levels (students, practitioners)</p>	Quantity	Quality	Relevance	Unintended effects	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
	No	Probably no	Uncertain	Probably yes	Yes	Varies																	
	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>																	
	Quantity	Quality	Relevance	Unintended effects																			
<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>																				
Are the anticipated undesirable effects small?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<p>Quantity Not applicable</p> <p>Quality</p> <ul style="list-style-type: none"> Improved competence, performance Improved knowledge Improved trainee satisfaction More practice yields better results However, inconsistent results for sustainability Results for patient outcomes inconsistent 									
No	Probably no	Uncertain	Probably yes	Yes	Varies																		
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>																		
What is the certainty of the anticipated effects?	<table border="1"> <tr> <td>Very low</td> <td>Low</td> <td>Moderate</td> <td>High</td> <td>No evidence</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	Very low	Low	Moderate	High	No evidence	Varies	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<p>Relevance No evidence identified</p> <p><i>Notes:</i> Large in terms of safety. Literature from emersion medical (Tulenko). American academy of paediatrics newborn resuscitation. Use evidence showing increased number of times doing a procedures increases proficiency. Allows the education of more students with fewer faculty. Important bridge between theory and practice. Opportunity costs. Risk of not performing the procedure on real patients (e.g. paid patients). Question about sustainability due to expensive, high-tech models that wear out and require replacement and maintenance. When possible, use low- cost methods for simulations (e.g. oranges for injections, animals – deliver babies of cows). Anatomical models used for delivery are very relevant, intubation very relevant, intubation done on mannequins. Provides proof of clinical competence (e.g. number of births attended, etc.). No undesirable effects, if well integrated into the curriculum. Could limit creative response to unexpected if not fidel to real life. Three dimensional video does not develop manual skills. Not a substitute, but a proxy.</p>									
Very low	Low	Moderate	High	No evidence	Varies																		
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>																		
Are the anticipated desirable effects large relative to the undesirable effects?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>										
No	Probably no	Uncertain	Probably yes	Yes	Varies																		
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>																		
RESOURCE USE	Are the resources required small?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<p>Main resource requirements: Simulation cost U.S. (\$5000 – \$200 000) Staff to operate simulation programmes (cost to be worked out at country level) <i>Example:</i> cost of training a surgical resident in the operating room for four years nearly \$50 000 MEPI schools say it is expensive (cardiovascular system, orthopedics). Some low cost/quality models are not durable. Development costs are high. If use low-cost options (e.g. oranges for injections), or open source agreements, then the cost is lower. Development costs differ by country.</p>								
	No	Probably no	Uncertain	Probably yes	Yes	Varies																	
<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>																		
Is the incremental cost small relative to the benefits?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<p>Uncertain because of the uncertainty of the size of the benefits and the potentially large resource use Incremental cost likely to vary with the cost of the specific simulation method</p>									
No	Probably no	Uncertain	Probably yes	Yes	Varies																		
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>																		
EQUITY	What would be the impact on health equity?	<table border="1"> <tr> <td>Reduced</td> <td>Probably reduced</td> <td>Uncertain</td> <td>Probably increased</td> <td>Increased</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	Reduced	Probably reduced	Uncertain	Probably increased	Increased	Varies	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<p>Probably no effect Patients may refuse to serve as human mannequins</p>								
Reduced	Probably reduced	Uncertain	Probably increased	Increased	Varies																		
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>																		

	CRITERIA	JUDGEMENT	EVIDENCE												
ACCEPTABILITY	Is the option acceptable to most stakeholders?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Not assessed in the stakeholders survey
No	Probably no	Uncertain	Probably yes	Yes	Varies										
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>										
FEASIBILITY	Is the option feasible to implement?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Not assessed in the stakeholders survey
No	Probably no	Uncertain	Probably yes	Yes	Varies										
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>										

PICO B8 RECOMMENDATION: Should simulation methods be used in the education of health professionals?

Balance of consequences	Undesirable consequences <i>clearly outweigh</i> desirable consequences in most settings <input type="radio"/>	Undesirable consequences <i>probably outweigh</i> desirable consequences in most settings <input type="radio"/>	The balance between desirable and undesirable consequences <i>is uncertain</i> <input type="radio"/>	Desirable consequences <i>probably outweigh</i> undesirable consequences in most settings <input type="radio"/>	Desirable consequences <i>clearly outweigh</i> undesirable consequences in most settings <input checked="" type="radio"/>
Recommendation	<i>We recommend against the option</i> <input type="radio"/>	<i>We recommend the option only in the context of rigorous research</i> <input type="radio"/>	<i>We recommend the option in the context of close monitoring and evaluation</i> <input type="radio"/>	<i>We recommend the option</i> <input checked="" type="radio"/>	
● Simulation methods should be used in the education of health professionals					
Justification	<ul style="list-style-type: none"> • Needed to acquire skills, accelerate learning • Allow for a variety of situations • Develop manual skills (can only learn by doing – through repetition) 				
Implementation considerations	<ul style="list-style-type: none"> • Availability of experienced staff • Availability of space and equipment • Seamless integration with the curriculum and a focus on developing priority competencies, based on population health needs • Cost 				
Key uncertainties	<ul style="list-style-type: none"> • Impact of simulation techniques on patient outcomes • Cost versus effectiveness 				
Monitoring and evaluation	<ul style="list-style-type: none"> • More data on its use in low-resource settings • Students performing a procedure an increased number of times versus without simulation • Ability to perform procedures that otherwise could not be performed 				
Research priorities	<ul style="list-style-type: none"> • Suggest postponing the identification of research priorities until a more expanded review of the literature is conducted • Good quality studies assessing effects on patient outcomes • Identifying methods to increase sustainability of benefits • Gender considerations 				

7.1.4 Direct entry of students

PICO B9: Should direct entry be used to increase the number of graduates from relevant undergraduate, postgraduate or other educational programmes into professional studies versus no direct entry of graduates from other relevant programmes?

	CRITERIA	JUDGEMENT	EVIDENCE																				
PROBLEM	Is the problem serious?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	There is a severe shortage of health workers and an inequity of distribution. The need for increasing the number of registered health professionals is a serious challenge. Direct Entry or Accelerated Degree Programs provide a quick and safe method to increase the number of health workers.								
	No	Probably no	Uncertain	Probably yes	Yes	Varies																	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>																		
Are a large number of people affected?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	All health workers and health students									
No	Probably no	Uncertain	Probably yes	Yes	Varies																		
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>																		
BENEFITS & HARMS OF THE OPTIONS	Are the anticipated desirable effects large?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<table border="1"> <tr> <td>Quantity</td> <td>Quality</td> <td>Relevance</td> <td>Unintended effects</td> </tr> <tr> <td><input checked="" type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table> <p>A number of literature reviews were identified but no systematic reviews</p> <p>Quantity</p> <p>Anecdotal reports of increasing numbers of health workers but no evaluation studies directly addressed this</p> <ul style="list-style-type: none"> Some moderate evidence: <ul style="list-style-type: none"> for improved retention (1 study – low-quality evidence) job satisfaction. <p>Quality</p> <p>Better outcomes or at least equivalence for:</p> <ul style="list-style-type: none"> critical thinking passing rates for national exams professional practice clinical competence leadership. <p>Relevance</p> <p>No specific evidence identified</p>	Quantity	Quality	Relevance	Unintended effects	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
	No	Probably no	Uncertain	Probably yes	Yes	Varies																	
	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>																	
	Quantity	Quality	Relevance	Unintended effects																			
<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>																				
Are the anticipated undesirable effects small?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>										
No	Probably no	Uncertain	Probably yes	Yes	Varies																		
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What is the certainty of the anticipated effects?	<table border="1"> <tr> <td>Very low</td> <td>Low</td> <td>Moderate</td> <td>High</td> <td>No evidence</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	Very low	Low	Moderate	High	No evidence	Varies	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>										
Very low	Low	Moderate	High	No evidence	Varies																		
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>																		
Are the anticipated desirable effects large relative to the undesirable effects?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>										
No	Probably no	Uncertain	Probably yes	Yes	Varies																		
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>																		
RESOURCE USE	Are the resources required small?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Main resource requirements:								
	No	Probably no	Uncertain	Probably yes	Yes	Varies																	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>																		
Is the incremental cost small relative to the benefits?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>										
No	Probably no	Uncertain	Probably yes	Yes	Varies																		
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>																		
EQUITY	What would be the impact on health equity?	<table border="1"> <tr> <td>Reduced</td> <td>Probably reduced</td> <td>Uncertain</td> <td>Probably increased</td> <td>Increased</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	Reduced	Probably reduced	Uncertain	Probably increased	Increased	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>									
Reduced	Probably reduced	Uncertain	Probably increased	Increased	Varies																		
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>																		
ACCEPTABILITY	Is the option acceptable to most stakeholders?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>									
No	Probably no	Uncertain	Probably yes	Yes	Varies																		
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>																		
FEASIBILITY	Is the option feasible to implement?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Not assessed in the stakeholders survey								
No	Probably no	Uncertain	Probably yes	Yes	Varies																		
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>																		

PICO B8 RECOMMENDATION: Should simulation methods be used in the education of health professionals?

Balance of consequences	Undesirable consequences <i>clearly outweigh</i> desirable consequences in most settings <input type="radio"/>	Undesirable consequences <i>probably outweigh</i> desirable consequences in most settings <input type="radio"/>	The balance between desirable and undesirable consequences <i>is uncertain</i> <input type="radio"/>	Desirable consequences <i>probably outweigh</i> undesirable consequences in most settings <input type="radio"/>	Desirable consequences <i>clearly outweigh</i> undesirable consequences in most settings <input type="radio"/>
Recommendation	<i>We recommend against the option</i> <input type="radio"/>	<i>We recommend the option only in the context of rigorous research</i> <input type="radio"/>	<i>We recommend the option in the context of close monitoring and evaluation</i> <input checked="" type="radio"/>	<i>We recommend the option</i> <input type="radio"/>	
<p>● Most of the evidence was from non-randomized parallel two group comparisons with no pre- and post-tests (Level III-c), however, the findings were consistent in showing equivalence in quality outcomes with potential to increase quantity outcomes. A Grade B level of moderate support.</p> <p>We are taking the question as relating to undergraduate (pre-qualification) education and to graduates.</p>					
Justification	-				
Implementation considerations	Consideration should be given to the type of pre-degrees as a number of studies were identified that evaluated the predictors of success. These studies were excluded but should be considered in any implementation.				
Key uncertainties	-				
Monitoring and evaluation	-				
Research priorities	Standard outcome measurement				

7.1.5 Admission procedures

PICO B10: Should targeted admissions policies seek to increase the ethnic and geographical diversity of students and be supported by mechanisms to ensure completion of education programmes versus no targeted admissions policies and supportive mechanisms?

	CRITERIA	JUDGEMENT	EVIDENCE												
PROBLEM	Is the problem serious?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<p>There is substantial evidence to show that admissions of students from rural or poorer areas is unbalanced and some but less published evidence that there are insufficient numbers of women in some countries to produce a balanced workforce. Although issues of recruiting and retaining doctors in rural and remote service numerically dominant in the published literature found there are some studies on other categories of health worker, and reports relating to low- and middle-income countries.</p> <p>Few references were found to any linkage between admission procedures or criteria and the numbers of graduates produced. This is not surprising, given that the main determinants of the volume of outputs from training are the volumes of health workers needed/ demanded and the capacity of training institutions.</p>
	No	Probably no	Uncertain	Probably yes	Yes	Varies									
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>										
Are a large number of people affected?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<p>All undergraduate students</p> <p>There is a general, but not universal finding, that previous academic achievement is a good predictor of success in medical schools in Austria (Reibnegger et al 2010), Canada (Kularunga-Moruzi, Norman 2002), Croatia (Jankovic et al., 2002), Germany (Hansel et al., 2010), Holland (Urlings-Strop et al., 2009; Cohen-Schotanus et al., 2006), UK (Brown, Lilford 2008) and the USA (Mitchell 1990).</p> <p>The same broad conclusion is reached in some studies from developing countries, among them Bahrain (Al Nasir, Robertson 2001), Nigeria (Egbewale et al., 2009) and Sri Lanka (Hewage et al., 2011).</p> <p>Some evidence disputing the predictive validity of previous academic attainment is offered for the New Zealand (Collins et al., 1995; Poole et al., 2012) and for Pakistan (Huda et al., 2001) and Sri Lanka (De Silva et al., 2004 and 2006) and the USA (Basco et al., 2000).</p> <p>For nurse education, a meta-analysis carried out in the US (Grossbach, Kuncel 2011) found that standardized admission tests were effective predictors of performance in the National Council Licensure Examination for Registered Nurses. Pre-nursing grade point average was also effective, but to a lesser extent. In the UK, a study of an entering cohort of pre-registration Diploma of Nursing students concluded that students with higher level entry qualifications performed consistently better than those with lower level qualifications (McCarey et al., 2007). A Canadian study (Carpio et al., 1996) found that school grades in English and chemistry were the best predictors at entry stage of success in licensure examinations. A New Zealand study which took as the outcome performance in the first year of an undergraduate nursing programme (Shulruf et al., 2011) found that the best predictor of success was final year secondary school achievement as measured by the National Certificate of Educational Achievement Grade Point Average (NCEAGPA).</p> <p>A dissenting voice from the UK (Ofori 2000) argued that paper qualifications in psychology, sociology or biology should not be relied on as predictors of academic performance in their related nursing modules, and that age was a good predictor (mature students, defined as >34 years on entry, did better), a finding which has been reported from other studies, and is advanced in the cause of a more diverse student body.</p>	
No	Probably no	Uncertain	Probably yes	Yes	Varies										
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>										

	CRITERIA	JUDGEMENT	EVIDENCE																				
BENEFITS & HARMS OF THE OPTIONS	Are the anticipated desirable effects large?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<table border="1"> <tr> <td>Quantity</td> <td>Quality</td> <td>Relevance</td> <td>Unintended effects</td> </tr> <tr> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> </tr> </table> <p>Selection</p> <p>The potential impact of selecting medical students of rural origin was quantified by Rabinowitz in a longitudinal study that evaluated the impact of the Physician Shortage Area Program (PSAP) in the USA. The PSAP combined selective admission criteria with a rurally orientated educational programme. On multivariate analysis, rural origin was the single variable most strongly associated with rural practice (OR 4.2, 95% confidence interval [CI] 2.8–6.3). Another strong influence that was rarely considered is the origin of the spouse. Rabinowitz found that 64% of rural physicians had spouses of rural origin; in Australia, doctors whose spouses had a rural background were significantly more likely to practice in a rural setting (OR 3.14; 95% CI 1.96–5.1). A home prefecture recruiting scheme in Japan was successful in recruiting medical professionals from rural areas and retaining them as qualified professionals in medically underserved prefectures</p> <p>A number of literature reviews were identified but no systematic reviews</p>	Quantity	Quality	Relevance	Unintended effects	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
	No	Probably no	Uncertain	Probably yes	Yes	Varies																	
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>																	
	Quantity	Quality	Relevance	Unintended effects																			
<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>																				
Are the anticipated undesirable effects small?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>										
No	Probably no	Uncertain	Probably yes	Yes	Varies																		
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>																		
What is the certainty of the anticipated effects?	<table border="1"> <tr> <td>Very low</td> <td>Low</td> <td>Moderate</td> <td>High</td> <td>No evidence</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	Very low	Low	Moderate	High	No evidence	Varies	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>										
Very low	Low	Moderate	High	No evidence	Varies																		
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>																		
Are the anticipated desirable effects large relative to the undesirable effects?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<p>Quantity</p> <p>There is a substantial body of evidence that selection according to geographic origin increases the number of graduates who practise in rural settings.</p> <p>Quality</p> <p>There is a considerable literature on admission criteria as a predictor of performance within the training experience, which takes as the end point course completion or attainment of a qualification (sometimes attainment before course completion).</p> <p>Relevance</p> <p>No specific evidence identified There is considerable evidence that students selected from rural areas are most likely to serve in rural areas, though this is not always the case.</p>									
No	Probably no	Uncertain	Probably yes	Yes	Varies																		
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>																		
RESOURCE USE	Are the resources required small?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<p>Main resource requirements:</p> <p>Resource</p> <p>Faculty and adjunct faculty time in terms of intensive academic and social support, individual mentoring, MCAT preparation, coaching in the application process, and upper-level science course work.</p> <p>Secondary school pre-admission coaching</p> <p>Financial support to complete academic programmes</p> <p>Social services support where necessary</p>								
	No	Probably no	Uncertain	Probably yes	Yes	Varies																	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>																		
Is the incremental cost small relative to the benefits?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	This will depend on the country and the cadre of health professional required for scaling up									
No	Probably no	Uncertain	Probably yes	Yes	Varies																		
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>																		
EQUITY	What would be the impact on health equity?	<table border="1"> <tr> <td>Reduced</td> <td>Probably reduced</td> <td>Uncertain</td> <td>Probably increased</td> <td>Increased</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input checked="" type="radio"/></td> </tr> </table>	Reduced	Probably reduced	Uncertain	Probably increased	Increased	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	Recruiting students across ethnic, geographical and all categories of social classes would lead to increased equity								
Reduced	Probably reduced	Uncertain	Probably increased	Increased	Varies																		
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>																		
ACCEPTABILITY	Is the option acceptable to most stakeholders?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	There may be some resistance from some medical colleges who may regard this as lowering of standards								
No	Probably no	Uncertain	Probably yes	Yes	Varies																		
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>																		

	CRITERIA	JUDGEMENT	EVIDENCE												
FEASIBILITY	Is the option feasible to implement?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	There are number of these programmes already running in Australia, UK and USA
No	Probably no	Uncertain	Probably yes	Yes	Varies										
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>										

PICO B10 RECOMMENDATION: Should targeted admissions policies seek to increase the ethnic and geographical diversity of students and be supported by mechanisms to ensure completion of education programmes versus no targeted admissions policies and supportive mechanisms?

Balance of consequences	Undesirable consequences <i>clearly outweigh</i> desirable consequences in most settings <input type="radio"/>	Undesirable consequences <i>probably outweigh</i> desirable consequences in most settings <input type="radio"/>	The balance between desirable and undesirable consequences <i>is uncertain</i> <input type="radio"/>	Desirable consequences <i>probably outweigh</i> undesirable consequences in most settings <input type="radio"/>	Desirable consequences <i>clearly outweigh</i> undesirable consequences in most settings <input type="radio"/>
Recommendation	<i>We recommend against the option</i> <input type="radio"/>	<i>We recommend the option only in the context of rigorous research</i> <input type="radio"/>	<i>We recommend the option in the context of close monitoring and evaluation</i> <input checked="" type="radio"/>	<i>We recommend the option</i> <input type="radio"/>	
<p>● There is an extensive literature on recruiting and retaining trained health workers for service in rural and remote areas, and this proved to be the most frequently encountered theme in the literature. Less well documented are published studies on minority groups, nursing and allied professions and medical mid-level providers.</p> <p>We are taking the question as relating to undergraduate (pre-qualification) education.</p>					
Justification	-				
Implementation considerations	<p>Quantity Admissions policies should be consistent with decisions concerning the supply of particular cadres of health workers. They should take into account the likely numbers of each cadre needed.</p> <p>Quality Admissions reforms tend to imply curriculum reforms as the student population changes. In some cases (e.g. China) there are different certificates available to graduates depending on their entry qualifications. However, students may still go on to pursue more advanced qualifications.</p> <p>Relevance There is evidence that students selected from rural areas are most likely to serve in rural areas, though this is not always the case. The preferences of applicants should be taken into account.</p> <p>Complexity and caution Admissions procedures by themselves will not overcome inequalities in health-care systems. Where targeted admissions policies are used, support mechanisms must be in place to ensure conditions in which students are able to complete programmes. These may include adjustments to the curriculum, teaching and learning methods and financial support. Currently, many of the students who do not complete their courses do so for financial reasons, so disadvantaged students would need financial support (South Africa subsidy system).</p> <p>The characteristics of underserved populations may vary from place to place. For example in Brazil populations in favelas may be less well served than populations in rural areas.</p>				
Key uncertainties	<ul style="list-style-type: none"> • The impact of admissions procedures on their own. • The impact of admissions policies on underserved populations across countries or even in the same country may vary. 				
Monitoring and evaluation	Close monitoring and evaluation is needed for admissions of innovative admissions policies but in particular monitoring of policies introduced with supportive mechanisms to obtain better information on their impact.				

Research priorities	<p>The literature on admissions criteria and practices is hugely biased in favour of rich countries. It is also biased in favour of medical education, to the relative neglect of nursing and allied health professions. This suggests a need to make research funding available in low- and middle-income countries to enable academics to replicate the types of studies that have been undertaken in developed countries, and to extend their scope particularly to types of health worker specific to those locations, for example medical assistants/clinical officers and pharmacy technicians.</p> <p>Make research funding available to low- and middle-income countries to enable academics to replicate the types of studies that have been undertaken in developed countries.</p> <p>Extend their scope, particularly to types of health workers specific to those locations, for example mid-level providers such as medical assistants/clinical officers/clinical associates/non physician clinicians. It would be helpful if cohort studies with large national samples following the entire pipeline from pre-admission characteristics through to long-term employment could be undertaken.</p> <p>Even in the rich countries, most of the studies encountered suffer from severe limitations of scope (restriction to one cadre or one training school), sample size (often below 100 and sometimes below 10 subjects) and weak methodology (low response rates, biased selection of subjects, failure to control for confounding variables, use of proxy outcome measures such as career intentions instead of observed career paths).</p>
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7.1.6 Educational pathways and ladder programmes

PICO C1: Should streamlined educational pathways, or ladder programmes, for the advancement of practicing health professionals be adapted in both undergraduate and postgraduate programmes, improve the quantity, quality, and relevance of health professionals?

	CRITERIA	JUDGEMENT	EVIDENCE																				
PROBLEM	Is the problem serious?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Rigid professional boundaries between professionals makes less adaptable to the needs of the population. The problem is serious in underserved areas.								
	No	Probably no	Uncertain	Probably yes	Yes	Varies																	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>																		
	Are a large number of people affected?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	The proportion of rural population is huge in developing countries (ex. 60% in SEARO region). Urban poor also can be served by the graduates of this ladder programmes.								
No	Probably no	Uncertain	Probably yes	Yes	Varies																		
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>																		
BENEFITS & HARMS OF THE OPTIONS	Are the anticipated desirable effects large?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<table border="1"> <tr> <td>Quantity</td> <td>Quality</td> <td>Relevance</td> <td>Unintended effects</td> </tr> <tr> <td><input checked="" type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table> <p>Quantity</p> <p>The intent to stay at the hospital for more than a year increased as nurses moved upward in the career ladder programme. No quantifiable measures reported although authors hypothesize retention might be due to intrinsic motivation factors such as updating of nursing knowledge and skills, personal development and possibility of salary increase when moving up along the ladder (Bjork et al., 2007).</p>	Quantity	Quality	Relevance	Unintended effects	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
	No	Probably no	Uncertain	Probably yes	Yes	Varies																	
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>																	
	Quantity	Quality	Relevance	Unintended effects																			
<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>																				
Are the anticipated undesirable effects small?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<p>Quality</p> <p>Participants in the ladder programme showed a higher involvement in leadership ($p < 0.001$) quality improvement ($p < 0.02$) and preceptorship ($p < 0.001$) compared to non-career ladder professionals in the same job role (Nelson, Cook 2008).</p>									
No	Probably no	Uncertain	Probably yes	Yes	Varies																		
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>																		
What is the certainty of the anticipated effects?	<table border="1"> <tr> <td>Very low</td> <td>Low</td> <td>Moderate</td> <td>High</td> <td>No evidence</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	Very low	Low	Moderate	High	No evidence	Varies	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>										
Very low	Low	Moderate	High	No evidence	Varies																		
<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>																		
Are the anticipated desirable effects large relative to the undesirable effects?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<p>Relevance</p> <p>Outcome not reported</p>									
No	Probably no	Uncertain	Probably yes	Yes	Varies																		
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>																		

	CRITERIA	JUDGEMENT	EVIDENCE												
RESOURCE USE	Are the resources required small?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<p>Main resource requirements:</p> <ul style="list-style-type: none"> • Salary increases for the upper ladder • Dedicated staff for the ladder programme • Training/capacity building of current faculty <p>An observational study describing a 20-year clinical ladder programme. Resources needed to implement the clinical ladder included an annual budget plan highlighting salary increases reflecting advancement in the ladder and an initial benchmarking with known successful programmes in the same geographical area (Pierson 2010).</p>
	No	Probably no	Uncertain	Probably yes	Yes	Varies									
<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>										
Is the incremental cost small relative to the benefits?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	-	
No	Probably no	Uncertain	Probably yes	Yes	Varies										
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>										
EQUITY	What would be the impact on health equity?	<table border="1"> <tr> <td>Reduced</td> <td>Probably reduced</td> <td>Uncertain</td> <td>Probably increased</td> <td>Increased</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	Reduced	Probably reduced	Uncertain	Probably increased	Increased	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	It depends on the context
Reduced	Probably reduced	Uncertain	Probably increased	Increased	Varies										
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>										
ACCEPTABILITY	Is the option acceptable to most stakeholders?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<p>Based on the stakeholders survey, on scale 1-9: Mean (sd) = 7.2 (1.8)</p> <p>See pages 34–35 for qualitative comments</p>
No	Probably no	Uncertain	Probably yes	Yes	Varies										
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>										
FEASIBILITY	Is the option feasible to implement?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<p>If regulations are strict, career ladder is difficult. In Africa, for example, it is very difficult to change the mindset.</p> <p>Based on the stakeholders survey, on scale 1-9: Mean (sd) = 6.0 (x.x)</p> <p>See pages 34–35 for qualitative comments</p>
No	Probably no	Uncertain	Probably yes	Yes	Varies										
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>										

PICO C1 RECOMMENDATION: Should streamlined educational pathways, or ladder programmes, for the advancement of practicing health professionals be adapted in both undergraduate and postgraduate programmes?

Balance of consequences	Undesirable consequences <i>clearly outweigh</i> desirable consequences in most settings <input type="radio"/>	Undesirable consequences <i>probably outweigh</i> desirable consequences in most settings <input type="radio"/>	The balance between desirable and undesirable consequences <i>is uncertain</i> <input type="radio"/>	Desirable consequences <i>probably outweigh</i> undesirable consequences in most settings <input checked="" type="radio"/>	Desirable consequences <i>clearly outweigh</i> undesirable consequences in most settings <input type="radio"/>
Recommendation	<i>We recommend against the option</i> <input type="radio"/>	<i>We recommend the option only in the context of rigorous research</i> <input type="radio"/>	<i>We recommend the option in the context of close monitoring and evaluation</i> <input checked="" type="radio"/>	<i>We recommend the option</i> <input type="radio"/>	
<p>● Ladder programmes should be delivered</p> <ul style="list-style-type: none"> • Specify conditions; available resources (training, faculty, cost, time) • Evidence of pilot interventions. Negative consequences also should be studied 					
Justification	-				
Implementation considerations	<ul style="list-style-type: none"> • ILO issued relevant documents. Duplication should be avoided. If its implementation is limited, this guideline can reinforce its implementation • Regulations should be carefully examined • Commitment by senior management and faculty • Interest and expertise among faculty and administrators • Budget plan for increasing the salary • Community contributions to implement the programme 				

Key uncertainties	Negative consequences of the ladder programmes are not well studied
Monitoring and evaluation	Careful monitoring of those who stepped up the ladders and those who wanted but failed
Research priorities	Gather more information on HRH problems that lend themselves to the application of educational and clinical ladders; (2) more specific costs and benefits of educational and clinical ladders through more evaluation or case studies

7.1.7 Interprofessional education

PICO B7 : Should inter-professional education (IPE) be implemented in both undergraduate and postgraduate programmes versus no inter-professional education be used?

	CRITERIA	JUDGEMENT	EVIDENCE																				
PROBLEM	Is the problem serious?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Patient care is a complex activity which demands that health and social care professionals work together in an effective manner. The evidence suggests that these professions do not effectively work well together. Interprofessional education (IPE) offers a possible way to improved collaboration and patient care. In this question, our judgement is on the problem of IPE, not on the question of whether professions do not effectively work well together.								
	No	Probably no	Uncertain	Probably yes	Yes	Varies																	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>																		
Are a large number of people affected?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	All health workers are affected as well as people that seek care									
No	Probably no	Uncertain	Probably yes	Yes	Varies																		
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>																		
BENEFITS & HARMS OF THE OPTIONS	Are the anticipated desirable effects large?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<table border="1"> <tr> <td>Quantity</td> <td>Quality</td> <td>Relevance</td> <td>Unintended effects</td> </tr> <tr> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> </tr> </table> <p>Only three small-size controlled trials assessing intermediate outcomes</p>	Quantity	Quality	Relevance	Unintended effects	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
	No	Probably no	Uncertain	Probably yes	Yes	Varies																	
	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>																	
	Quantity	Quality	Relevance	Unintended effects																			
<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>																				
Are the anticipated undesirable effects small?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<p>Quantity Not relevant. (We comment on 'quantity' below)</p> <p>Quality</p> <ul style="list-style-type: none"> The evidence from controlled studies demonstrated that IPE resulted in increased confidence in their own professional identity and helped them value the difference making them better for clinical placement. Students demonstrated more positive attitudes to team collaboration, improved communication skills No practice-level impact assessment 									
No	Probably no	Uncertain	Probably yes	Yes	Varies																		
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>																		
What is the certainty of the anticipated effects?	<table border="1"> <tr> <td>Very low</td> <td>Low</td> <td>Moderate</td> <td>High</td> <td>No evidence</td> <td>Varies</td> </tr> <tr> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	Very low	Low	Moderate	High	No evidence	Varies	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<p>Relevance</p> <ul style="list-style-type: none"> Interdisciplinary community-oriented exercises during IPE offer unique opportunities for students to appreciate health problems as they occur in the community Only one study which compared students from one school to another where there was no intervention did not show a significant difference 									
Very low	Low	Moderate	High	No evidence	Varies																		
<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>																		
Are the anticipated desirable effects large relative to the undesirable effects?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>										
No	Probably no	Uncertain	Probably yes	Yes	Varies																		
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	CRITERIA	JUDGEMENT	EVIDENCE												
RESOURCE USE	Are the resources required small?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Main resource requirements: Resource Staff from different faculties, work settings and locations Staff training Significant layer of coordination for interprofessional educators and curriculum developers Supervision of students Space issues
	No	Probably no	Uncertain	Probably yes	Yes	Varies									
<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>										
Is the incremental cost small relative to the benefits?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Uncertain given the uncertainty of benefits	
No	Probably no	Uncertain	Probably yes	Yes	Varies										
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>										
EQUITY	What would be the impact on health equity?	<table border="1"> <tr> <td>Reduced</td> <td>Probably reduced</td> <td>Uncertain</td> <td>Probably increased</td> <td>Increased</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> </tr> </table>	Reduced	Probably reduced	Uncertain	Probably increased	Increased	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	-
Reduced	Probably reduced	Uncertain	Probably increased	Increased	Varies										
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ACCEPTABILITY	Is the option acceptable to most stakeholders?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Based on stakeholders survey, score on a scale from 1–9: Mean; 6.9 SD: 2.2 Refer to pages 51–52 for qualitative comments
No	Probably no	Uncertain	Probably yes	Yes	Varies										
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>										
FEASIBILITY	Is the option feasible to implement?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Based on stakeholders survey, score on a scale from 1–9: Mean; 6.0; SD: 2.2 Refer to pages 51–52 for qualitative comments
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<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>										

PICO B7 RECOMMENDATION: Should inter-professional education (IPE) be implemented in both undergraduate and postgraduate programmes be used versus no IPE?

Balance of consequences	Undesirable consequences <i>clearly outweigh</i> desirable consequences in most settings <input type="radio"/>	Undesirable consequences <i>probably outweigh</i> desirable consequences in most settings <input type="radio"/>	The balance between desirable and undesirable consequences <i>is uncertain</i> <input type="radio"/>	Desirable consequences <i>probably outweigh</i> undesirable consequences in most settings <input type="radio"/>	Desirable consequences <i>clearly outweigh</i> undesirable consequences in most settings <input type="radio"/>
Recommendation	<i>We recommend against the option</i> <input type="radio"/>	<i>We recommend the option only in the context of rigorous research</i> <input checked="" type="radio"/>	<i>We recommend the option in the context of close monitoring and evaluation</i> <input type="radio"/>	<i>We recommend the option</i> <input type="radio"/>	
Justification	<p>● Before supporting this recommendation fully, we would recommend work to obtain much better evidence, in institutions with programmes and resources available to support the necessary research.</p> <p>We find a disconnect between the question (“Should inter-professional education [IPE] in both undergraduate and postgraduate programmes be used?”) and the related problem statement (“Low number, quality and relevance of health professionals”); and the statement “the evidence suggests that these professions do not effectively work well together”. The evidence for the latter statement should be included.</p> <p>IPE may also be relevant to quantity as well as quality and relevance questions. IPE may be resource-efficient in a way that allows more health workers to be educated.</p> <p>We are taking the question as relating primarily to undergraduate (pre-qualification) education.</p>				
Implementation considerations	Students in the 'non-clinical' professional categories (such as biomedical sciences) were less appreciative of IPE. They needed more explicit learning objectives				

Key uncertainties	<ul style="list-style-type: none"> Impact of IPE on the outcome of interest Cost effectiveness
Monitoring and evaluation	Given the uncertainties noted above, careful monitoring of the rollout of this intervention will be needed, particularly on resource use (human, material, financial, time)
Research priorities	<ul style="list-style-type: none"> Better quality studies looking at quality of health professionals and relevancy to the communities being served. Other priorities: <ol style="list-style-type: none"> Approaches for training educators involved in IPE Studies of cost effective models for IPE and sustaining IPE Evaluation of impact of IPE on health professional practice in developing countries.

7.2 Accreditation

7.2.1 Accreditation

PICO C2: Should accreditation of health professionals' education be introduced to improve the quality of health professionals' education versus no accreditation?

	CRITERIA	JUDGEMENT	EVIDENCE
PROBLEM	Is the problem serious?	No <input type="radio"/> Probably no <input type="radio"/> Uncertain <input type="radio"/> Probably yes <input type="radio"/> Yes <input checked="" type="radio"/> Varies <input type="radio"/>	Health professions education is resource intensive and attracts some of the most promising students in all countries. Less than 50% of countries have a credible, transparent and comprehensive accreditation system.
	Are a large number of people affected?	No <input type="radio"/> Probably no <input type="radio"/> Uncertain <input type="radio"/> Probably yes <input type="radio"/> Yes <input checked="" type="radio"/> Varies <input type="radio"/>	Affects all health professionals and the population they serve
BENEFITS & HARMS OF THE OPTIONS	Are the anticipated desirable effects large?	No <input type="radio"/> Probably no <input type="radio"/> Uncertain <input type="radio"/> Probably yes <input checked="" type="radio"/> Yes <input type="radio"/> Varies <input type="radio"/>	Quantity <input type="radio"/> Quality <input checked="" type="radio"/> Relevance <input checked="" type="radio"/> Unintended effects <input checked="" type="radio"/> Historical experience in the UK (Medical Act of 1858 establishing the General Medical Council) and the USA (Flexner Report, 1910) indicates substantial closing of sub-standard schools as a result of the introduction of quality standards.
	Are the anticipated undesirable effects small?	No <input type="radio"/> Probably no <input type="radio"/> Uncertain <input checked="" type="radio"/> Probably yes <input type="radio"/> Yes <input type="radio"/> Varies <input type="radio"/>	Two systematic reviews identified for medical education and two studies for nursing education. The reviews found very limited evidence of the effectiveness of accreditation on educational and service outcomes.
	What is the certainty of the anticipated effects?	Very low <input type="radio"/> Low <input type="radio"/> Moderate <input checked="" type="radio"/> High <input type="radio"/> No evidence <input type="radio"/> Varies <input type="radio"/>	Quantity Could negatively affect quantity as a result to school closures but no evidence identified Quality Strongly believed to improve quality but evidence weak. Historically, there is evidence of schools being closed on the introduction of accreditation or re-accreditation
	Are the anticipated desirable effects large relative to the undesirable effects?	No <input type="radio"/> Probably no <input type="radio"/> Uncertain <input type="radio"/> Probably yes <input checked="" type="radio"/> Yes <input type="radio"/> Varies <input type="radio"/>	Relevance Positive – provided accreditation standards reflect population needs Other <ul style="list-style-type: none"> Education and training in non-accredited institutions could lead to non-recognition of qualifications post graduation Risk of abuse with private accrediting bodies Poor accreditation may produce a false sense of security

	CRITERIA	JUDGEMENT	EVIDENCE												
RESOURCE USE	Are the resources required small?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<p>Main resource requirements:</p> <p>Resource</p> <p>Two items of importance in literature:</p> <ul style="list-style-type: none"> Resources for implementing the accreditation process Resources for improving institutions to allow them to reach accreditation standards
	No	Probably no	Uncertain	Probably yes	Yes	Varies									
<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>										
Is the incremental cost small relative to the benefits?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Uncertain because of the uncertainty of the size of the benefits and the potentially large resource use. Resources also depend on the current level of quality in educational institutions.	
No	Probably no	Uncertain	Probably yes	Yes	Varies										
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>										
EQUITY	What would be the impact on health equity?	<table border="1"> <tr> <td>Reduced</td> <td>Probably reduced</td> <td>Uncertain</td> <td>Probably increased</td> <td>Increased</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	Reduced	Probably reduced	Uncertain	Probably increased	Increased	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Depends on whether accreditation standards are attuned to population health, as set by country
Reduced	Probably reduced	Uncertain	Probably increased	Increased	Varies										
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>										
ACCEPTABILITY	Is the option acceptable to most stakeholders?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<p>Based on the stakeholders survey, on scale 1-9: Mean (sd) = 7.6 (1.7)</p> <p>Qualitative comments drawn from feasibility and acceptability survey.</p>
No	Probably no	Uncertain	Probably yes	Yes	Varies										
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>										
FEASIBILITY	Is the option feasible to implement?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<p>Based on the stakeholders survey, on scale 1-9: Mean (sd) = 6.7 (2.1)</p> <p>Qualitative comments drawn from feasibility and acceptability survey</p>
No	Probably no	Uncertain	Probably yes	Yes	Varies										
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>										

PICO C2 RECOMMENDATION: Should accreditation of health professionals' education be introduced to improve the quality of health professionals' education versus no accreditation?

Balance of consequences	Undesirable consequences <i>clearly outweigh</i> desirable consequences in most settings <input type="radio"/>	Undesirable consequences <i>probably outweigh</i> desirable consequences in most settings <input type="radio"/>	The balance between desirable and undesirable consequences <i>is uncertain</i> <input type="radio"/>	Desirable consequences <i>probably outweigh</i> undesirable consequences in most settings <input checked="" type="radio"/>	Desirable consequences <i>clearly outweigh</i> undesirable consequences in most settings <input type="radio"/>
Recommendation	<i>We recommend against the option</i> <input type="radio"/>	<i>We recommend the option only in the context of rigorous research</i> <input type="radio"/>	<i>We recommend the option in the context of close monitoring and evaluation</i> <input type="radio"/>	<i>We recommend the option</i> <input checked="" type="radio"/>	
	<p>● If a country has a health professions educational institutions accreditation system(s), the system(s) should be reviewed relative to established professional guidelines for accreditation</p> <p>If a country does not have a health professions educational institutions accreditation system(s), an accreditation system(s) should be developed with reference established professional guidelines for accreditation</p> <p>In both instances, it will be important that accreditation includes attention to:</p> <ul style="list-style-type: none"> addressing population needs providing holistic health professionals' education concern with health workforce needs. 				

Justification	Strong historical and limited current evidence suggests that accreditation is an important quality improvement and assurance mechanism for health professions schools. Moreover, accreditation can be a strong building block in effecting the relevance of a county's health workforce in meeting population health needs. Lastly, accreditation can promote social responsibility in terms of institutions addressing population needs.
Implementation considerations	<p>Sets of accreditation process standards have been developed. International professional groups such as ICN, ICM, WFME should discuss these so that a set of global standards can be developed. Such standards should include inter alia:</p> <ul style="list-style-type: none"> • accreditation must be based on standards • it must be supported by legislation • it should be done independently • the process should be transparent • the system and process should be periodically evaluated
Key uncertainties	<ul style="list-style-type: none"> • Effect on quantity, quality, relevance • Cost • Ability/willingness to address population health issues in accreditation process
Monitoring and evaluation	<ul style="list-style-type: none"> • Given the uncertainties noted above, careful monitoring and evaluation of effectiveness of this intervention will be needed, particularly on transparency and expertise requirements (human, financial, time) • Monitoring of appropriate implementation
Research priorities	<ul style="list-style-type: none"> • Impact on quantity, quality, relevance • Success in addressing population health issues in accreditation process • Impact on educational institutions and the graduates they prepare • Comparative studies on the process of accreditation, using criteria such as purpose, cost, transparency and social accountability

7.2.3. Continuous professional development (CPD)

PICO C5. Should continuous professional development and in-service training of health professionals implemented be implemented which reflects reforms in education to address evolving population health needs, increase the coverage of services, and actively engage education and training institutions in its design and execution versus no such training and development of health professionals?

	CRITERIA	JUDGEMENT	EVIDENCE																				
PROBLEM	Is the problem serious?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<p>Given the exponential progress seen today in technology, diagnostics tools and treatment methods, updating and maintaining the knowledge and skills of health workers throughout their professional life becomes more important than ever. Problems is serious</p>								
	No	Probably no	Uncertain	Probably yes	Yes	Varies																	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>																		
Are a large number of people affected?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<p>All health workers are affected, as well as people that seek health care</p>									
No	Probably no	Uncertain	Probably yes	Yes	Varies																		
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>																		
BENEFITS & HARMS OF THE OPTIONS	Are the anticipated desirable effects large?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<table border="1"> <tr> <td>Quantity</td> <td>Quality</td> <td>Relevance</td> <td>Unintended effects</td> </tr> <tr> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input checked="" type="radio"/></td> </tr> </table> <p>Undesireable effects:</p> <ul style="list-style-type: none"> absenteeism (time out of the clinics while sitting on CPD programmes). Essential newborn care practices – Sri Lanka (Senarath 2007): The intervention group received a comprehensive 4-day training programme based on WHO Training Modules on Essential Newborn Care and Breastfeeding, aiming at increasing knowledge of essential newborn care (ENC), and developing the corresponding skills among midwives, nurses and doctors in obstetric units. Teaching strategies included lecture discussions, demonstrations, hands-on training, practical assignments, and small group discussions. Sample size: 27 midwives, 19 nurses and 13 doctors in the study group, and 26 midwives, 19 nurses, and 16 doctors in the control group. Results: Practices of cleanliness, thermal protection and neonatal assessment improved significantly in the intervention group relative to the control group (p<0.05). Sexually transmitted diseases (STD) – Peru: The course design used a learning theory approach, was based on participants’ needs assessment, had an interactive format, used case-based learning with performance feedback, was tailored to local STD problems and included reinforcement components (e.g. mail consultation and learning materials). Sample size: 10 intervention cities, with 642 health workers participating in training, and 527 who did not participate in intervention. Results: knowledge scores among physicians improved from 64.2% to 77.9% at 4-month follow-up (p<0.001). Self-reported STD management practices did not change. Covered 60% of health workers of 10 Peruvian cities. Diarrhoea and cholera case management – Guatemala (Flores et al., 2002): an in-service distance education programme in diarrhoea and cholera case management for physicians and nurses (which was simultaneously introduced in El Salvador, Guatemala, Honduras and Nicaragua in 1994). Sample size: intervention group: 66 health workers, control group: 66 health workers. The programme was conducted for three weeks and follow up was made after one month to see the health workers’ performance. Results: percentage of diarrhoea cases assessed correctly and dehydration cases classified correctly increased by 25% more in the programme group than in the control group (p<0.05), but post-course performance was still only 55–60% in the programme group. Rehydration treatment did not improve. Counselling improved insignificantly. Completion rates were high. 	Quantity	Quality	Relevance	Unintended effects	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
	No	Probably no	Uncertain	Probably yes	Yes	Varies																	
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>																	
	Quantity	Quality	Relevance	Unintended effects																			
<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>																				
Are the anticipated undesirable effects small?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>										
No	Probably no	Uncertain	Probably yes	Yes	Varies																		
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>																		
What is the certainty of the anticipated effects?	<table border="1"> <tr> <td>Very low</td> <td>Low</td> <td>Moderate</td> <td>High</td> <td>No evidence</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	Very low	Low	Moderate	High	No evidence	Varies	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>										
Very low	Low	Moderate	High	No evidence	Varies																		
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>																		
Are the anticipated desirable effects large relative to the undesirable effects?	<table border="1"> <tr> <td>No</td> <td>Probably no</td> <td>Uncertain</td> <td>Probably yes</td> <td>Yes</td> <td>Varies</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </table>	No	Probably no	Uncertain	Probably yes	Yes	Varies	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>										
No	Probably no	Uncertain	Probably yes	Yes	Varies																		
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>																		

	CRITERIA	JUDGEMENT	EVIDENCE
RESOURCE USE	Are the resources required small?	<p>No Probably no Uncertain Probably yes Yes Varies</p> <p><input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p>	<p>Main resource requirements:</p> <p>Using local technology, minimal resources, and evidence-based strategies, the course was provided to nearly half of the physicians and midwives working in the private sector in 10 of the larger cities throughout Peru.</p> <p>Postdoctoral trainee salary for one author for 12 months, plus approximately \$5,000 for course production, including platform, content and fieldwork (Canchihuamna et al., 2011).</p> <p>Programme cost was US\$60 per enrollee (including all costs incurred to implement the programme but none of the costs to develop the curriculum or evaluate the programme), which compares favourably with the cost of other distance education programmes implemented in developing countries (Flores et al., 2002).</p> <p>(Discussion: What does 'small' indicate? Probably number, because of need to cover absenteeism, transportation fee, etc.)</p>
	Is the incremental cost small relative to the benefits?	<p>No Probably no Uncertain Probably yes Yes Varies</p> <p><input type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p>	<p>One article presented a model that related the degree of treatment underuse (which can presumably be measured as one effect of CPD programmes) to the implementation costs. Two application examples of outreach programmes for the prevention of stroke and coronary disease analysed the relevance of implementation costs with respect to the cost-effectiveness ratio and total costs. The model demonstrated that implementation costs may have little impact on the cost-effectiveness ratio but may nevertheless be relevant to a third-party payer who needs to stay within the budget and ensure that care is provided to a large underserved population (Gandjour, Lauterbach 2005).</p>
EQUITY	What would be the impact on health equity?	<p>Reduced Probably reduced Uncertain Probably increased Increased Varies</p> <p><input type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p>	<ul style="list-style-type: none"> • If CPD is delivered according to the needs of health service and population, it may improve the quality. • Need another box for 'wishful thinking' • It is important who delivers the programme (government, professional associations and others)
ACCEPTABILITY	Is the option acceptable to most stakeholders?	<p>No Probably no Uncertain Probably yes Yes Varies</p> <p><input type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p>	<p>The option = multiple techniques CPD programmes (table 4.9 of the Policy Guidelines on Increasing Access to Health Workers in Remote and Rural Areas)</p>
FEASIBILITY	Is the option feasible to implement?	<p>No Probably no Uncertain Probably yes Yes Varies</p> <p><input type="radio"/> <input type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/></p>	<p>Among physicians and midwives in Peru, an Internet-based CE course was feasible, acceptable with high participation rates, and led to sustained improvement in knowledge at four months (Canchihuamna et al., 2011)</p> <p>Certainly CPD is taking place already, but in underserved areas, it is more important to get access to CPD and there are also more challenges</p> <p>It depends on the commitment of the government</p> <ul style="list-style-type: none"> • - 85% (table 4.5 of the Policy Guidelines on Increasing Access to health Workers in Remote and Rural Areas)

PICO C5 RECOMMENDATION: Should continuous professional development and in-service training of health professionals be implemented which reflects reforms in education to address evolving population health needs, increase the coverage of services, and actively engage education and training institutions in its design and and execution?

Balance of consequences	Undesirable consequences <i>clearly outweigh</i> desirable consequences in most settings ○	Undesirable consequences <i>probably outweigh</i> desirable consequences in most settings ○	The balance between desirable and undesirable consequences <i>is uncertain</i> ○	Desirable consequences <i>probably outweigh</i> undesirable consequences in most settings ●	Desirable consequences <i>clearly outweigh</i> undesirable consequences in most settings ○
Recommendation	<i>We recommend against the option</i> ○	<i>We recommend the option only in the context of rigorous research</i> ○	<i>We recommend the option in the context of close monitoring and evaluation</i> ●	<i>We recommend the option</i> ○	
	● CPD programmes, delivered through comprehensive multiple and interactive techniques, are likely to improve quality of health workers, measured as improved clinical practice, knowledge, skills and attitudes				
Justification	<ul style="list-style-type: none"> • CPD is important for everyone given the rapid progress seen today in technology, diagnostics tools and treatment methods, updating and maintaining the knowledge and skills of health workers throughout their professional life • Programmes that are responsive to the needs of health service and population in all areas 				
Implementation considerations	<ul style="list-style-type: none"> • CPD would be transformative education if they are focused especially in areas where there are resource shortages 				
Key uncertainties	<ul style="list-style-type: none"> • Amount, relevance, impact on service quality, and costs of CPD • Impact of pharmaceutical industry 				
Monitoring and evaluation	<ul style="list-style-type: none"> • Course evaluation survey at the end of every course is not enough • Assess durability of skills after the programme ends • It is important to monitor and to plan future sessions 				
Research priorities	<ul style="list-style-type: none"> • There is a need for more standardized approaches in research on CPD effectiveness, particularly with regards to clearly defining the interventions, control groups and the methods and tools used to measure the effects of CPD • Explore in more depth the advantages and disadvantages of more innovative methods to deliver CPD, such as Internet-based or use of mobile phones 				

Annex 8.

Example of Systematic Review

SYSTEMATIC REVIEW PROTOCOL²³

The Effect of streamlined educational pathways, or ladder programmes, for the advancement of practicing health professionals

Organization, City, Country:	University of the Philippines Manila , Manila , Philippines
Prepared by:	Marilyn Lorenzo, Venice Celis, Sharlyn Celino
Document date:	February 20, 2012
Version:	Final
Senior supervisor:	Marilyn Lorenzo
Research team members:	Jenny dela Rosa, Vanessa Manila, Venice Celis ,Grace Fernandez, Sharlyn Celino

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Working title

A systematic review (PICO C1)

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1.0 Background

Health systems everywhere need health professionals who adapt to the health demands of clients and can address the multi-faceted needs of patients. Health system strengthening goals include improving professional development and retention of health care providers who can function in multiple settings and have a wide variety of competencies.

Educational Ladder programs or other streamlined educational pathways such as clinical career ladder programs have been utilized to develop a wide array of competencies for health workers in underserved areas and to promote advancement of practicing health professionals.

²³ For all systematic reviews, see <http://www.who.int/hrh/education/planning/en/index.html>

Documented educational ladder programs are curricular innovations stringing together several health professional development curricula into one integrated undergraduate program. These develop multiple competencies of health professionals who go through the entire ladder. Programs like these promote retention and effectively address mal-distribution of health professionals especially in underserved areas. On the other hand, clinical ladder programs have provided frameworks for recruiting, developing and evaluating health professionals, notably nurses, to promote career progression and retention.

A documented ladder curriculum program was established by the University of the Philippines Manila – School of Health Sciences (SHS) in Tacloban, Leyte in 1977. Its program is radically different from those found in standard medical schools with the objective of producing a broad range of health workers to serve depressed and underserved communities. It designed and tested new program models for health human resources development that would be replicable in different parts of the country, and in other countries with the same situation as in the Philippines.

The five levels in the ladder-type structure are: Barangay Health Workers program (which was later incorporated in the first quarter courses of the Community Health Workers program or midwifery course); Community Health Workers program; B. S. Nursing program; B.S. Community Medicine (Bachelor's degree at par with baccalaureate degrees awarded by the University) and M.D. program. Students are eligible to enroll in the program if they come from depressed and underserved areas. They are nominated by their own communities for admission and do not go through normal university entrance admission screening processes. The students and his community forge a social contract that ensures that the student upon graduation from a specific ladder program returns and serves in their community as a health worker. Service leaves between ladders are important components of the program, providing opportunities for the student to serve and learn at the same time. During the service leaves, the school ensures a firm linkage between the student, the rural health unit and his village or barangay. Upon performing his/her tasks satisfactorily, the student returns to the school to move up the ladder again upon the nomination of his community if there is a need for a health worker with more complex skills. Graduates of the ladder - type curriculum expressed that SHS made them recognize the importance of education and return service. They learned discipline and they became conscious of the need for service to the Filipino community. With the SHS education, they were able to understand and address the real needs of their people (Tayag and Clavel, 2011).

The step-ladder approach provides for less attrition and waste of resources as one may enter and exit at any level and become a functional health provider in the health care system. It also allows for the progressive, unified and continuous development of competencies of a health worker. The ladder-type curriculum addresses brain drain and mal-distribution of health manpower (Tayag and Clavel, 2011).

Clinical Ladder Programs provide a professional framework for developing, evaluating and promoting registered nurses (Krugman et al, 2000 Gustin et al, 1998, Bjørk, 2007, Cook, 2008). It is designed for the recognition and reward of skills in nursing practice. It also aims to promote administrative and education roles of nurses (Goodrich and Ward, 2004). Buchan (1999) considers it as a grading structure which facilitates career progression and associated differentiation of pay through defining different levels of clinical and professional practice in nursing. Advancement through the ladder depends upon meeting the criteria of clinical excellence, skills and competency, professional expertise and educational attainment defined in each level.

To enhance the ongoing process of growth in the practice of professional networking, clinical ladder programs were established that focused on the retention, recognition and recruitment of nurses was established in 1970's (Krugman et al, 2000, Goodloe et al, 1996, Ward and Goodrich, 2007 and Drenkard and Swatwout, 2005). At first, the program was not well received by health professionals because they saw it as a complex process that was difficult to comprehend (Krugman, 2000). To address this issue, many hospitals started modifying clinical programs that best suit the need of the institution and health professionals.

Most of the mechanisms of clinical ladders (mostly three or four level systems) often refer to the work of Zimmer and Benner (Krugman et al, 2000, Goodrich and Ward, 2004, Drenkard and Swatwout, 2005, Goodloe et al, 1996, Gustin et al, 1998, Buchan, 1999, Korman and Eliades, 2010, Pierson et al, 2010, Buchan and Thompson, 1997, Robinson et al, 2003). Studies revealed that hospitals offering career ladders have higher levels of personnel satisfaction than those who lack internal opportunities for professional advancement (Krugman et al, 2000 and Gustin et al, 1998). Positive outcomes from clinical ladder programs are improvement of staff satisfaction, patient satisfaction, physician satisfaction, professional development (Ward and Goodrich, 2007), quantity of expert nurses (Dodgson et al, 1998) and healthcare expenditures. The literature reveals that the use of clinical ladders results in decreased costs (Drenkard and Swatwout, 2005), decreased use of nursing sick time, decreased turnover, and decreased use of agency nurses (Buchan, 1999).

2.0 Objective

To assess the effect of streamlined educational pathways, or ladder programmes, for the advancement of practicing health professionals, in both undergraduate and postgraduate programmes, on the improvement of the quantity, quality, and relevance of health professionals.

3.0 Review Question

For the purposes of this literature review, the population, intervention, comparators and outcomes (PICO) framework to inform the review objectives are presented below:

POPULATION	INTERVENTION	COMPARISON	OUTCOME
<ul style="list-style-type: none"> • Health Science Educational Programs for: <ul style="list-style-type: none"> • Medical Doctors including PH doctors • Nursing Professionals including PH nurses • Midwifery Professionals including PH midwives • Dentists • Pharmacists • Health Science Students including: <ul style="list-style-type: none"> • Medical students • Nursing students • Premedical students • Midwifery students • Residents • Health Professionals <ul style="list-style-type: none"> • Doctors/physicians • Nurses/nursing staff • Midwives • Dentists/dental staff • Pharmacists • Paramedical practitioners 	Streamlined educational pathways and/or ladder programmes and /or ladder curriculum and /or ladder education and/or ladder systems and/or clinical ladders and/or career advancement programs and/or career development programs	No streamlined educational pathways and/or ladder programmes and /or ladder curriculum and /or ladder education and/or ladder systems and/or clinical ladders and/or career advancement programs and/or career development programs	Quantity, quality and relevance of health professionals

4.0 Evidence gathering and study selection

4.1 Evidence gathering

The evidence gathering approach has four components:

4.1.1 Searching databases

The databases in the table below have been searched with a pre-determined strategy.

TOPIC/FIELD	DATABASE
Medicine and Health Sciences	PubMed, Campbell Library, Cochrane Library, Health Systems Evidence, Global Index Medicus
Education	ERIC
Social Sciences	Social Science databases SSRN
Regional databases	African Index Medicus, Australasian Medical Index, Index Medicus for Eastern Mediterranean Region, IndMED, KoreaMed, LILACS, IMSEAR, Panteleimon, WPRIM, British Education Index, Research and Development Resource Base (RDRB)
Grey Literature databases	IGLE, New York Academy of Medicine Grey Lit site, FADE Library, HMIC, INTUTE, Medical Teacher database, DATAD, International Journal of Pharmacy Education, Biomed Central
Local databases	HERDIN, UP Manila Integrated Library System and Research Database, UST Miguel de Bienvenides Library, De La Salle University Library, Ateneo de Manila Library, Siliman University Library, Ateneo de Zamboanga Library, Xavier University Library, San Carlos University Library

4.1.2 Hand searching

The following journals, websites and resources have been hand-searched for relevant articles:

RESOURCES THAT WILL BE SEARCHED BY HAND

Journal of Nursing Administration

Journal of Continuing Education in Nursing

Journal for Nurses in Staff Development

Nursing Management

WHO's Library Database (WHOLIS)

Id Bank

Tayag JG, Clavel L, editors. Bringing Health to Rural Communities, Innovations of the U.P. Manila School of Health Sciences. Manila: University of the Philippines Manila; 2011.

4.1.3 Expert network consultations

A network of health professionals' education experts will be consulted by email to identify additional grey literature or research that has not been found through the above processes. The following experts and networks will be contacted.

EXPERTS AND NETWORKS WILL BE CONTACTED REGARDING ADDITIONAL ARTICLES

4.1.4 Reference searches

Bibliographies of those papers that match the eligibility criteria below were searched by hand to identify any further, relevant references, which were subjected to the same screening and selection process.

4.2 Eligibility criteria

After gathering the evidence, the following eligibility criteria was applied to the results and all identified references screened independently by two reviewers (ML,VC) using a three-stage approach to reviewing the title, abstract and full text.

4.2.1 Types of studies:

All types of evaluative study designs are eligible for inclusion, including grey literature. Studies were not selected on methodological quality.

4.2.2 Types of participants:

Participants in this study are:

- **Health Science Educational Programs for:**
 - Medical Doctors including Public Health doctors
 - Nursing Professionals including Public Health nurses
 - Midwifery Professionals including Public Health midwives
 - Dentists
 - Pharmacists
- **Health Science Students including:**
 - Medical students
 - Nursing students
 - Premedical students
 - Midwifery students
 - Residents
- **Health Professionals**
 - Medical Doctors - both Generalist and Specialist Practitioners, and Public Health Doctors
 - Nursing Professionals- both Generalist and specialist practitioners, including nurse practitioners and Public Health Nurses
 - Midwifery Professionals, including Public Health Midwives
 - Dentists
 - Pharmacists
- **Paramedical practitioners as defined in the ISCO-08 minor group 224 and Mullan and Frehywot, 2007; WHO, 2010. Will also include The Mid-level Cadres like Assistant medical officers, Clinical officers, Health Assistants, Health Officers, Medical Assistants, Nurse Clinicians, Physician Assistants.**

4.2.3 Types of intervention:

Streamlined educational pathways and/or ladder programmes and /or ladder curriculum and /or ladder education and/or ladder systems and/or clinical ladders and/or career advancement programs and/or career development programs

4.2.4 Types of outcome measures:

The primary outcomes of interest are the quantity, quality and relevance of practicing health professionals. These are defined by a number of measurable outcomes found in the Outcomes Framework document (See Appendix D). Secondary outcomes include values and preferences, costs and benefits, harms and all unintended effects of the intervention are also of critical importance and will be eligible. Studies that include other outcomes should not be excluded at this stage in the evidence retrieval.

4.3 Exclusion criteria

Editorials, newspaper articles and other forms of popular media were excluded. Failure to meet any one of the above inclusion criteria resulted in exclusion from the review and any apparent discrepancies during the selection process were resolved by a third, independent reviewer. The number of excluded studies was recorded at each stage.

5.0 Assessment of risk of bias and data extraction

Following final selection, reviewers extracted required data from each paper, using the predefined evidence summary templates. The Descriptive Evidence Table is attached in Appendix B. Data were collected regarding the reasons for exclusion, characteristics of included studies, participants, interventions (including comparators) and outcomes. The final decision for inclusion or exclusion will be made by a team consisting of the WHO Secretariat, methodologist and researchers conducting the review. Any potential disagreement will be recorded and resolved by further discussion.

Risk of bias across studies will be assessed using the approach outlined by the Grading of Recommendations Assessment Development and Evaluation (GRADE) working group. Any disagreements will be recorded and resolved by involvement of an additional reviewer.

6.0 Data synthesis

The availability of appropriate data and resources to conduct a meta-analysis was considered, where feasible.

7.0 Dissemination

A final set of tables including a GRADE Evidence Table and Descriptive Evidence Table was produced and submitted to the WHO Secretariat as stipulated in the Procedures for the Retrieval of Evidence and Summary of Evidence. In addition, a manuscript will be submitted to peer-reviewed journals for publication (a more specific dissemination proposal can go here as well).

8.0 Resource implications

The project lead worked closely with the WHO Secretariat to define the scope and methods of the review and facilitate access to unpublished literature, supporting translation of foreign language literature where necessary. Milestones and timescales are outlined below:

MILESTONES	TIMESCALE
Evidence retrieval protocol developed	4th week of September
Identifying and retrieving the evidence and conduct of literature review	4th week of September – 3rd week of November
Conduct of hand searching	4th week of November
Summarize the evidence Develop Descriptive Evidence Table	2nd week of October – 4th week of November
Develop GRADE Evidence Table	
Submit Descriptive Evidence Table	November 30, 2011
Submit GRADE Evidence Table to the WHO Secretariat	
Upload PDFs of articles to FTP site	1 st week of December

9.0 References

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SUMMARY OF DATABASES AND RESOURCES SEARCHED AND CITATIONS YIELDED

DATABASE	CITATIONS	TITLE SEARCH	ABSTRACT SEARCH	FULL TEXT SEARCH
Health				
PubMed	3,386	97	19	15 (retrieved) 13 (relevant)
Campbell Library	0	0	0	0
Cochrane Library	17	1	0	0
Health Systems Evidence	1,798 *only 50 articles were displayed	0	0	0
Global Index Medicus	0	0	0	0
Education				
ERIC	4,801	17	4	4 (retrieved) 1 (relevant)
Social Sciences				
Social Science databases SSRN	0	0	0	0

DATABASE	CITATIONS	TITLE SEARCH	ABSTRACT SEARCH	FULL TEXT SEARCH
Regional Databases				
African Index Medicus	0	0	0	0
Australasian Medical Index	0	0	0	0
Index Medicus for Eastern Mediterranean Region	0	0	0	0
IndMED	702 *only 500 articles were displayed	1	0	0
KoreaMed	0	0	0	0
LILACS	10	1	0	0
IMSEAR	876	2	0	0
Panteleimon	0	0	0	0
WPRIM	0	0	0	0
British Education Index	0	0	0	0
Research and Development Resource Base (RDRB)	0	0	0	0
Grey Literature databases				
OPENSIGLE	2	1	1	1 (relevant)
New York Academy of Medicine Grey Lit site	0	0	0	0
FADE Library	1	0	0	0
HMIC	3	1	1	1 (retrieved) 0 (relevant)
INTUTE	64	0	0	0
Medical Teacher database	37	0	0	0
DATAD	0	0	0	0
International Journal of Pharmacy Education	0	0	0	0
Biomed Central	3,967	1	0	0
Local databases				
HERDIN	0	0	0	0
UP Manila Integrated Library System and Research Database	0	0	0	0
UST Miguel de Bienvenides Library	29	0	0	0

DATABASE	CITATIONS	TITLE SEARCH	ABSTRACT SEARCH	FULL TEXT SEARCH
De La Salle University Library	27	0	0	0
Ateneo de Manila Library	0	0	0	0
Siliman University Library	0	0	0	0
Ateneo de Zamboanga Library	0	0	0	0
Xavier University Library	0	0	0	0
San Carlos University Library	0	0	0	0
Handsearch				
Journal of Nursing Administration	43	10	9	6 (retrieved) 6 (relevant) 4 (same as PubMed articles) 2 (added to descriptive evidence table)
Journal of Continuing Education in Nursing	0	0	0	0
Journal for Nurses in Staff Development	33	6	4	1 (retrieved) 1 (relevant and same as PubMed article) 0 (added to descriptive evidence table)
Nursing Management	27	1	0	0
WHO's Library Database (WHOLIS)	0	0	0	0
World Bank	0	0	0	0
Book: Bringing Health to Rural Communities, Innovations of the U.P. Manila School of Health Sciences Tayag JG, Clavel L, editors.				8 (relevant)
PubMed Author Search *Search for authors of studies included in the Descriptive Evidence Table which appeared in the references of other studies more than once	276	6	2	2 (retrieved) 2 (relevant and same as PubMed articles) 0 (added to descriptive evidence table)
Handsearching bibliographies of relevant articles retrieved from the databases searched	32	7	7	7 (retrieved) 7 (relevant)

SEARCH STRATEGIES FOR OTHER DATABASES

HEALTH DATABASES

Campbell Library

<http://www.campbellcollaboration.org/library.php>

SEARCH CONCEPT	THESAURUS KEYWORDS	ALL TEXT WORDS
Population	<ul style="list-style-type: none"> • Doctors • Physicians • Nurses • Nursing education • Midwifery • Dentists • Dentistry • Dental education • Pharmacy • Pharmaceutical education • Pharmacists • Medical education • Medical students 	<ul style="list-style-type: none"> • Doctor • doctors • physician • physicians • nurse • nurses • nursing • Midwife • midwives • midwifery • Dentist • dentists • dental staff • Pharmacist • pharmacists • medical student • medical students • nursing student • nursing students • premedical student • premedical students • midwifery student • midwifery students • resident • residents • midwifery education • dental education • pharmaceutical education • medical education • Nursing education • Midwifery education • Dentistry education • Pharmacy education • Medical internship • Medical residency • medical personnel • medical provider • medical providers • medical professional • medical professionals • nurse professional • nurse professionals • Physician Assistant • Allied health personnel • physician assistants • Physicians' Assistants • Physician's Assistants • Physicians Assistants • Physicians' Assistant • Physicians' Extenders • Physician Extender • Physician Extenders • Physician's Extenders • Physicians' Extender • Physician Extenders • Physician's Extenders • Physicians' Extender • Doctor's Assistants • Doctor Assistants • Doctor's Assistant • Medex • Feldshers • Feldsher • Assistant Medical Officers • Assistant Medical Officer • Clinical Officers • Clinical Officer • Health Assistants • Health Assistant • Health Officers • Health Officer • Medical Assistants • Medical Assistant • Nurse Clinicians • Nurse Clinician • Nurse Practitioner • Nurse Practitioner • non-physician clinician • non-physician clinicians • non physician clinician • non physician clinicians
Intervention	<ul style="list-style-type: none"> • Alternative education • Integrated curriculum • University curriculum • Higher education 	<ul style="list-style-type: none"> • streamlined educational pathways • educational pathway • educational pathways • ladder program • ladder programs • ladder programme • ladder programmes • ladderized programs • ladderized programmes • ladder curriculum • ladder education • clinical ladder • clinical ladders • ladder system • ladder systems • career advancement program • career advancement programs • career advancement programme • career advancement programmes • career development program • career development programs • career development programme • career development programmes

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Annex 10

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Annex 11.

Working groups at the Guidelines Development Group meeting, Washington, USA, March 2012

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Accreditation**

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Walid Abubaker
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**GROUP 2
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Arletty Pinel
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Carmen Dolea
Maki Agawa

**GROUP 3
Regulation**

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Barbara Aranda-Naranjo
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Keith Holmes
Lois Schaefer
Hidechika Akashi
Djona Avocksouma
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**GROUP 4
Financing**

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Edson Araujo
Lola Dare
Jennifer Dohrn
Jose Rafael Morales
Yojiro Ishii
Christophe Lemiere
Erica Wheeler

**GROUP 5
Curriculum reform – ladders**

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Lyn Middleton
Mwapatsa Mipando
Fatouma Diallo
Estelle Quain
Carolyn Hall
Margaret Brewinski-Isaacs
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**GROUP 6
Direct entry**

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Jose Rafael Morales
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Inter-professional education**

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**GROUP 8
Simulation and use of ICT**

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**GROUP 9
Continuous professional
development**

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**GROUP 10
Admission requirements**

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Hidechika Akashi
Ding Yang
Francisco Campos
Carolyn Hall
Leana Uys
Erica Wheeler

Annex 12

Systematic Reviews Team Leaders

Systematic Reviews of PICO Questions

PICO#	QUESTION	GROUP WORKING ON THE QUESTION
2. Education and Training Institutions		
1.	School Governance	
	Does the active participation of representatives from key stakeholder groups in the governance structures of health professional schools affect the quantity, quality and relevance of health professionals?	Global Pharmacy Education Taskforce (FIP) Sarah Whitmarsh
2.	Students	
	Does the active recruitment, admission and retention of students from underserved, underrepresented or rural populations in health professional schools, supported by regulatory mechanisms, for both undergraduate and postgraduate programmes, affect the quantity, quality and relevance of health professionals?	University of Tokyo Professor Jimba Department of International Community Health Graduate School of Medicine Tokyo, Japan
3.	Faculty and Teaching Staff	
	Does a system of recognition and rewards, which also values teaching ability and community engagement, for all those involved in teaching, including those in the health system, for both undergraduate and postgraduate programs, affect the quantity, quality and relevance of health professionals?	Cambridge University, UK: Alison Andrew, WHO Intern.
4.	Faculty and Teaching Staff	
	Does the innovative expansion of faculty affect the quantity, quality and relevance of health professionals?	University of the Philippines Prof. Marilyn Lorenzo Department of Health Policy and Administration Manila, Philippines (see letter for list of team members)
5.	Curricula	
	Does adapting curricula to needs through the definition of core competencies and their incorporation into core curricula, in both undergraduate and postgraduate programs affect the quantity and relevance of health professionals?	Mahidol University Nantiya Watthayu Department of Public Health Nursing, Faculty of Nursing Bangkok, Thailand
6.	Curricula	
	Does regular/periodic evaluation combined with streamlined mechanisms for regularly updating and innovating curricula in response to evolving needs of populations, health systems and health service delivery in both undergraduate and postgraduate programs affect the quantity, quality and relevance of health professionals?	University of Oslo Unni GOPINATHAN WHO Intern
7.	Curricula	
	Does inter-professional and trans-professional learning in both undergraduate and postgraduate programs affect the quality and relevance of health professionals? If yes, can these improvements be measurable?	University of Tokyo Professor Jimba Department of International Community Health Graduate School of Medicine Tokyo, Japan
8.	Capacity for Transformation and Scale up	
	Does the direct admission of graduates from relevant undergraduate, postgraduate, or other educational programmes into higher levels of health professional studies affect the quantity, quality and relevance of health professionals?	Gunma University Japan MATSUI, Hiroki WHO visiting scholar

PICO#	QUESTION	GROUP WORKING ON THE QUESTION
9.	Does moving health professionals' education closer to health services at all levels of the health system, in both undergraduate and postgraduate programs, affect the quantity, quality, and relevance of health professionals?	University of the Philippines Prof. Marilyn Lorenzo Department of Health Policy and Administration Manila, Philippines
3. Regulatory Frameworks		
10.	Do streamlined educational pathways, or ladder programmes, for the advancement of practicing health professionals, in both undergraduate and postgraduate programmes, improve the quantity, quality, and relevance of health professionals?	University of the Philippines Prof. Marilyn Lorenzo Department of Health Policy and Administration Manila, Philippines
11.	Does accreditation and periodic re-accreditation of all educational institutions and their associated clinical practice placement sites, both public and private, improve the quality, and relevance of health professionals?	The Chinese University of Hong Kong Diana Lee (and Eric Chen) Professor of Nursing and Director, The Nethersole School of Nursing, Assistant Dean, Faculty of Medicine
12.	Do certification and licensure (including periodic re-licensure/re-certification), to reflect reforms in education to address evolving population health needs and to increase the coverage of services (transformative education), of all health professionals in both the public and private sectors improve the quantity, quality, and relevance of health professionals?	University of the Philippines Prof. Marilyn Lorenzo Department of Health Policy and Administration Manila, Philippines
13.	Does the periodic expansion and/or redefinition of scopes of practice of health professionals in both the public and private sectors, which reflect educational reforms to address evolving population health needs and to increase the coverage of services, improve the quantity, quality, and relevance of health professionals?	University of the Philippines Prof. Marilyn Lorenzo Department of Health Policy and Administration Manila, Philippines
14.	Does continuing professional development (CPD) and in-service training of health professionals, which reflects reforms in education to address evolving population health needs, and increase the coverage of services, and the engagement and active participation of education and training institutions in its design and execution, improve the quantity, quality, and relevance of health professionals?	University of Tokyo Professor Jimba Department of International Community Health Graduate School of Medicine Tokyo, Japan
4. Financing		
Financing the Plan		
15.	Does the increased allocation of resources targeted to health professionals' education and training, and their effective and strategic management, lead to increased quantity, quality, and relevance of health care professionals?	Possibly NORAD, Knowledge Centre Bjarne Garden email. Bjarne.Garden@norad.no.
Financing the Plan		
16.	Does financial assistance to students improve the quantity, quality, and relevance of health care providers?	George Washington University Fitzhugh Mullan and Seble Frehywot Department of Health Policy Washington, USA
5. Planning, Implementation, Monitoring and Evaluation		
9.	Does strengthening of the national human resources for health information system (HRIS) to include multi-sectoral data elements that support situation analysis, monitoring and evaluation for the production, recruitment and retention of health professionals affect the quantity, quality, and relevance of health professionals?	WHO/Human Resources for Health Information Reference group

Annex 13

Working group members at first CGDG meeting, Divonne-les-Bains, France, May 2011

GROUP 1:

Governance + Planning, Implementation, Monitoring and Evaluation (9 PICO questions)

Chair: Francisco Campos;
Rapporteur: Fitzhugh Mullan;
Members: Siyam Amani, Julia Lear, Robert Ochai, George Pariyo, Ann Phoya, Djona Avocksouma, Sungkhobol Duangvadee, Alaka Singh

GROUP 2:

Regulatory Frameworks (10 PICO questions)

Chair: Joan Holloway; Rapporteur: Chris Rakuom;
Co-Rapporteur: Teri Reynolds;
Members: Mwansa Nkowane, Hidechika Akashi, Jean Barry, John Palen, Lois Schaefer, Walid Abubaker, Rodel Nodora, Manuel Dayrit

GROUP 3:

Financing (9 PICO questions)

Chair: Francis Omaswa;
Rapporteur: Bjarne Garden;
Co-Rapporteur: Chloe Le Marchand;
Members: Barbara Aranda-Naranjo, Carmen Dolea, Lola Dare, David Gordon, Yojiro Ishii, Kate Tolenko, Galina Perfilieva

GROUP 4:

Education and training institutions: school governance and partnerships, students, and faculty (9 PICO questions)

Chair: Jehu Iputo;
Rapporteur: Marilyn Lorenzo;
Co-Rapporteur: Nantiya Watthayu;
Members: Rebecca Bailey, Eric Chan, Seble Frehywot, Ali Haboor, Michael Johnson, Krisada Sawaengdee, Maki Agawa

GROUP 5:

Education and training institutions: curricula and improving capacity (10 PICO questions)

Chair: Eric Buch;
Rapporteur: Ian Couper;
Co-Rapporteur: Aaron Stoertz;
Members: Erica Wheeler, Milliard Derbew Beyene, Lyn Middleton, Mwapatsa Mipando, Charmaine Pattinson, Viroj Tangcharoensathien

Annex 14.

Outcomes framework

Based on	Actors ¹ (multi-sectoral)	Areas of intervention (public/private mix)	Outputs (graduates)	Outcomes of interest ^{2,3} (practitioners)	Contributing to ⁴ (health- service delivery)	Impact
Population health needs	<p>National Policy-makers</p> <p>Education and training institutions and associations</p> <p>Professional associations and regulatory bodies</p> <p>Health services</p> <p>Communities and civil society</p> <p>Development partners</p>	<p>Governance</p> <p>Education and training institutions</p> <p>Regulatory frameworks</p> <p>Financing</p> <p>Planning, implementation, monitoring and evaluation</p>	<p>Quantity</p> <ul style="list-style-type: none"> New graduates: <ul style="list-style-type: none"> completion rates number per year per category proportion per year per category relative to planned needs proportion who migrate per year. <p>Relevance</p> <ul style="list-style-type: none"> Demonstrate competencies relevant to local needs: <ul style="list-style-type: none"> population health needs and expectations health system and service delivery needs Skill mix (distribution of graduates by category or other skill-related characteristic) Likely to pursue advanced studies in needed fields (e.g. general practice, primary care, teaching) Likely to work in underserved areas (e.g. rural, primary level, marginalized populations) Representative of society in terms of language, ethnicity, gender, and origin <p>Unintended/harmful effects</p>	<p>Quantity</p> <ul style="list-style-type: none"> Density (proportion of health professionals in each category per 10 000 population) Proportion of health professionals who were educated within the country Proportion of graduates, per category, absorbed into the national health labour market within a defined period of time <p>Quality</p> <ul style="list-style-type: none"> Competent: <ul style="list-style-type: none"> technical knowledge, skills and behaviour service delivery knowledge, skills and behaviour (e.g. able to lead/manage, work in a team, adapt to changing practice environments, initiate change, educate) Responsive: <ul style="list-style-type: none"> patient satisfaction practitioner satisfaction Productive <p>Relevance</p> <ul style="list-style-type: none"> Able to deliver services that are relevant to local needs: <ul style="list-style-type: none"> population health needs and expectations present and future health system and service delivery needs Available: <ul style="list-style-type: none"> distribution by geographical location distribution by level of health service (i.e. primary, secondary, tertiary) <ul style="list-style-type: none"> absentee and turnover rates Skill mix (distribution of health professionals by occupation, specialization or other skill-related characteristic) Representative of society in terms of language, ethnicity, gender, and origin <p>Unintended/harmful effects</p>	<ul style="list-style-type: none"> Accessible Affordable Acceptable Quality Safe Effective Efficient Productive Universal Coverage 	Population health outcomes



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