WHO Library Cataloguing-in-Publication Data
World Health Organization.
ISBN 92 4 156317 6 (NLM classification: WA 530.1) ISBN 978 92 4 156317 8 ISSN 1020-3311
© World Health Organization 2006
All rights reserved. Publications of the World Health Organization can be obtained from WHO Press, World Health Organization, 20 Avenue Appia, 1211 Geneva 27, Switzerland (tel: +41 22 791 3264; fax: +41 22 791 4857; email: bookorders@who.int). Requests for permission to reproduce or translate WHO publications – whether for sale or for noncommercial distribution – should be addressed to WHO Press, at the above address (fax: +41 22 791 4806; email: permissions@who.int).

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.

The mention of specific companies or of certain manufacturers’ products does not imply that they are endorsed or recommended by the World Health Organization in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters.

All reasonable precautions have been taken by WHO to verify the information contained in this publication. However, the published material is being distributed without warranty of any kind, either expressed or implied. The responsibility for the interpretation and use of the material lies with the reader. In no event shall the World Health Organization be liable for damages arising from its use. Information concerning this publication can be obtained from: World Health Report World Health Organization 1211 Geneva 27, Switzerland E-mail: whr@who.int

Copies of this publication and the full report can be ordered from: bookorders@who.int

This report was produced under the overall direction of Tim Evans (Assistant Director-General, Evidence and Information for Policy). The principal authors were Lincoln Chen, David Evans, Tim Evans, Ritu Sadana, Barbara Stillwell, Phyllida Travis, Win Van Lerberghe and Pascal Zurn, assisted by Christie Aschwendt and Joanne MacEwan. Organizational supervision of the report was provided by Manuel M. Dayrit and Carmen Dolea. The Managing Editor of the report was Thomas Prentice.

Valuable inputs in the form of contributions, peer-review, suggestions and criticisms were received from the Director-General’s Office, and from Maia Ambeaogkara, Dina Balabanova, James Buchanan, Gilles Dussault, Martin McKee and Barbara McPake. Significant contributions to the analytical work were received from Mario Dal Poz, Sigrid Draeger, Norbert Dreseh, Patricia Hernandez, Yohannes Kinfu, Yee Na Kunjum, Hugo Mercier, Amit Prasad, Angelica Souza and Niko Speybroek. Additional help and advice were kindly provided by Regional Directors and members of their staff.


Contributors to statistical tables not already mentioned were Endre Bakka, Dorjsuren Bayarsaikhan, Ties Boerma, Eduard Bos, Thomas Buettner, Veneta Cherilova, Trevor Croft, Driss Zine Eddine Eldridrissi, Anton Fric, Robert Gabor, Chary Garg, Peter Ghys, Amparo Gordillo, Eleanor Gouws, Attila Hancioglu, Kenneth Hill, Chandika Indikadathena, Mie Inoue, Garth Jones, Joses Kirigia, Jan Klavus, Joseph Kutzin, Eduardo Levcovitz, Edilberto Loaiza, Doris Ma Fat, Francois Pelletier, Ravi Ramman-Elyia, Hossein Salehi, Cheryl Sawyer, Kenji Shibuya, Karen Stanecki, Rubén Suárez, Emi Suzuki, Nathalie Van de Maele, Jakob Victorin, Neff Walker, Tessa Wardlaw, Charles Waza, Jens Wilkins, John Wilmoth, and many staff in WHO country offices, governmental departments and agencies, and international institutions.

The report was edited by Leo Vita-Finzi, assisted by Barbara Campanini. Editorial, administrative and production support was provided by Shelagh Probst and Gary Walker, who also coordinated the photographs. Figures and tables were provided by Gael Keren who also was responsible for the web site version, and other electronic media. Proofreading was by Marie Fitzsimmons. The index was prepared by June Morrison.


Design: Reda Sadki
Layout: Steve Exwort and Reda Sadki
Figures: Christophe Granger
Printing coordination: Raphael Crettaz
Printed in France
# contents

Message from the Director-General  xiii

Overview  xv

- Why the workforce is important  xv
- Picture of the global workforce  xvi
- Driving forces: past and future  xvii

Strategies: working lifespan of entry–workforce–exit  xx

- Entry: preparing the workforce  xx
- Workforce: enhancing performance  xxii
- Exit: managing migration and attrition  xxii

Moving forward together  xxiii

- An imperative for action  xxiii
- National leadership  xxiii
- Global solidarity  xxiv
- Plan of action  xxv
- Moving forward together  xxvi

Chapter 1

Health workers: a global profile  1

- Who are the health workers?  1
- How many health workers are there?  4
  - Public and private sector workers  5
  - Sex and age of health workers  6
- How much is spent on the health workforce?  7
- Where are the health workers?  8
  - Uneven distribution across the globe  8
  - Uneven spread within countries  8
- Are there enough health workers?  9
  - Needs-based sufficiency  11
- Addressing the shortage – how much will it cost?  13
- Conclusion  15
Chapter 2

Responding to urgent health needs

High priority services: human resources for health and the MDGs
- Epidemics of in-service training
- Overburdened district staff
- Two tiers of salaries
- **Strategy 2.1** Scale up workforce planning
- **Strategy 2.2** Capitalize on synergies across priority programmes
- **Strategy 2.3** Simplify services and delegate appropriately
- **Strategy 2.4** Secure the health and safety of health workers

Preparing the workforce for the growing burden of chronic diseases and injuries
- New paradigms of care require a workforce response
- **Strategy 2.5** Deploy towards a continuum of care
- **Strategy 2.6** Foster collaboration
- **Strategy 2.7** Promote continuous learning for patient safety

Mobilizing for emergency needs: natural disasters and outbreaks
- Preparedness plans can help
- **Strategy 2.8** Take a “command and control” approach
- **Strategy 2.9** Help remove sector boundaries
- **Strategy 2.10** Train appropriate health staff for emergency response
- **Strategy 2.11** Develop an emergency deployment strategy for different kinds of health workers
- **Strategy 2.12** Ensure adequate support for front-line workers

Working in conflict and post-conflict environments
- **Strategy 2.13** Obtain and maintain strategic information
- **Strategy 2.14** Invest in advanced planning and focused interventions
- **Strategy 2.15** Protect what works
- **Strategy 2.16** Repair and prepare
- **Strategy 2.17** Rehabilitate when stability begins

Conclusion

Chapter 3

Preparing the health workforce

Workforce entry: the right mix
- The “pipeline” for recruitment

Training: the right institutions to produce the right workers
- Governance
- **Getting the right balance of schools and graduates**
- **Strategy 3.1** Encourage training across the health care spectrum
- **Accreditation: promoting competence and trust**
- **Managing admissions to enhance diversity**
- **Strategy 3.2** Develop admissions policies to reflect diversities
- **Retaining students through to graduation**
- Educational services
- **Strategy 3.3** Ensure quality and responsive curricula
- **Acquiring competencies to learn**
- Workforce of teachers
Strategy 3.4 Encourage and support teaching excellence  50
Financing  50
Infrastructure and technology  52
Strategy 3.5 Find innovative ways to access teaching expertise and materials 54
Information for policy-making  54
Strategy 3.6 Evaluate institutional performance, policy options and actions 54
Rethinking recruitment: gateway to the workforce  54
Imperfect labour markets 56
Strategy 3.7 Improve recruitment performance 58
Conclusion 59

Chapter 4
Making the most of existing health workers  67
What is a well-performing health workforce? 67
What determines how health workers perform? 70
What influences health workers' performance? 71
Job-specific levers 72
Strategy 4.1 Develop clear job descriptions  72
Strategy 4.2 Support norms and codes of conduct 72
Strategy 4.3 Match skills to tasks  73
Strategy 4.4 Exercise supportive supervision  75
Basic support systems 75
Strategy 4.5 Ensure appropriate remuneration 75
Strategy 4.6 Ensure adequate information and communication 80
Strategy 4.7 Improve infrastructure and supplies 81
An enabling work environment 82
Strategy 4.8 Promote lifelong learning 82
Strategy 4.9 Establish effective team management 84
Strategy 4.10 Combine responsibility with accountability 86
How are levers linked to the four dimensions of health workforce performance?  86
Availability 86
Competence 87
Responsiveness 87
Productivity 88
Conclusion 89

Chapter 5
Managing exits from the workforce  97
Ebbs and flows of migration 98
Why are health workers moving? 99
Impacts of migration 101
Strategies to manage migration 101
Source country strategies 102
Strategy 5.1 Adjust training to need and demands 102
Strategy 5.2 Improve local conditions 103
Receiving country strategies 103
Strategy 5.3 Ensure fair treatment of migrant workers 103
Strategy 5.4 Adopt responsible recruitment policies 103
Strategy 5.5 Provide support to human resources in source countries 104

**International instruments** 104

**Occupational risks to health workers** 105

- Violence 105
  - Strategy 5.6 Develop and implement tactics against violence 106
- Other risks 106
  - Strategy 5.7 Initiate and reinforce a safe work environment 107
- Illness and death from HIV/AIDS 107

**Change of occupation or work status** 107

- Choosing a reduced work week 107
  - Strategy 5.8 Accommodate workers’ needs and expectations 107
- Health workers not employed in their field 108
  - Strategy 5.9 Target health workers outside the health sector 108
- Absentees and ghost workers 108
  - Strategy 5.10 Keep track of the workforce 109

**Retirement** 109

- Retirement rates and the risk of shortages 109
- Health workforce ageing 110
  - Strategy 5.11 Develop the capacity and policy tools to manage retirement 111
- The need for knowledge transfer 111
  - Strategy 5.12 Develop succession planning 111

**Conclusion** 112

---

**Chapter 6**

**Formulating national health workforce strategies** 119

**Building trust and managing expectations** 120

- Strategy 6.1 Design and implement a workforce strategy that fosters trust 120

**Fair and cooperative governing** 121

- Self-regulation 121
- “Muddling through” and command-and-control 122
- Watchdogs and advocates 123
- A model for effective governance 123
- Strategy 6.2 Ensure cooperative governance of national workforce policies 124

**Strong leadership** 125

**Strengthening strategic intelligence** 126

- Strategy 6.3 Obtain better intelligence on the health workforce in national situations 126
- Extent and nature of the national workforce problem 126
- Action taken and further options 126
- National politics around the health workforce 126
- Reactions of health workers and their employers 127

**Investing in workforce institutions** 127

- Learning from microinnovations 128
- Scenario building and planning 129

**Conclusion** 129
Chapter 7

Working together, within and across countries 135

Catalysing knowledge and learning 135
A firm foundation for information 136
Generation and management of knowledge 139
Pooling of expertise 141

Striking cooperative agreements 143

Responding to the health workforce crisis 143
An extraordinary global response is needed 144
Coalitions around emergency plans 144
Towards more worker-friendly practices 144
The imperative of sufficient, sustained financing 145
A global guideline for financing 146

Moving forward together 147
National leadership 148
Global solidarity 149
Plan of action 150

Joint steps to the future 151

Statistical Annex

Explanatory notes 155
Annex Table 1 168
Annex Table 2 178
Annex Table 3 186
Annex Table 4 190

Index 201

Figures – Overview

Figure 1
Health workers save lives! xvi

Figure 2
Forces driving the workforce xvii

Figure 3
Countries with a critical shortage of health service providers (doctors, nurses and midwives) xviii

Figure 4
Working lifespan strategies xxi

Figure 5
Global stakeholder alliance xxvi

Figures – Chapters

Figure 1.1
Distribution of women in health service professions, by WHO region 6

Figure 1.2
Distribution of health workers by level of health expenditure and burden of disease, by WHO region 9

Figure 1.3
Rural–urban distribution of health service providers 9
<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1.4</td>
<td>Population density of health care professionals required to ensure skilled attendance at births</td>
<td>11</td>
</tr>
<tr>
<td>Figure 1.5</td>
<td>Countries with a critical shortage of health service providers (doctors, nurses and midwives)</td>
<td>12</td>
</tr>
<tr>
<td>Figure 2.1</td>
<td>From massive deprivation to marginal exclusion: moving up the coverage ladder</td>
<td>20</td>
</tr>
<tr>
<td>Figure 2.2</td>
<td>Optimal mix of mental health services</td>
<td>26</td>
</tr>
<tr>
<td>Figure 2.3</td>
<td>Global distribution of psychiatrists</td>
<td>27</td>
</tr>
<tr>
<td>Figure 3.1</td>
<td>Getting the mix right: challenges to health workforce production</td>
<td>42</td>
</tr>
<tr>
<td>Figure 3.2</td>
<td>Pipeline to generate and recruit the health workforce</td>
<td>42</td>
</tr>
<tr>
<td>Figure 3.3</td>
<td>Relationship of education, labour and health services markets with human resources</td>
<td>56</td>
</tr>
<tr>
<td>Figure 3.4</td>
<td>Projected time to recuperate student investments in education, Colombia, 2000</td>
<td>57</td>
</tr>
<tr>
<td>Figure 4.1</td>
<td>Patients’ perception of respectful treatment at health facilities in 19 countries</td>
<td>69</td>
</tr>
<tr>
<td>Figure 4.2</td>
<td>Levers to influence the four dimensions of health workforce performance</td>
<td>71</td>
</tr>
<tr>
<td>Figure 5.1</td>
<td>Exit routes from the health workforce</td>
<td>98</td>
</tr>
<tr>
<td>Figure 5.2</td>
<td>Health workers’ reasons to migrate in four African countries (Cameroon, South Africa, Uganda and Zimbabwe)</td>
<td>99</td>
</tr>
<tr>
<td>Figure 5.3</td>
<td>Occupations at risk of violence, Sweden</td>
<td>105</td>
</tr>
<tr>
<td>Figure 5.4</td>
<td>Ageing nurses in the United States of America</td>
<td>110</td>
</tr>
<tr>
<td>Figure 5.5</td>
<td>Age distribution of doctors</td>
<td>111</td>
</tr>
<tr>
<td>Figure 6.1</td>
<td>Organizations influencing the behaviour of health workers and the health institutions</td>
<td>124</td>
</tr>
<tr>
<td>Figure 7.1</td>
<td>Health information system (HIS) performance</td>
<td>136</td>
</tr>
<tr>
<td>Figure 7.2</td>
<td>Immunization coverage and density of health workers</td>
<td>139</td>
</tr>
<tr>
<td>Figure 7.3</td>
<td>Country priorities for health systems strengthening</td>
<td>145</td>
</tr>
<tr>
<td>Figure 7.4</td>
<td>Global stakeholder alliance</td>
<td>151</td>
</tr>
</tbody>
</table>
Boxes – Chapters

Box 1.1  
Classifying health workers  

Box 1.2  
The invisible backbone of the health system: management and support workers  

Box 1.3  
Where are the health workers? Service Availability Mapping  

Box 2.1  
Health workers and the Millennium Development Goals  

Box 2.2  
An emergency programme for human resources in Malawi  

Box 2.3  
Task shifting in the health care workforce  

Box 2.4  
Core competencies for long-term patient care  

Box 2.5  
Patient safety  

Box 2.6  
Responding to infectious disease outbreaks – SARS  

Box 2.7  
Thailand’s response to epidemics and disasters  

Box 2.8  
Protecting health systems and biomedical practice during conflicts  

Box 3.1  
Is the future of academic medicine in jeopardy?  

Box 3.2  
The public health movement in South-East Asia: regional initiatives and new schools  

Box 3.3  
rapid growth in private education of health professionals  

Box 3.4  
Practice-based teaching, problem-based learning, and patient-focused practice all go together  

Box 3.5  
Faculty development programmes: training trainers in professional health education  

Box 3.6  
From in-service to pre-service training: Integrated Management of Childhood Illness (IMCI)  

Box 3.7  
Regionalization of training for health professionals: University of the South Pacific and the University of the West Indies  

Box 3.8  
The evidence base to enhance performance of health educational institutions  

Box 3.9  
Pakistan’s Lady Health Workers: selection and development of new cadres
Box 4.1  
Infant mortality and health worker density, Viet Nam  

Box 4.2  
Differences in performance of male and female health service providers  

Box 4.3  
Job-related challenges to improving health worker performance  

Box 4.4  
Differences in salaries between countries, professions, sectors and sexes  

Box 4.5  
Incentives to enhance health workers’ performance  

Box 4.6  
Using modern communication technology to improve data, services and productivity  

Box 4.7  
What sort of training works best?  

Box 4.8  
Quality assurance, supervision and monitoring in Uganda  

Box 4.9  
Changing tasks and therefore skill needs  

Box 4.10  
The importance of management and leadership  

Box 5.1  
Turning brain drain into brain gain – the Philippines  

Box 5.2  
Recruitment agencies and migration  

Box 5.3  
Bilateral agreement between South Africa and the United Kingdom  

Box 5.4  
Strategies in action: examples of exit management  

Box 5.5  
Measures for a safe work environment: HIV/AIDS  

Box 6.1  
Self-regulation opportunities  

Box 6.2  
Human resources for health observatories in Latin America  

Box 7.1  
Seeking a common technical framework for human resources for health: a public good useful to all countries?  

Box 7.2  
Research priorities related to community health workers  

Box 7.3  
Tools for health workforce assessment and development  

Box 7.4  
Technical skills for human resource policy-making
Tables – Overview

Table 1
Global health workforce, by density xvii

Table 2
Ten-year plan of action xxv

Tables – Chapters

Table 1.1
Global health workforce, by density 5

Table 1.2
Proportion of government health expenditure paid to health workers 7

Table 1.3
Estimated critical shortages of doctors, nurses and midwives, by WHO region 13

Table 2.1
Deployment of state-employed health personnel in response to avian influenza outbreak in Turkey 33

Table 3.1
Functions of health educational institutions to generate the health workforce 44

Table 3.2
Health professional training institutions, by WHO region 44

Table 4.1
Dimensions of health workforce performance 68

Table 4.2
Human resource indicators to assess health workforce performance 71

Table 4.3
Pharmaceutical situations in public health facilities in Africa and South-East Asia 81

Table 4.4
Approaches to professional development and performance 83

Table 4.5
An aid to thinking through potential effects of levers on health workforce performance 87

Table 4.6
Health workforce performance: provisional assessment of implementation and effects of levers 88

Table 5.1
Doctors and nurses trained abroad working in OECD countries 98

Table 5.2
Doctors trained in sub-Saharan Africa working in OECD countries 100

Table 5.3
Nurses and midwives trained in sub-Saharan Africa working in OECD countries 100

Table 5.4
Statutory pensionable age 110

Table 7.1
Short description of results of three Cochrane systematic reviews on human resources for health 138

Table 7.2
Ten-year plan of action 150