WHO/EIP/OSD/02.3
Original English
Distr.: Unrestricted

Imbalances *Technical consultation on* in the health workforce

Evidence and Information for Policy
Department of Health Service Provision
World Health Organization
Geneva

Acknowledgements

WHO thanks the Government of Canada for its contribution to the meeting and Health Canada for its collegiality in bringing about this important consultation.

Technical consultation on imbalances in the health workforce

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Imbalances in the health workforce

Report of a technical consultation

Ottawa, Canada

10–12 March 2002

Evidence and Information for Policy
Department of Health Service Provision
World Health Organization
Geneva

Contents

Technical consultation on imbalances in the health workforce

Ottawa, Ontario, Canada, 10–12 March 2002

Introduction

A technical consultation on imbalances in the health workforce was held in Ottawa, Ontario, Canada, from 10 to 12 March 2002, organized by the World Health Organization, Geneva, in collaboration with Health Canada, Ottawa. Sixty-four participants attended the consultation from ministries of health from Member States, WHO regional offices, WHO headquarters, the World Bank and the Inter-American Development Bank, Health Canada, technical agencies and academic institutions.

Participants were selected according to their experience in the field of assessment and implementation of the health workforce. They included public health specialists, labour economists, health economists, sociologists, policy-makers, researchers and health professionals.

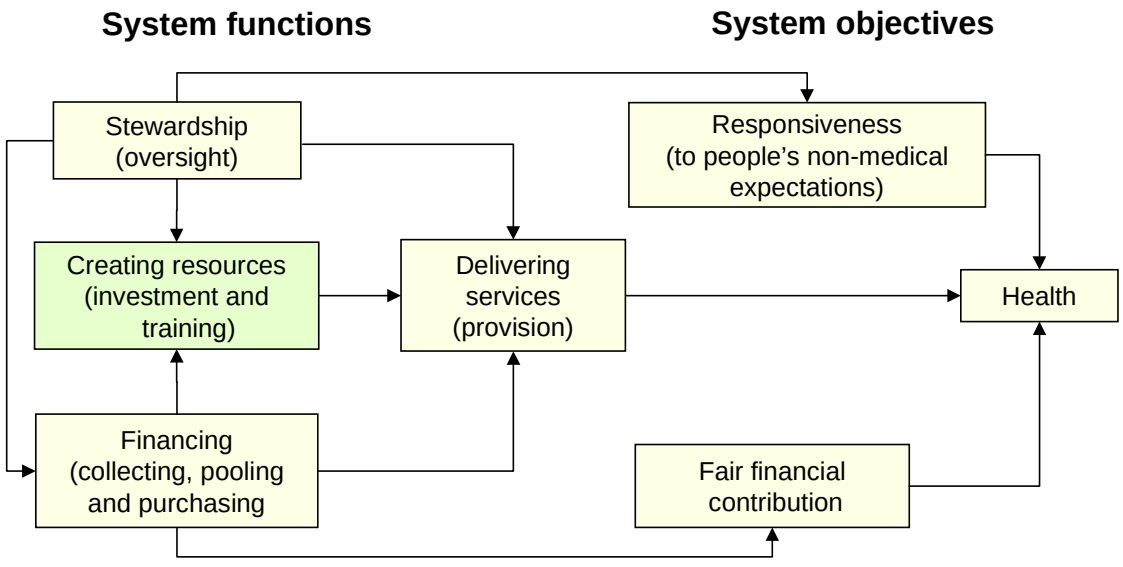
The discussions focused on the following main themes:

- the rationale for WHO's work on imbalances in the health workforce
- developing a conceptual framework for defining imbalances in the health workforce
- identifying sources of data required for optimal monitoring of imbalances
- Identifying areas for further research.

1. Rationale for WHO's work on imbalances in the health workforce

The *World health report 2000* highlighted the key contribution of health systems to improving health worldwide through its four functions of financing, resource generation, service provision and stewardship. The WHO performance framework is shown in Figure 1. Health system financing is the process by

Figure 1. WHO Health Systems Performance Framework



which revenues are collected from primary and secondary sources, accumulated in fund pools and allocated to providers' activities. Resource generation is the investment in and production of productive assets for health systems, which are human resources and physical capital. Stewardship involves setting, implementing and monitoring the rules for the health system; assuring a level playing field for all actors in the system; and defining strategic directions for the health system as a whole.

The system objectives are responsiveness—that is, a measure of how the system performs relative to non-health aspects—fair financial contribution and health. The health system should function to improve the health of the whole population and respond to people's expectations for the quality of their treatment. In addition, the system should provide protection against the costs of ill-health for everyone.

Provision of health services is the chief function of the health system through which interventions reach people, and depends to a large degree on the competence, regulation, economic incentives and distribution of human resources. Health care workers must be distributed so that the whole population has access to health services, and the skills of health workers must match the population's needs for care. The *World health report 2000* argues that human resources are the most important of the health system's inputs and consume a major share of resources. Improving the performance of the health system depends ultimately on improving the performance of the workforce.

Addressing imbalances in the health workforce is an ongoing challenge for policy-makers despite being on the agenda for many years. These issues are faced by developed and developing countries and occur for most of the health professions. The following dimensions with respect to imbalances in the workforce can be distinguished:

- profession/specialty imbalance
- geographical imbalance
- institutional and services imbalance
- public/private imbalance
- gender imbalance.

The factors that influence imbalances for a particular group or in a particular area are many and complex. For example, the active recruitment of health personnel (especially nurses) from developing to developed countries has recently attracted a great deal of publicity and has been blamed for the "brain drain" from developing countries (Bundred and Levitt, 2000; Buchan and May, 1999). The global liberalization of trade in services adds a new dimension to the shortages issue, as it may result in greater freedom for health personnel to move between countries and to more affluent countries with greater financial and professional opportunities but reduce access to health care in poorer countries.

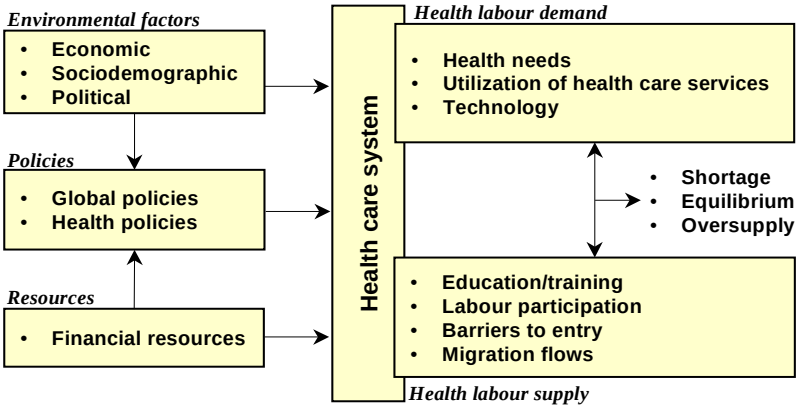
The work on imbalances in WHO includes determining a framework for analysis, developing evidence-based policy and identifying data and methods to be used in assessing the magnitude of imbalances and their impact on service delivery.

2. Developing a conceptual framework for defining imbalances in the health workforce

A review of the literature (Zurn et al., 2002) shows that the term "imbalance" has different meanings, depending on perspective and interests. Empirical studies relating to imbalances reflect the diversity of definitions. There is no single empirical measure of occupational labour shortage (Veneri, 1999; Friss, 1994), and a range of empirical approaches has been used to date.

The purpose of a conceptual framework should be twofold: first, to help countries resolve specific problems regarding health workforce imbalances, and second, to provide a common framework for cross-country comparisons. Mehmet (2002) and Zurn (2002) presented a conceptual framework, depicted in Figure 2.

Figure 2: Conceptual framework



Identifying factors determining the supply and demand for health labour is a key element of the conceptual framework. On the demand side, the identification of health needs, the rising level of health care utilisation and the generation of new technologies were presented as major factors. On the supply side, the main components were the patterns of education and training; labour participation; barriers to entry driven by regulation; and regional or international migration of the health workforce. The health labour market is part of the health care system and is characterized by market failures such as asymmetry of information and uncertainty. As a result, market mechanisms alone do not allow an optimal equilibrium from a societal perspective (Zurn et al., 2002).

The importance of placing health workforce issues in a broad framework that takes into account other sectors and the impact of global trends was also emphasized. Globalization, and in particular the emergence of a global labour market, resulting from mobility in labour, capital and technology is having an impact on workforces. Within the global health labour market, health professionals seem to have great mobility and appear highly sensitive to push and pull factors (Buchan and May, 1999). In the sending countries, pay and working conditions are key examples of push factors, and improving job satisfaction and economic prospects are pull factors. As a result of both push and pull factors, global inequalities and imbalance in health provision are increasing (Mehmet, 2002).

Social issues arising from globalization include an increase in female labour force participation, especially in the poorest countries. This has significant implications for the health of workers and households. Many special economic zones, where women constitute the majority of workers, suffer from occupational health and safety deficiencies. With increasing globalization, the safety of the workforce is likely to be a major challenge for countries. International cooperation is required to cope adequately with the negative consequences of globalization (Mehmet, 2002).

Key points relating to a conceptual framework

Scarcity is an important concept in imbalance, as it describes the dilemma of satisfying many wants while resources are limited.

Imbalances are most frequently discussed in terms of "shortage" or "surplus" situations, though not often in terms of scarcity. A good is said to be scarce if there is not enough of it freely available (at zero price) to satisfy human wants (Boyes and Melvin, 1999). Scarcity illustrates the dilemma of satisfying many wants while resources are limited. A limited amount of resources implies that it is not possible to satisfy all social wants. In that context, not meeting all social wants is more related to scarcity than to shortage.

Although health needs are difficult to measure, they provide important information for HR planning.

The health needs of the population, defined with respect to either objectives or expressed demand, are a critical element affecting the demand for health services and therefore for service providers. Understanding the population needs and behaviours that create the demand for human resources is central to attempting to meet the needs of the population. Linking health needs to outcomes creates greater data demands but offers feedback into the effectiveness of health human resources planning.

But health needs are difficult to measure, since they are influenced by several mediating factors including socioeconomic status, cultural behaviours, demographic characteristics, enabling and predisposing factors of health, and health behaviour.

O'Brien-Pallas and Birch (2002) emphasize that a model for human resources must account for social, political, geographical, economic and technological factors because it is sensitive to changes in these factors. Such a model can be built on a production-function process. Human-resource modelling must be an iterative process; it must be routinely updated to allow us to understand the impact of these various factors on the imbalances in workforce noted over time.

Supply-based or utilization-based models assume that the current supply of health providers is adequate to meet the future health needs of the population and that the way resources are deployed and used today is appropriate to meet health system needs in the future. Both of these assumptions do not hold up when we consider the types of workforce imbalances that have occurred over time and the complexity of the types of services required (O'Brien-Pallas & Birch, 2002).

Competences as a basis for workforce planning

Defining competence would help to define the roles of professionals. Both nursing and medicine have identified competences and skills needed for certain outcomes, and there is a substantial body of literature in the field of advanced nursing practice.

Competences can be associated with individuals or teams: it is possible to measure a team's performance to assess whether a competence is present, but it is challenging to develop tools of measurement. With this information there can be a better mapping of the resources available to deliver sets of services. The question of interest will then change, and rather than being expressed as the availability of specific categories of health personnel, it would be expressed as the availability of skills and competences to deliver the service. This would be the primary question. The secondary question would be related to the cost-effectiveness and quality of using different types of health care workers.

Structural causes of imbalance require specific solutions

Because structural causes of imbalance require specific types of solutions, it was recommended to account for the differences between structural and other factors in the framework. Weak or absent regulation or economic incentives, lack of balanced incentives among stakeholders, poor governance and poor management were presented as major structural causes of imbalance that must be addressed by policymakers.

Imbalance in the health workforce is a dynamic phenomenon, requiring anticipatory approaches to policy development and planning.

Imbalances in the health workforce are dynamic, since there is a continuous change in health care over time, given the advances in medical technology and changes in health care delivery systems. On the supply side, the quick response to these changes is challenging. There is a time lag between health workforce training and market needs. Workforce response can become inflexible through political influence, strict regulation of professions, union behaviour, monopsonistic markets and rigid professional practices. The dynamic nature of imbalances may be reflected in the framework by depicting a constant process of iteration between elements of planning, production and provision.

Include all parts of the workforce in the framework.

It was recommended that the total national health workforce (public, private, not-for-profit and for-profit) should be captured in the framework. Focusing on one sector provides only a partial view, as a shortage in the public health sector might coexist with a surplus in the private sector. Therefore, information on both the public and private health workforce is required to assess and manage imbalances.

Take account of political interests.

Stakeholders do not function only as economic agents but also as political actors, and therefore political interests should be incorporated in the framework. For instance, the possibility of Mexican doctors practising in the United States and Canada seems remote, mainly because some political actors in the United States and Canada are powerful enough to protect their markets and the standard of training and practice are very different (Nigenda, 2002). Similarly, health providers' lobbies or market strategies are not always related to health needs but sometimes reflect their own interests (Medici, 2002).

Management and organization influence retention and participation in the workforce.

The framework should take account of management and organization decisions. This argument relies on the fact that management and organization decisions or decisions at policy level clearly influence the participation and retention of people in the workforce. Declining numbers of nurses willing to work fulltime have lead to increased workload and reliance on overtime hours in Canada. Increases in overtime hours are almost perfectly correlated with sick time and predictive of lost-day claims due to injury and increased costs to the system (O'Brien-Pallas and Birch, 2002). Baumann et al. (2001) found that nurses need some degree of social support and predictability in their work. Appropriate management and organization decisions may partially remedy low participation and poor retention that constitute a source of imbalance.

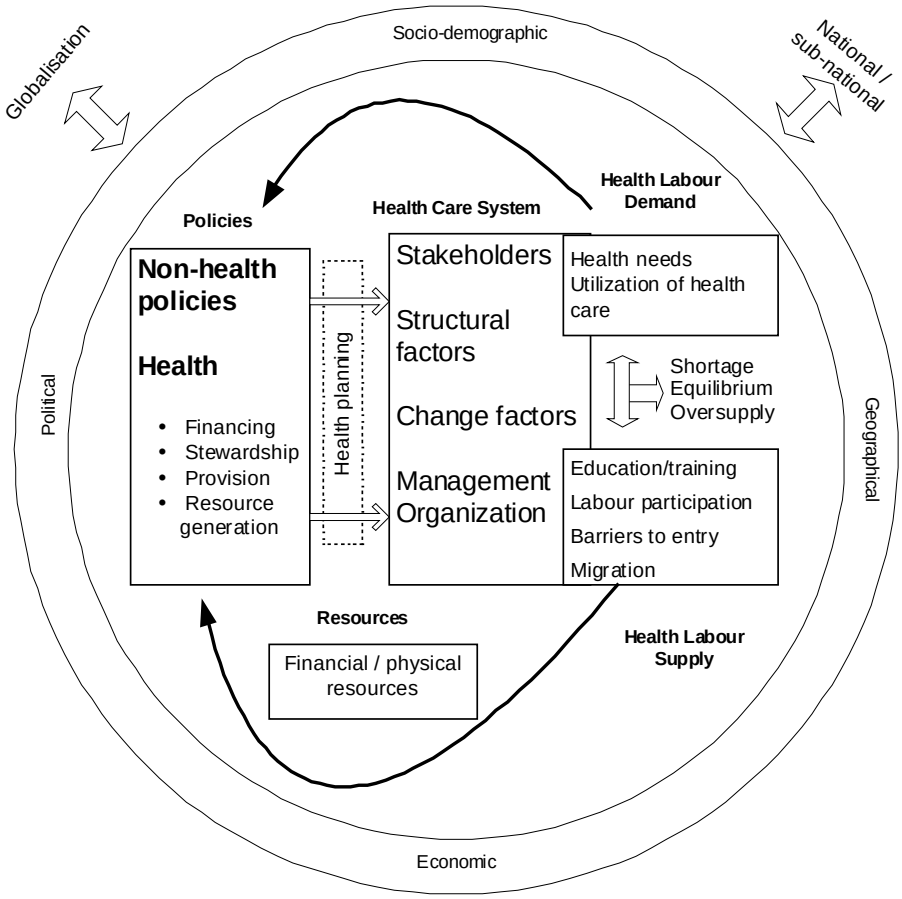
Migration and trade may critically affect the stocks and flows into and out of the health workforce.

Migration and trade were recognized as key elements of the global labour market. For example, there are several trade agreements in Latin America, and the nature and essence of these agreements seem to be

different across countries. In the case of Mercosur (Mercado Común del Sur) and NAFTA (North American Free Trade Agreement), doctors are not allowed to work in any member countries without prior certification. In the case of NAFTA, the agreements are even more restrictive regarding free circulation of the health workforce.

Figure 3 represents a new conceptual framework that accounts for the key elements identified by the technical consultation. It especially underlines the importance of placing health workforce issues in a broad perspective that takes account of the influence of globalization and national and subnational factors. It stresses the direct and indirect impact of political, sociodemographic, economic and geographical factors on health workforce issues.

Figure 3. Revised conceptual framework



The roles of health and non-health policies, financial resources, health planning and health system characteristics are emphasized by the framework. Health system characteristics contribute to continuous changes over time in health labour demand and supply. The continuous iteration between policies (health and non-health) and health labour demand and supply results in a dynamic situation represented by the arrows in the model. Factors determining demand for and supply of health labour are considered as key elements of the conceptual framework.

This framework is based on the premise, arising from the consultation, that population health needs constitute a "legitimate need" that the health system must meet. Based on meeting health needs, a "legitimate health labour demand" could be derived, and an imbalance would then signal a difference between health labour requirements to satisfy population "legitimate health needs" and the actual health labour supply.

Under this approach, one critical issue is to link human resources for health with outcomes of the health system. Adopting this approach and building on the consultation discussions, WHO proposes the following definition for imbalances:

Imbalances in human resources for health exist in health systems when the composition, level and use of health workers, conditioned on total resources in human resources, do not lead to maximum health system goals.

The associated operational definition considers that imbalances exist when the composition and use of health workers does not lead to the attainment of effective coverage of health interventions. Coverage of health interventions is a measurable intermediate variable that can be used by policy-makers. Coverage is defined as the probability of receiving an intervention conditional on the presence of a health problem that can benefit from the intervention (Adams, 2002).

3. Identification of sources of data required for optimal monitoring of imbalances

A common framework is required to link data-collection activities with policy development. Data-collection tools should be developed in collaboration with users. Tools must be developed that are specific to a country and to a certain set of data. On the other hand, while general-purpose tools may not be the best, they may be the only ones available. As statistics must be developed to meet the needs of the user, data collections must also reflect these needs. This may increase the difficulties of developing a common information base, as different users will have different priorities and therefore the resulting data may not be directly comparable. It may be useful to take a regional approach to developing a common information base.

To measure imbalances in the health workforce, statistics are required that:

- reflect current employment, hours and condition of work;
- reflect imbalances on the demand side (e.g. vacancies and skill mismatching);
- show imbalances on the supply side (e.g. unemployment skill mismatch);
- reflect net changes (including migration) and the number of persons experiencing different forms of changes.

Statistics can be based on household surveys, censuses and surveys of institutions, as well as on direct use of administrative records, such as those for people or households, whose use of the health system can be observed via their insurance records.

High-quality data are central to monitoring and difficult to collect. Those working with empirical studies in this area are encouraged to establish good contacts with national statistics offices—for labour and general statistics, as well as national social-science data archives—which often are depositories of important microdata that are useful for studies of the health sector workforce (Hoffmann, 2002).

Checklist relating to data quality

Coverage: Are all relevant units/areas covered?

Validity: Do we measure the relevant concepts?

Reliability: Can we trust the measurements?

Precision: Can we make the relevant distinctions?

Frequency: Does this correspond to rapidity of change?

Timeliness: Do we get the results in time?

(Hoffmann, 2002)

The characteristics and sources of socioeconomic, demographic, and institutional data are shown in Table 1. Despite progress on the availability and quality of data, there is currently little effort to use this information to improve knowledge about, and management of, health workforce imbalances. There remains a lack of clarity about the concept of health workforce imbalance, and it is difficult to establish in the short term a common framework for health workforce studies and international comparisons, since there are huge differences among countries regarding concepts, methodology and periodicity of data collection (Medici, 2002).

Table 1. Socioeconomic, demographic and institutional data

Characteristics / ***Sources***	***Quality of data estimation***	***Periodicity***	***Comparability of concepts***	***Comparability of HWF concepts and statistics***
Economic census	Good for all kinds of geographical levels and estimation sizes	Usually 5 years	Comparable as to time in each country: different concepts country by country	Very high
Establishment sample surveys	Usually strong on geographical levels and estimation sizes	Yearly or monthly	Little comparability	Variable
Administrative registers	Variable	Continuous	Very poor	For specific uses
Demographic census	Good for all kinds of geographical levels and estimation sizes	Usually 10 years	Comparable as to time in each country; several differences country by country	Very high
Regular household sample surveys	Good for national or regional levels; weak for local levels or small estimation sizes	Monthly (unemployment surveys) to 5 years (depending on country)	Surveys based on international concepts try to keep comparability among time and countries (Atlanta Plan; DHS; LSMS)	Variable
Special household surveys or opinion polls	Flexible: sample could be designed to meet specific geographical or estimation size needs	According to demand	No application	No application

(Medici, 2002)

The issue of measurement is crucial for monitoring imbalances, but there is no single empirical measure of occupational labour imbalance. Four main types of indicators have been identified in the literature (Zurn et al., 2002):

- employment indicators (e.g. participation rates, vacancy rate, unemployment);
- normative, population-based indicators (e.g. doctor/population ratio, etc.);
- activity indicators (e.g. overtime rates, working-time arrangements);
- monetary indicators (e.g. change in the relative wage rates).

It was suggested that efforts be made to collect and analyse time-series data in order to understand better the impact of policy decisions on changes in various dimensions of human resources (for example, the impact of a policy to limit medical school places on expressions of shortages).

Key points about data collection

Relying on a single indicator to assess imbalances provides only a partial view: more than one indicator should be used.

Zaidi and Cohen (in press) reviewed variables to assess imbalances in 19 countries, and found that the following four variables were the most relevant to empirically assess the extent of imbalances at the national level. Using these variables in each country allows international comparison:

- average annual employment growth by occupation;
- unemployment-rate averages;
- average annual relative wage change;
- amount of preparation time required for the occupation.

A common information base is needed to link and compare data.

Promoting technical cooperation and financial support to help developing countries improve their health workforce statistics is a first step to developing more uniform data. In addition, it is important to foster political and technical dialogues among countries to harmonize not only data but also concepts and statistics about the health workforce. Intensifying studies to get a comparative analytical base about the health labour market worldwide and assisting efforts to finance international cooperation on health human resources projects, especially in developing countries, will improve the management of imbalances.

More detailed categories are needed to capture the boundaries between the practice of different professionals.

The roles of health care workers vary from country to country, and the professions also have different national histories and cultures. Although it would be useful to show which professionals complement each other and which are substituting for another profession, it can be difficult to categorize data when professional boundaries are not well defined. The available typologies in occupational data often are too crude to appropriately delineate the tasks and duties of the professionals in the workforce. They do, however, serve as a basis on which to develop more detailed categories that can provide information for determining the extent of complementarity and substitution.

The International Labour Organisation is updating its database of detailed occupations: observations from 1990 to 2000 cross-nationally. They will also have updated descriptions of sources and methods of national surveys, in particular labour force surveys and documentation of the types of variables included.

From July 2003 there will be updates of information from the population-census data.

It was suggested that discussions be held with ILO with respect to the coding of the surveys in order to capture more detail about health occupations.

Traditional practitioners should be included in health workforce data.

Alternative and traditional practitioners are often a large component of the workforce. They do not share many of the characteristics of the formal health workforce: for example, they usually do not have secondary education, they belong to the private sector and the care they provide is outside the formal system. In some countries users of their services evaluate them highly. It is not always easy to consider them in workforce data as it is difficult to collect data on them. The International Standard Classification of Occupations has tried to make its typology more relevant for countries outside the Organisation for Economic Co-operation and Development and has provided for categories of traditional-medicine providers.

Exploring the production function

It is important to consider the health production functions for health services and their influence on the data-collection process. Deriving a production function for health provider services could help to identify the respective importance of the different inputs necessary to produce health services, indicate their degree of substitutability and permit planning.

A wide range of different data is required to estimate the respective weights of the different inputs to the production function. This is an area where further research would be valuable.

4. Identifying areas for further research

The consultation underlined the importance of the health labour market in the imbalance issue. A better understanding of the health labour market dynamics is required to elaborate better policies regarding imbalances. This can be developed by examining labour-market mobility, provider profiles and patterns of employment and unemployment, as well as underemployment (underuse of skills). Research questions identified were:

- What is the impact of the increasing participation of women in the health workforce?
- How can technology best be used to disseminate information in order to control for imbalances?
- What are the obstacles to the optimum functioning of human resources and how do they impact on imbalances?
- How can all partners be involved for a common agenda of work in human resources with respect to imbalances?
- Can there be sustainable change in the structure, organization and management of human resources to control for imbalances?
- How can methods of data collection on imbalances be improved?
- Can protocols be developed to guide practice, and translate care standards into labour needs?
- What are the major issues related to the quality of working life, e.g. autonomy and job satisfaction?
- What is the impact of the ageing of the health workforce?
- What are the nature and effects of relationships between professional groups?
- How do politics and legislation affect workforce planning?

- What are the opportunities for cross-country research and comparison to identify common problems and solutions?
- What are the costs of the different inputs needed to produce and deploy health care providers?
- How can a production function for human resources be formulated and estimated?
- What is the income elasticity of health workforce demand—that is, by how much does the quantity demanded for health labour respond to a change in the gross domestic product?
- What will be the impact of health tourism on imbalances?

Conclusions

- The conceptual framework has been revised and is presented in Figure 3. It will now be tested with a wider audience. This framework is based on the premise, arising from the consultation, that population health needs constitute a "legitimate need" that the health system must meet. Based on meeting health needs, a "legitimate health labour demand" could be derived, and an imbalance would then signal a difference between the health labour required to satisfy population "legitimate health needs" and the actual health labour supply.
- The main objective of having a balanced workforce should be to meet legitimate population health needs by providing high-quality services—that is, obtaining the best value for money and making services available to the most needy. Balance between supply and demand in the health workforce is required to achieve these goals.
- There was consensus among participants that imbalance is an important area of concern and that work on how to describe it better must be pursued at a number of levels. Internationally, it is desirable to develop a common framework for defining and collecting data to allow intercountry comparison of findings and sharing of potential solutions. At a national level, and particularly in developing countries, there is currently little effort to collect and use data to improve knowledge about, and management of, health workforce imbalances. There is a need to develop stronger networks between countries to improve the collection, analysis and comparison of health workforce statistics and to identify and test relevant indicators.
- It is important to collect comparable data from different countries, as this allows comparisons of imbalances, and may help to identify management options that can be used by several countries. Imperfections currently exist in data collection, but it remains important to collect and then refine data. A common framework is required between stakeholders to link data-collection activities with policy development.
- Relying on a single indicator to assess imbalances provides only a partial view: more than one indicator should be used.
- Further development of priorities for research is required.
- International cooperation was recommended to adequately cope with the negative consequences of globalization.
- More research is needed on the production function applied to human resources.
- WHO is already committed to an extensive programme of work in human resources during the coming biennium. To further the process of creative thinking, the group assembled for the informal consultation will be asked to continue to participate in generating ideas, gathering and sharing data and commenting on policy options.

Building on discussions at the meeting and further work by WHO, the following working definition of imbalances is proposed: “Imbalances in human resources for health exist when the composition and use of health workers does not lead to the attainment of effective coverage of health interventions.” The robustness of this definition will be empirically tested as more in-depth data on coverage of health interventions and on human resources in health become available.

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Annex 1. List of participants

WORLD HEALTH ORGANIZATION

Consultation on

Imbalances in the Health Workforce

Ottawa, Canada, 10 – 12 March 2002

Provisional list of participants

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