

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 	<p>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</p>	<p>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</p>	<p>Quantity, quality and relevance of health professionals</p>

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. <i>Bringing Health to Rural Communities, Innovations of the U.P. Manila School of Health Sciences</i> . 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 • 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 • 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

GROUP 1 Accreditation	GROUP 2 Faculty development	GROUP 3 Regulation	GROUP 4 Financing
Leana Uys Fitz Mullan Milliard Beyene David Gordon Robert Ochai Ann Phoya Eric Buch Walid Abubaker Gulin Gedik	Ian Couper Rebecca Bailey David Knapp Arletty Pinel Agneta Bridges Francisco Campos Yianna Vovides Carmen Dolea Maki Agawa	Peter Johnson Jean Barry Barbara Aranda-Naranjo Seble Frehywot Keith Holmes Lois Schaefer Hidechika Akashi Djona Avocksouma Mwansa Nkowane	Jehu Iputo Kate Tulenko Edson Araujo Lola Dare Jennifer Dohrn Jose Rafael Morales Yojiro Ishii Christophe Lemiere Erica Wheeler
GROUP 5 Curriculum reform – ladders	GROUP 6 Direct entry	GROUP 7 Inter-professional education	GROUP 8 Simulation and use of ICT
Marilyn Lorenzo Masamine Jimba Lyn Middleton Mwapatsa Mipando Fatouma Diallo Estelle Quain Carolyn Hall Margaret Brewinski-Isaacs Budihardja Singgih Galina Perfilieva	Lyn Middleton Agneta Bridges Jean Barry Jose Rafael Morales Robert Ochai Ann Phoya Barbara Aranda-Naranjo Djona Avocksouma Mwansa Nkowane	Masamine Jimba David Gordon Milliard Bayene Jennifer Dohrn David Knapp Estelle Quain Peter Johnson Margaret Brewinski-Isaacs Walid Aboubaker Gulin Gedik	Seble Frehywot Rebecca Bailey Edson Araujo Erich Buch Yianna Vovides Kate Tulenko Lola Dare Yojiro Ishii Arletty Pinel Galina Perfilieva
	GROUP 9 Continuous professional development	GROUP 10 Admission requirements	
	Mwapatsa Mipando Ian Couper Fatouma Diallo Christophe Lemiere Fitz Mullan Lois Schaeffer Budihardja Singgih Carmen Dolea	Keith Holmes Marilyn Lorenzo Jehu Iputo Hidechika Akashi Ding Yang Francisco Campos Carolyn Hall Leana Uys Erica Wheeler	

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.	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 quality and relevance of health professionals?	Mahidol University Nantiya Watthayu Department of Public Health Nursing, Faculty of Nursing Bangkok, Thailand
6.	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.	Does inter-professional and trans-professional learning in both undergraduate and postgraduate programs affect the quantity 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 Nkwane, 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

