Joint Action Health Workforce Planning and Forecasting

# HANDBOOK ON HEALTH WORKFORCE PLANNING METHODOLOGIES ACROSS EU COUNTRIES

RELEASE 1

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# INTRODUCTION

## - *THE JOINT ACTION HEALTH WORKFORCE PLANNING AND FORECASTING*

The Joint Action on Health Workforce Planning and Forecasting is a three-year programme running from April 2013 to June 2016, bringing together partners representing countries, regions and interest groups from across Europe and beyond, but also no EU countries and international organisations. It is supported by the European Commission in the framework of the European Action Plan for the Health Workforce, which highlights the risk of critical shortages of health professionals in the near future.

The main objective of the Joint Action Health Workforce Planning and Forecasting (JA EUHWF) is to provide a platform for collaboration and exchange between partners, to better prepare Europe's future health workforce. The Joint Action aims at improving the capacity for health workforce planning and forecasting, by supporting the collaboration and exchange between Member States and by providing state of the art knowledge on quantitative and qualitative planning. By participating in the Joint Action, competent national authorities and partners are expected to increase their knowledge, improve their tools and succeed in achieving a higher effectiveness in workforce planning processes. The outcomes of the Joint Action, among other things, should contribute to the development of sufficient health professionals, contribute to minimise the gaps between the needs and the supply of health professionals equipped by the right skills, through the forecast of the impact of healthcare engineering policies and of the re-design of an education capacity for the future.

This document contributes to achieving this aim by

- *analysing some selected planning system implemented in EU countries,*
- *describing a set of related good practices,*
- *presenting some useful insights concerning critical points of the health workforce planning,*

in order to provide information and advices on "minimum requirements" of a planning system.

This document - as a release 1 - has been approved by the 5th Executive Board of the Joint Action on Health Workforce Planning & Forecasting on March 6th, 2015. The comments of the Executive Review Group (WP3) and the most striking lessons learned out the pilot studies will be incorporated as release 2 by the end of the Joint Action.

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## - *CONTRIBUTORS AND ACKNOWLEDGEMENTS*

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Finally, we would like to extend our thanks to all partners engaged in the Joint Action.

## - GLOSSARY

| TERM | DEFINITION |
|---|---|
| Affordability | KEEPING THE COSTS OF HEALTHCARE SERVICES WITHIN THE THRESHOLD OF WHAT IS CONSIDERED SUSTAINABLE BY THE POPULATION, NATIONAL GOVERNMENT AND/OR EU DEFINITION. |
| Age groups | A DIVISION OF THE POPULATION ACCORDING TO AGE, IN A PRE-DETERMINED RANGE, USED TO DISTINGUISH DIFFERENCES AMONG POPULATIONS. EXAMPLES: 0-4; 5-9; 10-14; .... 60-64; 65+. |
| Anticipation | THINKING AHEAD OF AN OCCURRENCE IN ORDER TO DETERMINE HOW TO HANDLE IT, OR HOW TO STOP IT FROM HAPPENING. |
| Big picture challenge | A FUNDAMENTAL CHALLENGE THAT POLICY MAKERS ARE FACING ACROSS THE (HEALTHCARE) SYSTEM. MEETING A BIG PICTURE CHALLENGE REQUIRES FOCUSED ACTION AT THE HIGHEST LEVEL ACROSS THE HEALTH, SOCIAL CARE, EDUCATION AND EMPLOYEMENT SECTOR. |
| Circular mobility | A FORM OF MIGRATION THAT IS MANAGED IN A WAY ALLOWING SOME DEGREE OF LEGAL MOBILITY BACK AND FORTH BETWEEN TWO COUNTRIES. |
| Cluster | A SET OF SYSTEM FACTORS AND DRIVING FORCES, SIMILAR TO EACH OTHER AND LINKED THROUGH CAUSE AND EFFECT RELATIONSHIPS, WHICH DESCRIBE A KEY FOCAL ISSUE OF CONCERN. |
| Demand (of HWF) | NUMBER OF HEALTH PROFESSIONALS REQUIRED TO FILL IN OPEN VACANCIES. IT SHOULD IDEALLY BE EXPRESSED BOTH HEADCOUNT AND IN FULL-TIME EQUIVALENT (FTE), DEPENDING ON THE FORECASTING PURPOSE. |
| Driver / Driving force | A FACTOR THAT CAUSES OR MIGHT CAUSE CHANGES, MEASURABLE MOVEMENTS OR TRENDS IN THE HWF OF A HEALTH CARE SYSTEM. |
| Events | OCCURENCES THAT CAN IMPACT THE HEALTHCARE SYSTEM. |
| Emigration (outflow) | THE ACT OF LEAVING ONE'S CURRENT COUNTRY, IN THIS CONTEXT WITH THE INTENTION TO PRACTICE A PROFESSION ABROAD. |
| Factors | A CIRCUMSTANCE, FACT OR INFLUENCE THAT CONTRIBUTES TO A RESULT. FACTORS ARE LINKED TO EACH OTHER THROUGH CAUSE AND EFFECT RELATIONSHIPS. A CHANGE TO A FACTOR OFTEN WILL INFLUENCE ONE OR MORE OTHER FACTORS IN THE SYSTEM. |

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| Full-time equivalent (FTE) | UNIT USED TO MEASURE EMPLOYED PERSONS TO MAKE THEM COMPARABLE, AS THEY WORK A DIFFERENT NUMBER OF HOURS PER WEEK, IN DIFFERENT SECTORS.<br><br>THE UNIT IS OBTAINED BY COMPARING AN EMPLOYEE'S AVERAGE NUMBER OF HOURS WORKED TO THE AVERAGE NUMBER OF HOURS OF A FULL-TIME WORKER OF SAME KIND. A FULL-TIME WORKER IS THEREFORE COUNTED AS ONE FTE, WHILE A PART-TIME WORKER GETS A SCORE IN PROPORTION TO THE HOURS HE OR SHE WORKS OR STUDIES.<br><br>FOR EXAMPLE, A PART-TIME WORKER EMPLOYED FOR 24 HOURS A WEEK WHERE FULL-TIME WORK CONSISTS OF 48 HOURS, IS COUNTED AS 0.5 FTE. |
| Healthcare production | THE OUTPUT OF HEALTHCARE SERVICES THAT CAN BE PRODUCED FROM THE GIVEN COMBINATION OF HUMAN AND NON-HUMAN RESOURCES. |
| Health professional | INDIVIDUALS WORKING IN THE PROVISION OF HEALTH SERVICES, WHETHER AS INDIVIDUAL PRACTITIONER OR AS AN EMPLOYEE OF A HEALTH INSTITUTION OR PROGRAMME. HEALTH PROFESSIONALS ARE OFTEN DEFINED BY LAW THROUGH THEIR SET OF ACTIVITIES RESERVED UNDER PROVISION OF AN AGREEMENT BASED ON EDUCATION PRE-REQUISITES OR EQUIVALENT. |
| Health workforce | THE OVERARCHING TERM FOR THE BODY OF HEALTH PROFESSIONALS (TRAINED AND CARE WORKERS DIRECTLY INVOLVED IN THE DELIVERY OF CARE) WORKING IN A HEALTHCARE SYSTEM. |
| Horizon scanning | A SYSTEMATIC EXAMINATION OF INFORMATION TO IDENTIFY POTENTIAL THREATS, RISKS, EMERGING ISSUES AND OPPORTUNITIES ALLOWING FOR BETTER PREPAREDNESS. |
| Imbalances (major) | THE UNEVEN SPREAD OF THE ACTIVE HEALTH WORKFORCE ACROSS COUNTRIES, REGIONS OR PROFESSIONS, RESULTING IN UNDERSERVED/OVERSERVED AREAS. |
| Indicators (key planning) | A QUANTITATIVE OR QUALITATIVE MEASURE OF A SYSTEM THAT CAN BE USED TO DETERMINE THE DEGREE OF ADHERENCE TO A CERTAIN STANDARD OR BENCHMARK. |
| Job retention | THE VARIOUS PRACTICES AND POLICIES WHICH ENABLE HEALTHCARE PROFESSIONALS TO CHOSE TO STAY IN THEIR COUNTRIES TO PRACTISE FOR A LONGER PERIOD OF TIME, OR TO STAY IN THEIR PRACTICE, OR EVEN TO KEEP WORKING FULL TIME. |
| Labour force | THE TOTAL NUMBER OF PEOPLE EMPLOYED OR SEEKING EMPLOYMENT IN A COUNTRY OR REGION. |
| Megatrend | A LARGE, SOCIAL, ECONOMIC, POLITICAL, ENVIRONMENTAL OR TECHNOLOGICAL CHANGE THAT IS SLOW TO FORM AND DIFFICULT TO STOP. ONCE IN PLACE, MEGATRENDS INFLUENCE A WIDE RANGE OF ACTIVITIES, PROCESSES AND PERCEPTIONS, BOTH IN GOVERNMENT AND IN SOCIETY, POSSIBLY FOR DECADES. FOR EXAMPLE, THE AGEING POPULATION MEGATREND IS COMPOSED OF TRENDS IN BIRTH RATE, DEATH RATE, QUALITY OF HEALTHCARE, LIFESTYLE, ETC. |
| Migration (inflow) | THE ACT OF (EITHER TEMPORARILY OR PERMANENTLY) MOVING INTO A COUNTRY, IN THIS CONTEXT IN ORDER TO PRACTICE A PROFESSION. |

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| Minimum data set (MDS) for Health Workforce Planning | A widely agreed upon set of terms and definitions constituting a core of data acquired for reporting and assessing key aspects of health system delivery. |
| Planning process | A process of defining health workforce planning perspectives, based on needs assessment, identification of resources, establishing the priority of realistic and feasible goals, as well as on administrative measures planning to achieve these goals. |
| Planning system | Strategies that address the adequacy of the supply and distribution of the healthcare workforce in relation to policy objectives and the consequential demand for health labour force. |
| Population | A group of individuals that share one or more characteristics from which data can be gathered and analysed. |
| Population healthcare needs | The requirements necessary to achieve physical, cognitive, emotional, and social wellbeing, at the individual, family, community and population level of care and services. |
| Professions (withing JA scope only) | The professional qualifications of physicians, nurses, midwives, pharmacists, and dentists, included in the directive 2005/36/EC of the European parliament and of the council. |
| Qualitative information | Information collected using qualitative methodologies to identify and describe key factors in the health workforce system which are likely to affect the supply and demand of workforces. |
| Qualitative methodologies | Methods used to gather qualitative information on key factors which are likely to affect the supply and demand of health workforces through techniques such as interviews, document analysis, or focus groups. Includes methods to quantify uncertain parameters for forecasting models. |
| Reliance on foreign health workforce | The share of foreign (trained & born) health professionals within a country's health workforce in a given year, expressed as a percentage of the stock of the workforce. |
| Retirement | Period or life stage of a health care worker following termination of, and withdrawal from the healthcare system. It is expressed in the number of healthcare professionals retiring from the labour market. |
| Scenario | A description of a sequence of events, based on certain assumptions. Scenarios are used for estimating the likely effects of one or more factors, and are an integral part of situation analysis and long-term planning. |
| Shortage | The negative gap between supply and demand. |
| Stakeholder | Groups or individuals that have an interest in the organisation and delivery of healthcare, and who either deliver, sponsor, or benefit from health care. |

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| | |
|---|---|
| Stock (of HWF) | NUMBER OF AVAILABLE PRACTISING AND NON- PRACTICING HEALTH PROFESSIONALS IN A COUNTRY, RECORDED IN A REGISTRY OR DATABASE. IT SHOULD IDEALLY BE EXPRESSED IN HEADCOUNT AND IN FULL-TIME EQUIVALENT (FTE). |
| Supply (of HWF) | NUMBER OF NEWLY GRADUATED HEALTH PROFESSIONALS AVAILABLE TO FILL IN OPEN VACANCIES. IT CAN BE EXPRESSED IN HEADCOUNT OR IN FULL-TIME EQUIVALENT (FTE). |
| System | A NETWORK OF INTERDEPENDENT COMPONENTS THAT WORK TOGETHER TO TRY TO ACCOMPLISH THE AIM OF RENDERING MEDICAL AND OTHER HEALTH SERVICES TO INDIVIDUALS. |
| Threat/opportunity | A FUTURE EVENT OR SYSTEM STATE WHICH MAY OCCUR DUE TO CHANGES IN THE SYSTEM. THE IMPACT TO THE SYSTEM MAY BE VIEWED AS DETRIMENTAL (A THREAT) OR BENEFICIAL (AN OPPORTUNITY); OR A COMBINATION OF BOTH. |
| Training | THE PROCESS BY WHICH A PERSON ACQUIRES THE NECESSARY SKILLS AND COMPETENCIES FOR DELIVERING HEALTHCARE, POSSIBLY THROUGH POST-GRADUATE TRAINING PROGRAMMES (IN THE FRAMEWORK OF CONTINUOUS PROFESSIONAL DEVELOPMENT) IN ADDITION TO GRADUATE TRAINING PROGRAMMES. |
| Trend | AN EMERGING PATTERN OF CHANGE, LIKELY TO IMPACT A SYSTEM. |
| Universal coverage | A HEALTHCARE SYSTEM THAT PROVIDES EFFECTIVE, HIGH QUALITY AND FREE OF EXPENSE PREVENTIVE, CURATIVE, REHABILITATIVE AND PALLIATIVE HEALTH SERVICES TO ALL CITIZENS, REGARDLESS OF SOCIO-ECONOMIC STATUS, AND WITHOUT DISCRIMINATION. |
| Underserved areas | A REGION OR AREA THAT HAS A RELATIVE OR ABSOLUTE DEFICIENCY OF MEDICAL PERSONNEL OR HEALTHCARE RESOURCES. THIS DEFICIENCY COULD PRESENT ITSELF IN SHORTAGES OF PROFESSIONALS/SPECIALITIES/SKILLS REQUIRED TO DELIVER HEALTH SERVICES. |
| Variables | A CHARACTERISTIC, NUMBER OR QUANTITY THAT CAN INCREASE OR DECREASE OVER TIME, OR TAKE VARIOUS VALUES IN DIFFERENT SITUATIONS. |
| Weak signal | BARELY OBSERVABLE TRENDS OR EVENTS THAT INDICATE THAT AN IDEA, THREAT OR OPPORTUNITY IS GOING TO ARISE. SOMETIMES REFERRED TO AS EARLY SIGNALS. |
| "Wild card" | A SITUATION OR EVENT WITH A LOW PROBABILITY OF OCCURRENCE, BUT WITH A VERY HIGH IMPACT IN A SYSTEM. SOMETIMES THEY CAN BE ANNOUNCED BY A WEAK SIGNAL. |
| Healthcare Workforce planning | STRATEGIES THAT ADDRESS THE ADEQUACY OF THE SUPPLY AND DISTRIBUTION OF THE HEALTH WORKFORCE, ACCORDING TO POLICY OBJECTIVES AND THE CONSEQUENTIAL DEMAND FOR HEALTH LABOUR (NATIONAL PUBLIC HEALTH PARTNERSHIP, 2002). |
| Workforce forecasting | ESTIMATING THE REQUIRED HEALTH WORKFORCE TO MEET FUTURE HEALTH SERVICE REQUIREMENTS AND THE DEVELOPMENT OF STRATEGIES TO MEET THOSE REQUIREMENTS (ROBERFROID ET AL, 2009; STORDEUR AND LEONARD, 2010). |

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## - *EXECUTIVE SUMMARY*

The Handbook on Health Workforce Planning Methodologies (hereinafter "Handbook") has the aim of furnishing an useful contribution to all those people engaged in the **development and improvement of HWF planning systems in EU Countries.**

Starting from the importance of workforce planning in healthcare and the specificity that this subject meets in the European Union (free movement of professionals and patients in the EU, the principle of universal coverage of the NHS, the economic crisis are some of the elements characterizing the demand and supply of health professionals in the EU) the Handbook describes and analyzes the **planning practices developed in some EU countries.**

The **focus** is on the planning experiences concretely realized and currently working. In light of the aforementioned scope, practices considered as most significant and interesting to be reproduced in other European contexts were selected and described. So, planning systems developed in **BELGIUM**, **DENMARK**, **ENGLAND**, **FINLAND**, **NORWAY**, **SPAIN** and **THE NETHERLANDS** have been analyzed through a grid of five elements, here defined as **the 5 key elements of a planning system.**

1. *The setting of the **goals** of the planning system is itself a planning activity. The seven systems have provided different answers on this issue based on their assumptions (current equilibrium between supply and demand or not) and on their desired future health care levels, context of their health systems and structure of future health workforce*

2. *A lot of forecasting activities on both supply and demand side ask for a solid and appropriate mathematical forecasting model; to project, to develop, to improve and to maintain the **forecasting model** are themselves planning activities. The seven systems have developed their own forecasting mathematical model, more or less sophisticated and using quantitative and qualitative information in different ways. In particular, the Handbook describes in depth the quantitative forecasting approaches.*[1]

3. *To produce all this knowledge about the future and to run the forecasting model **data** are needed. Based on the requirements of the forecasting model each planning system defined its own data set and developed a data collection process with great attention to have*

(1) For a description on the qualitative forecasting methods, see D061 - User guidelines on qualitative methods in health workforce planning and forecasting available at http://euhwforce.weebly.com/results.html

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*updated and reliable data. The two options for data collection are to collect aggregated data or individual data, but the use of register with individual data is the prevailing choice.*

4. *To translate the planning into actions is a key feature of all the planning systems; very important are the instruments and the levers that the policy makers and the planners can implement to realize the project and to check wether the goals are going to be reached. Of course all the seven systems manage* ***the link to the policy actions*** *considering it as a strategic part of all the planning activities. The regulation of student intakes in medical schools or universities is the main lever adopted by the seven planning systems. Other levers used are managing attrition and developing the existing workforce.*

5. *All these planning activities require an* ***organisation*** *in order to guarantee a permanent process. The seven systems organise in different ways the activities required to achieve the desired goals, with different quantities of resources invested and different ways of involvement but, in every case, with great efforts spend to engage the various stakeholders in order to give commitment to the forecasting results and communicate them with the right efficacy to the policy makers.*

The comparison of these key aspects among the seven planning systems highlighted the **diversity** of approaches to the issue of workforce planning in healthcare but also allowed to detect some **constants.**

In particular there are various reasons that led to the implementation of the planning system as well as different institutional systems led to focus on **different goals** with different attention to specific professions compared to others. So, there are systems that take into account the full range of health professions forecasting and analyzing the interactions between different professions and others who plan only a single profession (medical doctors in particular) or certain professions (doctors, dentists, nurses) but with different approaches and not related to each other, with obvious limitations in imagening a structure of the future labor force different from the present one.

Consequently, the **organisation** of the planning system **is different** between the seven systems. The systems that plan the overall health workforce involve a large number of people with different skills to manage the planning activities. In these cases there are specific organisations dedicated to this purpose. Conversely, in systems planning for one or few professions the number of people dedicated to this purpose is lower and they

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usually work within public organisations that do not have planning as main activity.

The comparison allowed to highlight also the **constants** between the different planning systems. All seven systems pose great attention to the information and data collection (even if the main **data collection** purpose is not for planning), the **involvement and dialogue with stakeholders**, in organised forms, to the sharing of the various parameters of the models of forecasting (which before being technically sound is important that they are shared and agreed). Common to the seven systems is also **the interaction with the local levels** (regions). Another constant is regulation or limitation of student intakes in universities and schools as main output of the planning process of the mediacal professions.

The comparison of experiences puts in evidence the **strengths** of the seven planning systems, both among the constants and the diversities (different useful ways to address common problems). Definitely we consider strengths:

- *how to involve stakeholders in both the construction and feeding of the forecasting model and in the discussion of its results;*
- *how the forecasting models has been developed, albeit in their diversity (supply-side, demand-side, needs based and combinations of all these approaches)*
- *as are strengths various ways of collecting data (individual register, date estimation, etc.).*

The strengths have been turned and described as **"good practices"** concerning 15 specific aspects developed among the seven planning systems. Those "good practices" are conceived as useful to policy makers and planners to improve their own planning system or to implement a new one from the scratch.

The comparison among the seven systems also allowed to highlight some **weaknesses**:

- *the goals are often conceived as a mission statement and rarely translate into operational objectives broken down based on the desired future health care level or on the desired structure of the future health workforce;*
- *forecasting models generally assume the current balance between supply and demand and do not take into account any current imbalances;*
- *data collection shows in general failings in the mobility data, particularly on health professionals going abroad; consequently, the future dependency on foreign labor force is rather taken into account in the forecasting; for the same reason an important variable as "wages" that can vastly affect the future supply of health workforce usually is not considered;*
- *the policy actions implemented to achieve the objectives of the planning system are rarely different from regulation of the student intakes;*

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- *moreover, the evaluation of the planning process and of the forecasting excercise is not always done.*

In order to provide elements useful to approach these weaknesses, specific insights and recommendations are presented.

On the base of the potential different users of the Handbook, it's possible to browse its contents by three reading paths.

1. **IMPLEMENTATION PATH:** *for those who need guidelines and suggestions on how to implement a new planning system starting from scratch.*

2. **FROM THEORY TO PRACTICE PATH:** *for those who wants to know the essential theoretical elements for planning the HWF and deepen them through some practical applications.*

3. **IMPROVING PATH:** *for those looking for suggestions and ideas to improve their own planning system taking a cue from solutions implemented in other EU Countries.*

Anyhow, the hyper textual structure of the Handbook allows the reader to browse freely all the contents, even if their **future web version** will further improve their readability.

Finally, the **modular approach** used to organise the contents will enable the updating of individual parts without necessarily having to change the entire structure of the Handbook.

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- *FOREWORD*

The value of the health workforce planning efficacy can be properly understood by figuring its absence, that is by looking at the effects (and their costs) of the lack of planning or wrong planning.

If a country doesn't plan its health workforce it could assume that somehow the 'market' will adapt the supply to the demand of healthcare. This is generally true. Still, there is a huge amount of time when an imbalance is detected and the increase of the production and the delivery of the **necessary amount of health professionals** to close the gap. Indeed, educating and training incoming professionals takes time: on average not less than three years for nurses and midwives, five years for dentists and pharmacists, five to six years for physicians, plus three to five years for a specialization.

The anticipation of the necessary amount of health professionals, thus matching "on time" population healthcare needs with the required health workforce, is both an ethical and economic goal

Firstly, training the professionals that are really needed means saving money twice: no waste in the short run for training courses with no or scarce employment opportunities (not only a financial waste, but also a waste of time and opportunity for young students), no waste in the long run for searching abroad for professionals in areas where there are shortages. Moreover, the fact that training is often publicly funded, means that to demonstrate future needs will help to endorse requests for investments in education and training.

Furthermore, recent history shows that due to the lack of planning, or wrong planning, several countries have had to resort to immigration in order to respond to severe professional shortages. Clearly, international mobility does not involve only the health sector and, in itself, may be a growth factor and a win-win game, especially in a single market like the EU. However, when the situation becomes extreme , it may cause reverse shortages in the sending countries which, after having borne the burden of training costs, must also face the negative impact of the drain brain. Heavily relying on immigration, then, may in the long run create a vicious circle, discouraging investments in training in the sending countries, especially when recruitment policies focus on few or developing countries. That is the reason why the issue of the health workforce shortage arrived on the agenda of governments and international institutions and why

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the WHO Global Code of Practice on the International Recruitment of Health Personnel was adopted.

A clear vision of possible future changes in population needs is then required in order to steer education policies.

So, planning is not put forward a perfectly calculated and trustable value of the future needs according the most economically favorable scenario, but it is building a dialogue between the stakeholders leading to several policy options and deriving from those a range of prognoses together as a calculation of the potential error. Fed by such quality material and which transparent assumption, the policy maker may then agree on actions for the future, and take the difficult bow of reaching a society affordable strategy, which may be quite different from the ideal viewed from a health care perspective.

This is feasible and many countries have created years of evidence of this feasibility. We have more data then we need even is poorly coordinated today. We have experience and good practice, and most of all we have democratic peace and willingness of all health professions to dialogue.

Finally, about the complexity of planning using so many parameters, we acknowledge that many data and various scenario building must take place for enabling policy maker to take decisions on the most plausible or the most desired options. Still, planning is implemented using measures and we now have experience in the positive and negative effects of some of them. Action on the production is the most used, together as an action on budget and wages. Also the promotion of some professions and the provision of grants for establishment are well known. This knowledge will be made available to all.

Therefore, together, EU Members States took the engagement to address the HWF issues by sharing knowledge and improving the capacity to collect numbers and asses future trends. The result is the Action Plan for EU Health Workforce, out of which the Joint Action on Health Workforce Planning and Forecasting, which is not as such solution, but it is the ground on which solution may grow.

The Joint Action on Health Workforce Planning & Forecasting aims at sharing knowledge on planning methodologies and actively support the Members States in their effort to improve their planning processes.

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Building this knowledge together is a very positive action to improve this process, and even more, identifying and describing good practices allows to find new impulses, new ambitions and opportunities for a renewed country level and interregional dialogues. Even more, understanding each others' methodologies enables EU level discussions to finally happen and grow.

This Handbook has higher targets than being descriptive. It aims at demonstrating that planning the health workforce is feasible, adds values in many countries, and sets the roots for implementation within an EU vision of Health Workforce management, using shared knowledge.

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## - *PREFACE*

The Handbook on Health Workforce planning methodologies Across EU Countries has the main objective to furnish an useful contribution to all those people engaged in the development and improvement of health workforce planning systems in EU Countries.

Presently there are different analysis in the literature that furnish reference conceptual frames, inventories of applicable methodologies, theoretical in-depth analysis of key points, analysis of strengths and weaknesses, description of cases and planning systems realized at a National level, indication for the improvement and development on the basis of trends and main problems foreseen in the future. And some of these studies contain detailed analysis of the experiences realized in EU Countries, endorsing the in-depth analysis of some aspects, depending on their objective[(2)].

So, which utility for a further contribution, compared with the existing studies?

Singular characteristics of the Handbook, that make it a "first ever" study, are:

- *focalization on the context and on the realities of European Countries;*
- *attention only to the planning experiences concretely realized and to this day operative;*
- *consideration of elements relating to the entire planning cycle;*
- *approach intended to the practical use in order to implement new systems or improve the existing ones;*
- *selectivity of the experience considered as most significant end interesting to be reproduces in other European contexts.*

So, the Handbook must be considered first of all an instrument of support and referential for the implementation and improvement, whose efficacy will be tested in two Pilot Studies, in Italy and Portugal and in two Feasibility Studies (in Germany and in Moldavia) that will be realized, in the ambit of the Joint Action Health Workforce Planning & Forecasting, starting from January 2015.

Results of Pilot Studies and Feasibility Studies will furnish precious contributions in order to improve and update of the Handbook here presented in a first version.

From a methodological point of view, the Handbook, being addressed primarily to planners engaged in the implementation of a new planning system, puts more emphasis on similitudes than differences between the various systems.

(2) See bibliography.

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It emerges therefore a framework of minimum elements common to all the planning systems that are therefore essential requirements to be developed for those who want build a new system from the scratch; in the same way those elements may represent attention points for those planners engaged in systems already operating but that, with respect to those requirements, show weaknesses.

In the light of this methodological approach, the Handbook has its **limits**. Indeed some topics, as not "commonly" encountered in the analyzed practices, were not developed in the Handbook. We refer in particular to the issue of future health workforce re-engineering, the issue of skill mix and task shifting, more generally to the subject of setting and implementing policies regarding the future health workforce (with regard, of course, to the related decision making processes). These issues are of primary importance but, for the above mentioned reasons, were not considered in the analysis. In this sense, the Handbook should be viewed as a first tool of an entire kit that the Joint Action on Health Workforce Planning and Forecasting is helping to build to improve the planning capacity of the EU countries.

The Handbook, considering its features and its limits, is addressed to those people in EU countries, both policy makers, public officials, experts and researchers,

1. *who need to have a guideline to implement a new planning system;*

2. *who want improving the planning system in their own country, in a logic of benchmarking;*

3. *who simply intend to learn about HWF planning and forecasting, exploring some practices developed in some EU countries.*

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## - *READER'S GUIDE*

The Handbook is ideally divided in four parts. The partition is conceptual and mainly concerns the typology of contents.

The FIRST part presents the framework, the subject and the conceptual approach of the Handbook introducing to the core parts. In this part we underline the specificity of the health workforce planning in the EU context, we present the seven planning systems selected for the analysis and we describe the five elements of a planning system, used for our analysis, which, even if not exhaustive of all the system, are standards.

The SECOND and main part contains, for each of the five key elements (goals, forecasting model, data, link to policy actions, organisation) the findings of the comparison of the planning systems considered in our analysis and the related good practices. In particular each good practice is presented with the same structure:

- *title, explicating the subject of the practice;*
- *reference information, reporting any information useful to contact the organisation who developed and current use the described practice;*
- *main issue, underlying the keywords and the key issue treated in the practice;*
- *description, presenting the details of the experience;*
- *results, putting in evidence the outputs of the practice;*
- *suggestions and / or helpful tips, giving advice on how to implement the practice.*

The THIRD part collects and synthesizes a series of recommendations inserted in the good practices or derive from the analysis on the selected planning systems and directed to people engaged in the implementation or in the improvement and concludes the analysis outlying the minimum requirements of a health workforce planning system.

Finally, the "FOCUS ON" part contains a series of technical and methodological insights:

- *the details of the seven planning systems with the descriptions provided by the respective experts;*
- *different contributions and in-depth analysis on critical health workforce planning topics (integration between qualitative and quantitative methods in forecasting, planning capacity evaluation in a country, how to set goals and targets, wages importance in the management and forecasting of health workforce, how to assess the current workforce stock, the dependency of the health care system on foreign trained workforce).*

The Handbook is concluded by a chapter on the methodology used to select the analyzed planning systems and the related best practices, by the bibliography and by

the reference lists of websites.

The Handbook therefore contains some useful practices for planning, detailed descriptions of planning systems from which those practices are derived, some theoretical points, insights of some critical points and a series of elements that can be used:

1. *as a reference for those who want improve the planning system in their own country, in a logic of benchmarking,*

2. *or be followed step by step for those who need to have a guideline to implement a new planning system*

3. *or be viewed as a compendium for those who simply intend to learn to explore the theme of 'HWF planning in European countries.*

The hyper textual structure of the Handbook (in the .pdf version) allows to browse all the contents.

*Click on to return at Table of Content*

*Click on to return at Reading Path*

Using the internal link of the file, it's also possible to follow some logical "**reading paths**" presented below.

Here there are three related **reading paths**, which can help the reader to discover useful contents of the Handbook using the proposed internal link

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## IMPLEMENTATION PATH

Guidelines and suggestions on how to implement a new planning system starting from the scratch.

**A — KNOWING ABOUT THE CURRENT HWF INVENTORY**

- FIVE KEY ELEMENTS
- FINDINGS ON DATA SOURCES
- LESSONS ON DATA SOURCES
- DATA COLLECTION IN BELGIUM
- DATA COLLECTION IN THE NETHERLANDS
- DATA COLLECTION IN ENGLAND

**B — ASSESSING THE CURRENT HWF SITUATION**

- PLANNING CAPACITY EVALUATION
- ASSESSING CURRENT SITUATION
- ASSESSING THE CURRENT HWF IN THE NETHERLANDS

**C — ORGANISING THE STAKEHOLDER INVOLVEMENT**

- FINDINGS ON ORGANISATION
- LESSONS ON ORGANISATION
- STAKEHOLDERS INVOLVEMENT IN BELGIUM
- STAKEHOLDERS INVOLVEMENT IN SPAIN
- STAKEHOLDERS INVOLVEMENT IN ENGLAND

**D — MAKING FUTURE HWF FORECASTS**

- FINDINGS ON FORECASTING MODEL
- LESSONS ON FORECASTING MODEL
- DETAILS ON FORECASTING MODEL
- FORECASTING MODEL IN DENMARK
- FORECASTING MODEL IN SPAIN
- FORECASTING MODEL IN NORWAY
- FORECASTING MODEL IN ENGLAND

**E — SETTING THE GOALS**

- FINDINGS ON GOALS
- LESSONS ON GOALS
- SETTING TARGETS FOR THE PLANNING SYSTEM
- SETTING TARGETS IN ENGLAND

**F — LINKING PLANS WITH POLICY ACTIONS**

- FINDINGS ON LINKING TO POLICY ACTIONS
- LESSONS ON LINKING TO POLICY ACTIONS

**G — PLANNING CAPACITY EVALUATION**

- PLANNING CAPACITY EVALUATION
- PLANNING CAPACITY EVALUATION IN THE NETHERLANDS

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## FROM THEORY TO PRACTICE

Paths for those who wants to know the essential theoretical elements for planning the HWF and deepen them through some practical applications.

WHY PLAN — A

- BENEFIT OF HWF PLANNING
- SETTING TARGETS FOR THE PLANNING SYSTEM
- SETTING TARGETS IN ENGLAND

WHAT PLAN — B

- HWF PLANNING SPECIFITIES
- FIVE KEY ELEMENTS
- GOALS
- FORECASTING

HOW PLAN — C

- LESSONS FROM THE COMPARISON
- ORGANISATION
- LINK TO POLICY ACTIONS
- QUALITATIVE AND QUANTITATIVE METHODS
- PLANNING CAPACITY EVALUATION
- ORGANISATION OF PLANNING IN BELGIUM

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## IMPROVING PATH

For people looking for suggestions and ideas to improve their own planning system taking a cue from solutions implemented in others EU Countries.

**A — OWN PLANNING CAPACITY ASSESSMENT**

- PLANNING CAPACITY EVALUATION
- PLANNING CAPACITY EVALUATION IN THE NETHERLANDS

**B — SUGGESTIONS FROM THE COMPARISON**

- ACTIVATE THE NETWORK

**C — HOW TO IMPROVE THE GOALS**

- FINDINGS ON GOALS
- LESSONS ON GOALS
- SETTING TARGETS FOR THE PLANNING SYSTEM
- SETTING TARGETS IN ENGLAND

**D — HOW TO IMPROVE THE FORECASTING MODEL**

- FINDINGS ON FORECASTING
- LESSONS ON FORECASTING
- FORECASTING MODEL IN FINLAND
- FORECASTING MODEL IN NORWAY
- FORECASTING MODEL IN THE NETHERLANDS
- FORECASTING MODEL IN ENGLAND

**E — HOW TO IMPROVE THE DATA COLLECTION**

- FINDINGS ON DATA SOURCES
- LESSONS ON DATA SOURCES
- DATA COLLECTION IN BELGIUM
- DATA COLLECTION IN THE NETHERLANDS
- DATA COLLECTION IN ENGLAND

**F — HOW TO IMPROVE THE MONITORING OF THE HWF PLANNING PROCESS**

- FINDINGS ON LINKING TO POLICY ACTIONS
- LESSONS ON LINKING TO POLICY ACTIONS

**G — HOW TO IMPROVE THE INVOLVEMENT OF THE STAKEHOLDERS**

- FINDINGS ON ORGANISATION
- LESSONS ON ORGANISATION
- STAKEHOLDERS INVOLVEMENT IN BELGIUM
- PLANNING CAPACITY EVALUATION IN THE NETHERLANDS

**H — SOME ADDITIONAL TIPS TO IMPROVE THE HWF PLANNING SYSTEM**

- QUALITATIVE AND QUANTITATIVE METHOD
- HWF WAGES
- DEPENDENCY OF HEALTH CARE SYSTEM ON FOREIGN TRAINED HWF

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FIRST PART

CHAPTER 1

# HEALTH WORKFORCE PLANNING IN EU

In the Health Care sector, more than in other labour sector, the human resources are an important resources both because it is a labor-intensive sector and because the health of the people is, by definition, "not negotiable" and sensible issue. Whereas in every organisation people are one of the most important strategic resource the definition and planning of their requirements is equally important[(3)(4)].

The importance of human resource planning in healthcare, compare to industries, is well exemplified in the NHS English document: "*If a supermarket does not have enough staff then the queues at the tills grow longer meaning the customer will have a bad experience and not return to that shop again. If the NHS fails to have enough qualified staff then patients and their families will suffer at a time when they are at their lowest ebb. Health care is unlike any other economic good as the consequences of failure can be catastrophic for the individual and their families. Moreover, a shortage in qualified staff is not easy for a Trust to rectify. A local supermarket can recruit from other supermarkets or train new staff in a matter of weeks but new clinicians take much longer to produce and whereas there are shorter term supply solutions in some professions, this is not true of all*"[(5)].

The above stated example also put in evidence that Workforce planning has its specificities, in comparison to the same activities in the industries.

First of all, the input of new resources in the health care labour market strictly depends

(3) Armstrong, M. (2006) A Handbook of Human Resource Management Practice, Kogan Page, London (6), pp. 363–87.

(4) Bulla, D.N., & Scott, P.M. (1994) Manpower requirements forecasting: a case example, in Human Resource Forecasting and Modelling, ed D Ward, T P Bechet and R Tripp, The Human Resource Planning Society, New York.

(5) Developing people for health and healthcare: Investing in people For Health and Healthcare, p.10 - http://hee.nhs.uk/wp-content/uploads/sites/321/2013/12/Workforce-plan-investing-in-people.pdf

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from the training capacity of the education system and the training for a health professionals can take from 3 to 10 years. This is a medium-long period that affects the planning timeframe and the related decision making process: it's necessary to decide today how many health professionals are needed in ten years; in other terms, in a "closed" health labour market the supply takes many years to respond to the variation of the demand. It means that the equilibrium between supply and demand can reach

- *in short term, acting on the current stock of health workforce or "attracting" health professionals from outside;*
- *in long term, taking today the "right" decisions and thus affecting the supply in the future with new health professionals from inside.*

Moreover, considering that the quantity and quality of the health care strictly depends from the quality and quantity of the human resources employed, the health workforce planning is to consider as an activity of "public interest". It means that the health workforce planning is also "political" activity and so the involvement of policy maker in the planning activities is needed.

At last, the action strategies influencing retention and retirement in the health workforce works differently that in the industries. For example, one of the most affecting variables of the supply workforce in the industries is the wages level that in the health care labour market can be act in different ways[6].

The HWF planning in the EU countries, compared to other national contexts, has its specificity in particular due for the free movement of workers in EU. Of course professions with very specialised and context dependent skills are less mobile, but EU has set a good framework for mutual recognition - the well Directive on professional qualifications[7] known EU/2005/36 amended by EU/2013/55. Health Workforce are such specialised professions, also with specific risk on population, but are way more mobile than lawyers or notaries. In fact, according to the EU DG Internal Market database, the health care professions are among the top 5 with the most registrations.

Also, Europe is setting many mechanisms to improve the international qualifications of our young professionals, e.g. through the Erasmus processes, and through the

(6) For a detailed study on the influence of health workforce wages in the labour market see section 8.4.

(7) In the belief that the difference in training and professional practice can be overcome, the EU Directives EU/2005/36 and EU/2013/55 put in place the mechanism for applying and make easy the mechanism to ensure a mutual recognition of acquired skills and professional titles, and allowing in practice free movement of protected professions (incl. healthcare professionals), and proportional measures for closing any gaps in knowledge.

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standardisation of curricula[8] and of training processes and their accreditation.

The effect is the migration of health professionals with its dominant east to west and south to north flows that challenges the forecast of the health professionals supply which a country can make with respect to its current workforce. The question is then made even more complex by the countries differences in training options and even training level in some case[9].

But many challenges will come also on the demand side with EU Directive EU/2011/24 that makes possible the demand for healthcare services in countries other than their own.

In addition, the health care systems of the European Countries are based on the principle of universal coverage, an aspect which strongly influences the demand for health services. But in recent years this principle is jeopardized by the economic crisis that has forced the EU countries to implement austerity policies. From the point of view of the HWF planning this means to have a focus on efficiency and on optimization of human resources.

Those features, specific for the European context, justify a study dedicated to the HWF planning in European countries: how do they face those problems? Which are the specific solutions implemented, the tools developed?

On the other hand, models and tools developed in other contexts are unlikely to be adequate to meet the challenges that characterize the European health care systems. For example, there are many studies and models proposed by WHO[10] addressed in particular to Countries that need to develop from scratch a HWF planning system and whose main problem is to increase the supply to meet the unmet demand. They start from the assumption that the current supply is not sufficient to meet current demand's and generally they are based on the costs of training, on the attraction rate of new labour force, on wages and economic incentives. While European planning practices are

(8) Regulation of the European Parliament and of the Council establishing "ERASMUS+": the Union programme for Education, Training, Youth and Sport and repealing decisions No 1719/2006/EC, No 1720/2006/EC AND No 1298/2008/EC.

(9) For an example regarding the case of nurse assistants see: Damian Grimshaw, Marilyn Carroll, Karen Jaehrling, Philippe M´ehaut. "*Shaping and reshaping the work organisation : including or excluding low skilled labour? The case of the nurse assistant in Germany, France and the United Kingdom*" - SASE 2006, 18th Annual Meeting on SocioEconomics "Constituting globalization: actors, arenas and outcomes", IAAEG, University of Trier (Germany), July 2006, Jul 2006, pp.22., available at https://halshs.archives-ouvertes.fr/halshs-00085863/document

(10) For a detailed list go to http://www.who.int/hrh/tools/planning/en/

rather different and more varied: the initial assumption is usually a balance between supply and demand, although there are some cases of shortage or surplus of current stock of human resources; thus the focus is more on retirement patterns than on the attrition and retention rates and the economic analysis usually covers the cost of the health care providers rather than the cost of human resources training.



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CHAPTER 2

# FIVE KEY ELEMENTS OF A PLANNING SYSTEM

Effective workforce planning has been described as ensuring 'the right people, with the right skills, in the right places, at the right time'[11]. Over time there have been strategic additions to this description resulting in definitions of workforce planning that contain further dimensions: right attitude, commitment, doing the right work, at the right cost, with the right productivity[12]. There is also definitions of workforce planning that relates to forecasting the required health workforce to meet future health service requirements and the development of strategies to meet those requirements[13].

Regardless of the extent of the definition, and therefore the dimensions that the health workforce planning aims include, there are some "minimum" purposes that are common to any methodology.

According to the "Minimum Planning Data Requirements for Health Workforce Planning"[14] basic planning can be considered as:

| MINIMUM PURPOSES | DESCRIPTION |
|---|---|
| TO RECOGNISE THE MAJOR IMBALANCES OF HWF | To assess the current situation and to identify imbalances vs. overall evaluation of supply and demand for healthcare. |

(11) Taylor S: People Resourcing (People & organisations). Chartered Institute of Personnel & Development; 1998

(12) Hornby P, Santric Milicevic M. Human resources in health planning. In: Basics of health care system management. Health management guides, readings and references. Training in Health Service management in Serbia Belgrade: Ministry of Health of the Republic of Serbia, 2011; p.109-127.

(13) See Dominique Roberfroid, Christian Leonard and Sabine Stordeur, "*Physician supply forecast: better than peering in a crystal ball?*" Human Resources for Health 2009, 7:10, available at http://www.human-resources-health.com/content/7/1/10 ; Sabine Stordeur, Christian Léonard, "*Challenges in physician supply planning: the case of Belgium*" Human Resources for Health 2010, 8:28, available at http://www.human-resources-health.com/content/8/1/28

(14) See "*Minimum Planning Data Requirements for Health Workforce Planning*" Joint Action Health Workforce Planning and Forecasting D.051 – Release 1 available at http://euhwforce.weebly.com/results.html

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| | |
|---|---|
| TO ANALYSE THE IMBALANCES | TO ASSESS THE IMPACT OF BASIC ACTIONS CARRIED OUT CORRECTING THOSE IMBALANCES. BASIC ACTIONS ARE FOCUS ON HEALTH PRODUCTION, INFLOW (TRAINING AND IMMIGRATION), OUTFLOW (RETIREMENT AND EMIGRATION).<br>EVALUATION IS DEFINED THROUGH: MAJOR COST ASPECTS OF HWF; AN INITIAL EVALUATION ON THE IMPACT OF IMBALANCES ON QUALITY; MONITORING OVERALL COVERAGE AND GEOGRAPHICAL VARIANCES; INVESTIGATING WHETHER DOMESTIC PRODUCTION MEETS POPULATION NEEDS. |

With reference to the "minimum" purpose listed above[15], these can be considered the main health workforce planning activities[16]:

1. ***Supply forecasting*** *- estimate the supply of health professionals by reference to analyses of current stock of health professionals working for satisfying the current population needs, and their future availability, after allowing for wastage. The forecast will also take account of labour market trends relating to the availability of skills and to demographics.*

2. ***Demand forecasting*** *- estimate future health needs of the population and the skills necessary to satisfy those needs by reference to health care system goals, future health care levels to guarantee to the population and future health care delivery settings.*

3. ***Forecasting requirements*** *- analyse the demand and supply forecasts to identify future deficits or surpluses.*

4. ***Action planning*** *- prepare plans to deal with forecast deficits, knowing that undersupply is a problem, because of unmet demand, as well as oversupply, because of unemployment or*

(15) In the "*Minimum Planning Data Requirements for Health Workforce Planning*" a third purpose, regarding "to identify possible solutions, including changes in the health care system and attention to non-health indicators which are included in the major health care determinants", is considered to be an advanced model and, as stated in the Preface, out of scope for the purpose of this Handbook

(16) Amstrong Michael, "*Strategic Human Resource Management: A Guide to Action*", 2000 - p. 158.

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*increasing health system costs (supply inducing demand and oversized employed workforce). Develop retention, retirement, flexibility or other strategies to shape the right needed workforce*[17].

To ensure the success of those planning activities some requirements are therefore needed:

1. *if the estimation of the demand is made by reference to **goals**, plans and desired future health care levels, those goals, plans and levels have to be explicit and clear defined; so, the setting and the communication of the goals is itself a planning activities;*

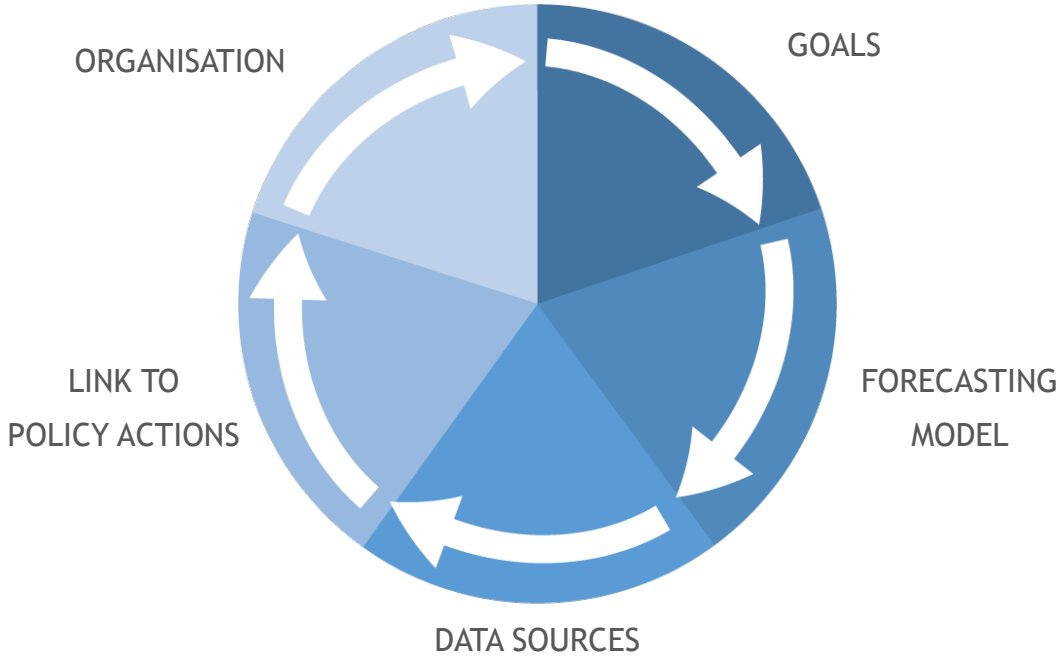
2. *a lot of forecasting activities on both supply and demand side (including also to know labour market changes, future workforce behaviors, the dynamics of the environment) ask for a solid and appropriate mathematical **forecasting model**; to project, to develop, to improve and to maintain the forecasting model are themselves planning activities;*

3. *to produce all this knowledge about the future and to run the forecasting model **data** are needed; to define the data set, to collect the data, to update the database are, of course, planning activities;*

4. *to translate the project into actions, i.e. **how the planning process is connected with the actions** that will achieve what has been planned, is a key feature of all the planning system; the cycle of continuous improvement of Deming with the phases Plan, Do, Check, Act could be a good way to assure this linkage; but also are very important the instruments and the levers that the policy maker and the planner can implement to realize the project; to manage the action planning is a strategic part of all the planning activities;*

5. *at last, all these activities requires an **organisation** in order to guarantee a permanent process; planning is also the process of organising the activities required to achieve the desired goals, including the engagement of the stakeholders and the communication with the policy makers, both strategic in a complex system.*

(17) See "*Effects of policy options for human resources for health: an analysis of systematic reviews*" Mickey Chopra, Salla Munro, John N Lavis, Gunn Vist, Sara Bennett - Lancet 2008; 371: 669-670. Avalilable at http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(08)60305-0/abstract




Each health workforce planning system can be described through five key elements

- *The goals of the planning system (setting objectives, communication of the goals, timeframe, etc.)*
- *The forecasting model used for projections (mathematical tool, activities on both supply and demand, estimation methods used, etc.)*
- *Data set, sources and methods (aim of data collection, comprehensive information,updated the database, etc.)*
- *Link between planning and policy action(how the planning process is connected with the actions that will achieve what has been planned, the cycle of continuous improvement of Deming,the levers that can implement, etc.)*
- *Organisation of the planning system (stakeholders involvement, communication with the policy makers, etc.).*

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CHAPTER 3

# SEVEN EU PLANNING SYSTEMS

Almost all European Countries address the issue of the health workforce planning, although at different levels, with different purposes and therefore different outcomes. Some countries carry out a monitoring of the current situation, others perform **analysis** aimed at responding to the challenges posed by the current situation, and still others are engaged in a **strategic planning** system[18].

Among all the experiences, according to the purposes of this Handbook, we have selected those most complete and for which it was more feasible to provide a standardised description with respect to the five key elements of a planning system presented above.

Considering that:

- *planning systems include forecasting (a projection model) and involving relevant stakeholders into the process; both the projection model and involving the stakeholders are very important elements of the entire planning process;*
- *in EU there are thirteen countries "that engage in model-based workforce planning" and carry out gap analysis; all thirteen countries use some form of supply-side projections and eight of them use also a demand/need based approach[19];*

the following criteria[20] were defined to select the experiences to include in the study:

1. *planning systems developed and implemented in the EU countries;*
2. *forecasting models that provide sound experimentations using both demand and supply based and*
3. *using a projections tool;*

(18) For a complete description of the Health Workforce planning purposes in the EU countries see "EU level Collaboration on Forecasting Health Workforce Needs, Workforce Planning and Health Workforce Trends – A Feasibility Study", pag. 112, http://ec.europa.eu/health/workforce/docs/health_workforce_study_2012_report_en.pdf

(19) See the table 36 in the already quoted "Feasibility Study", pag, 124.

(20) For details on the citeria definition see the chapter "Research methodology"

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4. *availability of experts in order to provide information, contributions and detailed descriptions of the planning system developed in their country in line with the Joint Action timeframe and deadlines.*

The planning system developed in the following countries respond to both criteria:

1. *Belgium,*
2. *Denmark,*
3. *England,*
4. *Finland,*
5. *Norway,*
6. *Spain,*
7. *The Netherlands.*

Below we have included a summary sheet for each of the seven planning systems selected (“*highlights of the seven planning systems*”).

The comparison of the seven systems in relation to the five key elements, as well as the related good practices developed in these seven countries, are presented in the second part of the Handbook. While the the detailed descriptions have been included in Chapter 11 “Details of the seven plannig system”.

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# BELGIUM

**WHO**

*Planning commission supported by the Unit Planning at Ministry of Health and organised in working groups for the different health professions.*

**WHAT**

*Planning of future workforce of medical doctors and dentists, monitoring of evolution of the workforces of nurses and physiotherapists*

**WHEN**

*Each planned profession every three years.*

**WHERE**

*At the national level limiting practitioners' access to the health profession and also reimbursement; at the regional level for managing education and training (selection by entrance exam, numerus clausus policies).*

**WHY**

*To monitor the current workforce situation and to assure the replacement of health professionals for the future, trying to maintain the current level and workforce distribution.*

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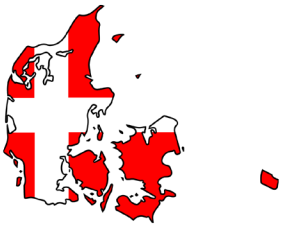
# DENMARK



**WHO**

*The Danish Health and Medicines Authority and Minister of Higher Education and Science.*

**WHAT**

*Future number of medical doctors and dentists, clinical dental technicians and dental hygienists.*

**WHEN**

*Each planned profession every 2-3 years (5 years plans and a follow-up forecasting after 2-3 years tle 5-years plan is set).*

**WHERE**

*A supply forecast is produced for each planned profession every 2-3 years (5 years plans settting the number of postgraduate training posts and a follow-up forecast 2-3 years after the 5-years plan is set).*

**WHY**

*To monitor and observe the current and future supply of workforce.*

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# ENGLAND

**WHO**

*Department of Health (DH), Health Education England (HEE), Public Health England (PHE) and the Centre for Workforce Intelligence (CfWI) with the involvement and contribution of local health providers and of the Local Education and Training Boards (LETBs).*

**WHAT**

*The future numbers of 110 healthcare and public health workforce roles, the social care workforce, future skills, new roles and wider definitions of 'workforce' that include the voluntary and unpaid carers.*

**WHEN**

*Updated every year as part of national workforce planning processes as well as by commission and periodic review*

**WHERE**

*Central level (Department of Health DH and Health Education England-HEE) and local level (Local Education and Training Board - LETB - and NHS providers).*

**WHY**

*To deliver high quality, effective, compassionate care bydeveloping the right people with the right skills and the right valuesTo*

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# FINLAND

**WHO**

*Government Institute for Economic Research (VATT), under the Ministry of Finance, and the National Board of Education (FNBE), under the Ministry of Education and Culture and regional councils.*

**WHAT**

*Demand for new labour for 28 industries and occupational groups in each of them as well as supply side projections for intake needs in different fields and levels of education.*

**WHEN**

*Every year.*

**WHERE**

*Central level (Ministry of Finance, Ministry of Employment and the Economy, Ministry of Education and Culture and Ministry of Social Affairs and Health) and regional level (regional councils).*

**WHY**

*To promote the availability of skilled labour in accordance with developments in industrial and occupational structures and to guarantee all young people an opportunity to apply for vocationally/ professionally oriented education and training.*

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# NORWAY

**WHO**

*Directorate of Health, under the Ministry of Health and Care Services, with the support of Statistics Norway (SSB) and the regional and local authorities.*

**WHAT**

*Supply and demand for 20 different groups of healthcare personnel, including medical doctors, nurses, dentists, phasmacists and midwives.*

**WHEN**

*Every three years.*

**WHERE**

*National level with the involvement and support of regional and local authorities.*

**WHY**

*To evaluate the present and future needs of health and social personnel and to follow up initiatives to strengthen the capacity and qualification building as needed.*

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# SPAIN

**WHO**

*Human Resources Commission of National Health System (at the Ministry of Health, Social Services and Equality) and the Council of University Policy (at the Ministry of Education, Culture and Sport).*

**WHAT**

*Number of medical doctors with the appropriate specialties through the regulation of the number of intakes in the Medical Universities and the available specialist training vacancies.*

**WHEN**

*Every two years.*

**WHERE**

*National and regional planning.*

**WHY**

*To define the vacancies in the basic education and specialist training for doctors according to future need of specialists and budget.*

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# THE NETHERLANDS

**WHO**

*The Ministry of Health, Welfare and Sports and ministry of Education and Science with the support and advice of the Advisory Committee on Medical Manpower Planning (ACMMP - Capaciteitsorgaan).*

**WHAT**

*Future number of doctors, dentists, mental health professions, specialized nurses, dental hygienists.*

**WHEN**

*Each planned profession every 2-3 years (alternating 2 and 3 years cycle).*

**WHERE**

*At the central level.*

**WHY**

*To monitor the current workforce and shape the future supply on the base of the foreseen changes on the demand side.*

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SECOND PART

Introduction to the descriptions and the analysis:

Each HWF planning system can be described through five main aspects that characterize it.

- *The **goals** of the planning system (setting objectives, communication of the goals, timeframe, etc.)*
- *The **forecasting model** used for projections (mathematical tool, activities on both supply and demand, estimation methods used, etc.)*
- ***Data** set, sources and methods (aim of data collection, comprehensive information,updated the database, etc.)*
- ***Link between planning and policy action** (how the planning process is connected with the actions that will achieve what has been planned, the cycle of continuous improvement of Deming,the levers that can implement, etc.)*
- ***Organisation** of the planning system (stakeholders involvement, communication with the policy makers, etc.).*

CHAPTER 4

# GOALS

The objective of the planning system is really the final meaning of the whole planning system. In literature are cited for example "balance between need and supply" for a profession[21].

It is also possible that the objectives include restraints (i.e. budget limitations) which mean that the system also has to find an economical balance. It seems that the process of definition of the objectives is one of the main means to interest stakeholders like policy makers. It is very important to state if the objectives also include indicators and how they are defined.

The goals should be **specific** in at least the two dimensions basically considered in HWF planning:

- *the targeted quantities for any health profession;*
- *the year in which these set quantities are to be accomplished.*

Really, to have more chances of success a HWF planning objective has to be **measurable**, **timed**, achievable, realistic, as well as specific. In other words, the objective should be SMART[22].

An example is the following: "By the year 2025, in Netherlands they will have 12.000

(21) ""Health workforce planning aims to achieve a proper balance between the supply and demand of different categories of health professionals in both the short and longer-term. This is desirable to ensure adequate access to care, a key goal of health policy in all OECD countries" Ono, T., G. Lafortune and M. Schoenstein (2013) "Health Workforce Planning in OECD Countries: A Review of 26 Projection Models from 18 Countries", OECD Health Working Papers, No. 62, OECD Publishing, pag.8. Available at http://dx.doi.org/10.1787/5k44t787zcwb-en

(22) According to Peter Drucker (The Practice of Management, 1954), the goal as to be S.M.A.R.T.:

- *Specific, the fixed goal has to be specific, clear, not vague or generic;*
- *Measurable, the goal has to be measurable, allowing to understand if attended results has been reached or not and eventually, how we are far from the goal;*
- *Achievable, the goal has to be achievable considering resources and ability at your disposal; it hasn't to be impossible to reach, otherwise it may risk to reduce the motivation; in the meantime it has to be stimulating;*
- *Realistic, a goal has to be stimulating, but also realistically achievable, considering resources and means available; goals too far from reality aren't taken into account, as discouraging;*
- *Time Related, the goal has to be based on time, i.e. it is necessary to determine the time for its realization; that's useful to allow that the goal itself is measurable and avoid that, without a timing reference, it is considered not urgent; that allows to better distribute the time compared with activities.*

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FTE working general practitioners. This goal will be attained by permitting 720 medical graduates as of 2015 to enter vocational training to become a general practitioner each year". This goal is specific, measurable, and timed.

It's important to note that concerning the resources of the healthcare system, a goal is more easily **achievable** if it is **acceptable** upon by the actors involved in the planning process. In fact, as long as the goals are still global, sharing the goals does not create any problem. Every organisation and professional wants that the needs of the population are met by an adequate supply of professionals in the future. The problems arise when the goals become smarter. In this stage, the goals will have to be agreed upon by the stakeholders. For example, the health professionals, especially in the case of medical doctors, are crucial in teaching and coaching medical graduates during their training to become a medical specialist. If their scientific associations disagree on e.g. the used vocational parameters, they will disagree on the set goal. Basically, the government and the health field have the same objectives. Both parties want an adequate health care system that takes care of the needs of the population. Both parties realize that an adequate health care system can only thrive when the health workforce is adequately staffed. There can be differences in opinion on the operationalization of "adequately staffed" in terms of FTE. It is helpful to create room for this discussion to be held by using a number of different scenarios in the planning. This will facilitate the discussion and the acceptance because is visualizes the "safe" margins irrespective of the underlying scenario's.

Concerning a **realistic** objective, it is more of a challenge. The goal has to be realistic both from the perspective of the health field stakeholders and from the perspective of the government. For the latter, the financial dimensions of the set goal are in most cases the limitation. For the stakeholders in the field it is the number of practical solutions they experience for the problems that encompass changes in the number of students to be trained. The problems range from the training and hiring of additional professors up to the founding of an additional university. In most cases, training institutes opt for gradual changes, giving them more time to adapt to the new circumstances.

Anyway, most health professions require a prolonged training period, and in case government wants to implement new policies there is also a lead time due to all the legislative hurdles that have to be passed before any change can be started. Therefore, any member state commencing with health workforce planning has to dampen the

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expectations on the short term.

After implementation, the duration of the training is the major contributing parameter. There is a vast range of training years for the different professions, from 3 years for a nursing profession to 12 years for a fully trained clinical specialist. This means, obviously,that there may be differences in the dimension time for the different professions.

**FOR FURTHER DETAILS:**

- *Focus on --> Insights --> To set targets for HWF planning*

## *FINDINGS*

Mostly, the goals of the seven planning systems here described are very generic and not specific. What is identified as a goal, in reality is most of the time a mission of the organisation or its activities.

It is important to make a distinction among "Goals", "Scopes" and "Missions". An example of goal may be the following: "Increase by the 30% the value of the ratio: number of doctors per 1000 inhabitants in a country by 2020". Following the SMART logical, this "goal" is "specific" (furnishes an indicator), is "measurable" (furnishes a target), is "time related" (furnishes a deadline). We may not discuss if this objective is also "achievable" and "realistic", because the specific context of applicability is missing, but in general we may assume that it "probably" is. On the other hand, in many countries what is a "scope" or a "mission" is confused with a "goal". An example of a "scope" (or "mission") is: "make sure that the offer of health workforce always satisfies the demand". The "scope" (or "mission") is not "specific", nor "measurable", nor "time related", but might however be "achievable" and "realistic". On the contrary of the goal, the "scope" (or "mission") defines the direction toward which converge the actions, without clearly fixing the purpose to reach, the time needed to reach it, nor the modalities as well. In a planning logic, these missing elements represent a problem.

In the case of Belgium, Denmark, Finland, Spain and Norway the action appears more guided by a "statutory mandate", than by operative goals.

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| PLANNING SYSTEM | STATUTORY MANDATE | SPECIFIC TARGETS |
|---|---|---|
| BELGIUM | MONITOR AND OBSERVE THE CURRENT WORKFORCE SITUATION AND EVALUATE THE CURRENT AND FUTURE HEALTH WORKFORCE NEEDS AND DEFINE ALLOWED INFLOW INTO PROFESSION<br>ADVISE THE MINISTER OF HEALTH ON THESE AND RELATED ISSUES | NO |
| DENMARK | TO SET THE NUMBER OF POSTGRADUATE TRAINING POSTS FOR DENTAL AND MEDICAL SPECIALISTS<br>TO ADVICE THE MINISTRY OF HIGHER EDUCATION AND SCIENCE REGARDING THE STUDENT INTAKE.<br>TO ILLUSTRATE THE EXPECTED DEVELOPMENT IN THE NUMBER OF PHYSICIANS, MEDICAL SPECIALISTS, DENTISTS, DENTAL SPECIALIST, DENTAL HYGIENISTS AND CLINICAL DENTAL TECHNICIANS.TO CREATE A BASIS FOR DISCUSSIONS FOR THE FUTURE NEED OF WORKFORCE WITHIN A GIVEN PROFESSION AND SPECIALTY.<br>TO MONITOR AND OBSERVE THE CURRENT AND FUTURE SUPPLY OF WORKFORCE. | NO |
| ENGLAND | TO ENSURE THAT AN EFFECTIVE EDUCATION AND TRAINING SYSTEM IS IN PLACE FOR THE NHS AND PUBLIC HEALTH SYSTEM.<br>DELIVERING HIGH QUALITY, EFFECTIVE, COMPASSIONATE CARE: DEVELOPING THE RIGHT PEOPLE WITH THE RIGHT SKILLS AND THE RIGHT VALUES | YES |
| FINLAND | TO PROMOTE THE AVAILABILITY OF SKILLED LABOUR IN ACCORDANCE WITH DEVELOPMENTS IN INDUSTRIAL AND OCCUPATIONAL STRUCTURES AND<br>TO GUARANTEE ALL YOUNG PEOPLE AN OPPORTUNITY TO APPLY FOR VOCATIONALLY/PROFESSIONALLY ORIENTED EDUCATION AND TRAINING. | NO |
| NORWAY | TO EVALUATE THE PRESENT AND FUTURE NEEDS OF HEALTH AND SOCIAL PERSONNEL<br>TO FOLLOW UP INITIATIVES TO STRENGTHEN THE CAPACITY AND QUALIFICATION BUILDING AS NEEDED. | NO |
| SPAIN | TO MAINTAIN THE PLACES IN THE FACULTIES OF MEDICINE ACCORDING TO THE NEEDS.<br>TO IMPROVE THE DISTRIBUTION OF THE SUPPLY OF SPECIALIZED TRAINING ACCORDING TO IDENTIFIED NEEDS.<br>TO REDUCE ABANDONMENT OF SPECIALIZED TRAINING AND PREVENT RECIRCULATION. | NO |
| THE NETHERLANDS | TO DRAW UP REQUIREMENT ESTIMATIONS ON THE BASIS OF, AMONGST OTHERS, THE ANTICIPATED DEMANDS FOR HEALTH CARE AND DEMAND PROJECTIONS IN RELATION TO VARIOUS MEDICAL AND DENTAL HEALTH SPECIALIZATIONS.<br>MEET BOTH THE HEALTH CARE SECTOR AND THE GOVERNMENT'S DEMAND FOR INFORMATION IN CONJUNCTION WITH THE PERCEIVED NEED AND THE RELATED CAPACITY FOR BASIC MEDICAL AND DENTAL EDUCATION AND SUBSEQUENT SPECIALIZATION.<br>ASSES THE REQUIRED CAPACITY LEVEL AS FAR AS BASIC MEDICAL TRAINING AT MEDICAL SCHOOLS IS CONCERNED AND SUBSEQUENTLY ADVISE THE GOVERNMENT ACCORDINGLY. | YES |

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Different is the case of England and Netherlands where specific targets are defined.

In England, for example, the goals are explicit, and also very specific and clearly defined, with a clear timing and precise indication about the modalities to achieve them.

They clearly define and communicate:

- *the expected outcomes;*
- *the operational objectives;*
- *and the related targets and indicators.*

**FOR FURTHER DETAILS:**

- *Focus on --> Details of the seven planning systems --> Goals*

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## *GOOD PRACTICES*

The following pages present the good practice "*Definition of the goals in the English planning system*" related to the key element "Goals".

For "**good practice**" we mean an experience or practice that have achieved results consolidated in the course of time and present elements and characteristics applicable in other contexts.

A good practice may concern to methods, instruments, processes and technical specific solution of HWF planning. The collection and diffusion of those practices realized at a national level are the premises for the construction of a base of knowledge, to be enriched in the course of time, to allow the exchange and the comparison of ideas, experiences and projects.

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## – DEFINITION OF THE GOALS IN THE ENGLISH PLANNING SYSTEM

### REFERENCE INFORMATION:

Centre for Workforce Intelligence (CfWI)
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### MAIN ASPECTS:

- *There is a clear and coherent process followed by England: to set the scope (Framework), than to deploy the specific objectives (Mandate) and update them (review of the Mandate) and, finally, to build a control system (Framework indicators);*
- *The health workforce planning system within England has clear accountabilities set out to assist clarity and understanding of responsibilities.*

### DESCRIPTION:

The health workforce planning system within England has clear accountabilities set out to assist clarity and understanding of responsibilities. The Department of Health has the overall purpose and aim as described below:

*"The Department of Health (DH) helps people to live better for longer. We lead, shape and fund health and care in England, making sure people have the support, care and treatment they need, with the compassion, respect and dignity they deserve."*(DH, 2014)

Healthcare workforce planning takes place at a number of levels in England and is organised within an overall framework of statutory relations between the DH and Health Education England (HEE).

This includes the overall guidance and stewardship to plan for known challenges such as planning to meet the needs of an ageing population with an ageing workforce, managing

changing demand resulting from an increasing prevalence of complex long-term conditions and co-morbidities whilst preparing for changes resulting from innovation and technology.

The Department of Health (DH) acts as the steward for the health, social care and public health system by setting strategic outcomes, securing resources, setting the regulatory, policy and legal framework and providing oversight and leadership (Department of Health, 2012 and 2013). The DH sets strategic outcomes in the form of mandates to national bodies, and has a mandate to Health Education England (HEE). The mandate is also reflected in the Education Outcomes Framework which "sets the outcomes which the Secretary of State expects to be delivered from the reformed education and training system in support of improving patient care and health outcomes". This is supported and further defined within technical guidance for the indicators (Department of Health, 2013). As a result the overall goals for England are explicit and set out in the Mandate and the Education Outcomes Framework that include long, medium and short term timeframes as well as outcome indicators.

Health Education England ensures 'that the future workforce has the right numbers, skills, values and behaviours.' HEE annually sets out its intentions (in terms of education and training commissions) in the Workforce Plan for England which is subsequently used as the basis of the contracts that each Local Education and Training Board (LETB, see local bodies in figure 1) places with local education providers for that academic year (Health Education England, 2014). To inform these training commissions HEE take the five year plans from LETBs, who in turn have taken five year projections from NHS Providers (e.g. NHS Foundation Trusts in figure 1). For 110 workforce roles HEE then decides on whether to increase or decrease training commissions based on triangulation of the LETB projections with other workforce intelligence, such as that from the CfWI. The Mandate aligns with the Education Outcomes Framework which describes the outcomes that are expected from the training and education system and progress is reported on a periodic and annual basis (HEE, 2014).

The CfWI is a key contributor to the planning of future workforce requirements for health, public health and social care in England. The CfWI is commissioned by the Department of Health, as well as Health Education England and Public Health England, to look at specific workforce groups and pathways, and to provide materials, tools and resources to inform workforce planning policy decisions at a national and local

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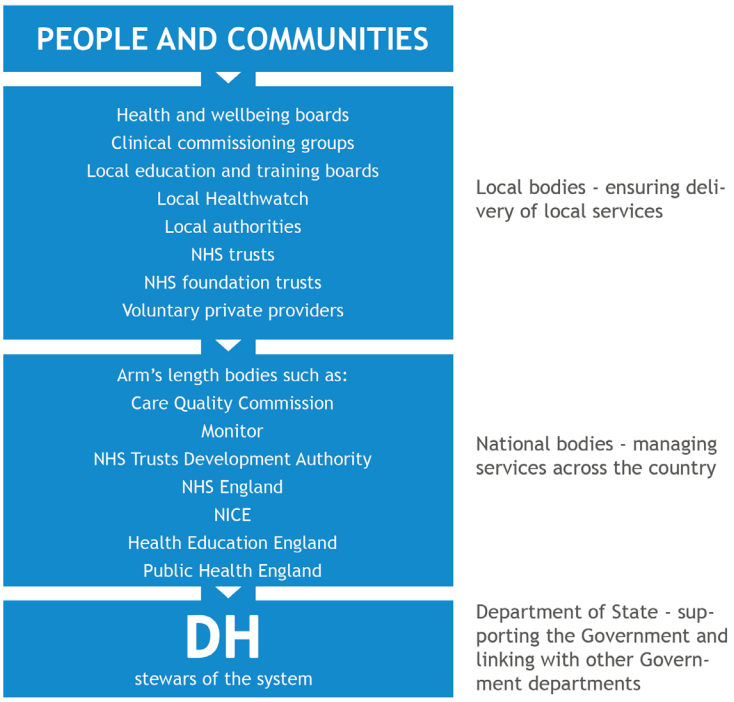
level such as those relating to the in-scope for the JA HWF planning and forecasting professions of doctors and dentists (CfWI, 2012), nurses (CfWI, 2013a), midwives (CfWI, 2013b) and pharmacists (CfWI, 2013c).




*National to local organisations (Department of Health, 2013)*

Describing the arrangements for health workforce planning in more detail, the mandate from the DH to HEE describes the strategic objectives in the areas of:

- *workforce planning*
- *health education*
- *training and development*

## Results:

Future demand, health need and analysis of skills are also examined as part of the CfWI work for its commissioners within England as well as for the EU JA HWF work and specifically the Horizon 2035 commission from the Department of Health.

## Further information:

- **Department of Health** *(2014) About us / What we do https://www.gov.uk/government/organisations/department-of-health/about*

- **Department of Health** *(2013) Helping people live better for longer: A guide to the Department of Health's role and purpose post-April 2013* https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/226838/DH_Brochure_WEB.pdf

- **Department of Health**, *(2014) A mandate from the government to Health Education England.* https://www.gov.uk/government/publications/health-education-england-mandate-april-2014-to-march-2015

- **Department of Health** *(2013) Education outcomes framework for healthcare workforce.* https://www.gov.uk/government/publications/education-outcomes-framework-for-healthcare-workforce

- **Department of Health** *(2013) Education Outcomes Framework Indicators - Technical Guidance 2013/14.* https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/225361/EOF_Indicators_-_Technical_Guidance_2013_14.pdf

- **Department of Health** *(2012) Liberating the NHS: Developing the healthcare workforce - from design to delivery.* https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/152168/dh_132087.pdf

- **Health Education England** *(2013) HEE's national Workforce Plan* http://hee.nhs.uk/wp-content/uploads/sites/321/2013/12/Workforce-plan-UPDATE-interactive.pdf

- **Health Education England** *(2014) HEE's Annual Report and Accounts 2013/14* http://hee.nhs.uk/wp-content/blogs.dir/321/files/2014/07/HEE-Annual-Report-and-Accounts-2013-14-interactive.pdf

- **Centre for Workforce Intelligence** *(2012) A strategic review of the future healthcare workforce.* http://www.cfwi.org.uk/publications/a-strategic-review-of-the-future-healthcare-workforce-informing-medical-and-dental-student-intakes-1

- **Centre for Workforce Intelligence** *(2013a) Future Nursing Workforce Projections.* http://www.cfwi.org.uk/news/publications/future-nursing-workforce-projections-starting%20the%20discussion

- **Centre for Workforce Intelligence** *(2013b) Future Midwifery Workforce Projections.* http://www.cfwi.org.uk/news/publications/future-midwifery-workforce-projections-starting-the-discussion

- **Centre for Workforce Intelligence** *(2013c) A strategic review of the future pharmacist workforce.* http://www.cfwi.org.uk/publications/a-strategic-review-of-the-future-pharmacist-workforce/@@publication-detail

- **Centre for Workforce Intelligence** *(2013d) A strategic review of the future dentistry workforce: Informing dental student intakes.* http://www.cfwi.org.uk/publications/a-strategic-review-of-the-future-dentistry-workforce-informing-dental-student-intakes

- **Centre for Workforce Intelligence** *(2014) Horizon 2035: Health and care workforce futures progress update.* http://www.horizonscanning.org.uk/publications/h2035-progress-update/

CHAPTER 5

# FORECASTING MODEL

The definition of a forecasting model and its implementation are core-activities inside the planning process. Forecasting model and its results (projections and scenarios' construction) in addition to the allow of the instauration of a political debate with the involvement of the stakeholders, represent an essential instrument to support decisions and actions of the policy makers.

It is important, but also a very complex task to achieve, define the model of forecasting to be used.

Different are the aspects to be considered: variables on supply and demand side, the algorithm to joint them, the method to be used for the definition of the estimations, the assumptions to start from, the modalities for the presentation of the results (one/more scenario/s) etc.

It is essential to clearly outline the assumptions behind the planning tools, maintain a flexible approach and adapt the planning strategy as needed. Health workforce planning is not an exact science[23]. To be most effective, health workforce planning and projections should be viewed as an iterative process in which the ability to measure and tell the performance story improves over time[24].

*"The value of projections lies not in their ability to get the numbers exactly right but in their utility in identifying the current and emerging trends to which policy-makers need to respond. The requirements for providers are endogenously determined through the political or social choices that underlie the health. Care system. Only where the social and political choices about the access to care are explicit, can scientific methods be used systematically to derive requirements for health care providers in a particular population"*[25].

(23) ONO T., LAFORTUNE G. AND SCHOENSTEIN M.: "Health Workforce Planning in OECD Countries: A Review of 26 Projection Models from 18 Countries", OECD Health Working Papers, No. 62, OECD Publishing, pag.11 – 2013 available at http://dx.doi.org/10.1787/5k44t787zcwb-en

(24) WHO, "Models and tools for health workforce planning and projections Human Resources for Health Observer", 2010

(25) Physician workforce supply in Belgium. Current situation and challenges. KCE reports 72C – pag. V - available at https://kce.fgov.be/sites/default/files/page_documents/d20081027309.pdf

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Largely, each method can be linked to qualitative or quantitative methodologies. Both qualitative and quantitative approaches to health workforce planning have advantages and disadvantages. Individual methods should be chosen based on specific aims in the planning process. Beyond individual methods, however, integrating qualitative and quantitative approaches can strengthen the planning system.

**FOR FURTHER DETAILS:**

- *Focus on --> Insights --> Qualitative and quantitative forecasting methods in HWF planning: a brief discussion*

## *FINDINGS*

The main approaches to health workforce forecasting include the supply projection approach, the demand-based approach and needs-based approach.[26]

Each of the seven planning system has developed a specific model based both on the **supply projection** approach and on the demand side. Every systems has a forecasting model based on supply projection: it means that, starting from the measure of the current stock and simulating the changes in the inflows and outflows, they forecast the future stock of health professionals.

From the **demand-based approach**, each forecasting model takes into account the population structure and estimates future changes of the population size. Then some models assume that the other demand patterns remain constant: i.e. health care utilization or the health service delivery or the health expenditure growth. But other models go further and try to estimate future changes in those patterns.

For example in Belgium, on the basis of the health expenditure (a proxy for health service utilisation and human resources requirement), they simulate future different level of health service utilisation by age and sex. In the Netherlands, they forecast possible future changes in population health status by using data on epidemiological trends and experts guidance on socio-cultural development and unmet care needs. In Norway and Finland, as well as in England, they estimate future changes in GDP and health expenditure growth considering future economic growth as one of the main

(26) Physician supply forecast: better than peering in a crystal ball? - D Roberfroid, C Leonard, S Stordeur - Human Resources for Health, 2009, 7:10 - available at http://www.biomedcentral.com/content/pdf/1478-4491-7-10.pdf

pattern affecting the demand of the health services. In the English forecasting exercises also future changes in morbidity and epidemiology are taken into account.

There are various statistical methods that might be used to forecast the future supply and demand (classical time series analysis, stochastic time series analysis, multiple regression analysis, etc.). The **quantitative methods** used are mainly classical time series analysis. But in England and Spain they adopt a systems dynamic approach which permits to manage typical features of the complex systems, like internal feedback loops and time delays that affect the behaviour of the entire system.

The seven planning systems also adopt different **qualitative methods** and techniques in the health workforce forecasting both to set some future scenario or to feed the forecasting model with information collected with qualitative techniques (Delphi, Brainstorming, Market survey, elicitation methods, etc). The Delphi method is a prevalent mixed method-qualitative technique used in the seven planning systems[27]. In addition to Delphi also specific survey are conducted to forecast specific indicators or trend. For example: development of a mathematical approach for calculating FTE for self-employed persons in Belgium, a hearing process involving relevant stakeholders to forecast future demand in Denmark, The Sheffield ELicitation Framework (SHELF) used in England[28] to involve experts in the forecasting excercise.

| FORECASTING NEED METHODS | SUPPLY | DEMAND |
|---|---|---|
| BELGIUM | CLASSICAL TIME SERIES ANALYSIS;<br>DELPHI FOR GENERAL PRACTITIONERS;<br>MATHEMATICAL APPROACH FOR CALCULATING FTE FOR THE SELF-EMPLOYED. | CLASSICAL TIME SERIES ANALYSIS<br>EXTRAPOLATING CURRENT OBSERVED HEALTH CARE DEMAND USING FORECASTED EVOLUTION OF SIZE AND COMPOSITION OF THE POPULATION. |
| DENMARK | CLASSICAL TIME SERIES ANALYSIS<br>LOGISTIC REGRESSION ANALYSIS FOR CALCULATING RETIREMENT AGE AND MORTALITY | CLASSICAL TIME SERIES ANALYSIS. |

(27) Fellows, J. and Edwards, M. (2014) User Guidelines on Qualitative Methods in Health Workforce Planning and Forecasting. www.euhwforce.eu and http://www.horizonscanning.org.uk/publications/eu-joint-action-user-guidelines-on-qualitative-methods-in-health-workforce-planning-and-forecasting/

(28) Elicitation methods: Applying elicitation methods to robust workforce planning - http://www.horizonscanning.org.uk/publications/elicitation-methods-applying-elicitation-methods-to-robust-workforce-planning/

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| | | |
|---|---|---|
| ENGLAND | SYSTEMS DYNAMICS APPROACH | SYSTEMS DYNAMICS APPROACH<br>DELPHI ELICITATION |
| FINLAND | YEARLY TIME SERIES<br>ANTICIPATING VOCATIONAL COMPETENCE AND SKILLS NEEDS (VOSE PROJECT) | YEARLY TIME SERIES |
| NORWAY | CLASSIC TIME SERIES ANALYSIS | CLASSIC TIME SERIES ANALYSIS |
| SPAIN | SYSTEMS DYNAMICS APPROACH | SYSTEMS DYNAMICS APPROACH |
| THE NETHERLANDS | YEARLY TIME SERIES<br>DELPHI AND CONSUMER PANELS | YEARLY TIME SERIES<br>DELPHI AND CONSUMER PANELS |

The result of the forecasting exercise is one or more scenarios showing the future situations. The HWF forecasting model may produce different scenarios also on the base of different patterns values (i.e. university training capacity, attrition rates, retirement patterns, migration flows). The scenario developed depends on the profession and on the purpose of forecasting exercise.

In most planning systems more than one scenarios is developed, a baseline scenario and one or more alternative scenarios. But for example in Spain just one scenario is explored.

The **projection period** might be different depending on the parameters, professions considered, goals defined, etc. Indeed, the selected forecasting methodologies are distinguished by different projection period: in Belgium 50 years, in Denmark up to 25 years, in England, for medical doctors, is 30 years, in Finland 15 years, in the Netherland almost 20 years, in Norway 25 years, in Spain, only for medical specialists, is 10 years. Of course, the timeframe is related to the type of profession and so to the duration of education and training. For example, for medical doctors, the average duration of the basic training is 6 years and 6 more years are necessary, in average, to entry in the labour market with a medical specialization; so, the minimum projection period for medical doctors is, more or less, 15 years, while for nurses 5 years could be sufficient. But there are also other reasons for this variability. For example, in the Netherlands there are subintervals with intermediate targets: the recommendations 2013 are thougt to be implemented by the field for the first time in 2015. Starting in 2015, they fixed on 2025 as first target to reach the equilibrium between supply and demand (the

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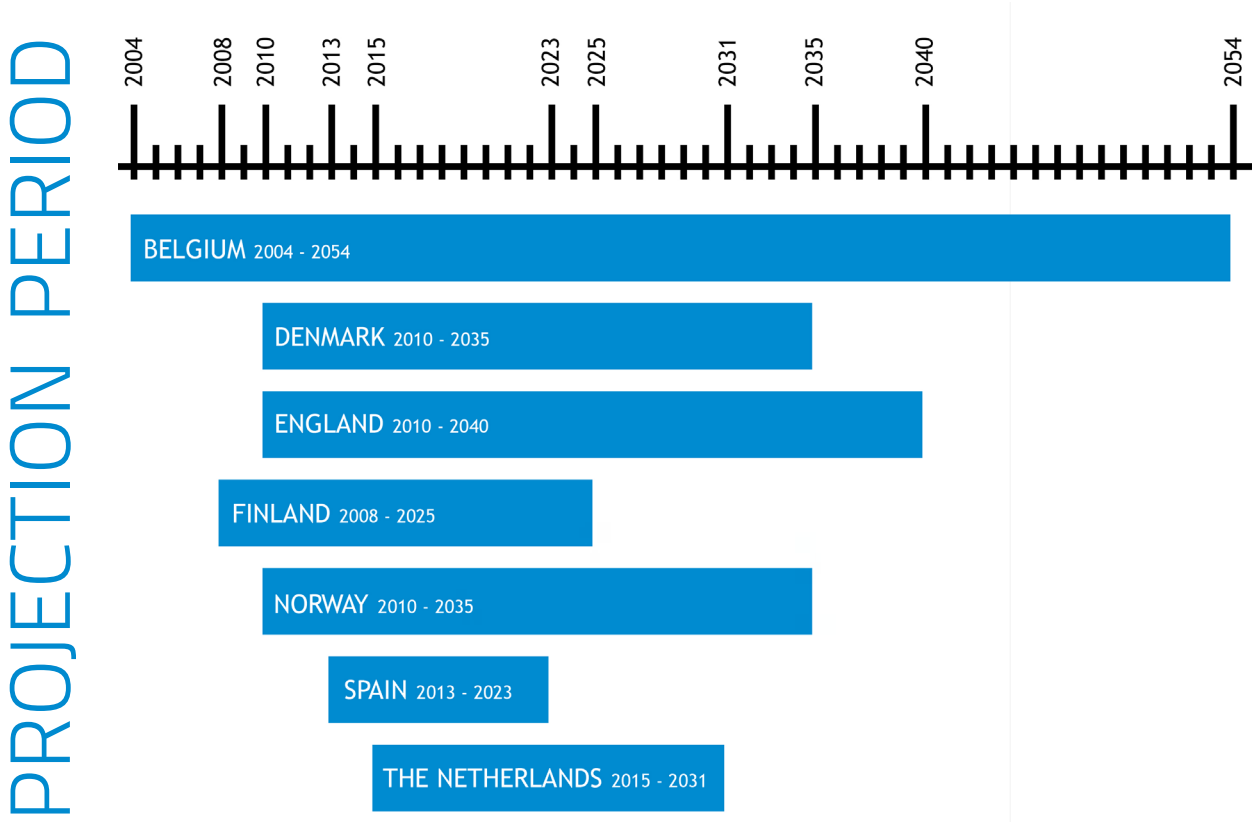
postgraduate training takes 6 years, so there are only 4 years remaining to adjust the equilibrium by a different inflow of medical graduates) and 2031 as second "chance" to reach the equilibrium. In Belgium, the 50 years timeframe (2004-2054) permits to "follow" the cohort of students of 2004 until their retirement 45 years later. While in England they generally look 20 to 30 years ahead to consider the medium to long term, especially considering the typical timescales of healthcare education and training timeframes. England also considers longer timeframes, however beyond 30 years the level of uncertainty generally increases and the projections become less robust for example the future student intakes to medical and dental schools are looking forward, in the current study to 2040.




The frequency of the **updating** of the forecasting exercise is important in order to take into consideration changing circumstances, new data, new policies and programs.

That's why all analyzed models foresee a recurrent updating of projection. The frequency of updating can vary from one (in England) to a maximum of four years (in Finland): it depends on the organisation of the workflow in the planning process and if there are changes to be taken into account in the models assumptions. But most member states update the forecasting exercise every two or three years.

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Despite the fact that the estimation of the migration flows is an ambitious challenge, international mobility is nearly always included (directly or indirectly) in the forecasting models. Excluding the Finnish and the Norwegian models the other ones include migration flows as input variables in the forecasting model.

The estimation of migration flows is primarily based on historical data analysis, but it's also clear the need to combine the analysis of the past trends with the estimation and the insights of the experts because the international migration is strongly fluctuating with the labour market conditions in other countries and with the economic situation.

INTERNATIONAL MOBILITY - FORECASTING MODEL

| COUNTRY | VARIABLES CONSIDERED IN THE FORECASTING MODEL | METHOD OF ESTIMATION |
|---|---|---|
| BELGIUM | MIGRATION INFLOW<br>MIGRATION OUTFLOW (BUT VALUE SET TO ZERO) | HISTORICAL TIME SERIES ANALYSIS<br>THE ESTIMATION IS ALSO BASED ON THE INSIGHTS OF THE CONSULTED EXPERTS |
| DENMARK | MIGRATION INFLOW<br>MIGRATION OUTFLOW | HISTORICAL TIME SERIES ANALYSIS<br>POSSIBLE ADJUSTMENTS AFTER DISCUSSION IN THE PLANNING AND FORECASTING COMMITTEES SUBCOMMITTEE |
| ENGLAND | MIGRATION INFLOW<br>MIGRATION OUTFLOW<br>MIGRATION FLOWS CONCERN BOTH THE INTAKES IN EDUCATION SYSTEM (STUDENTS AND TRAINEES) AND THE WORKFORCE | '- HISTORICAL DATA ANALYSIS<br>- ESTIMATION BASED ON QUALITATIVE METHODS |
| FINLAND | VATTAGE (THE FINNISH GENERAL ECONOMIC MODEL) AS SUCH DOES NOT TAKE INTO ACCOUNT THE MIGRATION FLOWS | ANYWAY MIGRATION ARE CONSIDERED AS QUALITATIVE VARIABLE FOR DETERMINING THE FINAL INTAKES FOR INSTITUTES AND UNIVERSITIES |
| NORWAY | MIGRATED HEALTH PERSONNEL WITH FOREIGN CITIZENSHIP IS INCLUDED IN THE STOCK POPULATIONS, BUT THERE ARE NO SPECIFIC VARIABLE ON FUTURE MIGRATION PATTERNS | N.A. |
| SPAIN | MIGRATION INFLOW<br>MIGRATION OUTFLOW | HISTORICAL DATA ANALYSIS |

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| | | |
|---|---|---|
| THE NETHERLANDS | MIGRATION INFLOW:<br>1) ANNUAL IMMIGRATION<br>2) GENDER FREQUENCIES IMMIGRATION<br>3) YIELD IMMIGRATION | ESTIMATION BY EXPERT GROUPS ON THE FUTURE NUMBER OF FOREIGN TRAINED HEALTH PROFESSIONALS<br>HISTORICAL DATA ANALYSIS |

Often specific assumptions on mobility trends are required to run the forecasting tool in order to make up for data not available.

Really there is a common meaning of immigration that is define as the number of foreign educated professionals estimate by the number of recognized qualifications. Different data sources are used in each Country including first of all the Authorization register. Otherwise there is a lack of information on emigration of professionals and this is why this variable is not included in some forecasting models.

INTERNATIONAL MOBILITY - DEFINITION, ASSUMPTIONS AND DATA SOURCES

| COUNTRY | DEFINITION AND ASSUMPTION | DATA SOURCES |
|---|---|---|
| BELGIUM | FOR MIGRATION INFLOW: RECOGNITION OF FOREIGN QUALIFICATIONS<br>FOR MIGRATION OUTFLOW | FOR MIGRATION INFLOW: FPS PUBLIC HEALTH, PRIMARY HEALTH CARE & CRISIS MANAGEMENT<br>(DG2) - DATA ARE AVAILABLE ANNUALLY AND ARE INTEGRATED IN THE BELGIAN CADASTER OF PRACTICING HEALTH PROFESSIONS<br>FOR MIGRATION OUTFLOW: CURRENTLY NO RELIABLE DATA IS AVAILABLE |
| DENMARK | FOR MIGRATION INFLOW: FOREIGN EDUCATED DOCTORS BEGINS A SPECIALIST EDUCATION IN DENMARK AND FOREIGN EDUCATED DOCTORS THAT RECEIVE A SPECIALIST DEGREE ON THE BASIS OF A SPECIALIST EDUCATION COMPLETED IN DENMARK.<br>MIGRATION OUTFLOW: DOCTORS EDUCATED IN DENMARK LEAVING DENMARK AFTER COMPLETION OF THEIR UNIVERSITY DEGREE | REGIONAL COUNCILS OF POSTGRADUATE MEDICAL EDUCATION (INFLOW)<br>AUTHORIZATION REGISTER (INFLOW AND OUTFLOW) |
| ENGLAND | SPECIFIC ASSUMPTIONS FOR THE DIFFERENT FLOWS CONSIDERED | DIFFERENT DATA SOURCES |

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| | | |
|---|---|---|
| FILNLAND | DATA ON MIGRATION INFLOW AND OUTFLOW IS NOT USED AS ANY DIRECT INPUT TO THE VATTAGE MODEL | NATIONAL INSTITUTE FOR HEALTH AND WELFARE (THL) ON DATA FROM:<br>- OFFICIAL STATISTICS OF FINLAND, EMPLOYMENT STATISTICS, STATISTICS FINLAND<br>- CENTRAL REGISTER OF HEALTH CARE PROFESSIONALS MAINTAINED BY THE NATIONAL SUPERVISORY AUTHORITY FOR WELFARE AND HEALTH (VALVIRA). |
| NORWAY | N.A. | N.A. |
| SPAIN | MIGRATION INFLOW: % SPECIALIST'S TITLE RECOGNITION<br>BASED ON THE PAST TREND DOWN: ANNUAL REDUCTION 8% | MIGRATION INFLOW:<br>- PAYROLL DATA OF REGIONS<br>- ECONOMICALLY ACTIVE POPULATION SURVEY (EAPS)<br>- NATIONAL IMMIGRANT SURVEY (NIS) 2007 - SOCIAL AND DEMOGRAPHIC CHARACTERISTICS OF PERSONS BORN ABROAD<br>MIGRATION OUTFLOW:<br>- 2010 NATIONAL STATISTICS INSTITUTE (INE) DATA (NON SPECIFIC FOR DOCTORS) |
| THE NETHERLANDS | MIGRATION INFLOW: NUMBER OF FOREIGN TRAINED HEALTH PROFESSIONALS<br>MIGRATION OUTFLOW HAS NOT BEEN MONITORED UNTIL 2014 BECAUSE IT WAS NOT CONSIDERED TO BE OF ANY SIGNIFICANCE BY ALL STAKEHOLDERS | '- MEDICAL REGISTRATION COMMITTEE (RGS) FOR HISTORICAL INFORMATION ON THE ALLEDGED IMMIGRATION OF MEDICAL SPECIALISTS<br>- BIG REGISTER FOR HISTORICAL INFORMATION ON IMMIGRATION OF MEDICAL GRADUATES AND DENTISTS<br>- EXPERT ESTIMATIONS FOR FUTURE MIGRATION |

The forecasting model might produce different estimations along different service delivery settings or sectors of employment (**segmentations** of the forecasting). From this point of view the seven forecasting models analyzed consider the health workforce differently. Most of them forecast the single profession (medical doctors, specialized medical doctors, nurses, dentists). But Finland and England look also at the whole system including public health and social care. Finally, in Belgium they develop projections on five sectors concerning nurses: hospital sector, nursing home sector, home care sector, other health care sector and non-health sector (including welfare and education).

The forecasting model might take into consideration possible **integration** between (vertical substitution) and/or within (horizontal substitution) **professional groups**. It is important to take into consideration various professional mixtures in the future: starting from the assumption that health care services may be provided from association of professionals different from those actual, but also from the consideration of the

increasing role of patients and service users, hypothesis that create different scenarios in terms of quantitative useful resources are advanced. In this sense one of the themes presently very debated is the horizontal substitution within doctors and nursing professions. In most of the forecasting models the mathematical tool is built separately for every profession. Just in England, in Netherlands and partially in Norway (vertical substitution only) the integration between and within professional groups are modelled. Considering the importance that the theme of skills mix and tasks shifting has for HWF future, at least following the literature in the field, the lack of such a parameter in many forecasting models maybe shows difficult to forecast future scenarios in which the organisation of work should be different from the present one.

| COUNTRY | INTEGRATION BETWEEN PROFESSIONS | DESCRIPTION |
|---|---|---|
| BELGIUM | NO | |
| DENMARK | NO | |
| ENGLAND | YES | ROLE SUBSTITUTION AND SKILL MIX |
| FINLAND | YES | DIFFERENT OCCUPATIONAL CATEGORIES |
| NORWAY | NO | |

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|---|---|---|
| SPAIN | NO | |
| THE NETHERLANDS | YES | VERTICAL INTEGRATION (FROM MEDICAL PROFESSIONS TO NURSES AND FROM DENTISTS TO ORAL HYGIENISTS) AND HORIZONTAL INTEGRATION (FROM MEDICAL SPECIALISTS TO EACH OTHER AND TO GENERAL PRACTITIONERS) |

A forecasting model might take into account interaction between demand and supply and estimates specific effects such as a **supply-induced demand** (feedback effects[29]). But, at the current, except for the English model, no one of the selected forecasting model considers at present this interaction. To mention the Belgian case, for which the effect of the supply-induced demand is one of the initial hypothesis of the planning system, that's why a parameter 'supply-induced demand' is available but not currently activated in planning scenarios.

Human resources inside an health system represent the central element both for the direct relation with the quality and quantity of cures supplied by the system (and so system coverage and cures level) and for the costs represented by these resources. So the health workforce projections might be put in **relationship with others health system goals** such as access to care, quality of care and costs containment. But most of the models analysed do not report projections taken from the model with other goals with a few exceptions: in England, for example, the health workforce projections are looked in relation to outcomes, cost-effectiveness and affordability, while in the Netherlands the projections are put in relationship with the goal concerning the access to care.

Finally, the **assessment of the forecasting model** is very important. The calculation of the goodness of fit and of the forecast accuracy are necessary to make an objective evaluation of the results. But the assessment of the forecasting model and of its results seems to be a challenge for some of the planning system considered that don't have any kind of evaluation process. Tests on historical data seem to be the most common technique used for evaluation . But in some cases sensitivity tests also are made in order to assess the forecasting model (for example in the Dutch system).

(29) See http://www.systemdynamics.org/DL-IntroSysDyn/feed.htm for some examples and definitions.

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| COUNTRY | ASSESSMENT OF THE FORECASTING OUTPUTS | DESCRIPTION |
|---|---|---|
| BELGIUM | YES | FOLLOW-UP COMPARISON |
| DENMARK | NO | |
| ENGLAND | YES | COMPARING THE RESULTS WITH PREVIOUS SIMULATIONS;<br>BACKCASTING;<br>SHARING RESULTS WITH RELEVANT STAKEHOLDERS;<br>ASSESSING THE SENSITIVITY OF THE MODEL OUTPUTS TO THE INPUT DATA. |
| FINLAND | YES | PEER REVIEW PROCESS |
| NORWAY | NO | |
| SPAIN | NO | |
| THE NETHERLANDS | YES | TESTS ON THE HISTORICAL DATA;<br>TESTS ON THE RELIABILITY OF THE MODEL;<br>SENSITIVITY TESTS. |

## FOR FURTHER DETAILS:

- *Focus on --> Details of the seven planning systems --> Forecasting model*

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## *GOOD PRACTICES*

The following pages present the good practices

- *"The "easy and flexible" forecasting model in the Danish planning system",*
- *"Assessment and estimation of the current imbalances: for general practitioners in Dutch planning system",*
- *"Forecasting the demand of dentist in the Dutch planing system",*
- *"HWF planning harmonized with social and economic development in the Finnish system",*
- *"Forecasting the demand for the HWF in the Norwegian planning system",*
- *"Budget constraints and allocation of resources in the Spanish planning system"*
- *"The English approch to the workforce planning and forecasting"*

related to the key element "Forecasting Model".

For "**good practice**" we mean an experience or practice that have achieved results consolidated in the course of time and present elements and characteristics applicable in other contexts.

A good practice may concern to methods, instruments, processes and technical specific solution of HWF planning. The collection and diffusion of those practices realized at a national level are the premises for the construction of a base of knowledge, to be enriched in the course of time, to allow the exchange and the comparison of ideas, experiences and projects.

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## – THE "EASY AND FLEXIBLE" FORECASTING MODEL IN THE DANISH PLANNING SYSTEM

### REFERENCE INFORMATION:

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### MAIN ASPECTS:

- *Denmark has chosen a simple forecasting model combining a quantitative and qualitative approach*
- *The model is quite cheap. The Danish Health and Medicines Authority (DHMA) uses approximately 0,25-0,5 FTE per year doing the modeling (not taking into account the time spent from the stakeholders and the statistical analyst placed at Statens Seruminstitut);*
- *At the same time the model is - in view of the fact that it's simple easy to update and the assumptions in the forecasting model are re-assessed in light of changing circumstances, new data, new policies and programs;*
- *There is a high degree of stakeholder involvement in the development and adjustment of the forecasting model, so the process of forecasting and setting the number of postgraduate training posts is very transparent.*
- *The supply forecasting model used for the four professions; doctors, dentists, dental hygienists and clinical dental technicians is basically the same*
- *The HWF forecasting model produces different scenarios on the base of different patterns values (i.e. university training capacity, and retirement patterns) for the supply of dentists, dental hygienists and clinical dental technicians. However for the coming supply forecast they plan on implementing scenarios also for doctors*
- *For doctors they assume there are imbalances at the starting point, conversely for dentists, dental specialists, dental hygienists and clinical dental technicians a current equilibrium between supply and demand is assumed.*

### DESCRIPTION:

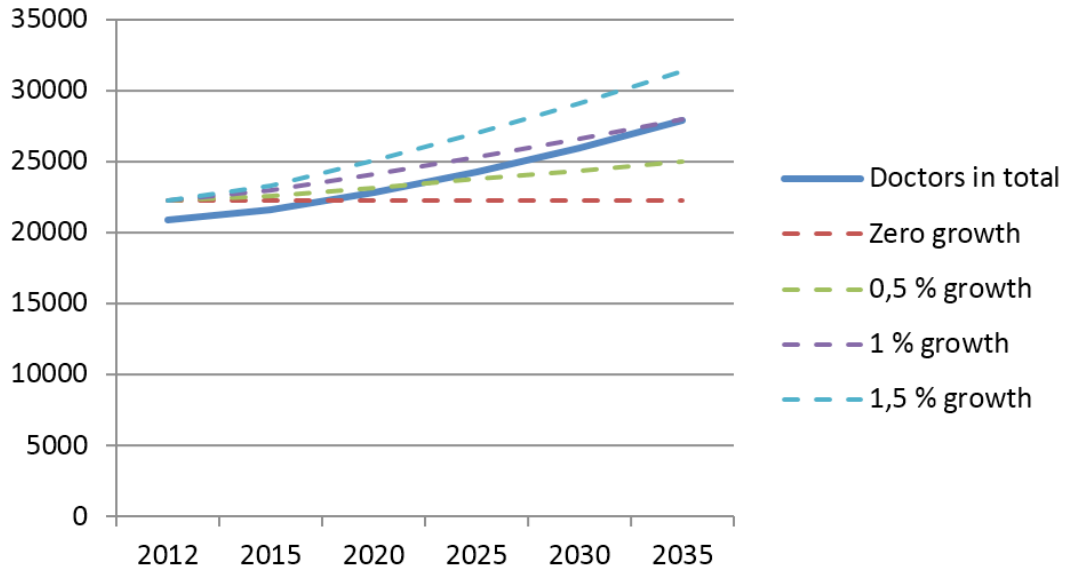
In Denmark forecasting of health workforce is done for four professions; doctors, medical specialists, dentists, dental specialists, dental hygienists and clinical dental technicians.

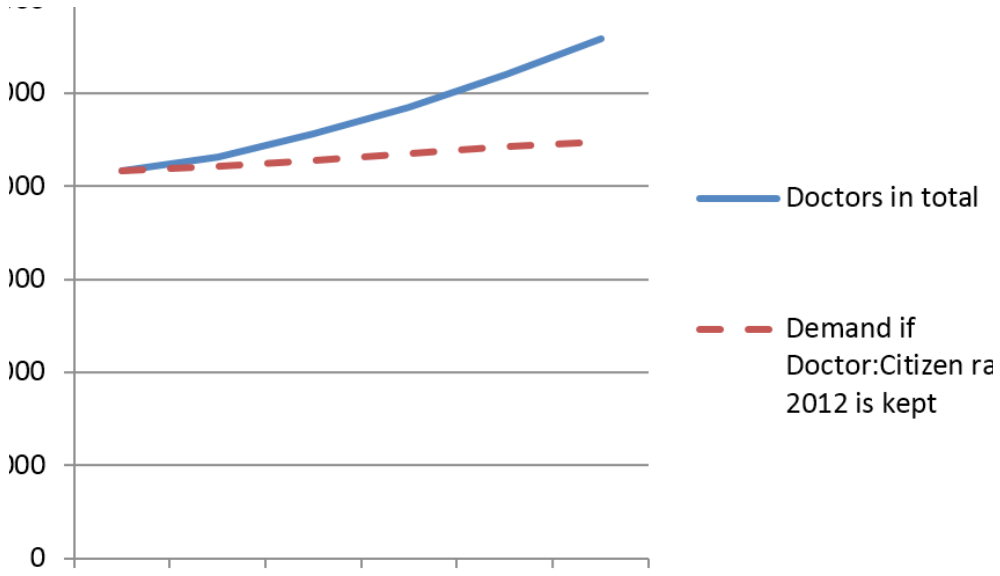
The Danish Health and Medicines Authority (DHMA) is responsible for the forecasting.

To assist the DHMA in the forecasting the DHMA has established two Planning and Forecasting Committees in which different relevant stakeholders are represented. The Committees advice DHMA regarding the contents of the forecasting, the assumptions used and so forth. This implies that when DHMA wants to update the forecast the committees are involved.

The Danish forecasting process is divided into two processes. In the first process a quantitative forecast is produced. It's basically a stock and flow model where some of the assumptions are based on a classic time series analysis and other assumptions e.g mortality and retirement is modelled with a logistic regression analysis. The second process is a hearing process involving relevant stakeholders.

The quantitative forecast includes a supply side and five very simplistic scenarios for the demand side. One scenario showing the demand for workforce if the current ratio between the profession and population size is being kept and four scenarios showing the expected demand for workforce if we see a 0 %; 0,5 %; 1 % or 1,5 % increase in demand per year. For doctors we assume imbalances between supply and demand at the starting point. For dentists, dental specialists, dental hygienists and clinical dental technicians a current equilibrium between supply and demand is assumed. The demand scenarios for doctors are illustrated in the figures below.






The forecast is updated every second or third year. The forecast is as already mentioned primarily focused on the supply side. However every fifth year a plan setting the number of postgraduate training post for medical and dental specialists is drawn up. In this process DHMA involve relevant stakeholders in a hearing process. Among the stakeholders is for example the Danish Regions, the Danish Medical Association, three Regional Councils for Postgraduate Medical Education and the Danish Medical Societies.

In the hearing process the stakeholders are presented with data regarding the current supply within the specific medical specialty or dental speciality. Both on a national and regional level. On the basis of the data presented the stakeholders are invited to answer a series of questions. For example:

- *How is the current balance between supply and demand perceived?*
- *Are there any specific regional differences in the supply or demand the plan must take into account?*
- *Is the demand expected to exceed or be lower than the expected supply? If so, why?*
- *Which factors is expected to influence the future demand within the medical specialty?*

The information provided by the stakeholders is first of all considered by the Planning and Forecasting Committees subcommittee. The subcommittee examines the data and information provided by the different stakeholders and draws up a plan for the number of postgraduate training posts. In examining the information provided the subcommittee tries to take different factors into account for example:

- *How many doctors/dentists can be expected to begin a postgraduate training post?*

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- *Are there any special areas in an acute need of specialists?*
- *If the number of postgraduate training posts is increased in one specialty it can affect the demand for specialists in another specialty*
- *Increasing the number of postgraduate training posts in specialties having no problem recruiting can have a negative effect on recruitment to specialties already facing recruitment difficulties.*
- *The educational capacity in the different specialties*

When the subcommittee has drawn up the plan it's first of all presented in the Planning and Forecasting Committee. If the committee gives the green light the plan (if for doctors) is afterwards presented in the National Council for Postgraduate Medical Education or (if for dentists) presented in the National Council for Postgraduate Dental Education.

This can sometimes make small changes to the plan which is afterwards released by DHMA. As a general rule the plan for the number of postgraduate training posts cover a five year period and the Danish Regions and other stakeholders involved in the postgraduate education of doctors and dentists are required to follow the plan. However if stakeholders within this five year period submit relevant information regarding the number of postgraduate training posts the number can be changed within this period.

## RESULTS:

The quantitative forecast shows the expected supply within the profession and specialty. The supply forecast for doctors and medical specialist is presented below.

| | 2012 | 2015 | 2020 | 2025 | 2030 | 2035 |
|---|---|---|---|---|---|---|
| GENERAL PRACTICE | 4.458 | 4.370 | 4.454 | 4.708 | 5.212 | 5.732 |
| ANAESTHETICS | 970 | 1.038 | 1.094 | 1.122 | 1.167 | 1.247 |
| OCCUPATIONAL MEDICINE | 91 | 87 | 77 | 86 | 113 | 146 |
| CHILD AND ADOLESCENT PSYCHIATRY | 166 | 194 | 246 | 318 | 397 | 467 |
| DERMATO-VENEREOLOGY | 154 | 156 | 172 | 204 | 238 | 268 |
| DIAGNOSTIC RADIOLOGY | 484 | 517 | 558 | 617 | 683 | 758 |

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| | | | | | | |
|---|---|---|---|---|---|---|
| GYNAECOLOGY AND OBSTETRICS | 549 | 560 | 554 | 581 | 618 | 669 |
| GENEREL INTERNAL MEDICINE | 155 | 128 | 85 | 49 | 20 | 5 |
| GENEREL INTERNAL MEDICINE: ENDOCRINOLOGY | 188 | 207 | 234 | 270 | 299 | 337 |
| GENEREL INTERNAL MEDICINE: GASTROENTEROLGY AND HEPATOLOGY | 165 | 179 | 192 | 224 | 258 | 297 |
| GENEREL INTERNAL MEDICINE: GERIATRICS | 87 | 92 | 126 | 176 | 228 | 282 |
| GENEREL INTERNAL MEDICINE: HEAMATOLOGY | 102 | 111 | 136 | 169 | 200 | 229 |
| GENEREL INTERNAL MEDICINE: INFECTIOUS DISEASES | 74 | 88 | 111 | 135 | 161 | 186 |
| GENEREL INTERNAL MEDICINE: CARDIOLOGY | 344 | 363 | 405 | 450 | 483 | 520 |
| GENEREL INTERNAL MEDICINE: RESPIRATORY DISEASES | 125 | 143 | 171 | 212 | 255 | 305 |
| GENEREL INTERNAL MEDICINE: NEPRHOLOGY | 110 | 123 | 149 | 167 | 186 | 204 |
| GENEREL INTERNAL MEDICINE: RHEUMATOLOGY | 214 | 208 | 224 | 269 | 313 | 369 |
| VASCULAR SURGERY | 75 | 84 | 88 | 93 | 102 | 113 |
| GENERAL SURGERY | 482 | 489 | 512 | 525 | 549 | 587 |
| CLINICAL BIOCHEMISTRY | 86 | 87 | 83 | 94 | 113 | 133 |
| CLINICAL PHARMACOLOGY | 36 | 42 | 57 | 75 | 91 | 104 |
| CLINICAL PHYSIOLOGY AND NUCLEAR MEDICINE | 85 | 103 | 126 | 145 | 162 | 181 |
| CLINICAL GENETICS | 26 | 44 | 59 | 78 | 94 | 111 |

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| | | | | | | |
|---|---|---|---|---|---|---|
| CLINICAL IMMUNOLOGY | 42 | 50 | 56 | 64 | 71 | 82 |
| CLINICAL MICROBIOLOGY | 95 | 99 | 106 | 111 | 121 | 135 |
| CLINICAL ONCOLOGY | 140 | 185 | 282 | 391 | 493 | 586 |
| NEUROLOGICAL SURGERY | 85 | 90 | 90 | 88 | 87 | 86 |
| NEUROLOGY | 292 | 324 | 386 | 459 | 526 | 592 |
| OPHTHALMOLOGY | 310 | 318 | 329 | 368 | 417 | 461 |
| ORTHOPADIC SURGERY | 700 | 740 | 770 | 782 | 804 | 867 |
| OTO-RHINO-LARYNGOLOGY | 342 | 349 | 349 | 385 | 416 | 440 |
| PATHOLOGICAL ANATOMY AND CYTOLOGY | 186 | 194 | 213 | 246 | 289 | 330 |
| PLASTIC SURGERY | 95 | 100 | 111 | 122 | 132 | 148 |
| PSYCHIATRY | 808 | 790 | 738 | 786 | 901 | 1.056 |
| PAEDIATRICS | 409 | 435 | 472 | 526 | 583 | 631 |
| FORENSIC MEDICINE | 9 | 12 | 19 | 28 | 35 | 43 |
| PUBLIC HEALTH MEDICINE | 137 | 130 | 136 | 144 | 158 | 184 |
| THORACIC SURGERY | 89 | 91 | 87 | 78 | 72 | 71 |
| UROLOGY | 157 | 167 | 192 | 216 | 245 | 279 |
| **MEDICAL SPECIALISTS TOTAL** | 13.125 | 13.486 | 14.246 | 15.561 | 17.292 | 19.236 |
| **DOCTOR WITHOUT SPECIALTY** | 7.720 | 8.088 | 8.559 | 8.699 | 8.685 | 8.657 |
| **DOCTOR IN TOTAL** | 20.845 | 21.574 | 22.805 | 24.260 | 25.977 | 27.894 |
| **DOCTORS ON LEAVE** | 918 | 987 | 1.078 | 1.130 | 1.165 | 1.196 |

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| | | | | | | |
|---|---|---|---|---|---|---|
| DOCTORS IN TOTAL (INCL. DOCTORS ON LEAVE) | 21.764 | 22.561 | 23.883 | 25.390 | 27.142 | 29.090 |

*Expected supply of doctors and medical specialists*

Furthermore as described the forecast includes simplistic scenarios for the demand side. This makes it possible to have a discussion on how big a growth is needed but also on what growth that is acceptable when trying to take into account that there has to be future funding to support the increase in health workforce. At the same time the scenarios makes it possible to compare with some historic trends in the health workforce growth.

On the basis of the forecast as earlier described a plan for the number of postgraduate training posts is drawn up. Furthermore DHMA advices the minister of Higher Education and Science regarding the student intake within the 4 professions; doctors, dentists, dental hygienists and clinical dental technicians.

In the current Danish model a lot of trust is put into the stakeholders' advice even though it doesn't support the stakeholders with a lot of data regarding scenarios for the future demand for workforce. The stakeholders in that regard play a crucial role and if their advices turns out to be based on a wrong set of assumptions Denmark probably won't reach a balance between supply and demand in the future.

From time to time stakeholders therefore encourage the DHMA to make a more elaborate demand forecast so that it's easier for the stakeholders commenting on the needed amount of health workforce. Making more elaborate demand scenarios where it's tried to model some expected trends in the health care sector should in theory make the stakeholders able to give better advice to the DHMA. At the same time a description of future scenarios for the health care sector should make it possible for politicians to have a discussion on in which direction the healthcare sector should be developed.

On the downside a more elaborate demand model would also cost more to develop and regularly update than the current model and it's not sure that the scenarios developed will give a more accurate picture of the future than the different stakeholders' current advice.

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## Helpful tips:

- *Establish a planning and forecasting committee*
- *Establish a subcommittee that tries to implement the planning and forecasting committees wishes into a technical forecasting model*
- *In the first years of modelling focus on developing a supply forecast combined with simplistic scenarios for the demand side*
- *Develop a qualitative method for involving stakeholders in the description of future demand.*

## Further information:

Currently the DHMA plan to update the forecast for doctors and medical specialists. For that task they have involved the Planning and Forecasting's subcommittee to review the model. For our next forecast they plan to include scenarios showing:

- *The expected supply if retirement age is increased by 2 years*
- *The expected supply of medical specialists if all postgraduate training posts are filled*
- *The expected supply of medical specialists if more postgraduate training posts than set in the current plan are filled*
- *The expected supply of medical specialists if the future number of filled postgraduate training posts corresponds to the average number of posts filled in the period 2012-2014.*
- *The expected supply of doctors if we see an increase or decrease in the student intake*
- *The expected demand based on the historic trend in health expenditure per capital*
- *The expected demand for workforce if we see a 2 %, 3 % and 4 % increase in demand per year.*

The current forecasts and plans setting the number of postgraduate training posts are only available in Danish but can be found on our website.

- **Forecast for Doctors** *http://sundhedsstyrelsen.dk/publ/Publ2013/02feb/Laegeprogn2035.pdf*
- **Plan for the number postgraduate training posts for medical specialists** *https://sundhedsstyrelsen.dk/da/uddannelse-autorisation/special-og-videreuddannelse/prognose-og-dimensionering/~/media/B19C3BD8AD734793B5B2BF9A998F23C7.ashx*
- **Forecast for Dentists, dental hygienists and dental technicians** *http://sundhedsstyrelsen.dk/publ/Publ2013/12dec/Tandplejeprognose2013_2035.pdf*
- **Plan for the number postgraduate training posts for dental specialists** *https://sundhedsstyrelsen.dk/da/uddannelse-autorisation/special-og-videreuddannelse/prognose-og-dimensionering/~/media/56CE3E72A3E54886B8BBB656A9F939C7.ashx*

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## – ASSESSMENT AND ESTIMATION OF THE CURRENT IMBALANCES: FOR GENERAL PRACTITIONERS IN DUTCH PLANNING SYSTEM

### REFERENCE INFORMATION:

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### MAIN ASPECTS:

- *Imbalances are estimated through a number of indicators like vacancies/ unemployment among specialists, waiting time before consultation/ treatment for the population, proportional number of vacancies still open after 3 months, etc.*

- *The 3 usable parameters all point in the same direction. The percentage of vacancies is in the lower part of normal margins. This percentage is measured trough monitoring the vacancy adds in 5 Dutch medical websites. The choice of these 5 websites have been unaltered in the past 8 years. Changes in the reservoir of locums will usually precede changes in the percentage of vacancies. The number of locums is measured through a census method by structural surveys. The reservoir of locums seems large enough to fill all vacancies in the Netherlands, even in the less favourable practices. The distribution of practicing general practitioners is also measured through a census method, as is the number of immigrants. The strength of the parameters is high. The resulting decision on the unmet demand states that there are sufficient general practitioners in the Netherlands . It also states that there is no intention to increase the number of general practitioners in the soliciting reservoir any further.*

### DESCRIPTION:

The most important step in defining imbalances between the demand and the supply of health care is in identifying a number of parameters that can be considered to be illustrative for any differences between supply and demand. By monitoring multiple parameters one can consider triangulating the results. The parameters have to be measurable, but it is not necessary to have a census. There may be differences between the professions regarding the parameters used. In the Netherlands, there is only one parameter that is in place for all medical professions. The “Arbeidsmarktmonitor” or vacancies monitor is the only one used for all medical professions. For all clinical professions, this monitor is broadened by monitoring the period between the request

of a patient for an appointment with a clinical specialist and the actual appointment. For the general practitioners, this parameter is irrelevant as every patient can have an regular scheduled appointment with his or her general practitioner within 2 days.

In this example we will focus on the general practitioner because in the Netherlands the general practitioner is the gatekeeper of health care. Imbalances between demand and supply of general practitioner care can have grave consequences for the rest of the health care system. There are a number of (measurable) indicators for imbalances between demand and supply in use in the Netherlands:

- *Trends in the vacancies monitor;*
- *Trends in the number of locums;*
- *Geographical distribution of general practitioners;*
- *Trends in immigration of general practitioners from other countries.*

Vacancies for general practitioners (and all other medical professions) are monitored continuously and reported to the ACMMP and the magazine of the Royal Netherlands Medical Association every 3 months. The number of vacancies is divided by the number of working general practitioners at that time and results in a percentage of vacancies for this profession. What is considered a percentage of vacancies beneficial for a sound workforce market depends slightly on the average number of years the newly registered professional is expected to work. Usually, we consider a percentage range of 1% to 3% vacancies as normal.

In the Netherlands, medical graduates can register as general practitioner after successfully completing a vocational training of 3 years. All general practitioners work in private. Most of them work in a duo or a group practice of general practitioners. Some, especially in the rural areas, still work in solo practices. Once a general practitioner settles in a certain area he usually stays there for the rest of his or her remaining career. This prospect encourages most newly registered general practitioners to start their career as a locum in order to orientate on possible future workplaces. Newly registered general practitioners are structurally surveyed each year until they finally settle down. Trends in the number of young locums are an indicator for changes in the demand for general practitioners. The geographical distribution of general practitioners in the Netherlands is monitored each year. This is done by linking each general practitioner by fte worked with the zip code of the general practice he or she is working in, be it as (co-)owner, locum, or employed by another general physician. Usually, the reports on

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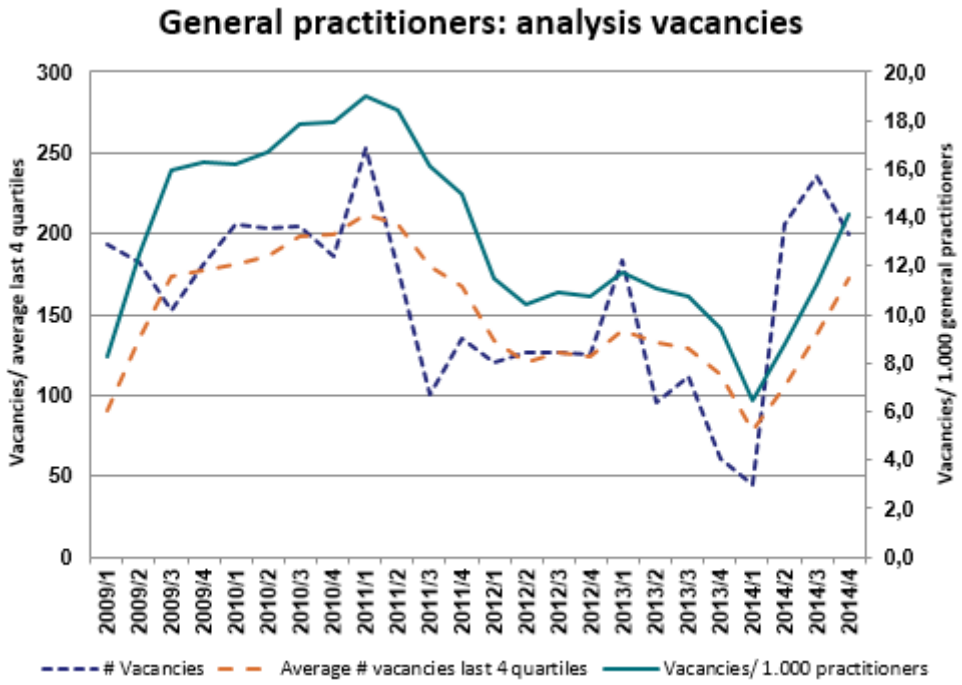
the geographical distribution are on a level of the 12 provinces and show data on the number of fte of general practitioners, the number of inhabitants of the province, and the number of people served by one fte general practitioner.

Finally, trends in the immigration of general practitioners from other countries can be an indication for unmet demand in the Netherlands. The immigration of general practitioners (and all other medical specialists) is monitored each year.

## RESULTS:

The vacation monitor shows that the vacancy percentage for general practitioners in 2012 was stable at 1%.




*Source: Arbeidsmarktmonitor*

The yearly investigation of the number of locums demonstrates that the number of locums has increased from 1.500 in 2010 to almost 2.000 locums in 2012. The number of general practitioners employed by other general practitioners has remained stable at 1.000 persons. The geographical distribution of general practitioners indicates that there are no shortages for general practitioners at national or provincial level. In rural areas occasionally there may be a succession problem due to the location of the general practice. In most cases, this is due to the organisation of the practice, not to the location. Solo practices are not very favoured any more. The immigration of general practitioners into the Netherlands is virtually absent.

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The conclusion of the experts in the Chamber for General Practitioners was that there is no problem with the national workforce capacity of general practitioners. Also, there are no regional distribution problems. The percentage vacancies is low but stable. The increase in the number of locums in the last two years indicates that it takes young locums longer to buy their way into a general practice. The experts decided for the first time in the history of the ACMMP to fix the parameter "unmet demand" for general practitioners on 0%.

## Helpful tips:

Implementing unmet demand in the workforce planning is not very easy. The quickest implementation can be achieved by structural surveys of all newly registered medical specialists in a certain specialism. The surveys can be copied from the Dutch ones and completed with specific topics for the own country. The ease with which newly registered physicians e.g. can obtain a definitive working position or a locum position is an indication for the balance between demand and supply. Then, the organisation responsible for certifying the new specialists has to be asked to distribute these survey forms structurally. In this way, the first results will be available within 6 months after starting. In our experience, the outcome of this first survey will produce valuable input for improvements in the next questionnaire.

The monitoring of the vacancies can be started at any time. Crucial is the selection of the web sites that will be monitored in the future, since the isolated trends are even more important than the absolute number of vacancies. This means that changes in the selected websites cannot be made easily. Besides that, monitoring the websites can be more time-consuming than doing surveys.

The geographical distribution of general practitioners depends heavily on the registration system that is in place for practising general practitioners . In the Netherlands, we use the quality register for general practitioners deployed by the Registration Committee for Medical Specialists ("RGS") for this purpose. This register holds all practising general practitioners and is actualized permanently.

## Further information:

| | |
|---|---|
| Next recommendation for general practitioners: | 2016 |
| Some improvements are under construction: | - Estimation and inclusion of the unmet demand |

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- Conversion of working hours to fte

- Effects of trainees on total working hours

The 2010 Recommendations for Medical Specialist Training http://www.capaciteitsorgaan.nl/Portals/0/capaciteitsorgaan/publicaties/capaciteitsplan2010/0%2Capaciteitsplan%20Hoofdrapport%20Engels.pdf

The 2013 Recommendations for Medical Specialist Training http://www.capaciteitsorgaan.nl/Portals/0/capaciteitsorgaan/publicaties/Capaciteitsplan%202013/DEFINITIEF%20hoofdrapport%20engels%20compl.pdf

Capaciteitsplan 2010: deelrapport 2; huisartsgeneeskunde http://www.capaciteitsorgaan.nl/Portals/0/capaciteitsorgaan/publicaties/capaciteitsplan2010/Deelrap2_Huisartsgeneeskunde.pdf

Capaciteitsplan 2013: deelrapport 2; huisartsgeneeskunde http://www.capaciteitsorgaan.nl/Portals/0/capaciteitsorgaan/publicaties/Capaciteitsplan%202013/Capaciteitsplan%202013%20Deelrapport%202%20Huisartsen.pdf

Cijfers uit de registratie van huisartsen, peiling 2010 (website NIVEL) http://www.nivel.nl/sites/default/files/bestanden/Cijfers-uit-de-registratie-van-huisartsen-peiling-jan-2010.pdf

Cijfers uit de registratie van huisartsen, peiling 2011 (website NIVEL) http://www.nivel.nl/sites/default/files/bestanden/Cijfers-uit-de-registratie-van-huisartsen-peiling-jan-2011.pdf

Cijfers uit de registratie van huisartsen, peiling 2012 (website NIVEL) http://www.nivel.nl/sites/default/files/bestanden/Cijfers-uit-de-registratie-van-huisartsen-peiling-jan-2012.pdf

Regionale spreiding huisartsen; notitie voor het Capaciteitsorgaan http://www.capaciteitsorgaan.nl/Portals/0/capaciteitsorgaan/publicaties/capaciteitsplan2010/onderliggende%20rapporten/Rapport-regionale-spreiding-van-huisartsen.pdf

## - FORECASTING THE DEMAND FOR DENTIST IN THE DUTCH PLANNING SYSTEM

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### MAIN ASPECTS:

- *The Dutch forecasting model produces different scenarios on the base of different patterns values and any parameter can be changed in the model, e.g. the percentage of men entering the training programs*
- *It considers a high and a low value for a number of the parameters of yearly change rated by the experts*
- *The different scenarios are based on 6 incremental scenarios with low values and 2 scenarios with high values for the parameters.*
- *All scenarios are based on either an ongoing trend or a trend that ceases after 10 years.*
- *Starting wirh the unmet demand three parameters are taken into account: the demographic parameter, the epidemiological parameter. the socio-cultural parameter.*

### DESCRIPTION:

In 2006, a Dutch committee installed by government to advise on an 1 year extension of the 5 year study to become an dentist, concluded that little was known about the labour market for dentists in the etherlands. Thereupon the ministry of Health, Welfare and Sports requested the ACMMP to explore the labour market for dentists and oral hygienists. The ACMMP has done so until 2014.

In this experience on the forecasting of the demand side they extend the unmet demand with the other 3 parameters on expected demography, epidemiology, and sociocultural changes. Starting with the unmet demand, the activity related to it was a custom made survey. There were no readily available data on the demand for dentists. This survey was actually done in 2012 by NIVEL on regional differences in the supply of dentists. In this study the age of the dentists was taken into account also. A province with a

relatively low number of dentists per 10.000 inhabitants or with much elderly dentists and few young dentists was considered a province at risk of having an unmet demand.

For the demographic parameter on the demand for dentists, they start out with the most recent forecasts of Statistics Netherlands (CBS) on the future. In table 1 the forecast on the population of the Netherlands between 2011 and 2031 is shown.

| AGE | #2011 | #2025 | #2031 | IN-/DECREASE IN % |
|---|---|---|---|---|
| 0-20 YEARS | 3.913.819 | 3.705.141 | 3.743.002 | -4.3% |
| 20-45 YEARS | 5.458.524 | 5.323.986 | 5.365.071 | -1.7% |
| 45-65 YEARS | 4.688.510 | 4.573.752 | 4.244.724 | -9.4% |
| 65+ YEARS | 2.594.946 | 3.786.220 | 4.275.336 | +64.8% |
| **TOTAL** | **16.655.799** | **17.389.099** | **17.628.133** | **+5.8%** |

*Forecast population Netherlands 2011-2031*

Source: Statistics Netherlands January 1st 2012

The increase of the Dutch population in the next 18 years is exclusively realised in the age compartment of 65 years and older. The ACMMP has age specific utilization ratios for dentistry for the years 2007, 2010 and 2011. In this way we can estimate the impact the demographic changes have on the demand for dentists.

The strength of the demographic parameter is high under regular circumstances. The data on the forecasts of the population are based on the “middle” scenario of Statistics Netherlands. The age-specific utilization ratios are based on a structural on-going population survey amongst 9.000 regularly changing inhabitants.

For the epidemiologic parameter, the ACMMP could use the results of structural surveys done by the College for Health Insurances (NZI) in 2007, 2010, 2011 and 2013. The 2007 survey still expected a worsening of the dental health amongst youngsters and extra demand amongst (mentally) handicapped and elderly in nursing homes. The 2010, 2011

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and 2013 surveys were only done for youngsters up to 23 years of age. Therefore, the ACMMP interviewed dental experts on the (mentally) handicapped and geriatric fields to get more reliable insights into the developments on dental health in these subgroups.

The strength of the epidemiological parameter is mediocre at best. Though there are sound data on the dental status of the population between 0 and 20 years, there has not been a usable survey on the dental status of adults since 2007. They had to rely heavily on the results of surveys of experts as far as (mentally) handicapped and elderly in nursing homes were concerned.

The sociocultural parameter is tricky. From analysis of the utilization data, there seems to be an increase of demand amongst elderly for complex dental care. For this reason, we had some research done on the volume of implant dentistry. The necessary data was retrieved from the compiled database of Health Insurers Netherland (ZN), which has coverage of close to 96% of the dentist declarations on the Dutch market.

Further,there are some indications that the group between 45 and 65 years is also having more complex (and time-consuming) dental care than 5 to 10 years ago. On the other hand, dental care for adults is not covered by the Health Insurance Act which means that the demand for complex dental care is affected by economic aspects. One can insure him/ herself additionally for dental care but this is costly and there is a negative selection bias in people asking coverage. In the last two years, people tended to postpone the preventive visit to the dentist due to financial motives and low consumer‘s faith in economic relapse.

## RESULTS:

For the unmet demand, the NIVEL survey concluded that out of the 12 provinces, 3 were considered regions at risk of getting an unmet demand. Opposed to these regions there were other regions with a relatively high number of dentists per 10.000 inhabitants. These findings are consistent with the image of small regional shortages, partially compensated by regions with a slight oversupply of dentists. Having considered these data, the experts maintained their 2010 estimate of 1% unmet demand.

The demographic parameter is a bit more complicated. Different age categories have different utilization ratios. In table 2 the utilization ratio’s in 2031 for the different age categories are demonstrated based on two approximations: the first based on the average utilization ratios for the period 2010-2011, the two most recent years.

The second based on the average utilization ratio's for the period 2007-2011, which comprises a much longer period.

| AGE | BASED ON AVERAGE 2010-2011 | BASED ON AVERAGE 2007-2011 |
|---|---|---|
| 0-20 YEARS | 82.2% | 82.2% |
| 20-45 YEARS | 83.9% | 84.6% |
| 45-65 YEARS | 80.7% | 80.3% |
| 65+ YEARS | 54.8% | 53.3% |

*Percentage persons with at least one visit to the dentist in 2031*

Source: NIVEL

The table shows clearly that the part of the population aged 65 years and older has considerably less contact with the dentist then the younger categories. A significant increase of the elderly implies not necessarily a significant increase in the demand for dentistry.

Multiplying the age-specific number of inhabitants that have visited the dentist with the average number of visits per person (not shown) results in the total number of dentist visits that will take place in the Netherlands by 2031. Based on table 2, two different projections have been made. If we use the average visit ratio from the longer period 2007-2011, the number of dentist visits will decline from 39,1 million in 2011 to 38,5 million in 2031. Based on the average of the two most recent years, the number of dentist visits will rise to 40,2 million. There was no strong case for any of the two projections, so the experts decided to average the two. Based on the average, there will be a slight increase in the demand of 0,85% in a 10 year period. In the recommendations 2010 the ACMMP still used 3,0% as the demographic change in 10 years.

The epidemiological changes in dentistry are twofold, the expected changes in juvenile dental health and (mentally) handicapped and elderly. The surveys by NZI in 2010, 2011, and 2013 showed no evidence for a decline of the dental health amongst youngsters. The interviews of dental experts in the (mentally) handicapped and elderly in nursing homes gave some indication of the (poor) dental health of persons in nursing homes.

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It is expected that these groups will need more explicit attention in the near future. The experts decided that the two countervailing trends would be best expressed by maintaining the 2010 value of 3% change needed in 10 years.

Also there are data that suggest that the proportion of elderly edentate people is slowly declining. This is not accounted for under epidemiology, but in sociocultural changes. The elderly are visiting the dentist more frequent than in the past (as can be observed from table 2) and they get more complex treatments. The volume of implants among elderly has been expanding only mildly for the years 2009-2011. On this basis, the parameter for sociocultural change has been set to 3% in 10 years.

## Helpful tips:

- *In addition to the indicator "number of visits to the dentist" for the forecasts on the future demand, it would be very useful to get more insight in the average "chair time" a patient has in the dentist's chair yearly.*
- *For epidemiology, a better understanding of the dental health of adults could improve the rational evaluation of this parameter. The structural monitoring of dental health amongst juveniles should be expanded to adults again*
- *Sociocultural changes can be examined by using consumer panels. The ACMMP had used this technique for the projections on dental demand on the case of vertical substitution of dentists by oral hygienists and it is promising, but basically it is a "what if.." technique.*
- *If the population composition is straight, one might consider abolishing age specific utilization ratios for a quick implementation. However, usually the population is not straight; there is e.g. substantial immigration/ emigration or there is significant ageing of the population. In that case, a survey amongst a small part of the population can yield the needed data for a quick implementation within six months.*
- *Sometimes, epidemiologic data can be retrieved from monitors or scientific research in the member state.*
- *Considering that sociocultural changes are only rarely documented for demand purposes, the expert opinion can be leading in this field.*

## Further information:

The 2010 Recommendations for Medical Specialist Training http://www.capaciteitsorgaan.nl/Portals/0/capaciteitsorgaan/publicaties/capaciteitsplan2010/0%20Capaciteitsplan%20Hoofdrapport%20Engels.pdf

The 2013 Recommendations for Medical Specialist Training http://www.capaciteitsorgaan.nl/Portals/0/capaciteitsorgaan/publicaties/Capaciteitsplan%202013/DEFINITIEF%20hoofdrapport%20engels%20compl.pdf

Capaciteitsplan 2010: deelrapport 3; mondzorg http://www.capaciteitsorgaan.nl/Portals/0/capaciteitsorgaan/publicaties/capaciteitsplan2010/Deelrap3_Mondzorg.pdf

Capaciteitsplan 2013: deelrapport 3; mondzorg http://www.capaciteitsorgaan.nl/Portals/0/capaciteitsorgaan/publicaties/Capaciteitsplan%202013/Capaciteitsplan%202013%20

Deelrapport%203%20Mondzorg.pdf

Regionale spreiding van de eerstelijns mondzorgcapaciteit in Nederland 2010-2012 http://www.capaciteitsorgaan.nl/Portals/0/NIVEL%20%282013%29%20Regionale%20spreiding%20tandartsen%20en%20mondhygi%C3%ABnisten_DEF_metkaft.pdf

Hove,ten M. & Yerrou, R. ben. (2013).Volume Implantologie Kaakchirurgie en Mondzorg.Vektis

## *- HWF PLANNING HARMONIZED WITH SOCIAL AND ECONOMIC DEVELOPMENT IN THE FINNISH SYSTEM*

### REFERENCE INFORMATION:

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www.thl.fi (National Institute for Welfare and Health)

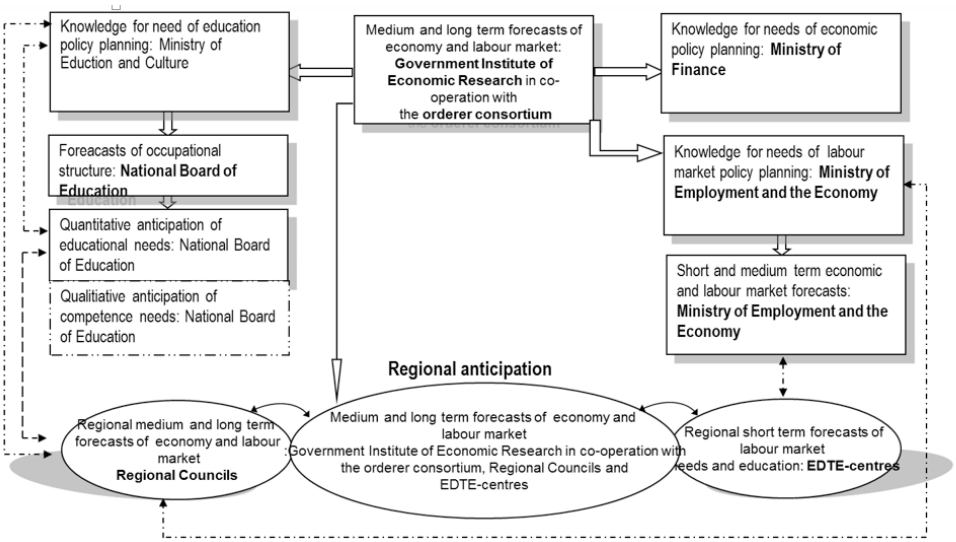
www.stm.fi (Ministry of Social Welfare and Health MoSocH)

### MAIN ASPECTS:

- *The HWF planning is harmonized with social and economic development and the planning of other related sectors. This means better coordination and also better synchronizing of the labor markets and education system in the short, middle and long run. The intakes for education are coordinated according to needs for all industries.*
- *Different scenarios provide alternative views on future economic development that can be utilized in the political decision making processes and in the social planning. The growth of GDP and employment as well as, the changing needs of population, productivity in health care, skill mix changes and estimated need for migration are taken into account.*

### DESCRIPTION:

The Finnish model can be described as "integrated" anticipation process. It starts with general economic scenarios, takes into account size of new cohorts entering to education and to work and tries to keep in balance of the labour market and same time considers the changing quality needs for HWF.




*ANTICIPATION OF EDUCATION AND LABOUR MARKET NEEDS (general purpose, not only HWF)*

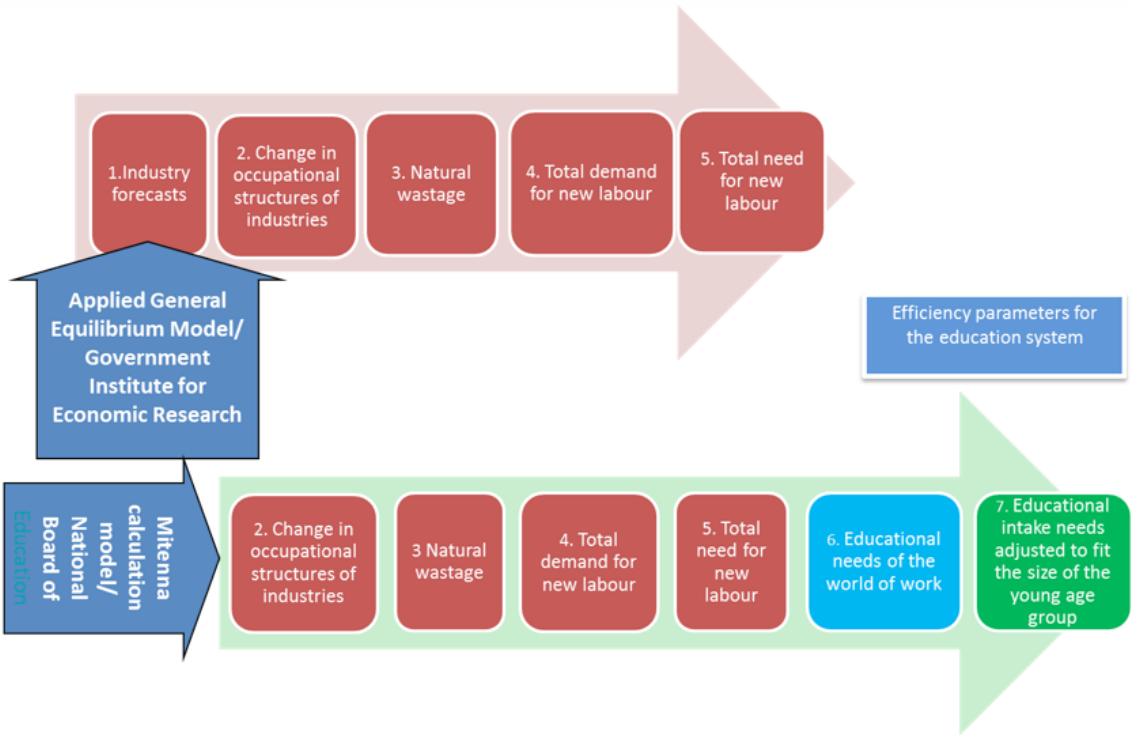
Government Institute for Economic Research VATT produces with the applied general equilibrium model of Finnish economy VATTAGE long term workforce forecasts in

collaboration with four ministries (Ministry of Finance, Ministry of Education and Culture, Ministry of Employment and the Economy and Ministry of Social Welfare and Health).

Finnish National Board of Education FNBE anticipates with Mitenna model the educational needs and proposes the entrant targets on the base of workforce demand. Regional councils in collaboration with other regional partners, including health care organisations, make analysis and forecast of workforce demand and educational needs. After experts groups discussing alternatives Ministry of Education and Culture set the proposals for entrance targets.

Besides the consortium of four ministries the MoEC appoints a wide group of experts to steer and provide expertise of different industries for the phase of forecasting educational needs. These experts present e.g. the MoSocAH, Local Government Employers KT, trade unions, regional authorities and other stakeholders.

The monitoring data for HWF is collected from multiple data sources and reported by research institutes.




*MAIN PHASES OF THE ANTICIPATION PROCESSES (general purpose, not only HWF)*

## RESULTS:

The entrant targets are adopted every four years by the Government as part of the

national development plan for education and research. The intake in universities, polytechnics and vocational institutions is defined in accordance with the national entrant targets. Monitoring is used to compare the targets with the actual data and changes if needed can be implemented even during the planning period.

## HELPFUL TIPS:

- *Effective coordination between quantitative and qualitative forms of anticipation is necessaryin order to support a better and more complete perspectives of foresight and anticipation*
- *There is no quick trick to establish a solid national data base and implement the macroecomic model. In addition, building a tradition on intersectoral collaboration for workforce anticipation is a challenging requirement.*

## FURTHER INFORMATION:

*VATTAGE model:*

Ahokas J, Honkatukia J. Politiikkatoimien vaikutukset työvoiman tarpeeseen Suomen taloudessa 2010-2025. Tutkimukset 161. VATT, 2010.

http://www.vatt.fi/file/vatt_publication_pdf/t161pdf

http://www.vatt.fi/file/vatt_publication_pdf/t150.pdf

*Mitenna model:*

Hanhijoki I, Katajisto J, Kimari M, Savioja H. Education, training and demand for labour in Finland by 2025. Finnish National Board of Education. Publications 2012:16. http://www.oph.fi/download/144754_Education_training_and_demand_for_labour_in_Finland_by_2025_2.pdf

*Monitoring HWF:*

National Institute for Welfare and Health: Three yearly reports from THL (data from Statistics of Finland and Valvira).

1. *Personnel in municipal social and health services*
   .....
2. *Health care and social welfare personnel*
   .....

http://www.thl.fi/en/web/thlfi-en/statistics/statistics-by-topic/personnel-in-the-health-and-social-services

Statistics Finland : Employment Statistics

http://www.stat.fi/

The Finnish Medical Association and the Finnish Dental Association together with KT Local Government Employers (www.kuntatyonantajat.fi) collect information on physicians and dentist shortages in municipal health centres.

http://www.laakariliitto.fi/site/assets/files/1268/ll_vuositilasto2014_e_net.pdf (Physicians)

http://www.hammaslaakariliitto.fi/fi/liiton-toiminta/tutkimukset-ja-tilastot/tutkimukset/tyovoimaselvitykset (Dentists, in Finnish only

KT makes assessments every two or three years also on the shortages of other professional and vocational groups in municipal social and health care. These assessments on shortages are carried out in collaboration with the MoSocH.

http://www.kuntatyonantajat.fi/fi/ajankohtaista/tilastot/tiedustelut-ja-selvitykset/Tyovoimatiedustelut/kuntasektorin-tyovoimatilanne-2012/Sivut/default.aspx

"Competence foresight in local government services "-pdf publication

http://www.kuntatyonantajat.fi/en/municipal-personnel/competence-foresight/Pages/default.aspx

The Competence foresight in local government services project was carried out by KT Local Government Employers to develop competence foresight frameworks and practices for the local government sector.

Other websites - ministries and institutes:

www.okm.fi (Ministry of Education and Culture)

www.oph.fi (Finnish National Board of Education)

www.tem.fi (Ministry of Employment and the Economy)

www.vm.fi (Ministry of Finance)

www.vatt.fi (VATT Government Institute for Economic Research)

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## - FORECASTING THE DEMAND FOR THE HWF IN THE NORWEGIAN PLANNING SYSTEM

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### MAIN ASPECTS:

- *The Norwegian forecasting model covers a wide range of aspects*
- *It is also a robust model*
- *The model is based on alternative projections on different assumptions, and offers different scenarios (i.e. high, medium, low) for the different approaches. This makes the model quite flexible and can be used in different scenarios*

### DESCRIPTION:

The Norwegian health and social personnel forecast model (HELSEMOD) is developed by Statistics Norway. It is mainly applicable for planning purposes of future health personnel capacity to cope with health care needs in the population. It is not a prognosis, but an exercise in disclosing what happens 20 years ahead under certain conditions. The model is based on alternative projections based on different assumptions, and offers different scenarios (i.e. high, medium, low) for the different approaches. The baseline year for the most recent projections is 2010, and the model projects the health care personnel needed towards 2035. It should be noted that HELSEMOD is the main Norwegian forecast model for health personnel, but there is also other registers and statistics used for planning purposes on national, regional and local level supplementary to the results of the HELSEMOD. This chapter however focuses on the HELSEMOD model.

The various factors of the demand side in health planning models are surrounded by a lot of uncertainties. The OECD distinguishes five different approaches to modelling the demand side, than can be commented based on the Norwegian experience:

1. *Population size*
   .....

2. *Current utilisation patterns*
   .....

3. *Changing utilisation patterns*

4. *Changes in health service delivery*

5. *GDP/ health expenditure growth*

## 1) Population size

Any model should include population size as a basic element for all types of forecasting. Changes in the age groups of the population using health services are a basic component in projecting the demand for services and personnel. By assuming a fixed ratio between health professionals in different services and population in actual age groups may, it is possible to construct a relevant first order indicator of future demands. An increase in population will also affect the supply side of health personnel. This approach can easily be implemented based on population projections which are known with a relatively high degree of certainty for the first decades. However, this approach is not sufficient to forecast future population needs because it does not take into account other factors. In the most recent population projection (2011) made by Statistics Norway, the population is projected by age and sex at the national level up to and including the year 2100.

## 2) Current utilisation patterns

Most models also consider the effects of changes in population structure to estimate the future demand for health services. This exercise requires data on present health care utilisation rates by age and sex, in different settings. These patterns are translated into health workforce requirements by using existing data on population size. It is assumed that the utilisation rates and the related health workforce requirements remain constant over the course of the projection period. In baseline scenarios, changes in demand are driven by changes in population size and structure only. This approach is useful if the change in utilisation pattern cannot be projected properly (see approach 3). However, it is easier for countries with fully developed health care systems to use the existing utilisation rates than countries without access to the same data and where the living conditions are expected to improve. This should be taken into account in developing a forecasting model.

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The HELSEMOD model uses data from multiple sources in the Statistics Norway`s health statistics to disclose the current utilisation patterns. Available data varies across the different health care settings, and health care utilisation data is not seamless between hospital and primary health care in Norway. If data is not available, it is assumed the same pattern for every population group. The lack of good data for all groups could be considered a weakness in the model. The demographical component is shown as a time series for each year in the projection period, which is beneficial when building a forecasting model.

### 3) Changing utilisation patterns (e.g. need-based)

In addition to merely considering the population size and current utilisation patterns, it is also possible to incorporate possible changes in the demand by using different methods. The two most common approaches are: the utilisation-based approach and the needs-based approached. However, there may be gaps between utilisation and needs for health services. For both approaches, the most common factor is changes in population health status (morbidity or epidemiology). This can be taken into consideration by using data on past trends in health risk factors and the incidence/prevalence of a number of diseases by age and sex, making assumptions that these trends will either continue or stabilize in future years. The use of available data is often complemented by expert consultations to seek views on the most probable scenarios in terms of morbidity in the years ahead. “Needs-based” models try to assess any current gap between utilisation rates and health care needs by using information about unmet care needs as reported for instance in population-based surveys and/or by using available evidence on gaps between current use and recommended use according to existing clinical guidelines.

One should consider the quality of available data before making such projections, as this approach requires a large amount of information from administrative sources, disease registries and/or population-based surveys. Certain models make assumptions about compressions or expansions of morbidity or mortality, and build their projections on health workforce requirements based on arbitrary assumptions. Such practices should be avoided.

Epidemiological trends and expert judgments can also estimate changes in the prevalence of e.g. circulatory diseases, cancer, diabetes, lung diseases, mental diseases, people with dementia, alcohol abuse and other conditions that may increase the demand for health services. Even though such judgments may not produce specific numbers by

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themselves, they are an important supplement/alternative to available data.

A model may consider past trends in the health care and social services when making projections. The HELSEMOD model only indirectly include such aspects through the assumption the observed increase in utilisation of health services will continue in the projection time span as a part of general economic growth. Progress as a result of new health technologies and research may entail higher demand in itself due to the new possibilities. On the other hand, improved health status in the general population may indicate that the need for health services does not increase as much as the rise in the number of for example elderly with high health care needs.

### 4) Changes in Health Service Delivery

Changes in the composition of health services may also impact the future demand for different categories of health professionals. One can expect a re-organisation of the health care service deliveries to influence the health workforce requirements, requiring a different number and mix of health care providers. Many countries try to re-orient activities away from hospitals for example by strengthening primary health care, home-based care and long-term care in institutions. These policies are likely to have an impact on the health personnel demand. Some countries have tried to include this in their health workforce planning models. For this purpose, the model requires possible assumptions about the future direction and magnitude of the reforms. Some Norwegian reforms are incorporated in the HELSEMOD 2012 model and in earlier versions. An example is the Coordination Reform which presumes that the municipalities will play an increasing part in meeting the growth in demand for health services. In order to include the reform into the analyses, Statistics Norway has assumed expansion of home nursing care, general practitioners, physiotherapy and in health promoting activities compared to the baseline alternative. This is one way to take into consideration that the health care delivery system affects the health workforce demand. Another example is a long term national program to strengthen mental health care resulting in an increased supply of services, reflecting a former unmet need of mental health care. Such reforms can influence future demand considerably. Although the effect of different re-organisations can be hard to measure, it is an important factor to incorporate into any forecasting model.

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## 5) Gross Domestic Product (GDP)/Health Expenditure Growth

Future economic growth in the society, whether negative or positive, is likely to be very important for the future demand for health services and health professionals. Positive economic growth increases the public and private resources to pay for health services. Only a few models have tried to incorporate economic growth. Experiences show that countries with affluent economies tend to increase the share of GDP spent in the health care sector. Countries with reduced public spending and high unemployment rates tend to protect the health sector, although expansion of patient co-payment is often introduced. The HELSEMOD model assumes that positive economic growth will create higher expectations and utilisation of services beyond the impact of demographic changes. The model includes this aspect through GDP growth.

### Results:

Since most of the Norwegian health spending is publicly (more than 80 %), the model recognises the increasing health and social spending depending on political decisions. Models in countries with different health systems will also benefit from incorporating economic growth.

The political re-organisation of health care deliveries is influencing the demand but it is still early to say if the assumptions made to measure it are good.

### Helpful tips:

- *The forecasting model would benefit from including projections not only at the national level, but also at a regional level. If possible, this should be a part of future model. The model would improve if it could incorporate to forecast changing utilization rates directly. This could be hard to measure but is a good indicator of the future need*
- *Based on the OECD experiences, and following the Norwegian model, for an easy implementation of the Norwegian model:*
  - *Population size projection should be incorporated, although interpreted with care.*
  - *Considering the current utilisation rates is a good basis for the model, but is insufficient for forecasting future needs.*
  - *Being able to forecast changing utilisation rates will greatly improve the accuracy of the model.*

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- *The effects of significant health reforms or political priorities should be quantified and incorporated into the model.*
- *National economic development and health expenditure growth should be incorporated and is essential for a good forecasting model.*

## FURTHER INFORMATION:

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### *- BUDGET CONSTRAINTS AND ALLOCATION OF RESOURCES IN THE SPANISH PLANNING SYSTEM*

#### REFERENCE INFORMATION:

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  - Ministerio de Sanidad, Servicios Sociales e Igualdad - Profesionales - Estudios para la planificación de profesionales sanitarios
- Regional website. Murcia Region:
  - http://www.murciasalud.es/fse.php?iddoc=192437&idsec=4494
  - http://www.murciasalud.es/recursos/ficheros/165344-modelo_dinamico.pdf

- Legislation: Last modification of article 22 Law 44/2003, November 21st.

#### MAIN ASPECTS:

- *Since sustainability of the Health care system is one of the values of the HWF planning systems, it's very important to know how to put in practice this value, both in the forecasting model and during the discussion with the stakeholders*

- *The planning of HWF should be made based on the needs of health care for the population, but economic resources should also take into account, because the available budget is a factor that influences the demand, just as has happened in Spain during the economic crisis.*

#### DESCRIPTION:

In Spain, by Law(30), the planning of health specialist's vacancies takes in account the budget and the needs (demand) of professionals. Both factors are closely related, the budget determines the investments of regional health services, low budgets condition the opening of new health centers, retirement patterns and replacementof health professionals and, consequently, the demand of new specialists.

In the Spanish planning model for specialists, the regional proposal of vacancies must ensure that the budget is available. The vacancies offer by central administration(31) (0.3% of total) must befiscallyauthorizedby the Ministry of Finance, previously.

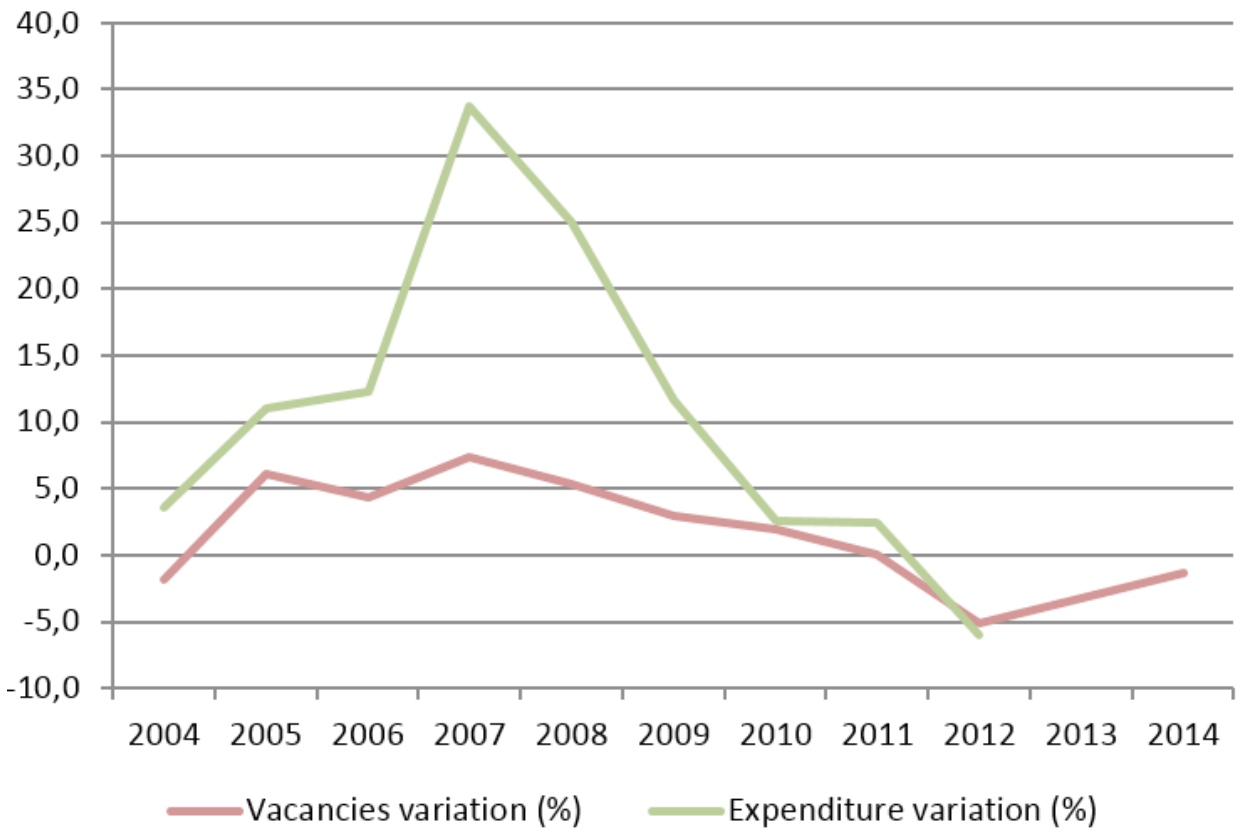
In the beginning of the economic crisis, the annual vacancies of specialized training continued growing in Spain and reached the highest number of offer to history (2011). However since 2012, the reduction is progressive according to these two factors: specialist demand and budget.

In addition to the previously mentioned, Spain has frozen salaries in thepublic sector

(30) Article 22, Law 44/2003, November 21st.

(31) Ministry of Defense, Health Institute Carlos III and INGESA (National Institute of Health Management)

since 2010; this measure also affectsspecialists in training, and,therefore,the overall costof specialized training.




*Evolution vacancies and expenditure specialist training in Spain*

Source: Ministry of Health, Social Services and Equality, September 2014.

The increase in spending in 2007 and 2008 reflects a change in the remuneration[32] and the increased number of specialists in training.

Expenditure data 2023 and 2014: not available.

## RESULTS:

The specialist training spending in 2012 reached 992 million euros, compared to 1.001 the previous year, representing a decrease of 0.9%, while the overall reduction of public health expenditure was 1.7%. The expenditure data are published with two year delay, so we have to wait to know the real expenditure of specialized training in 2013 and 2014.

(32) RD 1146/2006, August 6. special employment relationship of specialist training.

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Despite theprogressivereduction of supply (number of vacancies), the specialist replacementinthe next 15 yearsis guaranteed withthecurrent specialists in training. Our last offerwas a bitoversizedin relationto future demand andbecause the demographic forecast have not accomplished. Currently, the offeris adaptingto new scenarios

## HELPFUL TIPS:

When budgets are low, you can opt for an easy short-term measure: reducing expenditure can be approached in two ways: by reducing the expenditure of specialized training or reducing overall costs by employing lower-paid professionals as specialists in training. This measure can have serious consequences in the medium and long-term supply of professionals, may cause imbalances (shortages or surplus). Therefore, in these situations it is more necessary than ever to optimize resources and, therefore, a good planning is a key factor.

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## - THE ENGLISH APPROACH TO THE WORKFORCE PLANNING AND FORECASTING

### REFERENCE INFORMATION:

Centre for Workforce Intelligence (CfWI)
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Matt Edwards
Head of Horizon Scanning & International
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+44 7834 800 393
http://www.horizonscanning.org.uk

### MAIN ASPECTS:

- *England has developed a workforce planning approach that recognises the complexity of factors influencing demand and supply and the intrinsic uncertainty of the future. A system thinking approach is used to plan workforces across public health, healthcare and social care including skills and competencies at a system level. Methods include horizon scanning, scenario generation, systems dynamics modelling / simulation and policy analysis.*
- *A major feature of the work in England is the high degree of stakeholder involvement, which is critical to arrive at a shared view of future challenges, and in making policy decisions.*
- *The key benefits of this approach are to support longer-term planning, to provide robust decision-making that takes account of the uncertainties of the future, and to help decision makers be more alert to emerging risks as the future unfolds.*
- *Key policy actions have been taken as a result of the approach and organisation of the England system for workforce planning. This includes regular review of workforces at a system level as well as across public health, health care and social care, the use and development of innovative leading methods to support policy makers such as the Department of Health to be the steward of the system, Health Education England who deliver each year a national workforce plan. The Centre for Workforce Intelligence has delivered over 20 major studies and over 400 publications in the last 5 years to support decision makers in the English system.*

### DESCRIPTION

The English health and social care workforce is large. The total number of jobs within the health and care system in 2013 was 3.4 million (ONS, 2013b). Of this, the English National Health Service (NHS) employs 1.4 million staff (NHS) (HSCIC, 2014). It has been claimed that only the Chinese People's Liberation Army, the Wal-Mart supermarket chain and Indian Railways directly employ more people. Furthermore, the workforce is composed of diverse set of roles such as doctors, nurses, social workers and carers, many of which require a significant number of years of training.

The risks of poor workforce planning are to put patient lives at risk, increase morbidity, and the need to spend large sums of money to correct sub-optimal systems. Employees can suffer from the stresses of understaffing, or in the case of oversupply, livelihoods can be put in jeopardy if jobs are not available. To mitigate risk it is important to have foresight of the key issues, and flexibility within the workforce and the training pipeline (i.e. the stages required prior to entering the workforce). Finally, it can takes many years to train these professionals, for example 15 years or more for a hospital consultant, so an under or over-supply cannot be corrected quickly or easily.

Within England the Department of Health, Health Education England and Public Health England commission the Centre for Workforce Intelligence to produce workforce intelligence to inform policy making.

The approach used by the CfWI for robust workforce planning uses a framework that combines four elements:

1. *horizon scanning to understand the system and what drives future behaviour;*

2. *scenarios to explore plausible but challenging futures that need to be addressed;*

3. *system dynamics modelling and simulation to quantify what these futures may look like; and*

4. *4policy analysis to make robust decisions that work best across these uncertain futures.*

*Figure 1: Robust workforce planning framework (CfWI, 2014a)*

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Each workforce study uses systems thinking methods to integrate horizon scanning, scenario generation and modelling and simulation. Additionally, new innovative ways to quantify uncertain parameters are used as part of mathematical elicitation approaches to test scenarios for consistency as well as modelling uncertainty to help decision-makers such as DH, HEE and PHE to make appropriate choices.

As an example, system dynamics modelling was used to quantify the future supply and demand of doctors as part of a project for the Department of Health to inform a Health and Education National Strategic Exchange (HENSE) review of the intake to medical and dental school (HENSE, 2013 and CfWI, 2014a). The purpose of the work was to provide intelligence to inform recommendations of the HENSE review group on future student intakes to medical and dental schools looking forward to 2040.

System dynamics is a simulation method that enables the behaviour of complex systems over time to be understood and simulated. System dynamics models represents changes to a system over time by using the analogy of system flows accumulating and depleting over time in stocks.

The system dynamics approach meant that robust, evidence-based supply and demand models could be created to test potential policies and their impact. It also meant the model was “transparent” and enabled expertise of several hundred stakeholders from the healthcare system to be synthesised.

The diagrams below show a high-level stock and flow diagram containing the key training and workforce stocks that make up the medical workforce model and the generic demand structure implemented in the medical model. An overall representation of the medical training and career pathway system is also provided to illustrate the complexity and comprehensiveness required to truly understand the dynamics of these types of systems.

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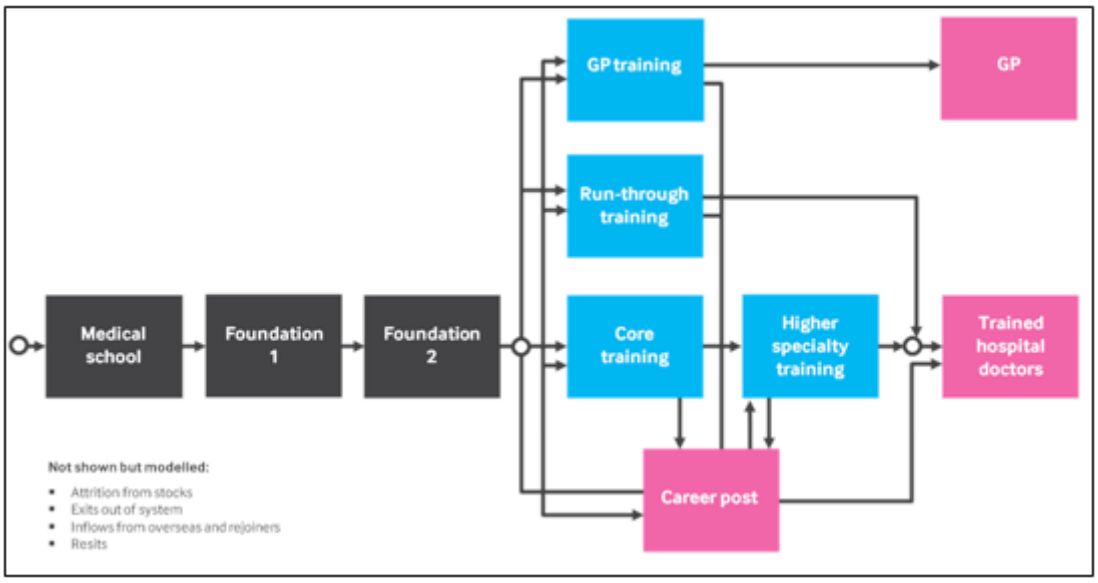


*Figure 2: High-level stock and flow diagram of the medical workforce model for England*

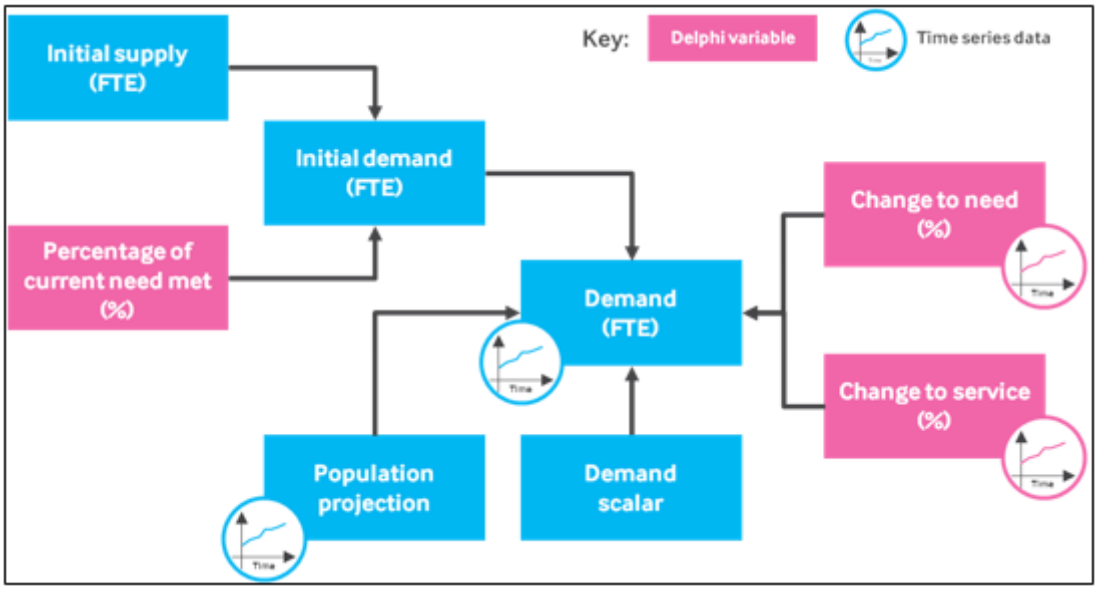


*Figure 3: The generic demand structure implemented in the medical model for England*

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This is a detailed SFD diagram from the Vensim system dynamics model, and illustrates the conversion of the high-level stock and flow diagram into a full computer simulation. Although the details cannot be seen, this shows the complexity of the stocks and flows in the full model. There are several diagrams like this in the medical model.

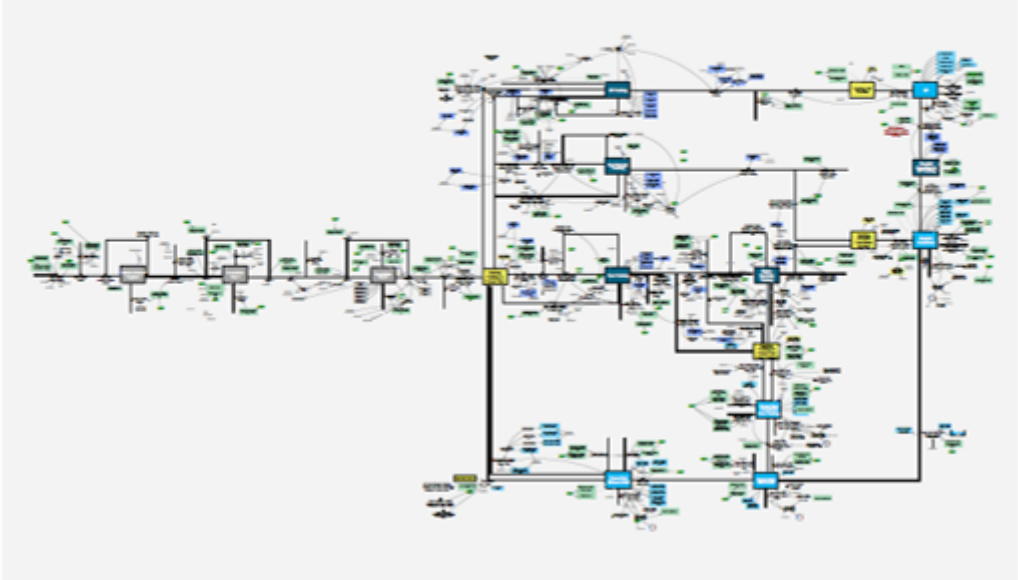

*Figure 4: System dynamics model SFD of the medical training and career pathway system*

These approaches and methods have been used by England to develop a wide range of supply and demand models for other workforces across the health and social care systems, including nursing, midwifery, pharmacy and a range of medical specialties. (CfWI, 2013 a-d)

In addition the CfWI, as part of a commission from the Department of Health to model skills and competences out to 2035.

In Horizon 2035 the study (CfWI, 2014b) applies a broad definition of health, social care and public health in England to reflect the Department of Health's wide role as 'the steward of the health and care system to ensure that it operates effectively as a whole to meet the needs of people and communities' (DH 2013).

Taking a whole system approach to the health, social care and public health sectors presents a particular challenge. This approach requires the research and modelling to capture these three diverse sectors, and the people represented, together within a single framework.

With a headcount of over 11 million people which equates to 10 Billion hours of skill

that is being modelled, this system represents one in five of England's total population. The figure below shows how the unpaid and voluntary care and support workforces account for around 75% of this total headcount.

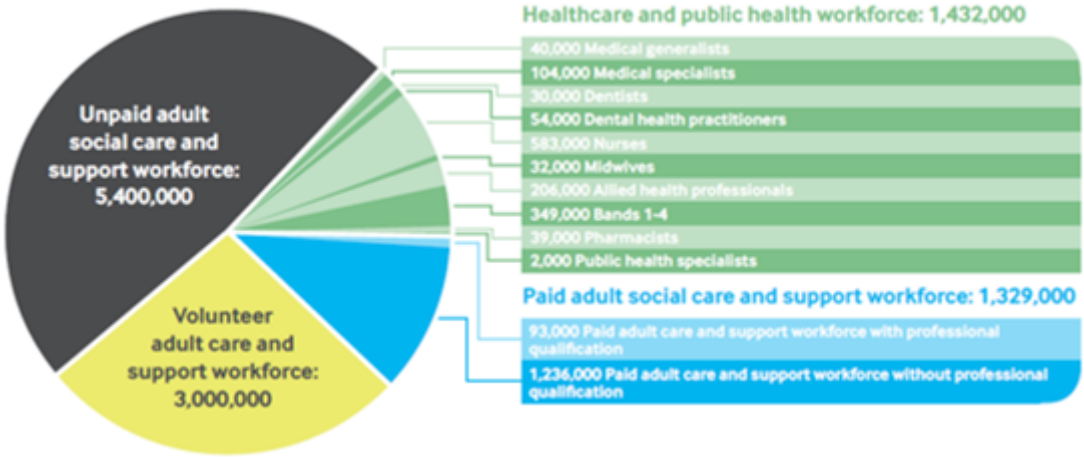


*Figure 5: Horizon 2035 head count*

The long timeframe of 20 years presents a different challenge; that current conceptions of roles and responsibilities in health and care services may not be applicable over a long timescale. Therefore a different understanding may be required. To overcome both the challenge of the whole-system approach and the long timeframe of the research, in England they have developed a 'skills and competency lens' that is applicable to all three sectors and consistent over a longer timescale.

This lens (figure 5) recognises competence in these sectors as a complex combination of an individual's skills, personal attributes and knowledge and this lens has been applied throughout Horizon 2035. The focus on the eight 'wellbeing skills' as these relate most directly to service capacity and capability and are the subject of this system level modelling.

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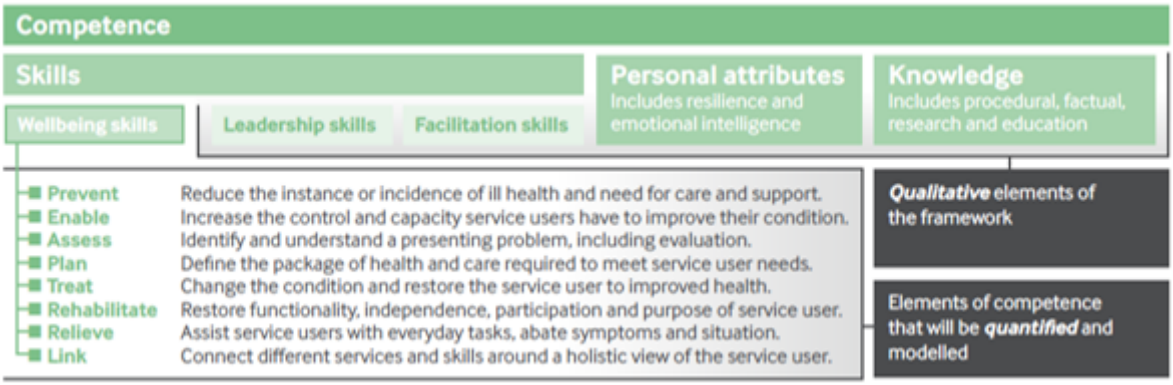


*Figure 6: Horizon 2035 skills and competency lens*

Latest findings and the 6 scenarios of this work will be published during 2015 at www.horizonscanning.org.uk and www.cfwi.org.uk

## Results:

England has delivered more than 20 major studies and have over 430 publications since 2010 on the future workforce needs.

Example of policy action in England include:

- *HEE's national workforce plan making £5Billion of education and training decisions on an annual basis (HEE, 2013 and 2014)*
- *The HENSE group decision amended medical student intakes as a result of detailed modelling, simulation and policy analysis, leading to key changes in commissions (DH, 2012b)*
- *The Home Office Migration Committee updating the Shortage Occupation List to permit recruitment of shortage occupations from outside the EEA with regular review of the workforce planning situation (Migration Advisory Committee 2012 and 2015)*

## Helpful tips

England has developed a workforce planning approach that recognises the complexity of factors influencing demand and supply and the intrinsic uncertainty of the future. This framework is referred to as the Robust Workforce Planning framework (CfWI 2014a).

A major feature of the work in England is the high degree of stakeholder involvement, which is critical to arrive at a shared view of future challenges, and in making policy decisions.

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The key benefits of this approach are to support longer-term planning, to provide robust decision-making that takes account of the uncertainties of the future, and to help decision makers be more alert to emerging risks as the future unfolds.

The Horizon 2035 programme of work has adopted a systems thinking approach to considering how challenges across the English health and care system may unfold over the next 20 years, in terms of demand and supply of skills. This is a new approach within workforce planning and moves beyond professional definitional boundaires and allows a wider definition of 'workforce' that includes citizens and unpaid individuals who care for others as well as the concept of self-care and wellbeing skills across the continuum of public health, healthcare and social care.

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CHAPTER 6

# DATA SOURCES

One of the main recommendation on the health workforce planning subject concerns the **availability, quality and exhaustively of data**.

"Need to know first where we are before we can know where we're heading: The first step of any good health workforce projection is good data about the current situation. One of the main benefits of strengthening health workforce planning efforts is that it often triggers improvements in this crucial first step"[33].

"Health workforce planning is concerned with ensuring that the right number and type of health human resources are available to deliver the right services to the right people at the right time (Birch et al, 2009). In order to be able to deliver against this purpose, one of the key requirements for human resource planning in the health sector are accurate and comprehensive information systems on the actual number of health care[34]".

In many cases is difficult that data utilized in the forecasting model are collected with the main purpose of health workforce planning. Often are information derived from a multiplicity of data sources whose aims are varied and in any case different from the planning.

The required level of detail is closely connected with the forecasting model developed and with the variables it considers and may cause the contemporaneous use of information collected at a local, national and even international level.

Nevertheless, there is a minimum series of information that must necessary be collected and used for the HWF planning, independently from the type of source they come from and the aims they are collected for[35] and collecting this data set might be a priority

(33) ONO T., LAFORTUNE G. AND SCHOENSTEIN M.: "Health Workforce Planning in OECD Countries: A Review of 26 Projection Models from 18 Countries", OECD Health Working Papers, No. 62, OECD Publishing, pag.11 – 2013 available at http://dx.doi.org/10.1787/5k44t787zcwb-en

(34) Matrix, pag 25

(35) D051 MINIMUM PLANNING DATA REQUIREMENTS FOR HEALTH WORKFORCE PLANNING http://www.euhwforce.eu/web_documents/RESULTS/140414_WP5_D051_Minimum_planning_data_requirements_final.pdf

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not only for the technician in charge of planning, but also for policy makers, especially when the collection of information requires an economic investment.

"Data availability will continue to be scarce unless governments recognize this and allocate resources to health workforce planning.

Hence, there should be a sense of purpose on the basis of which national governments recognize the importance of health workforce planning to ensure the affordability and sustainability of their health systems."[36].

## *FINDINGS*

Data useful for the planning may be collected and filed with a planning aim in a specific database or arise from different sources and collected to different aims.

In general there is more than one database where data used for planning are stored. However, usually, these databases aren't created only for planning purposes. In some case a comprehensive and complete database is available thanks to a collection of data coming from different data sources.

Sometimes, there is also a dedicated agency with responsibility for producing comprehensive regular reports from different data sources to improve planning and decision making[37].

The databases used as data source for planning might contain individual data or aggregated data.

One of the principal sources of data useful for the aims of planning is represented by professional registers to which professional are obliged to be enrolled in order to exercise the profession.

It is obvious that a huge part of database analyzed contains individual data referred to the single professional that allow further aggregations on various dimensions object of the analysis.

(36) Matrix pag.25

(37) See Information Centre Health and Social Care in England - http://www.hscic.gov.uk/

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Where these types of elementary information are unavailable, data is extrapolated by different sources and already presents a level of aggregation more or less elevated.

The data sources used to feed the forecasting model might be unique or multiple.

No one of the analyzed models has a sole source from which are extracted data which will provide the forecasting model. Usually there are multiple sources, even if there are often principal sources of data from which the most part of necessary information are extracted. For example in Belgium there are three primary sources of data, in Denmark just two and in Finland four. Anyway in some countries there are structured database gathering information from more than one data sources , (see the National Cadaster of Health Professionals in Belgium and the Mobility register in Denmark).

Availability of updated data to be used as input in the forecasting model is necessary for the success of the exercise and the reliability of evaluations.

In the selected planning systems data from which the forecasting is generated are almost always updated to the previous one or two years.

| DATA COLLECTION | DATA SOURCES | DATA COLLECTED | LAST AVAILABLE DATA |
|---|---|---|---|
| BELGIUM | THE FEDERAL DATABASE OF REGISTERED HEALTH PROFESSIONALS WHICH INCLUDES "LICENSED TO PRACTICE" (IN FEDERAL PUBLIC SERVICES HEALTH).<br>THE NATIONAL INSTITUTE OF HEALTH INSURANCE AND DISABILITY FOR INFORMATION ABOUT THE "PRACTICING".<br>THE CROSSROADS BANK FOR SOCIAL SECURITY FOR INFORMATION ABOUT THOSE PROFESSIONALS, WHO ARE "WORKING" AS EMPLOYEES. | INDIVIDUAL DATA | THE PRIME SOURCE (FEDERAL DATABASE) IS UPDATED DAILY.<br>DATA LINKING WITH THE OTHER SOURCES IS A COMPLICATED PROCESS AND HAS BEEN CARRIED OUT FOR THE FOLLOWING YEARS:<br>2009 FOR NURSES,<br>2010 FOR PHYSIOTHERAPISTS,<br>2012 FOR PHYSICIANS AND DENTISTS. |
| DENMARK | REGISTER OF HEALTH PERSONNEL REGISTER AT THE DANISH HEALTH AND MEDICINES AUTHORITY (AUTHORIZATION REGISTER): CONTAINS RELEVANT DATA REGARDING PROFESSION, GENDER, AGE, DATE OF REGISTRATION ETC.<br>THE MOBILITY REGISTER: A COMBINATION OF INFORMATION FROM THE AUTHORIZATION REGISTER COMBINED WITH INFORMATION FROM "DANMARKSSTATISTIK" REGARDING EDUCATION, OCCUPATION ETC. | THE AUTHORIZATION REGISTER THAT CONTAINS BOTH INDIVIDUAL AND AGGREGATE DATA.<br>THE MOBILITY REGISTER THAT CONTAINS AGGREGATED DATA. | THE AUTHORIZATION REGISTER IS UPDATED ON A DAILY BASIS.<br>THE MOBILITY REGISTER WAS LAST UPDATED WITH DATA FROM 31.12.2012. ACCORDING TO PLAN THE REGISTER FROM NOW ON IS GOING TO BE UPDATED ONCE A YEAR. |

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| | | | |
|---|---|---|---|
| ENGLAND | DATA ARE COLLECTED NATIONALLY THROUGH A HUMAN RESOURCE (HR) AND PAYROLL SYSTEM (ELECTRONIC STAFF RECORD SYSTEM - ESR).<br>DATA ON GENERAL PRACTITIONERS (GP), AND SOME PRACTICE STAFF WHO ARE NOT DIRECTLY EMPLOYED BY THE NHS, ARE COLLECTED BY SEPARATE SYSTEMS.<br>OTHER KEY DATA SOURCES ARE THE LABOUR FORCE SURVEY CONDUCTED BY THE OFFICE OF NATIONAL STATISTICS (ONS) AND DATA FROM UNIVERSITY COLLEGES AND ADMISSIONS SERVICE AND HIGHER EDUCATION STATISTICS AGENCY). | INDIVIDUAL DATA | CONSIDERING THE PROJECTIONS MADE BY CFWI, THE SUPPLY MODELS ARE BUILT USING DATA RELATED TO YEAR 2013. |
| FINLAND | MULTIPLE DATA SOURCES | INDIVIDUAL DATA | THE MODEL, DATA AND CALCULATIONS HAVE BEEN UPDATED CONTINUOUSLY EVERY YEAR |
| NORWAY | REGISTER OF ALL STUDENT IN HIGHER EDUCATION (MINISTRY OF EDUCATION AND RESEARCH).<br>STATE REGISTER OF EMPLOYERS AND EMPLOYEES (NAV), CENTRAL REGISTER OF EMPLOYMENT RELATIONSHIPS IN NORWAY REGISTER OF HEALTH PERSONNEL WITH AUTHORIZATION GIVEN BY THE NATIONAL HEALTH PERSONNEL AUTHORITY (SAK).<br>CENTRAL REGISTER OF ALL PHYSICIANS (GPS – NAV) AND SPECIALISTS (DIRECTORATE OF HEALTH).<br>RELEVANT DATA AT REGISTERS IN STATISTICS NORWAY. | INDIVIDUAL DATA AND JOB POSITIONS AVAILABLE FOR SPECIALISTS IN HOSPITALS. | MAINLY 2012.<br>DATA ON GPS AND SPECIALISTS ARE UPDATED CONTINUOUSLY. |
| SPAIN | MEDICAL COUNCIL REGISTER: PROVIDING INFORMATION OF REGISTERED PROFESSIONALS.<br>PAYROLL DATA OF REGIONAL HEALTH SERVICES.<br>PRIMARY CARE: SNS INFORMATION SYSTEM FOR PRIMARY CARE (SIAP).<br>HOSPITAL BASED-CARE, AMBULATORY AND INPATIENT CARE: NATIONAL SURVEY ON INPATIENT CARE PREMISES (ESCRI).<br>REGISTER OF MINISTRY OF EDUCATION: GRADUATES AND SPECIALIST DOCTORS.<br>NATIONAL STADISTICAL INSTITUTE (INE) FOR DATA ON RETIRED AND ACTIVE PROFESSIONALS, BY GENDER AND AGE; HEALTH PROFESSIONALS ENTERERING SPAIN (ECONOMICALLY ACTIVE POPULATION SURVEY (EAPS); NATIONAL IMMIGRANT SURVEY (NIS 2007) –SOCIAL AND DEMOGRAPHIC CARACTHERISTICS OF PEOPLE BORN ABROAD). | AGGREGATED DATA.<br>BUT WITH THE IMPLEMENATION OF THE NATIONAL REGISTER OF HEALTH PROFESSIONALS BY 2016 THE DATA WILL BE INDIVIDUAL | DECEMBER 2013 |
| THE NETHERLANDS | SOURCES USED FOR PLANNING PURPOSES INCLUDE GOVERNMENT BODIES SUCH AS THE CENTRAL BUREAU OF STATISTICS (CBS), THE NATIONAL REGISTER FOR HEALTH PROFESSIONALS WORKING FOR INDIVIDUAL PATIENTS (BIG-REGISTRY) AND THE NATIONAL INSTITUTE FOR PUBLIC AND ENVIRONMENTAL HEALTH FOR FORECASTS ON DEMOGRAPHICS AND THE DEVELOPMENT OF NEED/DEMAND FOR HEALTH CARE.<br>PROFESSIONAL ASSOCIATIONS SUCH AS THE ROYAL NETHERLANDS SOCIETY FOR MEDICINE KEEP DETAILED PERSONAL REGISTERS FOR EACH SPECIALISM AND FOR EACH TRAINING PROGRAM.<br>STATE REGISTER OF EMPLOYERS AND EMPLOYEES (CENTRAL REGISTER OF EMPLOYMENT RELATIONSHIPS IN NORWAY) OPERATED BY NAV, AND REGISTER OF HEALTH PERSONNEL WITH AUTHORIZATION (HPR) OPERATED BY SAK.<br>DATA ON PRODUCTION CAN BE DRAWN FROM THE DATABASES OF THE HEALTH INSURANCE COMPANIES AND THE HOSPITALS THEMSELVES. | INDIVIDUAL DATA | JANUARY 2013 FOR ALMOST ALL THE VARIABLES CONSIDERED |

Data useful for planning may be collected and filed for aims different from the specific aim of planning. Vice versa, might be collected with the principal aim to plan and after be used also for other aims and the control of authorization to exercise. At the

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end existing and created with different aims database might be enriched with data specifically required by the planning.

In the analysed experiences, generally speaking, data utilized in the forecasting model are not collected with the specific aim of health workforce planning. They are mainly data filed in professionals registers and useful to payroll systems. The fact remains that these archives represent the main source of information useful for planning and, where there is the opportunity, they may be enriched with fields specific for the planning project. Vice versa, in those cases in which data are collected and filed for planning (National Cadaster of Health Professionals in Belgium), they may be also used for other purposes.

**FOR FURTHER DETAILS:**

- *Focus on --> Details of the seven planning systems --> Data*

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## *GOOD PRACTICES*

The following pages present the good practices

- *"Data collection and FTE calculation in the Belgian planning system",*
- *"Data collection and FTE estimation in the Dutch planning system",*
- *"Data collection and FTE estimation in the English planning system",*

related to the key element "Data".

For "**good practice**" we mean an experience or practice that have achieved results consolidated in the course of time and present elements and characteristics applicable in other contexts.

A good practice may concern to methods, instruments, processes and technical specific solution of HWF planning. The collection and diffusion of those practices realized at a national level are the premises for the construction of a base of knowledge, to be enriched in the course of time, to allow the exchange and the comparison of ideas, experiences and projects.

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## - DATA COLLECTION AND FTE CALCULATION IN THE BELGIAN PLANNING SYSTEM

### REFERENCE INFORMATION:

Statistical Reports produced by the Team Workforce Planning are published on the website of the planning commission : www.health.belgium.be/hwf
Secretary of the Planning Commission : Aurélia Somer
Contact Email Team Workforce Planning : plan.team@health.belgium.be
One of the main data sources in the Belgian data linking method is the Datawarehouse Labour Market & Social Protection, which serves as a national administrative data clearing house. Website : https://www.bcss.fgov.be/fr/dwh/homepage/index.html

### MAIN ASPECTS:

- *Data used in the forecasting model are regularly updated in order to have a realistic picture of what is the current situation of the HWF demand and supply*
- *The HWF planning tool considers the entire work life cycle (supply side);*
- *Data collected on current stock of HWF allow to know: number of active professionals, number of full-time equivalent, types of providers, where they work, their skills, the services they provide, workloads and Skills defined here as acquired certifications (e.g. diabetes care, intensive care….);*
- *The HWF planning tool uses demand data which allow estimating the health care utilization and the population needs, in addition to size and structure (age and sex) of the population being this data obtained from the National Institute of Health Insurance;.*
- *The followed approach allows the planning commission to work with accurate, recent and exhaustive data, increasing the power of its forecasts and strengthening its authority in the Belgian health policy field.*

### DESCRIPTION:

The main tool for monitoring the Belgian workforce of the health care professionals is the National Register of Health Care Professionals, maintained by the Ministry of Public Health.

Every health professional who wants to practice a recognised health profession on the Belgian territory is required by law to register him or herself in this National Register. This 'Cadastre' therefore contains information about the diploma, the licence to practice and further personal details of all the health professionals in Belgium. Over the last decade, both the number of registered professions and the capabilities of this Register have grown. The current implementation consists of an electronic register built on an Oracle backbone.

While the available information in this National Register of Health Care Professionals allows for the monitoring of the size and composition of the registered workforce (i.e.

with licence to practice), no information is available about this workforce's actual labour market participation and activity.

However, by linking the National Register with other administrative databases, mainly from social security and health insurance administrations, it is possible to obtain a detailed image of the participation and activity levels of the licensed Health Workforce. This method provides invaluable data for health workforce monitoring and planning purposes.

More specifically, to obtain this data, a formal request is addressed to the Belgian Privacy Commission, seeking the permission to carry out an individualized, anonymous data linking between the concerned administrative databases. This request describes the various variables, their level of detail, the measures taken to protect the privacy of sensitive data, and all other relevant specifications.

If approved by this Commission, the data linking can start via the intermediary of the Crossroads Bank for Social Security, a federal institute founded to centralize administrative data and organise data flows (E-government).

For each individual who is present in the National Register, the data linking can then determine his or her activity status, sector of activity, full time equivalent, region of activity, number of jobs...

The inclusion of health insurance data makes this data linking particularly useful for health care planning, since it provides information about the volumes of care which are 'produced' by an individual health care professional.

With regards to the full time equivalents, two types of data are available. For the employees, information is available about contractual and actual working hours. For those persons who are paid via the health insurance system on the basis of performed 'medical acts', this number of acts needs to be 'transformed' into a FTE.

Different formulas are used for the different professions, but the principle is universal. The mean or median observed number of care acts of a given reference age group is used as the reference value of 1 FTE. A person who performs exactly half the number of acts of this reference receives an FTE of 0,5. Instead of acts, the formula can also use the amount that is reimbursed by the health insurance.

One major caveat: the data linking method relies on existing data, collected by specific

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administrations to carry out their objectives and missions. As such, the raw data does not necessarily align with the health workforce analysis perspective and may require either re-formatting, careful (re)-interpretation, or the combining of several variables to construct the desired parameter.

As of the end of 2014, data linking projects have been undertaken for the professional groups of the registered Nurses, Physiotherapists, Physicians and Dentists. While the Team Workforce Planning has succeeded in setting up the basic structure and workflow which already provide very insightful data, the data linking process is still a work in progress and much remains to be done. As such, work is being done (as of 2014) to expand the included source material to other administrative databases and to improve the quality of certain existing parameters.

In parallel, steps are being taken to evolve from 'one shot' data linking projects to a more systemic, 'permanent' data linking approach, which would make it possible to link the data for all the recognised health professions on a yearly basis. This approach will centre around automatisation, standardisation and streamlined data flows.

While the technical difficulty of the data linking procedures requires qualified personnel to carry out, it does not constitute the main difficulty in setting up this type of data collection. The main challenge consists rather in obtaining the necessary permissions, access rights and the cooperation of the different data providers. The necessary legal and regulatory framework has to be in place to allow the data linking to proceed successfully. Making sure that the data linking stays within the boundaries defined by national privacy protection laws also requires time and attention.

An important factor in the successful completion of these steps is support and cooperation for the project among the different involved decision makers and levels of government.

### RESULTS:

The investment in the creation of an 'enriched' Cadastre leads to the availability of a detailed and exhaustive image of the workforce of a given health profession. In fact, the amount of available data can be so large that the next challenge lies in managing, analysing and finding ways to graphically represent the collected data.

A related aspect that cannot be ignored is the way that the results of this data analysis are presented and communicated to both the general public and the health care

professionals. Depending on budget and priorities, options range from static printed reports to dynamic interactive websites.

Most importantly, the collected data can be used as reliable input data for forecasting and planning models.

## HELPFUL TIPS:

- *A data linking system, if properly designed, does require an important investment of time and effort to set up, but can then be easily maintained and operated to provide regularly scheduled, qualitative and insightful reports and forecast source data*
- *Acquire political support in order to establish a legal framework (e.g. data access rights)*
- *Tackle privacy concerns / methods of data anonymisation*
- *Identify existing sources and data providers*
- *Set up communication lines with concerned data managers / institutions*
- *Start with the low hanging fruit and work your way up. Managing a data linking system consists in both improving the data quality and increasing the data quantity (inclusion of additional parameters / sources) on a continuous basis.*
- *Design and implement standardised and automated approaches for data collection, analysis and reporting (templates, macros, statistical programming codes)*

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## - DATA COLLECTION AND FTE ESTIMATION IN THE DUTCH PLANNING SYSTEM

### REFERENCE INFORMATION:

Capaciteits Orgaan
PO Box 20051
Zip Code 3502 LB
Utrecht
Phone: 0031302823331
www.capaciteitsorgaan.nl

Victor A.J.Slenter,
Medical specialist Society& Health
CEO
Cell phone: 0031613011349
v.slenter@capaciteitsorgaan.nl

### MAIN ASPECTS:

- *Data collected on current stock of HWF allow to know: number of active professionals; number of full-time equivalent; types of providers; where they work; their skills; the services they provide; workloads, including also gender and age.*
- *Workloads are not collected as this is multi-interpretable in the Netherlands*
- *The FTE is partly measured by asking the specialists themselves.*
- *The strength of this solution is good. The employed clinical specialists already account for 58% of the total population and the information retrieved is reliable. They are able to do comparisons between the earlier surveys amongst all clinical specialists and the data in this database*
- *The remaining weakness is the lag time of two years for the data to become available. Another weakness is that the relation between reported fte and actual hours worked is not determined*

### DESCRIPTION OF THE ACTIVITIES (INCLUDING CHALLENGES):

The supply of care is measured by multiplying the number of professionals actually offering services to patients by the average fte (fulltime equivalent) they are working. This sounds fairly simple, but it is not. Regarding the number of professionals actually treating patients, the Netherlands has the advantage that a medical specialist is only allowed to treat a patient as long as he/ she is registered in the only national register of medical specialists. The registration is valid for a maximum of five years, after which it has to be renewed. The number of medical specialists actually treating patients therefore is a subsample of the registered medical specialists. By doing a survey amongst the registered medical specialists and asking them whether they (still) treat patients one can get a good estimate on the supply of medical specialists.

To get reliable data on the fte is more difficult. In this good practice, we focus on clinical specialists. To start out, almost half of the clinical specialists are self-employed. They are not bound to keep track of the number of hours they work. When asked, most self-employed clinical specialists work between 50 and 60 hours in a week. However, self-reports on hours worked are not very reliable. The other half of the clinical specialists are employed by academic or general hospitals, but the labour union's definition of full time differs between "40 to 48 hours" for academic specialists to "40 to 45 hours" for non-academic specialists.

The ACMMP has used surveys amongst clinical specialists from 2000 up to 2010. Because of the burden this places on the clinical specialists, in 2013 the ACMMP switched to a different mode of retrieving fte data. For all employed clinical specialists, all kinds of tax and income data are available through a combined (confidential) database, including the fte worked in the tax year and the employer. These data are handled by Statistics Netherlands. The drawbacks are that it takes two years for tax and income data to become final, so the dataset lags two years behind, and that there are no data on self-employed clinical specialists in the database regarding the fte numbers. The advantages are that no survey amongst a sample of the clinical specialists is necessary any more because there is a census data collection on all employed clinical specialists and that it was possible to retrieve the data up to 2001.

### Results:

The average fte of the employed clinical specialists has been 0,92 as of 2006 and has not changed until 2010. There is a clear difference between men and women, although the difference has diminished substantially between 2001 and 2006 and still diminished but in a much slower pace in more recent years.

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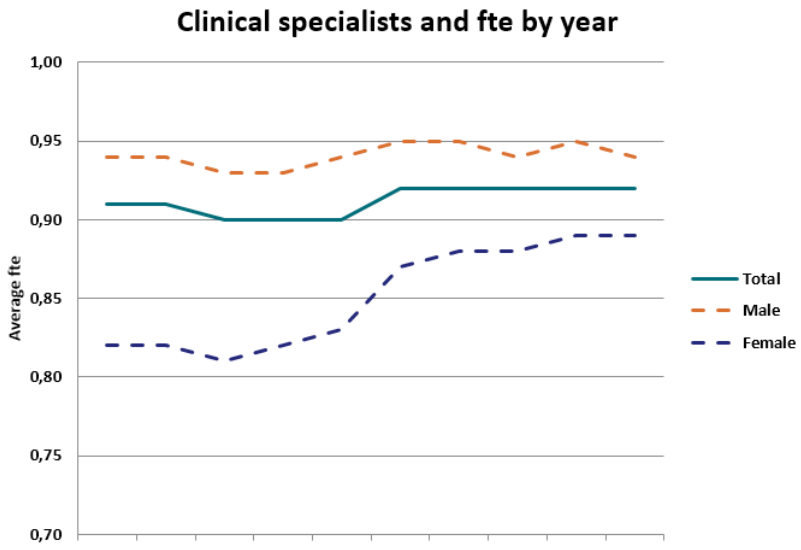


*Developments fte for employed clinical specialists by gender*

The remaining gap in fte between the male and female clinical specialists (0,05 fte) in combination with the feminization in the clinical specialisms accounts for part of the growth in the number of needed clinical specialists in the future.

## Helpful tips:

There are a number of possible improvements. In the first place, we can consider combining both methods to improve the actuality and the completeness (for the self-employed) of the data. We will start out by comparing the available data on the subject.

In the second place, there still is the missing link between self-reported fte and actual worked patient related hours. The relation between these two items is poor. Some promising research has been done in 2013 regarding actual hours worked and self-reported fte amongst general physicians. The results imply that self-employed general physicians work more patient-related hours per fte than employed general physicians.

## Suggestions for a quick / easy implementation:

The quickest way to implement this parameter is to do a survey per clinical specialism and to have a subset of the specialists report on specialism, age, gender, and percentage of fte they are working. This will produce fairly reliable and timely data. You do not need to bother on employed or self- employed, unless you expect distinct and sudden changes in the ratio between employed and self-employed professionals. This is usually policy-driven, so you should be aware of it.

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## Further information:

The next recommendation for clinical specialists will provide in 2016

The 2010 Recommendations for Medical Specialist Training http://www.capaciteitsorgaan.nl/Portals/0/capaciteitsorgaan/publicaties/capaciteitsplan2010/0%20Capaciteitsplan%20Hoofdrapport%20Engels.pdf

The 2013 Recommendations for Medical Specialist Training http://www.capaciteitsorgaan.nl/Portals/0/capaciteitsorgaan/publicaties/Capaciteitsplan%202013/DEFINITIEF%20hoofdrapport%20engels%20compl.pdf

Capaciteitsplan 2010: deelrapport 1 http://www.capaciteitsorgaan.nl/Portals/0/capaciteitsorgaan/publicaties/capaciteitsplan2010/Deelrapport%201%20%20Medisch%20Specialisten.pdf

Capaciteitsplan 2013: deelrapport1 http://www.capaciteitsorgaan.nl/Portals/0/capaciteitsorgaan/publicaties/Capaciteitsplan%202013/Deelrapport%201.pdf

## - DATA COLLECTION PROCESS IN THE ENGLISH PLANNING SYSTEM

### REFERENCE INFORMATION.

Centre for Workforce Intelligence (CfWI)
209-215 Blackfriars Road
London
SE1 8NL (UK)
www.cfwi.org.uk

Matt Edwards
Head of Horizon Scanning & International
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http://www.horizonscanning.org.uk

### MAIN ASPECTS:

- *A wide range of demand and supply data and information is collected regularly for analysis as part for workforce planning within England*
- *England has invested in the NHS Electronic Staff Record and it is a principal resource for workforce information.*
- *The Workforce Information Architecture project mapped and profiled over 100 sources of data and information relevant to health and social care workforce planning*
- *Implementation of a national human resource (HR) and payroll system, standardisation of data and the development of a suite of national and local reports are key successes in the English planning system*

### DESCRIPTION OF THE ACTIVITIES:

Effective workforce planning is a challenge in healthcare due to a complex mix of workforces (with specific training pipelines and distinct functions), the large geographic area that is covered and the changing policies that influence the supply and demand of care. To add to this complexity, the healthcare workforce in England is large. As of September 2012, there were 1,358,295 staff in the NHS Workforce (HSCIC, 2013c).

Workforce planning is made more difficult by complicated training career pathways. There are many routes through training, different flows and transitions between these routes, and migration in and out of England and the UK. Behaviours of the workforce (in terms of, for example, attrition and retirement) also vary by age, gender and profession. The long timescales for training make it hard to measure the impact of policy changes and to make corrections. The inertia, delays and complex influences in the system mean that data needs and modelling is complicated. In addition there are the complexities of estimating the requirements of the future health needs of the population.

The risks of poor workforce planning ultimately reflect on the health of populations, with potential consequences such as reductions in the health outcomes which may have been achieved, or the opportunity cost caused by the potential need to spend large sums of money to correct sub-optimal systems. To mitigate these risks it is important to have clear governance, methods and approaches suitable for workforce planning that can deal with and process complexity and uncertainty. These approaches must enable the development of robust evidence based intelligence (attained by considered analysis and access to optimal data and information) that includes thinking about key challenges and the future systematically.

The health workforce planning system within England has clear accountabilities set out to assist clarity and understanding of responsibilities. The Department of Health has the overall purpose and aim as described below including how legislation requires workforce data:

"The Department of Health (DH) helps people to live better for longer. We lead, shape and fund health and care in England, making sure people have the support, care and treatment they need, with the compassion, respect and dignity they deserve." (DH, 2014)

The Health and Social Care Act 2012 places a duty on all organisations that deliver NHS-funded care to provide data on their current workforce and to share their anticipated future workforce needs. (DH, 2013)

Health workforce planning takes place at a number of levels in England and is organised within an overall framework of statutory relations between the DH and Health Education England (HEE)

(for more details on English system organisation please see good practice on organisation "Call for evidence" and the process of "triangulation" in the English planning system")

A wide range of demand and supply data and information is collected regularly for analysis as part for workforce planning within England. When identifying data for workforce planning it is important to obtain the right level of granularity of information that is ideally aligned to the way education and training is commissioned.

'The Department of Health (DH) and Health Education England (HEE) share a vision of planning for future workforce needs and securing funding for education and training

that is underpinned by accurate, comprehensive, complete and timely workforce information, to ensure the workforce truly reflects the needs of local service users. This will meet the needs of patients, and providers, and commissioners of healthcare.' (DH, 2013)

England has invested in the NHS Electronic Staff Record and it is a principal resource for workforce information. The data is collected locally by NHS organisations as part of established governance and mandatory reporting processes. The Health and Social Care Information Centre (HSCIC) manages this overall resource, performs validation and conducts analysis acting as 'the single central source and repository of published workforce information' (DH, 2013).

'The key successes of workforce planning identified in the UK include: implementation of a national human resource (HR) and payroll system which has improved the consistency, accuracy, quality and completeness of workforce statistics; led to greater standardisation of data; and the development of a suite of national and local reports and other tools to facilitate benchmarking' (European Commission, 2012).

Nationally within England there have also been initiatives such as the Workforce Information Architecture project that mapped and profiled over 100 sources of data and information relevant to health and social care workforce planning. The output of this initiative produced a comprehensive map of the information and data sources as shown below.

*Workforce planning and development information architecture*

http://www.cfwi.org.uk/intelligence/projects/information-architecture-1/files/information-architecture-map

As part of national workforce planning reviews presenting back intelligence, the data source, variable, quality and assumptions are stated. Examples of supply and demand variables for a strategic review of the pharmacy workforce (CfWI, 2013c), as commissioned by DH and HEE are shown below.

| VARIABLE | DATA QUALITY | SOURCE | NOTES |
|---|---|---|---|
| ANNUAL INTAKE OF HOME AND EU STUDENTS TO MPHARM COURSES IN ENGLAND AGE PROFILE | M | GPHC PHARMACY STUDENT ANALYSIS 2009/10<br><br>PHARMACEUTICAL JOURNAL DATA ACQUIRED VIA FREEDOM OF INFORMATION (FOL) REQUEST FOR ARTICLE: "STUDENT TRENDS MAY HAVE IMPLICATIONS FOR THE FUTURE OF THE PROFESSION" (BASSEY, 2012) | THE PHARMACY STUDENT ANALYSIS 2009/10 REPORT PROVIDED THE 2009/10 MPHARM INTAKE TO ENGLISH SCHOOLS OF PHARMACY SPLIT BETWEEN HOME/EU AND NON EU, AS WELL AS MALE AND FEMALE. IT ALSO PROVIDES THE INTAKE PRIOR TO THIS BUT NOT SPLIT AND DOMICILE SPLIT GOING BACK TO 2005 IN ORDER TO INITIALISE THE PHARMACY MODEL DEVELOPED.<br><br>DATA USED IN AN ARTICLE FOR THE PHARMACEUTICAL JOURNAL (BASSEY. 2012) CONTAINING THE INTAKE TO ENGLISH SCHOOL OF PHARMACY IN 2011/12. THE SAME DOMICILE AND GENDER SPLITS WERE USED AS PREVIOUSLY.<br><br>FOR 2010/11 VALUES, THE CFWL TRENDED BETWEEN THE TWO SOURCES AND TOOK THE MIDPOINT. |
| ANNUAL INTAKE OF HOME AND EU STUDENTS TO MPHARM COURSES IN ENGLAND AGE PROFILE | VH | HESA STUDENT DATA | AS TOTAL MPHARM INTAKE NUMBERS FROM OTHER SOURCES DID NOT PROVIDE THE AGES OF STUDENTS, THE AGE PROFILE WAS CALCULATED FROM HESA STUDENT DATA |
| FUTURE POPULATION PROJECTIONS | VH | OFFICE FOR NATIONAL STATISTICS (ONS) NATIONAL POPULATION PROJECTIONS, 2010-BASED PROJECTIONS. | THE CFWL USED THE ONS POPULATION PROJECTION TO HELP ESTIMATE THE CHANGE IN DEMAND FOR PHARMACIST DUE TO THE CHANGING POPULATION SIZE. |
| FCE DATA | H | THE HEALTH AND SOCIAL CARE INFORMATION CENTRE, HOSPITAL EPISODE STATISTICS FOR ENGLAND INPATIENT STATISTICS, 2011-12. | FINISHED CONSULTANT EPISODES DATA WAS USED TO HELP WEIGHT THE DEMAND FOR PHARMACISTS' SERVICES IN HOSPITAL SETTING. |

Overall for the UK, *'each system collects workforce data based on headcounts (full time/whole time equivalent), staff groups (disaggregated according to sex, age and ethnicity), role count, basic/total earnings, absence and turnover. Data are also available on the numbers of temporary staff and numbers on fixed term contracts. Data on General Practitioners (GP), and some practice staff who are not directly employed by the NHS, are collected by separate systems in England, Wales and Scotland. Gaps still remain, for example, in England on other staff employed by local authorities, the private and third party providers of NHS services.'* (European Commission, 2012)

*'Both FTE and headcount are modeled by specialty/profession, age and gender. All supply modeling takes account of the numbers entering training, attrition rates and delays during each stage of training (which vary by specialty/profession), and entry*

*to the workforce. Workforce modeling includes leavers, returners, retirement profiles and exits, again by specialty/profession. Where information is available we model gender as well as age, and participation rate (ratio of full to part-time working) which varies between specialty/profession, age band and staff type.'* (OECD, 2013)

Demand modeling at present considers factors including population growth rate, the likely gap between demand and need, and expert opinion concerning the workforce necessary to meet future requirements.

## Helpful tips:

When identifying data for workforce planning it is important to obtain the right level of granularity of information that is ideally aligned to the way education and training is commissioned.

Greater standardisation of data is a key factor of success

The development of a suite of national and local reports and other tools facilitates benchmarking (European Commission).

## Further information:

- **Department of Health** *(2013) Workforce Information Architecture in the Reformed NHS Landscape*
- **Centre for Workforce Intelligence** *(2010) Review of Information Architecture Http://www.cfwi.org.uk/intelligence/projects/information-architecture-1*
- **Centre for Workforce Intelligence** *(2014a) Robust workforce planning: Update from practice http://www.cfwi.org.uk/publications/robust-workforce-planning-framework-update-from-practice/attachment.pdf*
- **OECD** *Study - Ono, T., G. Lafortune and M. Schoenstein (2013), "Health Workforce Planning in OECD Countries: A Review of 26 Projection Models from 18 Countries", OECD Health Working Papers, No. 62, OECD Publishing. doi: 10.1787/5k44t787zcwb-en*
- **Department of Health** *(2014) About us / What we do https://www.gov.uk/government/organisations/department-of-health/about*
- **Department of Health** *(2013) Helping people live better for longer: A guide to the Department of Health's role and purpose post-April 2013 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/226838/DH_Brochure_WEB.pdf*
- **Department of Health**, *(2014) A mandate from the government to Health Education England. https://www.gov.uk/government/publications/health-education-england-mandate-april-2014-to-march-2015*
- **Department of Health** *(2013) Education outcomes framework for healthcare workforce. https://www.gov.uk/government/publications/education-outcomes-framework-for-healthcare-workforce*

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CHAPTER 7

# LINK TO POLICY ACTIONS

To reach the goals of the planning system (see chapter "Goals" in the second part), and so turn what has been planned into outputs, it is important to use the right levers and put into practice the right actions.

From an organisational point of view it is also important to define the **responsibilities** relating to these levers and actions.

Finally, it is crucial **monitoring** and **checking** that those actions and levers provide the desired results and that the objectives have been achieved.

The reference methodology in this regard is the continuous improvement process as defined by Edward Demin in its cycle: **Plan, Do, Check, Act** (PDCA).

The "Do" step is represented by policy initiatives which, for example, a ministry takes to face emerging problems (e.g. an expected shortage of the number of health care professionals). In Belgium, for example, in 2008 the Ministry of Public Health and Social Affairs started an attractiveness plan for the profession of nurses. It was designed to meet the needs of all nurses, their patients and the quality of care. Several actions were undertaken: diminishing the workload and stress of nurses; functional differentiation (increasing the number of titles and qualifications); annual payment for the holders of a particular professional title or qualification. All these initiatives aim to increase (or at least maintain) the number of nurses in the health sector (hospitals, nursing homes and home care).

The "Check" step is represented by all the tools and process set to assess and check the policy decision-making and its accuracy in helping to achieve their main objective of ensuring a proper balance over time between the supply and demand of different categories of health professionals. The evaluation of a planning strategy and system can take place at different stages of the process of health workforce planning.

- *Ex-ante:*
  - *Alignment of HRH objectives on service and health objectives;*

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- *Soundness of underlying conceptual framework;*
- *Validity of assessment of baseline situation;*
- *Assessment of the various dimensions of feasibility, which all have an impact on the success/failure of planning (economic, legal, technical/ organisational, political, social).*

- *In itinere:*
  - *Comparing the observed changes to the expected ones.*
  - *Looking for the explanation of the differences? Are these intrinsic to the planning process (wrong assumptions, technical failures, poor management) or to external factors (unexpected economic or political change)?*
  - *Deciding whether a change of course is needed?*
- *Ex post: an analysis of results can be conducted to assess the dimensions of effectiveness, efficiency, satisfaction of health professionals and of users of services. Research can help explain what worked, what did not work, which lessons can be learned, which practices proved good and may be recommended.*

## *FINDINGS*

How the planning process is connected with the actions that will achieve what has been planned?

In the analyzed methodologies prevail the objectives finalized to modify the number of profession in the labour market, in particular through the definition of the numerous clausus in university or fixing limits to the number of posts in prost graduating schools or even limits to the entrance to the labour market. In some case aspects connected to the professional mix, skills needed, future working conditions are taken into account to define the right objective of "**quantity of professionals**". In this case the Dutch case has to be mentioned.

Different are the Finnish and the English model, in which the objective set by the system have as a focus the future skills needed and the future professional mix.

Goals defined by the HWF planning system are achieved through different instruments.

Most of them appertain to the category **"barriers to entry"**: depending on the circumstances, their purpose is to regulate the access to the university, to postgraduate schools or labour market. There are also other instruments utilized to regulate HWF labour market.

Barriers to the entrance are a measure present in all the observed planning systems, in particular the regulation of the access to education and training programs. But in many cases these initiatives flank **other type of actions** which directly intervene on actual HWF. That' the case, for example, of Belgium, which has started different incentive and promotion initiatives aimed at HWF. Different is the case of England where, compared with the goal defined in "Mandate", specific instruments and actions of realization have been identified.

Which are the processes who leads to the realization of planned plans and goals and which are the responsibilities within those processes?

Concerning the process of realization of the target set, aspects common to the different experiences, seem to be two:

1. *a solid technical analysis supported by a certain amount of data and, in most cases, by a quantitative, and sometimes also qualitative, method;*

2. *a sharing of scenarios, context, interpretative lectures through the involvement of a series of stakeholders, to reach social "commitment" to the technical proposal.*

This double decisional support allow the **decision maker** (policy maker) to take decisions with a higher degree of assurance and with a lower degree of conflict.

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| MAIN LEVERS AND RESPONSABILITIES | MAIN LEVERS | RESPONSABILITIES |
|---|---|---|
| BELGIUM | SETTING MAXIMUM NUMBER OF NEW PROFESSIONALS IN HEALTH INSURANCE SYSTEM PER YEAR;<br>SETTING NUMBERS OF ACCESSES TO SPECIALTY (ONLY FOR PHYSICIANS AND DENTISTS);<br>SETTING NUMBERS OF ACCESSES TO PRIVATE PRACTICE (ONLY FOR PHYSIOTHERAPISTS).<br>CONTROLLING INFLOW WITH ENTRANCE EXAMS FOR MEDICAL STUDIES (AT COMMUNITIES LEVEL). | MINISTRY OF HEALTH WITH THE SUPPORT OF THE PLANNING COMMISSION.<br>MINISTRY OF HEALTH WITH THE SUPPORT OF THE PLANNING COMMISSION.<br>MINISTRY OF HEALTH WITH THE SUPPORT OF THE PLANNING COMMISSION.<br>COMMUNITIES. |
| DENMARK | REGULATION OF THE NUMBER OF POSTGRADUATE TRAINING POSTS ON A YEARLY BASIS IN A FIVE YEAR PERIOD.<br>REGULATION OF THE STUDENT INTAKES. | THE DANISH HEALTH AND MEDICINES AUTHORITY.<br>THE MINISTER FOR HIGHER EDUCATION AND SCIENCE. |
| ENGLAND | SETTING NUMBERS OF STUDENT INTAKES AT THE LOCAL LEVEL ENSURING THAT OVERALL TRAINING NUMBERS IN THE PLANS REFLECT THE NATIONAL DEMAND FOR HEALTH PROFESSIONS<br>SHAPING THE TRAINING CONTENTS AND LENGTH OF TRAINING IN ORDER TO PRODUCE HEALTH PROFESSIONALS WITH THE REQUIRED COMPETENCIES TO PRACTISE IN THE NEW NHS. | NUMEROUS PLANS AND STAKEHOLDERS INVOLVED WITH DIFFERENT RESPONSABILITIES. MAINLY:<br>HEALTH EDUCATION ENGLAND;<br>LETBS;<br>DEPARTMENT OF HEALTH. |
| FINLAND | SETTING ENTRANT TARGETS AND OUTPUT OF QUALIFICATIONS FOR EVERY FIELD AND LEVEL OF PROFESSIONAL AND VOCATIONAL EDUCATION AND TRAINING.<br>MEASURES TO ENSURE THE SUFFICIENCY AND SKILLS OF THE PERSONNEL, RETENTION POLICY ISSUES, REDISTRIBUTION OF PROFESSIONAL RESPONSIBILITIES AND WELL-BEING AT WORK IN SOCIAL AND HEALTH CARE. | THE NATIONAL GOVERNMENT WITH THE INVOLVMENT OF THE MINISTRY OF EDUCATION AND CULTURE, MINISTRY OF ECONOMICS AND THE MINISTRY OF SOCIAL AFFAIRS AND HEALTH. |
| NORWAY | RESTRICTED INTAKE OF STUDENTS TO SOME OF THE HELATH EDUCATIONS, SUCH AS MEDICINE, DENTISTRY, PHARMACOLOGY, PSYCOLOGY AND OTHERS.<br>THIS NATIONAL QUOTA SYSTEM WAS DISCONTINUED IN 2012.<br>NATIONAL QUOTA SYSTEM FOR NEW POSITIONS AS PHYSICIAN IN HOSPITALS. | MINISTRY OF EDUCATION AND RESEARCH<br>THE DIRECTORATE OF HEALTH THROUGH THE MINISTRY OF HEALTH AND CARE SERVICES |
| SPAIN | REGULATION OF THE NUMBER OF AVAILABLE SPECIALIST TRAINING VACANCIES. | MINISTRY OF HEALTH, SOCIAL SERVICES AND EQUALITY, SUPPORTED BY THE HUMAN RESOURCES COMMISSION |

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| | | |
|---|---|---|
| THE NETHERLANDS | SETTING THE NUMBER OF ADMISSIONS TO THE 8 MEDICAL SCHOOLS (SO-CALLED "NUMERUS FIXUS"). | MINISTRY OF EDUCATION AND SCIENCE ADVICED BY ACMMP. |
| | SETTING THE NUMBER OF ADMISSIONS TO THE VOCATIONAL (SPECIALIST) TRAINING PROGRAMS FOR MEDICAL GRADUATES. | MINISTRY OF HEALTH, WELFARE AND SPORTS ADVICED BY ACMMP. |

**Controlling and monitoring** of the progress of the process to join the goal is a basic aspect of any system of goals. It helps to understand if the actions taken are bringing in the desired direction and if it is necessary to intervene to correct those actions taken or define new ones. If starting condition have changed, monitoring and control stage may be also useful to re-define the goal. Is there in the analyzed experiences this control stage.

Exception made from Norway and Denmark, the other methodologies have built some control systems. In most cases the control is done by the same subject responsible of the planning system. In this sense the case of the Netherlands is interesting for the set of evaluation parameters arranged with stakeholders. Usually a series of reports containing data and monitoring evaluation are published.

On the other hand, in the case of Belgium the control is done by a third body, the Belgian health care knowledge center (https://kce.fgov.be/).

**FOR FURTHER DETAILS:**

- *Focus on --> Details of the seven planning systems --> Link to policy actions*

## *GOOD PRACTICES*

The following pages present the good practice "*Self-evaluation of the effectiveness of the planning model in the Dutch planning system*" related to the key element "Link to policy actions".

For "**good practice**" we mean an experience or practice that have achieved results consolidated in the course of time and present elements and characteristics applicable in other contexts.

A good practice may concern to methods, instruments, processes and technical specific solution of HWF planning. The collection and diffusion of those practices realized at a national level are the premises for the construction of a base of knowledge, to be enriched in the course of time, to allow the exchange and the comparison of ideas, experiences and projects.

## – SELF-EVALUATION OF THE EFFECTIVENESS OF THE PLANNING MODEL IN THE DUTCH PLANNING SYSTEM

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### MAIN ASPECTS:

- *In the Dutch planning system there have been 3 "scientific" evaluations on the functioning of the model and 1 on the "consumer satisfaction" in the health field since 1999.*
- *The evaluation of the recommendations is structural and serves as feedback to the ACMMP each time a new recommendation is produced. This way the ACMMP creates a pdca cycle. After planning the necessary influx, the ministry and the hospitals attempt to realize a certain influx (do). The ACMMP checks on the realized influx and adjusts the necessary influx thereupon for the next period.*
- *The other evaluations do not need to be done on a structural basis, except for the customer satisfaction. All of these were done by universities or semi-academic organisations that had no ties with the ACMMP. Some were done on request of the ACMMP, some others were done on instigation of the ministry.*

### DESCRIPTION.

The effectiveness of the planning model can be evaluated in several ways. There is the evaluation whether the planning model:

1. *has contributed to the decision making process;*
   .....
2. *is mathematically sound;*
   .....
3. *is appreciated and accepted by the health field;*
   .....
4. *does cover all the relevant parameters.*
   .....

To get feedback on these items, the ACMMP does a number of things that will be discussed in this paragraph. The ACMMP does not interpret data, but merely presents them. The recommendations of the ACMMP concern intake numbers for vocational training of specialists, based on the demand forecasts and the current number of specialists. In order to give readers an impression on the impact of the recommendations of the ACMMP, all former recommendations in combination with the decision of the ministry of Health, Welfare and Sports and the realised intake numbers are routinely presented in chapter 3 of each sub-report (regarding a subset of professions).

To evaluate the mathematical soundness of the model, it is best to have specialists of a university testing the model under different circumstances. The ACMMP had this testing done by the university of Tilburg in 2010.

The ACMMP produces the recommendations on the intake of vocational trainees based on the planning model, the ministry of Health, Welfare and Sports takes the decision on the final numbers and allows for financing the trainees, but the health field (training institutes e.g. hospitals and professionals) has to make logistic arrangements to actual train the medical graduates in order to become a medical specialist. This means that acceptance and appreciation by the field is also necessary to get things done. In 2010 the ministry of Health, Welfare and Sports had a customer satisfaction survey done amongst members of the health field. The subject of the survey was another organisation but it included the ACMMP also.

There is sparsely expertise on forecasting in the Netherlands. The ACMMP wanted to know whether any parameters relevant for planning were excluded in the model. For that reason, the leading planning organisation in the Netherlands, the Central Planning Agency, was consulted in 2011 to evaluate the planning model of the ACMMP.

## Results:

The sub-reports on clinical specialists (1), general practitioners (2), specialists for the elderly (5) and specialists for the intellectual disabled (6) show that the recommendations on medical specialists have been used since 2000. The actual numbers of new trainees were always close to the vicinity of our high number in the range. Up till 2007 this was the only aspect we could report on, because the number of new medical trainees was determined by local negotiations between numerous health insurance companies and hospitals. As of 2007, the Health Insurance Act transported the negotiations to a central

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level and replaced the health insurance companies by a single ministry. From this year on, we can also report on the number of trainees the ministry decided to subsidize. These data also show that the ministry studies our recommendations very good.

The sub-report on dentists and oral hygienists (3) shows that the recommendations of 2009 and 2010 regarding dentists and oral hygienists have not been accepted by the government. Government had requested the ACMMP in 2008 merely to present reliable data on the workforce of dentists and oral hygienists. There was no felt need for a recommendation at the ministry. For this reason, recommendations on the necessary influx on dentist students and oral hygienist students have ceased in 2013.

The recommendations in the sub-report on social medicine (4) have always been accepted by the ministry of Health, Welfare and Sports as far as they feel a responsibility. The recommendations for social law physicians and occupational physicians regard another ministry. Also, these trainings are not subsidized. In view of the poor economic prospect for occupational health firms, the influx of medical graduates in these two professions is stagnating since 8 years already.

Finally, in 2013 the first mature recommendation on psychological professions in health care (sub-report 7) were presented to health field and ministry. The ministry has responded to these recommendations by expanding the subsidized training for 4 of the 5 investigated professions.

The mathematical soundness of the model was tested by the university of Tilburg. A number of kinds of testing were done. The parameters that are used to create the 9 different scenarios in the model are the most powerful parameters according to these tests.

Mathematically, the model was also tested by NIVEL. They compared the theoretical data on general practitioners in the model with the empirical data for the last 15 years. For self- employed general practitioners, the model was 3% off over a 15 year period.

The customer satisfaction was on average 8 on a scale of 1 to 10. The clinical specialisms had a slightly lower score (7.4) than the non- clinical specialisms.

The Central Planning Agency concluded that the model was plausible. They suggested to introduce an explicit additional economic parameter in the model. The suggestion was investigated by another bureau and then put aside. The model holds no financial or

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qualitative parameters.

## Helpful tips:

- *Implementation of an evaluation system is not the first item on the agenda. As of the second planning document, the results/ effects of prior one(s) should be part of the document. When you use experts frequently, you should be able to have a hunch on whether you are on the right track or not.*
- *It's important to organise and personalize the customer satisfaction scheme to use.*
- *It's useful to discuss the time interval in which the evaluations should be repeated.*

## Further information:

The model is operated through two simultaneously opened Excel sheets that are available.

Zorgopleidingen in de polder (Regioplan, 2009) http://www.regioplan.nl/publicaties/rapporten/evaluatie_van_het_opleidingsfonds_en_cbog

CPB notitie(UvT, 2011) "Plausibiliteitstoets op de raming van het benodigde aantal artsen en specialisten in een vergrijzend Nederland" http://www.cpb.nl/publicatie/plausibiliteitstoets-op-de-raming-van-het-benodigde-aantal-artsen-en-specialisten-in-een-vergrijzend-nederland

CHAPTER 8

# ORGANISATION

A planning system should be organised in order to guarantee a constant process. The literature defines planning (also called forethought) as the process of thinking about and organising the activities required to achieve a desired goal. Planning is deciding in advance what to do, how to do it, when to do it, and who should do it. In a complex system it is critical to engage the stakeholders in the planning process.

The organisation of the planning system inevitably reflects the institutional assess of the Country and is strongly affected by the current regulations on the subject, that often defines the centralism/ decentralism of the process, the involved actors, and the approach to be followed (top-down / bottom-up).

Countries are different in terms of the structure of government, in particular whether the country has a centralized or federal structure, and the role played by nongovernmental organisations.

Also the involvement of the stakeholders, when it's consider useful to the decision making process, it's different on the base of the institutional context and on the base of the role assigned by the law or by the national regulation to the different stakeholders.

## *FINDINGS*

HWF planning process requires an **organisation** of all its phases which, on the strength of the number of profession to be planned, may be more or less articulated and detailed. Possible solution may vary depending on whether you want to import the process for vertical kind of specialization (system dedicated to the single profession) or for horizontal specialization (phases common to different professions analyzed).

We may have:

1. *Different workflow for each professions managed by different planning institutions.*

2. *Same workflow with some specific articulation for the different professions managed by the same planning institutions.*

3. *Unique workflow with no specific procedures for the different professions managed by the planning institutions.*

All the analyzed methodologies have an articulated workflow, which is strongly coordinated by Councils or Central Commission which are the core of the process. Also in those cases in which the system takes into account more professions, these Central Body are unique and so the process is unique (except from the case of nurse in the Netherland).

Inside those Councils or Commissions the work is often granted through working Groups or Committees for the single profession: that's for example the case of Belgium, England, Netherlands and Spain. There aren't mechanisms or processes of verify and reciprocal control on the results achieved by each Committee or working group. However, when working group exists, (as it is in Belgium) their results are of the working group are submitted to a process of feedback and validation by the Commission.

Health workforce planning may be managed at a **central level** by one or more institutions for the whole country or may be decentralized at a **local level**. In such a case it is important to understand which role is performed by the central level and which by the local one. From this derives the organisation of the decisional process.

Almost all the systems, except for the Dutch one, provide the involvement of local stakeholders to the planning process. Mostly, the rule of local stakeholders involved is mainly advisory and of definition of the requirement estimates. The decisional rule remains at the central level, where the organisations involved are often multiple: first of all the Ministry of Health and the Ministry of Education.

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| DECENTRALIZATION OF THE PLANNING SYSTEM | LOCAL STAKEHOLDERS WITH A KEY ROLE IN THE PLANNING SYSTEMS | THEIR ROLE |
|---|---|---|
| BELGIUM | FLEMISH COMMUNITY, FRENCH COMMUNITY AND GERMAN-SPEAKING COMMUNITY.<br>4 UNIVERSITIES OF FLEMISH COMMUNITY, 3 UNIVERSITIES OF FRENCH COMMUNITY. | COMMUNITIES ARE RESPONSIBLE FOR MANAGING EDUCATION AND TRAINING (CONTENT OF COURSES, STANDARDS FOR SELECTIONS, NUMERUS CLAUSUS POLICIES).<br>COMMUNITIES AND THEIR UNIVERSITIES ARE MEMBERS OF THE PLANNING COMMISSION |
| DENMARK | REGIONS.<br>REGIONAL COUNCILS. | REGIONS ARE IN CHARGE OF ASSIGNING PROVIDER NUMBERS TO GENERAL PRACTITIONERS (NECESSARY TO BE REIMBURSED BY THE PUBLIC TAX BASED HEALTH SYSTEM).<br>THREE REGIONAL COUNCILS FOR POSTGRADUATE EDUCATION ARE RESPONSIBLE FOR<br>- ANNOUNCING POSTGRADUATE TRAINING POST ON THE BASIS OF THE PLAN OUTLINED BY THE DANISH HEALTH AND MEDICINES AUTHORITY<br>- TO DISTRIBUTE TRAINING POSTS WITHIN THE REGION;<br>- COMPOSING THE POSTGRADUATE TRAINING POSTS AND THEIR EDUCATIONAL PROGRAMS.<br>- THE REGIONS, AS THE MAIN EMPLOYER, PLAY A CRUCIAL ROLE IN SECURING THE QUALITY OF EDUCATION IN THE POST GRADUATE EDUCATION. |
| ENGLAND | LOCAL EDUCATION AND TRAINING BOARD (LETB).<br>NHS PROVIDERS. | EACH LOCAL EDUCATION AND TRAINING BOARD (LETB) PLACES CONTRACTS WITH LOCAL EDUCATION PROVIDERS FOR THAT ACADEMIC YEAR ON THE BASE OF WORKFORCE PLAN FOR ENGLAND SET OUT BY HEE ANNUALLY.<br>NHS PROVIDERS (E.G. NHS FOUNDATION TRUST) GIVE TO LETBS THEIR FIVE YEAR PROJECTIONS. |
| FINLAND | REGIONAL COUNCILS.<br>HOSPITALS DISTRICTS.<br>LOCAL GOVERNMENT EMPLOYERS TRADE UNIONS.<br>X ASSOCIATION OF FINNISH LOCAL AND REGIONAL AUTHORITIES. | REGIONAL COUNCILS, ON THE BASE OF HEALTH CARE ORGANISATIONS, MAKE ANALYSIS AND FORECAST OF WORKFORCE DEMAND AND EDUCATIONAL NEEDS.<br>HOSPITALS DISTRICTS, LOCAL GOVERNMENT EMPLOYERS TRADE UNIONS AND ASSOCIATION OF FINNISH LOCAL AND REGIONAL AUTHORITIES PARTICIPATE IN THE REGIONAL FORECASTING PROCESS IN ORDER TO PROVIDE HEALTH CARE EXPERTISE. |
| NORWAY | NORWEGIAN ASSOCIATION OF LOCAL AND REGIONAL AUTHORITIES (KS).<br>REGIONAL HEALTH AUTHORITIES (RHF).<br>MUNICIPALITIES. | THE NORWEGIAN ASSOCIATION OF LOCAL AND REGIONAL AUTHORITIES (KS) OPERATE THEIR OWN PERSONNEL REGISTER (PAI) BASED ON REPORTS FROM THE MUNICIPALITIES EVERY YEAR. THIS COVERS ALL SECTORS.<br>REGIONAL HEALTH AUTHORITIES PLANS ON REGIONAL LEVEL FOR HOSPITALS AND MUNICIPALITIES ON LOCAL LEVEL. |

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| | | |
|---|---|---|
| SPAIN | 17 AUTONOMOUS COMMUNITIES. | AUTONOMOUS COMMUNITIES ARE INVOLVED AS PERMANENT MEMBERS IN THE HUMAN RESOURCES COMMISION (PROPOSING NUMBER OF SPECIALIZED MEDICAL TRAINING POST) AND IN THE COUNCIL OF UNIVERSITY POLICY (SETTING THE NUMBER OF ADMISSION IN THE BASIC EDUCATION). |
| THE NETHERLANDS | STAKEHOLDERS INVOLVED ARE MAINLY NATIONAL REPRESENTATIVES. | THERE AREN'T STAKEHOLDERS WITH LOCAL OR REGIONAL RESPONSABILITIES |

Inside HWF planning system, the **decision making process** is the most important phase and maybe also the most critical one: in fact, if the decision is not coherent with the results and the conclusion arrived at the process it means that the efforts of the planning system have been vane. To better understand how the decision making process operates one of the elements to be analyzed concerns the responsibility of the decisions to be taken. Who are these responsibilities? To one or more subjects (shared responsibility)?

In most cases planning process advisory decision are taken by a single body (Minister or, in the case of Denmark concerning posts of specialists in medicine, by the Danish Health and Medicines Authority) as sole responsible. In any case this decision follows and is taken on the bases of a long decisional process, in which different subjects (stakeholders) share a proposal. In the examined cases the proposal shared by stakeholders has such a strength and a commitment to be always confirmed by the final decision of the Minister (this is the case, for example, of The Netherlands, Spain, Belgium and Finland).

**Stakeholders** involvement is one of the fundamental and in the meantime critical point of the whole planning system. The importance of the involvement is due both to the necessity of acquire information and points of view and to find the consensus on some solution, so to define objectives more correct than to the problems highlighted and, once the objectives fixed, arrive to the fixed target with the best degree as possible of opposition.

In any case, this involvement is often critical, both for the number of interested stakeholders than for the strong discrepancy among the represented positions. These criticalities sometimes need a lot of time to be solved or weakened, being such a case another criticality.

Stakeholders are involved through the participation, as steering members, to commissions or committees dedicated to the HWF planning (as in The Netherlands, Belgium and Spain). In other cases stakeholders involvement is a peculiar specificphase inside a

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multi-phase process, as for example in England, Denmark or Finland.

Stakeholders involved, considering the breadth and importance of the subject (impact of health on population, country socio-economic system, employment, etc.) may be vary and different:

1. *health care producers (public and private).*
   .....
2. *health care trainers.*
   .....
3. *health care payers.*
   .....
4. *health care workforce (professional orders).*
   .....
5. *health care users.*
   .....

Main evidences regarding stakeholders involvement, may be resumed as follow:

- *all seven methodologies give a huge attention to the representation of local instances (municipalities, regions, local providers);*
- *the same attention is given to the involvement of those subject responsible of the Education (Universities, Schools, etc…) and professional orders;*
- *there aren't cases of involvement of associations of patients;*
- *nor there is involvement of representatives of health system (drug makers, medical devices producers, etc…).*

The **role of the stakeholders** involved can be different. The involvement may be passive, in case stakeholders are just informed about decisions taken, or active. In such a case their contribution may consist in a series of advices they give to the "process owner" about different subject and that may be then utilized by the decision maker to take his decisions, or directly contribute to the decision taken, inside a process of collaboration and agreement.

In most cases stakeholders have, inside the process an advisory role: they give suggestions, make their point, in some case facilitate the process, contributing to the collection of useful data and help in giving their correct interpretation. They never have a decisional role but, through their advisory role, they try to direct and influence the decision maker toward the most correct choices. We may say that stakeholders

involvement gives strength and value to the proposals the policy maker has to decide on.

**Communication** is also a strategic element of the organisational process and it is a crucial aspect for the general efficacy of the process and its outcome. In the early stages, in the case of HWF planning, to be able to communicate the objectives of the process, facilitates the involvement of stakeholders and helps in the clarification of their contribution.

In the same way, effectively communicate the results of the planning process it isn't just a reporting operation "due" to citizens, for the impact that this decision will have on future public services, but also un act that makes transparency on the work done and the use that police makers will do on that.

Most planning methodologies foresee the publication of an internet report, accessible to everyone and containing the goals (even if they may not always be considered as such – see the grid concerning the goals) and the output of the process, in a very detailed form (such the case of Netherlands, Spain and England).Even if these report are accessible by all, writing and publishing style have an institutional and typically dedicated to insider character. There aren't examples of communication dedicated to a wide and heterogeneous public.

To be managed effectively HWF planning process requires the use of an adequate number of **staff**. Adequacy number of people involved in the process will depend on different factors as the type of health profession object of the planning (how much and which), the consequent number of stakeholders to be involved, the frequency of planning cycle, the degree of planning "de-localization". Depending on the different stages which characterize HWF planning process and according to the adopted planning model, it is necessary having the right skills: for example, for data collection and forecasting: statistical, computer, epidemiological, sociological skills; for the management of the planning cycle, stakeholder involvement and interaction with the decision makers: management and relations skills.

Number of people involved in the various HWF planning systems, as their modalities of involvement are different from case to case.

In relation to the number, different cases may be synthetized as follows:

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- *everywhere the is a fixed team who works for the HWF planning system, in some case full time, in other part-time;*
- *they range from a minimum of 3 people (Denmark) to more of 50 people (England) who work for the planning system;*
- *number is proportional to the number of planned professions;*
- *to the fixed number of people involved has to be added a variable commitment of people from external organisations, often involved in projects and specific researchers.*

Competence profile of people involved in the HWF planning process corresponds naturally to the skills necessary to manage the different phases: so there are statistical, sociological, epidemiological, computer, administrative, as well as management and leadership skills; in most cases there are people belonging to health professions object of the planning (in particular doctors and dentists); in some cases these people are also managing directors of the section which manage the whole planning process.

In cases of a system that plans more than a profession, prevails, for people of the fixed nucleus, the specialization for health profession.

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## *GOOD PRACTICES*

The following pages present the good practices

- *"Involvement of stakeholders in the Belgian planning system",*
- *"Call for evidence" and the process of "triangulation" in the English planning system",*
- *"Multi regional planning in the Spanish system: organisation aspects and forecasting model",*

related to the key element "Organisation".

For "**good practice**" we mean an experience or practice that have achieved results consolidated in the course of time and present elements and characteristics applicable in other contexts.

A good practice may concern to methods, instruments, processes and technical specific solution of HWF planning. The collection and diffusion of those practices realized at a national level are the premises for the construction of a base of knowledge, to be enriched in the course of time, to allow the exchange and the comparison of ideas, experiences and projects.

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## - *INVOLVEMENT OF STAKEHOLDERS IN THE BELGIAN PLANNING SYSTEM*

### Reference information:

Legal framework : Royal Decree Nr. 78 of November 10th 1967 – Organisation of the Health System
Website of the Planning Commission (includes links to published formal advices and reports in both French and Dutch): www.health.belgium.be/hwf
Secretary of the Planning Commission : Aurélia Somer
Contact Email Team Workforce Planning : plan.team@health.belgium.be

### Main aspects:

- *Solution involves experts and stakeholders in policy process from day 1.The parameters in the forecasting model are discussed and agreed with stakeholders, who participate in the elaboration of scenarios. Validation occurs through consensus building;*
- *the planning system support a political debate and stakeholder lobbying through the discussion of scenarios;*
- *tasks and corresponding competences of people and institutions involved in the planning process are clearly defined;*
- *there is a formal mechanisms for health education planners to discuss HWF needs, being the competent authorities members of the planning commission*
- *there is a specific budget, depending on availability, dedicated to train people working on HWF planning.*

### Description:

To enable stakeholder consultation and participation in the HWF planning process, the following structures and methods have been set up in Belgium:

By law, a planning commission for the medical supply was created (1996). This planning commission, and its component working groups by profession, are composed as follows :

- *Representatives of the different competent governments (both federal/language community level)*
- *Representatives of the education system*
- *Representatives of the professional organisations of the concerned professions*
- *Representatives of the Health Insurance Authority and Health Insurance sector*

These representatives are nominated by the different sectors and their nomination is confirmed by the Minister of Health.

When necessary or desired, the commission can invite external experts to enrich its discussions. However, these experts cannot take part in votes.

The main tasks of the commission as defined by law are:

- *Examine existing and future needs for the different health professions*
- *Evaluate needed inflow and determine the number of allowed new entrants into the quota-restricted health professions*
- *Inform the minister of its findings*

In its meetings and communications, the members of the planning commission and the working groups try to arrive at a common viewpoint regarding these issues. The discussions and activities are organised in working groups by profession. These working groups present their findings to the plenary session of the Planning Commission which votes to validate the findings and issue a formal advice to the Minister of Public Health.

The commission and the working groups can rely on the administrative, scientific and statistical support of the Team Workforce Planning at the Ministry of Health. The commission can request data to be collected or research to be conducted to assist it and help it achieve its tasks. The Ministry of Health also provides meeting rooms and takes care of all other practical matters (travel reimbursements, translation services,...)

This structure and process is thus clearly defined. However its correct functioning depends on the motivation, dedication and activity of the people who occupy the different roles as defined by law.

An important role in this context belongs to the presidents of both the planning commission and the working groups. They can act as the main drivers of the process. The successful functioning of the planning commission depends in large part on their skill as organisers, discussion leaders and spokespersons. It is a definite challenge to align all the viewpoints expressed in the working groups and to achieve a workable compromise which can survive a vote. However, this complicated work of negotiating and consensus building is crucial for the planning commission in order to fulfil its role as a consultative and advisory body.

To improve the chances of success, the choice of competent personnel to fill the different roles as defined in the legal structure is critical.

The heterogeneous composition of the planning commission, while essential to enrich the discussion and provide a wide variety of backgrounds, is not always compatible with the technical complexity inherent to workforce forecasting.

Therefore, it is essential to present a clear and comprehensible insight into the used methodology to keep the participants engaged and involved. The validity and predictive power of forecasting methods and planning tools need to be carefully explained and situated, in order to create the conditions for a correct interpretation of the produced forecasts.

## RESULTS:

The end result of the activities of the commission and its working groups is a formal advice to the Minister, which is adopted by a simple majority vote. By request, next to the adopted advice, a minority opinion can be transmitted to the Minister.

The support staff (team planning) plays an important role in the editing, translation and transmission of the text of this advice.

The Minister of Public Health is free to follow or ignore the advice of the Planning commission. However, the formal advices of the Planning commission carry such political weight (especially when unanimous) that the Minister generally incorporates the advice in policy decisions and in the setting of legal access quota.

Next to this formal aspect, the involvement of the stakeholders in the planning process can and does lead to other outcomes.

Meeting with the stakeholders with direct access to the field can serve as an early warning system for workforce trends and chokepoints which are not (yet) apparent in the statistical monitoring system

The involvement of the stakeholders in the policy process builds consensus, creates goodwill and legitimizes the resulting health policy choices. It can avoid possible conflicts by recognizing and tackling them early in the policy process.

To achieve these advantages, an adequate investment of time and effort in the activities of the planning commission from all involved partners, especially the representatives of the Minister of Health, is essential.

The support structure for the planning commission, especially when assistance is required for multiple working groups, needs to be adequately staffed and funded. Ideally, the support team members have a background in research, data analysis, statistics, and health sector issues.

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## HELPFUL TIPS:

- *Identify interested stakeholders in the health workforce field*
- *Create a structure to steer interaction with stakeholders (depending on national context: commission / institute / advisory board / ...)*
- *Assign specific roles & responsibilities*
- *Invest in the recruitment and the development of skills of the experts supporting the stakeholder involvement system*

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## – *"CALL FOR EVIDENCE" AND THE PROCESS OF "TRIANGULATION" IN THE ENGLISH PLANNING SYSTEM*

### Reference information:

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E: cris.scotter@dh.gsi.gov.uk

### Main aspects:

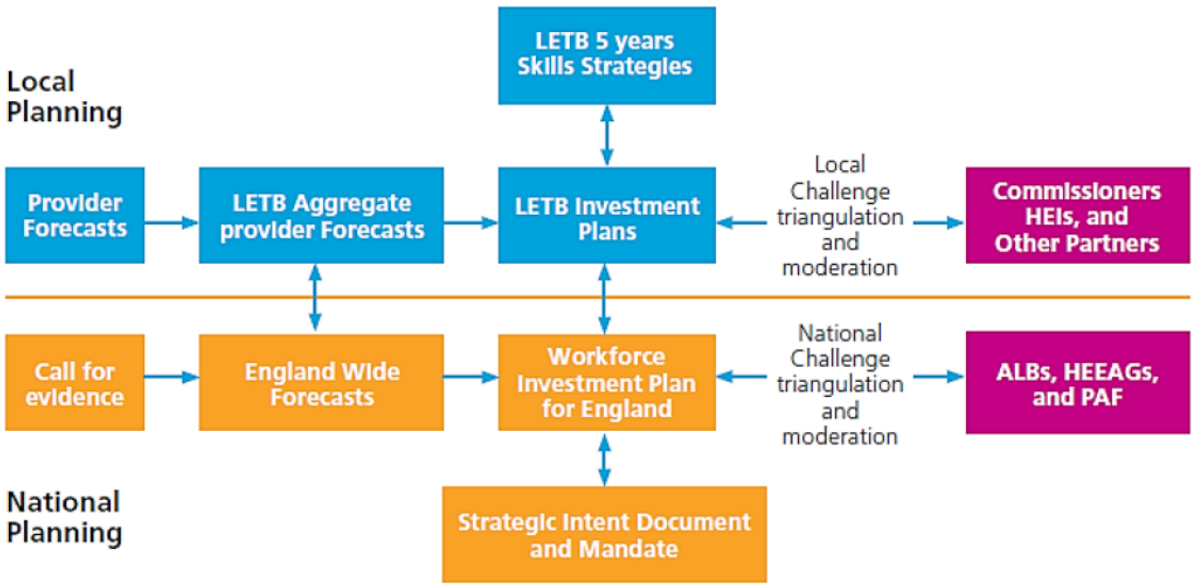
- *Strong involvement of the stakeholders in order to reach a wider consensus on the solutions,*
- *Useful information for planning are picked up from the field.*
- *Two different process that are "call for evidence" and "the process of triangulation" to obtain the two mentioned scopes.*
- *A key benefit of these processes is the transparency and sharing of the evidence that is generated through Health Education England's formal advisory structures and wider engagement with stakeholders.*

### Description:

Health workforce planning takes place at a number of levels in England and is organised within an overall framework of statutory relations between the DH and Health Education England (HEE).

Health Education England ensures 'that the future workforce has the right numbers, skills, values and behaviours' and annually sets out its commissioning intentions in the Workforce Plan for England which is subsequently used as the basis of the contracts that each Local Education and Training Board (LETB) places with local education providers for that academic year (Health Education England, 2014).

To inform these training commissions Health Education England take the five year plans from LETBs, who in turn have taken five year projections from NHS projections from NHS providers. For approximately 110 workforce roles HEE then decides on whether to increase or decrease training commissions based on triangulation of the local planning forecasts with the national planning forecasts (as shown in the diagram below) and set out in detailed workforce planning guidance issued by HEE annually (HEE, 2014).




*Health Education England workforce planning process*

Health Education England has introduced as part of national processes a **'call for evidence'**. This key and formal part of the process provides:

*'the opportunity for stakeholders and other partners not directly involved in the locally led LETB process to input their evidence and associated judgment, from a national perspective, on future workforce requirements.'*

Evidence submitted is used as part of HEE's **process of triangulation**, review and moderation of each year's workforce forecasts and investment plans. This evidence sits alongside other intelligence, including analysis and reports commissioned by HEE and the Department of Health from the Centre for Workforce Intelligence (CfWI) and any primary analysis undertaken by HEE alongside partners such as the Health and Social Care Information Centre (HSCIC). HEE's Chief Professional Officers also produce briefings from their professional perspective that are incorporated into this process, so that shared assumptions about the future may be constructed.

National triangulation then takes place between Health Education England and the other Arm's Length Bodies that include NHS England, Monitor, the NHS Trust Development Authority and the Care Quality Commission. This is part of an overall and systematic engagement with national stakeholders throughout the course of the planning cycle, including with Royal Colleges, professional representative organisations and trade unions.

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HEE's planning process is explicitly about the skills, values and behaviours of the future workforce as well as future numbers (including 'numbers' in relation to new roles). In the Call for Evidence template that is provided by HEE there are examples of the evidence requested. There are three main sections:

1. *Future Service and Workforce Models*

2. *Forecast of future supply and demand - volumes*

3. *General / Other Evidence not included elsewhere*

## FURTHER INFORMATION:

- *The key features of the process of triangulation are described on HEE website http://hee.nhs.uk/work-programmes/workforce-planning/hee-workforce-planning-201415-call-for-evidence/*
- **Department of Health**, *(2014) A mandate from the government to Health Education England. https://www.gov.uk/government/publications/health-education-england-mandate-april-2014-to-march-2015*
- **Health Education England** *(2013) HEE's national Workforce Plan http://hee.nhs.uk/wp-content/uploads/sites/321/2013/12/Workforce-plan-UPDATE-interactive.pdf*
- **Health Education England** *(2014) HEE's Call for Evidence http://hee.nhs.uk/work-programmes/workforce-planning/hee-workforce-planning-201415-call-for-evidence/*
- **Health Education England** *(2014) HEE's Call for Evidence template Call-for-evidence_Template-2014_15-2.doc*
- **Health Education England** *(2014) HEE's Workforce planning guidance 2014/15 WORKFORCE PLANNING GUIDANCE FOR THE 2014/15 ROUND FOR 2015/16 EDUCATION COMMISSIONS - Workforce-planning-guidance-2014-15.pdf*

## – MULTI REGIONAL PLANNING IN THE SPANISH SYSTEM: ORGANISATION ASPECTS AND FORECASTING MODEL

### REFERENCE INFORMATION:

- National website. MoH. Studies for health workforce planning
  - Ministerio de Sanidad, Servicios Sociales e Igualdad - Profesionales - Estudios para la planificación de profesionales sanitarios
- Regional website. Murcia Region:
  - http://www.murciasalud.es/fse.php?iddoc=192437&idsec=4494
  - http://www.murciasalud.es/recursos/ficheros/165344-modelo_dinamico.pdf

- Legislation: Last modification of article 22 Law 44/2003, November 21st.

### MAIN ASPECT:

- *In the countries with a decentralized planning system, like Spain or Italy for example, the involvement of regional stakeholders is very important;*
- *The Spanish planning system of specialists involves various stakeholders that enrich the discussions and bring different approaches: central, regional and professional;*
- *The challenge is to tune up the regional instances, reinforced by the regional autonomy, with the needs and the resources of the Country. The challenge is more hard if we think that what is planned as health workforce need for each specific Region is than threatened by the health professions mobility between regions;*
- *In the forecasting model Spain takes into account both the multi-regional dimension and the inland migration. The results of the projections are that discussed in the Human Resources Commission;*

### DESCRIPTION:

The Spanish experience is focused on the planning of medical specialists and other specialists (nurses, biologists, pharmacists, chemists, physicists and psychologists).

Since 2003, the number of vacancies for specialist training is annually approved by the Commission on Human Resources of the National Health System (CRHSNS)[38], with the previous report by the Ministry of Education and the National Council of Specialists in Health Sciences (CNECS)[39].

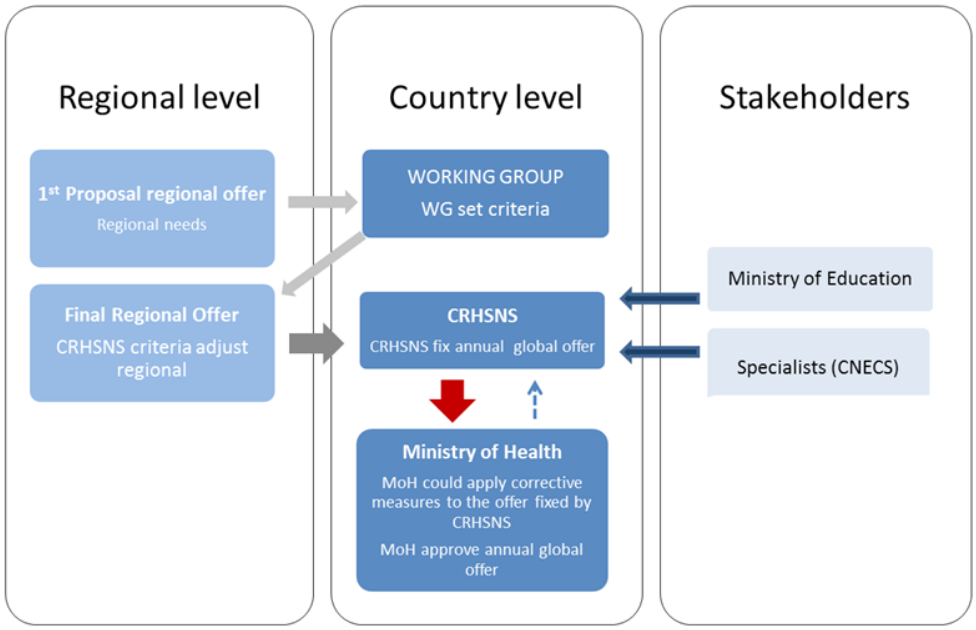
The annual offer of specialist training meets the needs of specialists identified at national and regional level, as well as budget available.

(38) CRHSNS is composed by health officials of the regions (17 autonomous communities + INGESA) and the central state administration (Ministry of Health, Social Services and Equality, Ministry of Education, Culture and Sports , the Ministry of Defense and the Ministry of Finance and Public Administration)

(39) CNECS represented by each of the specialties.

The first step is the initial proposal for regional offer (17 regions+ INGESA[40]). Regional proposals respond to regional needs (regional planning) and do not always match with the global needs at country level (country planning). Even though the regional offer aims to be self-sufficient for training, sometimes a region hasn't authorized training capacity to meet regional needs or the specialty is oversupplied at country level.

To get a consensus to address these differences, a Working Group (WG)[41], by delegation CRHSNS, maintain numerous contacts and negotiations: plenary and bilateral meetings. In these meetings, the criteria for each annual offer are fixed, differentiating between specialties with oversupply, deficiency or balance and checking regional and national needs. These criteria based on a forecasting model are yearly adjusted in order to anticipate future demands. Sometimes, a region didn't unilaterally accept these criteria and proposes a number of vacancies higher than the necessaries calculated. In these cases and before 2014, tools were not available to reduce the regional proposal according to global needs and planning. This was the main reason for a change in the Law[42] to allow the MoH to introduce corrective measures to the regional proposals. These corrective measures require a reasoned report from the MoH to the Commission of Human Resources.




*Spanish specialists planning process*

(40) National Institute of Health Management

(41) WG is composed by technical staff of the MoH and the regions

(42) Article 22, Law 44/2003, modified in March 2014

## RESULTS:

The offer 2014/15, set on September 1st. and negotiated during the past nine months, hasn't required taking corrective measures because previous negotiations among the MoH and the regions have allowed to adjust the initial proposal of certain specialties. Probably the new MoH competence has changed the predisposition of some regions to reach agreement, as in previous years had been more reluctant.

Spain has to continue to improve its planning, especially by continuing working in the availability and reliability of data for planning and updating the skills of specialists. For this task we have two new tools:

- *The State Register of Health Care Professionals[43], created specifically to improve planning, which will be available by November 2016*
- *The new specialist training system that includes a core training period (trunk) common to several specialties[44].*

## HELPFUL TIPS:

- *Buiding a working group composed by central government and regions and other stakeholders.*
- *Setting a time horizon to adopt agreements.*
- *Launching the working group timely for the discussion of all criteria and measures.*
- *Sharing and disseminating information necessary for planning among all stakeholders.*
- *Considering regional needs but remembering that planning has to cover the overall needs of the country.*
- *Further information (including next changes or improvement planned, related bibliography, useful documentation, working materials, pdf or excel tool, link, etc.).*

(43) Royal Decree 640/2014, July 25

(44) Royal Decree 639/2014, July 25

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CHAPTER 9

# LESSONS LEARNED

Here we intend to provide suggestions and advices derived by the different contents of the Handbook, in particular from the comparison of the different planning experiences.

With regard to the five key elements of a planning systems suggestions and indications may be summarized as follows.

## GOALS

Is it feasible to planning health the workforce without setting any objectives to be achieved?

The seven experiences analyzed have shown that, basically, health workforce planning requires sharing principles, before than agree on specific objectives. Just the will to preserve certain principles and values, even in the face of complex challenges such as the economic crisis, makes the health workforce planning meaningful (for an example of HWF planning principles see the table below[45]).

1. *Universal coverage, i.e. the health care system will provide assistance to all citizens without excluding poor or rich. This implies that the need of professionals of the whole population of the Country has to be considered.*

2. *Affordability, i.e. the cost of the future health care system has to be kept within the limits of what is considered sustainable for the population.*

3. *Effectiveness, i.e. in considering the future need of professionals, is it important to bear in mind good production parameters.*

(45) See "*Minimum Planning Data Requirements for Health Workforce Planning*" Joint Action Health Workforce Planning and Forecasting D.051 – Release 1, pag. 7, available at http://www.euhwforce.eu/web_documents/RESULTS/140414_WP5_D051_Minimum_planning_data_requirements_final.pdf

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4. *Imbalances are not an option (according to the affordability of the system, see point 2) as they are a threat to the coverage and quality, i.e. it is not acceptable to plan for a number of professionals which would be lower than a number which ensures a good quality.*

5. *Education and not immigration to meet Healthcare needs, i.e. each country has to plan how cover its own HWF needs, migration is a right for EU citizens but it should not be used systematically as a source to cover the population's need*[46].

The definition of HWF planning includes several dimensions that can be considered: quantity, geographical distribution, time distribution, skills, attitudes, commitment, appropriateness of activities, cost, productivity[47].

**What are the basic dimensions to be taken into consideration?** Definitely depends on the objectives that the system arises. In the health workforce planning there are **basically two dimensions** to consider:

1. *the targeted quantities for any health profession.*

2. *the year in which these set quantities are to be accomplished.*

The second dimension represent one of the great challenges: to educate and train a health professionals requires a minimum time frame (from 4 years for a nursing profession to 12 years for a fully trained clinical specialist) which obliges **to use forecasting methodologies and to calculate the margin of error of this forecast.**

**How to turn those principles in operational objectives?**

Most of the planning systems analyzed take into account the two basic dimensions mentioned above: the amount of professionals and the year in which this amount is achieved. Commonly the aim is to ensure in the future the current ratio of workforce and population, acting on the stock and flow of workforce in response to expected changes in the population. We can consider this as a starting point for those who aim to develop a planning system. But more advanced systems focus their planning on the reengineering of the workforce, in terms of horizontal and vertical substitution and skill

(46) See WHO Global code of practice on the international recruitment of health personnel (2010).

(47) See the definitions of health workforce planning quoted in Chapter 1

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mix, and on the reorganisation of health care delivery.

Whether the aim is to maintain the current situation or to change it, it would be useful to undertake an **assessment of the current situation** and to measure if there are any imbalances between supply and demand. Just **the outcome of this assessment should lead to the definition of specific objectives.** The challenge in this case is to agree on indicators that certify any imbalance. Only few planning systems measures the current situation. Most of them assume the current equilibrium between supply and demand, which it's a problem in the event that this assumption in not correct incurring the risk to perpetrate the imbalances in the future.

**The consensus of stakeholders is necessary?** Transparency and communication are one of the keys to successful planning systems: both principles, operational objectives, specific target or assumption are to be shared with stakeholders. The stakeholders involvement is thus to be considered as part of the setting goals process.

*Minimum planning requirements*

- *Define and agree with stakeholders on planning principles.*
- *Turn planning principles into operational objectives, even in case of maintaining the situation "as it is now".*
- *Set targets regarding, at least, the amounts of health professionals needed and the year in which these amounts are to be accomplished*
- *Ensure to start the process with an assessment of the current situation on the basis of which to define future goals*
- *Be transparent and communicate principles, assumptions and targets to the stakeholders.*

*Other recommendations for a better planning process*

- *Make a comprehensive analysis of the future health needs of the population and of the skills mix needed to deliver planned health services in the future in order to have added value information to set the goals.*
- *Identify and address unintended adverse policy interactions before setting the goals.*
- *Be sure that different Ministries (Education, Health, Finance, Labour) share and agree the objectives so to increase the probability to reach the results expected.*
- *Set goals that are Specific, Measurable, Acceptable, Realistic and Timed (SMART)*

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## Forecasting

**Does exist a basic approach to estimate "the right people"?**

Although the seven planning systems share planning principles and in most cases also the basic dimensions of planning (quantity and timing) the models and process to forecast those quantity in the future are varied. **At its basic stage, HWF planning consists in forecasting the evolution in the supply of and in the demand for healthcare services taking into account demographic variables.** Healthcare workforce forecast models function by projecting supply, demand, or both. To determine the evolution of supply, the initial stock of physicians, nurses, or any other health care professional is considered. The current health workforce is then updated according to the evolution of the factors known to affect it, like changes in the mortality and retirement rates, migration flows, medical school intakes, etc. Forecasting demand is arguably more complex, mostly due to a higher uncertainty over the estimate of the underlying parameters. Common economic factors like the evolution of demography, income or the GDP growth rate influence the demand for healthcare services.

A multi-professional approach to health workforce planning, taking into account the interaction between professions (vertical and horizontal substitutions) is also to be considered as essential for a reliable forecast.

**What's "the right time"?**

To set "the right time" it's necessary to take into account not only the training period (from 4 to 12 years) but, in case government wants to implement new policies, there is also a lead time due to all the legislative hurdles that have to be passed before any change can be started. A period of 6 to 7 years is considered realistic for any policy to be implemented, so it is considered realistic to use 5 and 12 additional years for changes to be accomplished. The total time frame is **therefore usually 12 to 18 years** from the present time. Therefore, any Country commencing with health workforce planning has to dampen the expectations on the short term, e.g. the first 6 to 10 years.

**Is it feasible to forecast other HWF dimensions?**

More comprehensive forecasting models consider also the skills of the workforce, their geographical distribution, the impact of technological progress, the epidemiological needs of the population or the kind of services provided and how all these factors

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evolve and their interactions within the system. System dynamic approach are very useful to forecast many dimensions interacting in a complex system.

Whatever dimensions are considered, the underpinnings of sound HWF planning is a credible and reliable forecast.

**How to have a credible and reliable forecast?**

Every forcasting has to be matched with the related margin of error.

It is important that the basic assumptions on which the forecasting models are based can be easily reviewed and changed and that the models are, in general, flexible, in order to be updated in particular the effects of significant health reforms or political priorities should be quantified and incorporated into the model.

It is also important that the models provide for the possibility of starting from a current imbalance between supply and demand. In the first years of modeling focus on developing a supply forecast combined with simplistic scenarios for the demand side:

- *for the supply forecast it is important that the models can formulate different scenarios related to different conditions of the supply;*
- *for the demand forecasts, in addition to aspects of the population, it could be important that the models take into account the budget constraints; also it is feasible to develop a qualitative method for involving stakeholders in the description of future demand.*

*Minimum planning requirements*

- *Forecast both supply and demand, first of all measuring and predicting the demographic variables*
- *Involve stakeholders in the description of future demand*
- *Provide different scenarios related to different conditions of the supply*
- *Calculate the margin of error of the forecasting*
- *Take into account the interaction between different health professions and the budget constraints.*
- *Set at 12 (for nurses) or 18 (for medical doctors) years the minimum time horizon and restrain expectations on shorter terms.*

*Other recommendations for a better planning process*

- *Focus the forecast on long-term structural factors and avoid being overly sensitive to cyclical fluctuations*
- *Forecast the trend of dependence of the health care system on foreign trained HWF personnel.*

- *Be able to forecast changing utilization rates because considering the current utilization rates is a good basis but is insufficient for forecasting future needs.*
- *Include parameters to address the issue of inequitable geographic distribution of the HWF*
- *In order to ensure that the dependency is addressed and more workforce needs are identified"*

## DATA

### How to look at the dimension "quantity"?

The **quantity** could be expressed in working **full time equivalents** or in headcount. The expression in full time equivalent is important because in most countries there appears to be a gender difference in average working FTE between males and females that changes very slow. Females tend to work less FTE on average than man. In combination with an expected feminisation of the health workforce this will augment the number of students required to enter education programmes. It's also important to distinguish the "**professionally active**" workforce and the "licensed to practice" workforce.

To have **updated data** on the quantity of health professionals currently active is also a necessary condition to have a reliable forecasting.

### How to collect data?

It's common to use different sources for data collection, also because mainly the data useful for the forecasting exercise are usually not collected with planning purposes. In the first stages it recommended to start with the "most" easily available data and only in the next stages working on both improving the data quality and increasing the data quantity (inclusion of additional parameters / sources) on a continuous basis. At that point it could be necessary to design and implement standardized and automated approaches for data collection, analysis and reporting (templates, macros, statistical programming codes). Probably, in the beginning, there are only **aggregate data** available that is anyway sufficient to start the planning process. Then, it's necessary to improve data collection investing in a individual database. To build such robust data collection it's important to acquire political support in order to establish a legal framework (e.g. data access rights).

If the forecasting model requires data not available from any sources use **qualitative methodology to gather the information** needed (surveys, Delphi, estimations).

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*Minimum planning requirements*

- *Collect data from different sources setting up communication lines with concerned data managers and institutions.*
- *Use updated data to provide an accurate and comprehensive description of the current supply for both the stock and the flow and to give timely descriptions HWF demand.*
- *HWF planning is feasible also using only aggregated data. When data are not available use qualitative methodology to gather the information needed and in the meanwhile improve the quantitative data collection process.*
- *Measure the current and desired workforce in FTE focusing the analyses in the professionally active workforce.*

*Other recommendations for a better planning process*

- *In order to use individual, acquire political support in order to establish a legal framework (e.g. data access rights) and to build robust data collection.*
- *Identify and address actual gaps in data collection and promote consistent approaches to research in order to collect all information required including number of active professionals; number of full-time equivalent; types of providers; where they work; their skills; the services they provide and workloads.*
- *Build a national coordination mechanism to manage, improve and monitor the information system.*

## LINK TO POLICY ACTIONS

### How to reach the objectives?

The results of the planning system depends mainly on how the available levers are used. At the basic level, the most common lever used is the regulations of students intakes in education courses. And in many cases is the unique one.

Not being able then to question the only useful lever it is important however to use it to the best.

So it's important:

- *to communicate the goals and the target to a broader panel of stakeholders;*
- *to develops tools (i.e. check lists, guidelines) to evaluate and inform the decision making process on its own planning capacity;*
- *to establish a mechanism for the periodic monitoring and evaluation of the progress of implementation of interventions and initiatives for HRH development and management;*
- *finally, to communicate the reached results to the government, the public, and the shareholders but without claiming any positive changes to be due to the planning process;*

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- *previously reached results should always be mentioned in new health workforce planning goals, thus triggering an improvement cycle.*

*Minimum planning requirements*

- *Communicate goals, targets and tools available to reach them.*
- *Monitor continuously the HWF situation keeping stakeholders informed on the progress and changes in order to adjust and intervene with corrective actions.*
- *Evaluate periodically the planning capacity of the system*
- *Communicate reached results and on that base, set the new goals.*

*Other recommendations for a better planning process*

- *Develop different strategies to shape the right needed workforce (retention, retirement, flexibility, financial mechanisms, etc.)*

## Organisation

### Who should be the responsible for planning?

A HWF planning system, due to its complexity (public interest, many actors involved, long-term objectives), requires a well-structured organisation to support it. Therefore it's important that roles and responsibilities of the people involved in the organisation are clearly defined and the widest participation throughout the process is guaranteed.

In case of decentralized planning, regional needs has to be considered but remembering that planning has to cover the overall needs of the country. Indeed, a national health workforce planning body that engages state, local, public and private stakeholders it's important, in order to develop an integrated, comprehensive, national health workforce policy that can be accomplished if all interested stakeholders work together.

Finally, it is easier to pursue long-term HRH development objectives when the responsibility for planning is in the hands of an independent agency, preferably accountable to Parliament rather than to a ministry.

### When do stakeholders have be involved?

The key to successful planning system is the involvement of stakeholders at all stages of the process. Generally speaking, the rule is that before the stakeholders are involved the better is. This means that the involvement must focus already in the early stages, communicating them the objectives of the planning, till the end of the process, sharing

with them the results. In any case engaging the stakeholders in the planning process does not mean always sharing and agreeing. However, there are some steps when even the sharing and agreement with stakeholders are important.

One important step in getting the stakeholders to share and agree should be the joint building and agreeing upon the model that will be used by the health workforce planners. The involvement of the stakeholders in getting the parameters of the models is important because they have expertise on the needs, as far as demographic changes, epidemiology, and cultural changes may be involved. Their expertise is valuable in approximating the parameters as close as possible.

Moreover, the participation of the stakeholders in the elaboration of scenarios is a useful lever to grant an effective involvement.

**How to organise the stakeholders involvement in the planning system?**

It's important to obtain a trustful involvement of stakeholders thanks to a transparent process that provides sharing data and tools allowing to them to be an active part in the process of scenario building (i.e.: on line database, .open access to forecasting tool, etc.).

In particular, it's important strengthening partnership between educational institutions and the health-care delivery system, between education system and health care system.

Regarding the organisation of the stakeholders involvement the key messages are:

5. *identify the interested stakeholders in the health workforce field;*

6. *create a structure to steer interaction with identified stakeholders;*

7. *assign specific roles and responsibilities within this structure;*

8. *establish a subcommittee that tries to implement the planning and forecasting committees wishes into a technical forecasting model;*

9. *share and disseminate necessary information are among all stakeholders.*

Finally, to be successful in managing the involvement of the stakeholders, it's necessary to invest in the recruitment and the development of skills of the experts supporting this system.

## *Minimum planning requirements*

- *Define and implement a national body that engages state, local, public and private stakeholders and supports the planning process in every stage, with roles and responsibilities clearly defined.*
- *Establish a subcommittee that tries to implement the planning and forecasting committees wishes into a technical forecasting model.*
- *Identify all the interested stakeholders.*
- *Strengthen partnership between educational institutions and the health-care delivery system, between training system and health care system.*
- *Communicate goals and results of the planning process to the stakeholders and engage them in particular building and agreeing upon the model that will be used by the health workforce planners and in the elaboration of scenario.*

## *Other recommendations for a better planning process*

- *Establish an independent agency responsible for planning, preferably accountable to Parliament rather than to a ministry, to pursue long-term development objectives.*

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CHAPTER 10

# CONCLUSION

The general objective of the **Joint Action on European Health Workforce Planning and Forecasting**, being part of the Action Plan for the EU Health Workforce – Part 1 "Improve Workforce Planning" (as adopted by the European Commission in 2012) is to help countries to move forward on the planning process of health workforce and to prepare the future of the health workforce by creating a platform for collaboration and exchange between Member States. This will help the EU Member States to take effective and sustainable measures in terms of healthcare planning and forecasting.

This Handbook tries to make a contribution in this direction. In particular, we defined and identified the key elements of a planning system, the related minimum planning requirements and provide a series of contributions that can be used by Member States to implement or improve these planning requirements.

Consistent with the purpose, we analyzed and described some good practices related to these aspects. The advantage of a good practice is double: on one hand shows that the solution described is feasible, having already been applied, on the other hand, describing its results, suggests a shortcut for its implementation.

In support of the experiences we then provided, through the comparison of the seven planning system, some elements for a critical analysis and a series of insights on specific critical topics (that you can find in the next section "FOCUS ON").

This methodological approach, however, has also shown its limits. Focusing the analysis on minimal planning requirements and on consolidated experience of some Member States, the Handbook does not provide any tips for developing planning methodologies in line with a more comprehensive and exhaustive definition HWF planning. In particular, the Handbook provides useful information to plan two key dimensions at health workforce, that are quantity of health professionals ("right people") and timing ("at the right time"). While other dimensions are not sufficiently detailed or considered: the theme of skill mix and task shifting, above all, but also the critical issues related to the geographical mal-distribution and the challenges of international mobility are mentioned in the Handbook, but probably not analysed in sufficient depth, although "right skills

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in the right place" are fundamental issues for an effective strategic planning system. Other dimensions are not then entirely covered: productivity and working conditions, for example.

In any case the Handbook should not be considered as a stand-alone product, but rather a tool part of a kit in which the entire Joint Action and, more in general, the entire Action Plan for EU Health Workforce, contributes to provide comprehensive and practical solutions to "improve workforce planning".

With its limitations and its strengths, the Handbook is to be considered as a guideline to implement and improve minimum planning requirements that ensure a workforce numerically in line with demand, economically sustainable, at the appropriate time.

The efficacy of the Handbook in responding to these objectives will be tested in two Pilot Studies, in Italy and Portugal, and in two Feasibility Studies (in Germany and in Moldova) started in January 2015. Results of Pilot Studies and Feasibility Studies will furnish precious contributions in order to improve and update of the Handbook here presented in a first version.

In particular, the chapter 9 "Lessons learned" will be completely rewritten based on the experiences of both the pilot studies and the feasibility studies, while the chapters of the Second Part about the good practices will be continually updated as new practices will be identified, analyzed.

In conclusion, referring to the objective of the Action Plan "**Improve Workforce Planning**", we still want to put in evidence that, beyond specific tool that, as the Handbook, can be constructed, the aim of the Action Plan for EU Health Workforce is achievable also, and mostly, through the collaboration between the different Member States and stakeholders. Mainly for two reasons.

First, the HWF planning, as mentioned in the introduction, is a complex activity requiring skills and expertise. Some countries may have difficulty to find and involve some of these skills that instead are available in other countries; activating a network of experts (such as the **Joint Action on European Health Workforce Planning and Forecasting** aims) is a solution to this problem and the exchange of good practices between EU Member States is essential to trigger this network. Among other things this network of experts could also take the form of a "**high-level group of independent experts**" to provide useful advice to the different member states and alerts.

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Secondly, cooperation between Member States is needed because some of the current problems that planning systems are facing have moved from national level to a, at least, EU level and can therefore only be solved through coordination and cooperation between Member States. For example, for the supply side, the critical issue of international mobility of health professionals and, for the demand side, increasingly in the future, the mobility of the patients.

We believe that the Handbook can represent an important step in activating an effective, efficient and permanent cooperation between Member States. While writing these conclusions, we are having the first signs of this cooperation: having started with the two Pilot Studies and in the two Feasibility Study, already the people of the four countries involved are starting talking to each other to find common solution. We hope that these first contacts, done “to the light of the Handbook” are the beginnings of a future HWF European network.

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FOCUS ON

CHAPTER 11

# DETAILED DESCRIPTIONS OF THE SEVEN PLANNING SYSTEMS

## *GOALS*

### ◄ BELGIUM

The main goal of the Belgian Planning Commission is:

- ***to monitor and observe the current workforce situation****. For now, the planning commission tries to maintain the current level and workforce distribution.*
- *An implicit baseline goal is **to assure the replacement of health professionals for the future**, making sure the growth of both population and the expected impact of the ageing of the population, is reflected in the future available stock of health professionals. This implicit goal influences the planning process but is not hard-coded into the planning tool.*

The commission currently has no common or official position on which workforce level is required or preferred (the desired number of health care professionals/habitant).

**FOR FURTHER INFORMATION:**

See the presentation of the Commission de planification de l'offre medicale on the Belgian Planning Commission official web site (http://www.health.fgov.be/eportal/Healthcare/Consultativebodies/Planningcommission/index.htm).

*The mathematical planning model is used to model the current (and future) workforce situation, but not to model the desired workforce situation, since the commission currently has no common or official position on which workforce level is required or preferred (the desired number of health care professionals/ habitant).*

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*We could take into account some working conditions (hours worked / year) and also the future changes in training. Although, we are limited to quantifiable information. This means we could take into account the changing duration of the study, but not the qualitative changes.*

## ◄ DENMARK

The main goal is:

- *to set the number of postgraduate training posts for dental and medical specialists;*
- *to advice the Ministry of Higher Education and Science regarding the student intake.*

Other objectives to be mentioned are:

- *to illustrate the expected development in the number of physicians, medical specialists, dentists, dental specialist, dental hygienists and clinical dental technicians;*
- *to create a basis for discussions for the future need of workforce within a given profession and specialty;*
- *monitor and observe the current and future supply of workforce.*

No other goals are pursued.

## ◄ ENGLAND

The goals of the English HWF planning system are **explicit** and set out in the "Mandate from the Government to Health Education England" and the "Education Outcomes Framework". In particular, the latter define the **expected outcomes** while the first makes explicit the related **operational objectives** (both **short term** and **long term**).

Some examples

**Expected outcomes**

On the domain named "Competent and Capable Staff", whose definition is "There are sufficient health staff educated and trained, aligned to service and changing care needs, to ensure that people are cared for by staff who are properly inducted, trained and qualified, who have the required knowledge and skills to do the jobs service needs, whilst working effectively in a team", the expected outcome are:

- *"organisations anticipate the numbers and capabilities of the workforce they will need for the future and demonstrate how they work singly and collectively to meet these needs";*
- *"high quality care will not be compromised by the lack of available staff with the necessary competence, capability and performance".*

### Operational objectives

In the domain of "Competent and Capable Staff", two scopes were defined:

1. *ensuring effective workforce planning through close work with the LETBs;*
2. *delivery of a workforce to meet the changing needs of the service, with particular focus on preventative measures and primary care.*

And a set of expected deliverables (output) were described,

- *i.e. "Significant reduction in the number of roles on the Shortage Occupation List by March 2015",*
- *or "Delivery of a 5-year consolidated workforce plan by Autumn 2013".*

In 2014 the HWF planning targets have been updated and detailed.

**FOR FURTHER INFORMATION:**

- *"A mandate from the government to Health Education England (HEE) for April 2013 to March 2015" available at https://www.gov.uk/government/publications/health-education-england-mandate*
- *"A mandate from the Government to Health Education England: April 2014 to March 2015" available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/310170/DH_HEE_Mandate.pdf*
- *"Education outcomes framework" available at https://www.gov.uk/government/publications/education-outcomes-framework-for-healthcare-workforce*
- *"Indicators and Technical Guidance 2013" available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/225361/EOF_Indicators_-_Technical_Guidance_2013_14.pdf.*

## ◄ FINLAND

The objective of anticipation of educational needs is:

- *to promote the **availability of skilled labour** in accordance with developments in industrial and occupational structures and*

- *to guarantee all young people an **opportunity to apply for vocationally/professionally oriented education and training**.*

Anticipation of demand for labour and educational needs produces information about how the education system could support goal-oriented development of the economic structure.

More precisely, over the last ten years, the anticipation issue that has gained emphasis in Finland is the demographic change; in other words, ***how to make the most of the competencies of diminishing young age groups*** to compensate for the retiring baby-boomer generation.

**FOR FURTHER INFORMATION:**

- *"Politiikkatoimien vaikutukset työvoiman tarpeeseen Suomen taloudessa 2010-2025" available at http://www.vatt.fi/file/vatt_publication_pdf/t161.pdf*
- *"Education, training and demand for labour in Finland by 2025". available at http://www.oph.fi/download/144754_Education_training_and_demand_for_labour_in_Finland_by_2025_2.pdf*

## ◄ NORWAY

The national planning system is based on a Parliamentary decision of 1995 where the Ministry of Health and Social Affairs (later Ministry of Health and Care Services) was given the task to develop an action plan for training of health personnel. The plan focused on:

- *a better utilisation of health personnel,*
- *a better geographical distribution,*
- *better interdisciplinary co-operation and awareness of new health technologies and economic opportunities*
- *and the increased care burden in society due to demographic changes.*

The mission of the present planning system in the Directorate of Health is

- *to evaluate the present and future needs of health and social personnel*
- *and to follow up initiatives to strengthen the capacity and qualification building as needed.*

## Spain

The Spanish planning model focus on specialists doctors. So far, Spain has not included other health professionals in the planning model, unless an approach in 2011 to planning nurses and midwifes.

The goals of Spanish planning model are **to identify and to locate the right number of doctors with the appropriate specialties** for the right place at the right time.

We used since 2006 a supply and demand/need simulation model for 44 medical specialties using system dynamics. The model calculates the supply and the deficit or surplus.

Model results allow policy decisions and the establishment of some measures. For example:

- ***Maintain the places*** *in the Faculties of Medicine following a sharp increase since 2006 and establishing a Numerus Clausus less than 7.000.*
- ***Improve the distribution*** *of the supply of specialized training according to identified needs.*
- ***Reduce abandonment*** *of specialized training and* ***prevent recirculation*** *(access to specialized training place with other specialty physicians or physicians prior left the training).*

FURTHER INFORMATION:

Spain went from a surplus (in the eighties) to a shortage of medical specialties (2003-2009). Shortages of professionals were in part solved through professionals' inflows mainly from Latin America and Europe. To face those challenges the HWF planning system set goals regarding number of intakes in Universities as well as in specialization schools. There are no goals regarding future skills or professional mix. Some studies on working conditions were made. In 2014, not one specialty has shortage.

## The Netherlands

The statutory objectives of the ACMMP are:

- *Draw up* **requirement estimations** *on the basis of, amongst others, the anticipated demands for health care and demand projections in relation to* **various medical and dental health specializations.**

- *Meet both the health care sector and the government's demand for information in conjunction with the perceived need and the related capacity for basic medical and dental education and subsequent specialization.*
  - *Asses the required capacity level as far as basic medical training at medical schools is concerned and subsequently advise the government accordingly. ("The 2010 Recommendations for Medical Specialist Training", p. 9. http://www.capaciteitsorgaan.nl/Portals/0/capaciteitsorgaan/publicaties/capaciteitsplan2010/0%20Capaciteitsplan%20Hoofdrapport%20Engels.pdf)*

These goals are **explicit**. They are translated in specific measurable advices on the range of the yearly intake in any profession that is concerned. Because these ranges are discussed with the field in advance, all training institutes will have made action plans for the different scenario's. The ministry of Health, Welfare and Sports will make the necessary budget available. This will take some time, up to 2 years at the most. The goals are therefore **attainable.**

There are **several restrictions**. The necessary budget is only one of the restriction. Then, there have to be training institutes that can accommodate the (additional) trainees. And also there have to be enough trainers. Finally, the medical graduate has to take an interest in the training program.

The goals are **timely**. In the scenario's, we take into account a 2-year lag time phase due to the process of taking the decisions and implementing the consequences. Thereafter, the ACMMP sets two equilibrium years, one in 12 years, (including the lag time), the other one in 18 years.

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# FORECASTING MODEL

## 1 - FORECASTING APPROACH

### ◄ BELGIUM

The Belgian forecasting model looks at **both demand and supply** of health workforce:

- *the model estimates trends in the supply of health workforce, factoring in multiple scenarios regarding* **various levels of inflows** *in the workforce;*
- *on the demand side the model takes in consideration the evolution of demand based on* **health expenditures** *and the* **ageing of the population.**

**IN DETAILS:**

Essential in the correct functioning of the Belgian forecasting model is a precise definition of this **starting stock**. Exact information about size and composition of the current workforce is a conditio sine qua non for reliable forecasting.

This starting stock is then modified by **inflow and outflow**. In a workforce model, inflows are define as new graduates entering the labor pool, immigration, extra flows (e.g. people entering health sector from other sectors mid-career). Outflow is determined by survival rate, halting of activities, emigration, etc. Expected evolutions about future inflows (e.g. education and migration) and outflows (e.g. emigration and retirement) of the profession and future level of activity are used to forecast the future levels of the (active) workforce.

In combination with the projected population evolution, the Belgian forecasting model also produces expected densities (number of health professionals per 1000 inhabitants).

**FOR FURTHER INFORMATION:**

- http://www.health.fgov.be/eportal/Healthcare/Consultativebodies/Planningcommission/18070759_FR
- http://www.euhwforce.eu/web_documents/JAHWF_130521_WP6_workshop/JAHWF_130527_WP6DOC_Eindproduct_FR_Gegevenswoordenboek_geharmoniseerdeplanningsmodel080526.pdf
- *"Belgian Harmonized Mathematical Planning Model (BHMPM)", Pieter-Jan Miermans.*

## ◀ DENAMRK

The quantitative forecast includes a **supply side** and **five very simplistic scenarios for the demand side**:

- *one scenario showing the demand for workforce if the current ratio between the profession and population size is being kept*
- *and four scenarios showing the expected demand for workforce increasing 0 %; 0,5 %; 1 % or 1,5 % per year.*

The decision not make a more elaborate demand forecast is primarily due to great difficulties associated with forecasting demand. When producing a 5 year plan setting either the number of postgraduate training posts for medical or dental specialists the Danish Health and Medicines Authority uses the results from the supply forecast and is furthermore advised by different stakeholders regarding their qualitative estimation of the need of medical or dental specialists in the different specialities on a national and regional level.

## ◀ ENGLAND

The forecasting model looks both demand and supply of health workforce.

The forecasting approach is **different for the different professions** forecasted (110 different roles). However demand and supply are always take into account. Workforce planners model demand and supply variables and assess if the current training volume is likely to produce under or over supply if not adjusted.

Factors influencing **demand** include:

- *changing patterns of disease,*
- *developments in technology,*
- *introductions of new professional or regulatory standards,*
- *financial constraints,*
- *new roles substituting current roles.*

Factors influencing **supply** include:

- *current workforce levels,*
- *rates of attrition from training courses,*

- *rates of staff turnover,*
- *retirement age,*
- *inflow and outflow from other countries and healthcare employers.*

## FINLAND

The forecasting model follows a **need based approach** and produces demand side projections regarding demand for new labour for 28 industries and occupational groups in each of them as well as supply side projections for intake needs in different fields and levels of education.

The **macroeconomic** forecasting (VATTAGE model) is based on projections of

- *the employment rate,*
- *the GPD growth,*
- *and the social security development.*

The "**demand for labour**" forecasting (Mitenna model) is based on the projections regarding demand for new labour and takes into account the changes in the occupational structures of the industries, natural wastage, total supply of labour and the efficiency and effectiveness parameters (the completion rate, the proportion of multiple education, the labour force participation rate) for the education system.

**FOR FURTHER INFORMATION:**

- *The* **VATTAGE** *is a model used in VATT, the Government Institute for Economic Research, to study the effects of tax policies and environmental policies on the economy. The model can also be used to study scenarios concerning the driving forces of economic growth and employment. See http://www.vatt.fi/file/vatt_publication_pdf/t150.pdf*
- *The* **Mitenna** *model provides long-term data on changes in demand for labour, natural wastage of labour, demand for skilled labour and educational needs. The anticipation process in the Mitenna model anticipates demand for and supply of labour in the target year and reconciles these factors. The anticipation method is divided into two sections. The* **first** *focuses on the needs of the world of work. This involves anticipation of demand for new labour, i.e. the amount of labour and the types of educational qualifications required by economic life over a certain anticipation period. The calculation consists of forecasts of changes in demand for labour and estimates of labour wastage. The* **second** *section concerns the supply of labour. New labour is mainly supplied by new young age groups. The unemployed labour force also adds to supply. In addition, supply of labour is influenced by labour force participation rates, i.e. the proportion of graduates entering the labour force. The effects of net immigration and age group forecasts are also taken into account in anticipation of the total supply of labour. Main phases of the anticipation process in the Mitenna model can be found in Figure 3, p. 20 in http://www.oph.fi/download/144754_*

Education_training_and_demand_for_labour_in_Finland_by_2025_2.pdf

## NORWAY

The Norwegian health and social personnel forecast model (**HELSEMOD**), developed by Statistics Norway, looks at **both demand and supply** of health workforce.

The **supply side** analysis include:

- *the size of the workforce in the health and social sector, register data reported annually to Statistics Norway;*
- *average working hour for the health and social workforce;*
- *number of student in health and social sciences, based on annual statistics from the register in the Ministry of Education and Research;*
- *the candidate production from educational institutions;*
- *the number of persons leaving the health and social labour marked because of death.*

The **demand side** analysis include:

- **population** *size (the population is projected by age and sex at the national level up to and including the year 2100);*
- **current utilisation** *patterns (multiple sources are used to disclose the current utilisation patterns);*
- **changing utilisation** *patterns (the model only indirectly include the assumption that observed increase in utilisation of health services will continue in the projection time span as a part of general economic growth; progress as a result of new health technologies and research may entail higher demand in itself due to the new possibilities; on the other hand, improved health status in the general population may indicate that the need for health services does not increase as much as the rise in the number of for example elderly with high health care needs);*
- **changes** *in health service* **delivery** *(some reforms are incorporated in the HELSEMOD 2012 model and in earlier version, for example the Coordination Reform which presumes that the municipalities will play an increasing part in meeting the growth in demand for health services; in order to include the reform into the analyses, Statistics Norway has assumed expansion of home nursing care, general practitioners, physiotherapy and in health promoting activities compared to the baseline alternative; another example is a long term national program to strengthen mental health care resulting in an increased supply of services, reflecting a former unmet need of mental health care);*
- **GDP**/ *health expenditure growth (the model assumes that positive economic growth will create higher expectations and utilisation of services beyond the impact of demographic changes).*

It is mainly applicable for planning purposes of future health personnel capacity to

cope with health care needs in the population. It is not a prognosis, but an exercise in disclosing what happens 20 years ahead under certain conditions. The model is based on alternative projections based on different assumptions, and offers different scenarios (i.e. high, medium, low) for the different approaches. The baseline year for the most recent projections is 2010, and the model projects the health care personnel needed towards 2035.

FOR FUTHER INFORMATION:

Roksvaag, K. and I. Texmon (2012), *Arbeidsmarkedet for helse- og sosialpersonell fram mot år 2035 [Helsemod- the labor market for healthcare personnel towards* 2035], Report 14/2012, Statistics Norway, Oslo, available at http://www.ssb.no/emner/06/01/rapp_helse/rapp_201214/rapp_201214.pdf

## ◀ Spain

The forecasting model looks **both demand and supply** of health workforce.

The **supply** submodel was implemented for each of the 43 specialties, and separately for women and men, since the flows that affect the stock of specialists, emigration and immigration, drop-outs, productivity, mortality, etc., differ significantly by gender.

On the **demand** side, the model allows the analysis of the degree of sensitivity of the parameters that are most uncertain: population growth, and the growth rate for the demand of each specialty.

The model calculates the supply and the deficit or surplus.

## ◀ The Netherlands

The forecasting model looks both demand and supply of health workforce.

It allows to develop different scenarios using different hypothesis and it calculates the needed influx into specialist training (a specified range is calculated for each specialism).

- *The forecasting process starts out with estimating the present demand, expressed in FTE supply, by correcting the present demand with unmet demand or abundance of demand.*

- *Then, they make a projection of the demand 18 years later, by taking into account demographic, epidemiological, and socio-cultural developments mixed with policies.*
    - *Based hereon, they develop different scenario's, using different estimates for efficiency, horizontal and vertical substitution, professional developments, and working hours changes.*
    - *For each of the scenario's, they calculate the needed influx into specialist training, given the expected retirement of the present supply, the supply in training at the moment, the immigration of specialists, the feminization, and the yield of the training.*
    - *The experts decide on which to scenario's are the most likely. This results in a specified range for the needed influx in medical training for each specialism.*
    - *This range is presented to government with unanimous support from health insurance companies, training institutes, and professionals (http://www.capaciteitsorgaan.nl/Portals/0/capaciteitsorgaan/publicaties/capaciteitsplan2010/0%20Capaciteitsplan%20Hoofdrapport%20Engels.pdf).*

## 2 - QUANTITATIVE FORECASTING METHODOLOGY

### ◀ BELGIUM

The statistical forecasting method used classical Time Series Analysis.A mathematical approach for calculating FTE for the self-employed is used.

Extrapolating current observed health care demand using forecasted evolution of size and composition of the population. This demand is based on health care expenditure figures from he national health insurance.

### ◀ DENMARK

The statistical forecasting method used is a combination of classical time series analysis and logistic regression analysis. The logistic regression analysis is used for calculating mortality rates and expected retirement ages.

### ◀ ENGLAND

The forecasting method used is a **systems dynamics approach**. It was developed to quantify the future demand and supply of doctors and dentists currently used only for medical doctors but now the approach is being used by the CfWI to develop additional supply and demand models for other workforces across the health and social care systems, including nursing, midwifery, pharmacy and a range of medical specialties.

**IN DETAILS:**

> *"Due to the complexity of the model scope and scale it was decided that the system dynamics approach was best suited to meeting the modelling requirements. System dynamics is a simulation method that enables the behaviour of complex systems over time to be understood and simulated. System dynamics models represents changes to a system over time by using the analogy of system flows accumulating and depleting over time in stocks. Historically, the CfWI has developed Excel-based models to represent these complex systems. The system dynamics approach meant that robust, evidence-based supply and demand models could be created to test potential*

*policies and their impact. It also meant the model was "**transparent**" and **enabled expertise of several hundred stakeholders from the healthcare system to be synthesised**. As a result of these benefits, the system dynamics approach is considered fundamental to the CfWI's ongoing workforce modelling strategy".*

*"Robust workforce planning: Medical model technical description"*, p. 2, available at http://www.cfwi.org.uk/publications/robust-workforce-planning-medical-model-technical-description

## ◀ FINLAND

The basic structure of the model has remained stable for a long time. Estimations are based on **yearly time series**. Every year new actual data are included in the database of the model once they are published; thus, projections are re-estimated taking into account new data.

**FOR FURTHER DETAILS:**

- *http://www.vatt.fi/file/vatt_publication_pdf/t150.pdf (VATTAGE)*
- *http://www.oph.fi/download/144754_Education_training_and_demand_for_labour_in_Finland_by_2025_2.pdf (Mitenna)*

## ◀ NORWAY

HELSEMIOD is a **classic time series analysis**.

## ◀ SPAIN

The forecasting method used is a **systems dynamics approach**.

## ◀ THE NETHERLANDS

The basic structure of the model has remained stable for a long time. Estimations are

based on **yearly time series**. Every year new actual data are included in the database of the model once they are published; thus, projections are re-estimated taking into account new data.

**FOR FURTHER DETAILS:**

- *Best Practices in Forecasting Labour Demand in Europe, p. 54. https://www.prognozowaniezatrudnienia.pl/g2/oryginal/2012_12/e682ecc28075e068b129be3245f75304.pdf*

## 3 - USE OF QUALITATIVE FORECASTING METHODS

### ◀ BELGIUM

The forecasting methodology used is **mainly quantitative** but some qualitative techniques are also used, as Delphi, workgroup consensus and surveys: for example Delphi for general practitioners, brainstorming for calculating FTE for self-employed, survey research when extra qualitative information is needed. For both supply and demand, the consensus view of the gathered experts is translated into a numerical hypothesis (quantitative parameters to enter in the forecastin model). Then the model generates results on future stocks and workforce composition.

The planning commission monitors the workforce levels and trends of the different health professions using the available statistical information and detects bottle-necks.

Further research is conducted (if necessary), using the resources of the Unit Workforce or via public tender process. The collected quantitative data will be analyzed in combination with qualitative input from the members of the working groups.

### ◀ DENMARK

The forecasting method used on supply side is quantitative.

Regarding the **demand side** all information is gathered through a **qualitative process involving relevant stakeholders**. No real projection is produced but the input is considered in setting the number of postgraduate training posts.

### ◀ ENGLAND

The forecasting method used is a **combination of quantitative and qualitative** methods.

In particular, the qualitative methods are used for the demand model.

Parameters that determine potential changes in levels of need and changes in productivity are applied. These parameters are determined through the **Delphi** process and are scenario specific.

FOR FURTHER INFORMATION:

"*Robust workforce planning: Medical model technical description*", p. 20, available at http://www.cfwi.org.uk/publications/robust-workforce-planning-medical-model-technical-description

## ◀ FINLAND

The forecasting methods used are a **combination of quantitative and qualitative methods.**

**Quantitative anticipation** is used to provide information on quantitative needs for vocationally and professionally oriented education and training in upper secondary vocational education and training (VET), polytechnic education and university education (Mitenna model).

Fo a description of the Mitenna model for anticipation, anticipation results of demand for labour until 2025 and educational needs for education and training in the latter part of the 2010's based on this data see "Education, Training and Demand for labour in Finland by 2025 report" available at http://www.oph.fi/download/144754_Education_training_and_demand_for_labour_in_Finland_by_2025_2.pdf

**Qualitative methods** for anticipating vocational competence and skills needs for the future (next 10-15 years) were developed by the Finnish National Board of Education. The model is known as the **VOSE** project. The knowledge produced through the model should serve different levels of education, including vocational, polytechnic and university education. Anticipatory knowledge may be utilised, for example, in the national core curriculum, in curriculum planning and the development of the content of education. For the results of the pilot project hold in 2008-2012 see the report available at http://www.oph.fi/download/144508_VOSE_Results_2012.pdf

## ◀ NORWAY

The HELSEMOD is based only on a **quantitative analysis**.

## ◀ SPAIN

The forecasting methods used are a **combination of quantitative and qualitative methods.**

On the **supply** submodel, the variables used are **quantitative** (numerus clausus, number of professionals by specialty, age group and sex; the number of training vacancies for each specialty; the mandatory retirement age; the equivalent full-time ratio; and the immigration rate by specialty).

The **demand** submodel use quantitative variables (demographic estimations or normative standards for each specialty or group of specialties), but **mainly qualitative variables** (region demands noticed by the regional health services; trends in demand defined through a non-structured interview to panel of experts).

**IN DETAIL:**

The **qualitative methods** used is ad hoc **non-structured interview to panel of experts** (2009).

The participants in this group of experts were:

- *Subgroup of more than 20 experts in HWF planning, catalogue of health services, health plans and health statistics, that work in the Ministry of Health*
- *Subgroup of experts in HWF planning and management from 11 autonomous communities.*
- *43 medical specialists from clinical care practice, representing each of the existing medical specialties.*

Each of the experts was asked to weight the trend in demand for every one of the medical specialties in the 2009-2025 period. The obtained outcome was having the demand of medical specialties classified into the following categories:

1. *Crescent*
2. *Crescent-stable*
3. *Stable*

4. *Declining*

## THE NETHERLANDS

The forecasting methods used are a **combination of quantitative and qualitative methods**.

The supply projections are dominantly quantitative, the demand projections are a mixture of quantitative and qualitative methods.

The qualitative methods used are Delphi and consumer panels.

For example, a group of international research experts experienced in the field of substitution were invited to debate on the best way to carry out research into substitution ratios. The conclusions drawn from this conference indicated that quantitative methods such as time-and-motion measurements should be complemented with qualitative insights

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## 4 - SCENARIO ANALYSIS

### ◄ BELGIUM

The planning systems allows to create **all the desired scenarios**.

It works like that:

- *the working group of the profession discusses which assumptions to use for each scenario;*
- *the data analyst creates these parameters and makes them available in the planning application;*
- *within the application users can combine all the available parameters of the different scenarios into a new 'original' scenario.*

Anyway, for each planned professions, the specific **working group** decide the number of scenarios to develop.

For example:

- *For physiotherapists, the working group has decided to only develop one baseline scenario.*
- *For nurses three scenarios are developed: a baseline scenario and two alternative scenarios (high and low scenario) with different assumptions. The baseline scenario is defined as the most likely scenario of future development. The alternative scenarios are based on different hypothesis on level of inflow, activity and demand. Thus, the model provides an upper and a lower limit between which future developments will take place.*

### ◄ DENMARK

**For dental professions: different scenarios** for the supply are explored on the basis of changed training capacity. It is for example modelled what impact it would have if 10 or 20 more dentists per year are educated.

**For medical doctors no alternative scenario** is developed at the moment. However in the coming update of the model it's planned to add scenarios influencing the supply.

In the current forecast for doctors and medical specialists a small **reduction** in the number of medical specialists in general practice, occupational medicine, clinical biochemistry, psychiatry, public health medicine and thoracic surgery until the year 2020 is expected.

For all specialties (thoracic surgery not included) an **increase** in the number of

specialists in the period 2012-2035 is expected. For 11 specialties more than twice as many specialists are expected in 2035 compared to 2012. Within some specialties even a tripling or quadrupling is expected. The increase in medical specialists is primarily due to:

increased capacity in the postgraduate education;

- *changes in retirement age;*
- *reduction of the time spent from being registered doctor to obtaining a specialists degree;*
- *immigration.*

## ◀ ENGLAND

There isn't a single set of scenarios that are applied across all models.

The scenarios developed depend on the nature and purpose of the modeling exercise.

Anyway, usually a **"business as usual scenario"** (nothing changes and trends continue as at present) and a **"null hypothesis"** scenario are developed ( no controls at all).

## ◀ FINLAND

Usually two or three scenarios are developed to estimate the future workforce demand, a **baseline scenario** and **one or two alternative scenarios**. The latest scenario regarding an increase of immigration which results in the growth of labour force by 10 000 compared to the baseline scenario.

**FOR FURTHER INFORMATION:**

*"Education, Training and Demand for Labour in Finland by 2025", section "Alternative scenarios for development of the economic structure by 2025"*, p. 28, available at http://www.oph.fi/download/144754_Education_training_and_demand_for_labour_in_Finland_by_2025_2.pdf

An example:

1. ***Basic scenario**. The employment rate is expected to end up at 72 %, with the GDP growth*

*is leveling at 1,7 %. Considerable growth is expected in the GDP share and the workforce share of the social and health services.*

2. ***Target scenario**. Compared to the basic scenario, the Finnish economy is expected to perform better. One of the presumtions is that demand for export will continue to increase also in the future. The GDP is expected to increase 2,3 % during the last years of the forecasting period, the employment rate is expected to rise to 75 % and the unemployment rate is expected to fall to 4 %. The need for social and health care services and the demand for social and health care workforce are expected to rise, but to a lower extent than in the basic scenario.*

3. ***SOME scenario**. Regarding the health and social care services, the SOME scenario is based on expenditure projections by the MoSocH. The demand growth for health workforce is largely similar to that in the target scenario.*

These alternative scenarios have not considered detailed differences (eg. different skill-mixes) in the health workforce developments. The main difference is the assumption about the demand for health care and the corresponding effects on workforce.

## ◀ NORWAY

HELSEMOD include different scenarios on **future GNP growth**:

- *the high growth alternative,*
- *the intermediate (reference alternative)*
- *and the low growth alternative.*

In addition there are three scenarios with variations in

- *changes in student entrance into education each year;*
- *the job opportunities in society;*
- *technological changes.*

As to the magnitude of migration of health personnel this is taken into consideration in the stock calculations. There are great variations between regions on migrant HWF, for

example near 50 percent of the personnel in caring services in Oslo.

### ◀ Spain

Although the model allows creating several scenarios, we define **a unique scenario**. The baseline model assumes that all the controllable parameters will remain at their current values on the forecasting period.

### ◀ The Netherlands

The Advisory Committee's standard procedure is to calculate **nine possible scenarios** per professional group, chiefly to give an impression of the impact that certain assumptions would have upon the actually required capacity. The assumptions are adjustable in the model.



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## *5 - PROJECTION PERIOD*

### ◄ BELGIUM

The projection period is **50 years** (currently the the forecasting model is set from 2004 to 2054) with **5 years intervals**.

The length of the projection period represents **a complete career for a health professional.**

In fact, in Belgium, employees have to work 45 years in order to have a full pension and adding the years of training for a health care professional, the result is 50 years. Furthermore, this timeframe permits to "follow" the cohort of students of 2004 until their retirement 45 years later.

However, it is important to stress that this 50-year projection is just the 'maximum' projection period contained within the model.

The output of the model contains projections for each 5-year interval within this 50-year period.

As such, short- and medium term projections are available and indeed, often more relevant than this maximum 50-year long-term projection.

### ◄ DENMARK

The projection period is **20-25 years**.

This time horizon is necessary in accordance to the planning of the intake at the universities and postgraduate medical and dental education. Current projections are **to 2035**, for both medical doctors and dentists.

If a forecast is to be used as a basis for decision making regarding intake at the universities and the postgraduate medical and dental education there has to be a long time-horizon.

## ◀ England

The projections period of the **local planning** (provider forecast and LETB aggregate provider forecast) is **5 years** (2013 plans foresee up to 2018)

The projection periods in CfWI workforce projects (**national planning**) vary depending on the characteristics of the particular workforce and are typically **from 15 to 30 years**. In the case of medical doctors, for example, the forecasting model calculates each variable over a 30-year period (currently up to 2040)

## ◀ Finland

The current projection period regarding demand of new labour is **2008 - 2025**. On the basis of these forecasts the present entrant targets have been adopted for 2011-2016.

## ◀ Norway

The HELSEMOD is **20 years ahead** for all parameters and the last edition has time series to 2035. The time series allow, however, analysis of the short term and long term in the 20 year period ahead.

## ◀ Spain

In 2014, the projection period is until **2023** (2013-2023). The forecasting period have been adapted to updated demographic estimations of Spanish Statistics Institute (INE). Previously, estimates were made for 2025 or 2030, but changes in the Spanish population trends from the beginning of the economic crisis have required an adjustment of forecasting period.

## ◀ The Netherlands

In the "Recommendations 2013" (http://www.capaciteitsorgaan.nl/Portals/0/capaciteitsorgaan/publicaties/Capaciteitsplan%202013/DEFINITIEF%20

hoofdrapport%20engels%20compl.pdf) the projection period is 2015 - 2031:

- *the starting year of the new influx numbers is **2015** (in order to account for government financial changes needed to accommodate the new numbers);*
- *the first year to realize the new balance between supply and demand was **2025** (the initial training program takes 6 years, postgraduate training programs take another 3 to 6 years);*
- *the second year to realize the new balance between supply and demand was **2031** (in order to achieve the new balance with more changes less abrut).*



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## 6 - FREQUENCY OF UPDATING

### ◀ BELGIUM

There are **not fixed** terms for the updating of the forecasting excercise even if the Unit Planning aims to make the forecasting exercise for each profession **every three year** (one profession per year is the usual procedure, depending also on the available staff in the Unit).

### ◀ DENMARK

The projections are updated **every 2-3 years**.

Normally a new forecast is produced just after setting the 5 year plan for the number of postgraduate training posts. 2-3 years later a new forecast is made taking into account possible changes in the models assumptions. This **revised forecast** is afterwards used as hearing material in the process of drafting a new 5-year plan setting the number of postgraduate training posts. The process of drafting a 5-year plan is usually started 2 years ahead of when the plan is to be implemented.

The current 5-year plan for medical specialists cover the period **2013-2017**. The normal procedure leads to that the process of drawing up the plan for the period 2018-2023 is expected to start in 2016 with an expected publication date late 2016.

This gives the regions that are to implement the plan one year to prepare the implementation.

### ◀ ENGLAND

Most projections are revised or updated **annually**. Each review will state when it is recommended the next review of the workforce is next made.

### ◀ FINLAND

The projections are updated every **4 years.**

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## ◀ Norway

A new HELSEMOD edition produced **every three year**.

## ◀ Spain

The overall data were updated **biannually.**

## ◀ The Netherlands

The projections are updated with **an alternating 2 and 3 years cycle**, e.g. 2000, 2003, 2005, 2008, 2010. The last update has been 2013.

In between, the advice is updated if the yearly monitoring shows any irregularities.

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## *7-MIGRATION FLOWS*

### ◄ BELGIUM

Migration inflow and migration outflows are quantitative input variables in the Belgian forecasting model for doctors, dentist, nurse and physiotherapists.

Starting from historical data available, the estimation of the expected future migration levels is based on the observed trends and the insights of the consulted experts

- *•Migration inflow: recognition of foreign qualifications.*
  - *Data are available annually and are integrated in the individual data base (Belgian Cadaster of practicing health professions)*
  - *Data available are aggregated for sex and for age groups but the flow of migration can be divided by age and sex using a distribution key based on the data in immigration and emigration.*
- *Migration outflow: currently no reliable data is available, value set to zero in scenario development.*

### ◄ DENMARK

Migration inflow and migration outflows are quantitative variables included in the Danish forecasting model.

The forecast however doesn't take into account whether the function of the health care system is dependent on the immigration.

The quantitative data on migration inflow and outflow is discussed in the Planning and Forecasting Committees subcommittee where it's decided whether some adjustments are necessary.

- *Migration inflow*
  - *is estimated on the basis of past years trend in how many foreign educated doctors begins a specialist education in Denmark and how many foreign educated doctors that receive a specialist degree on the basis of a specialist education completed in Denmark*

- *the source is a combination of reports from the Regional Councils of Postgraduate Medical Education and data from the Authorization register. The Authorization Register contains information regarding country of education. However the forecast model doesn't take the specific country of education into account.*

- *Migration outflow*
  - *is estimated on the basis of past years trend in doctors educated in Denmark leaving Denmark after completion of their university degree. The variable is broken down by nationality since there are a bigger percentage of doctors with a foreign nationality educated in Denmark leaving Denmark than doctors of Danish nationality educated in Denmark leaving Denmark.*
  - *the source is the Authorization Register.*

Not all foreign educated persons who gets registered as a health person in Denmark has a social security number at the time of registration at the Danish Health and Medicines Authority. Upon moving to Denmark they sometimes forget to inform us of their social security number. The lack of social security number means that we can't know for sure whether they actually come to Denmark, if they get a job and for how long a period of time they stay.

This makes the modeling of migration difficult.

## ◄ England

Migration inflow and migration outflow are considered in the English System Dynamics model.

Migration flows concern both the intakes in education system (students and trainees) and the health workforce.

- *Specific assumptions are set for the different flows considered.*
- *Historical data analysis and estimation based on qualitative methods are used to populate the model.*
- *Different sources of data are used*
- *Many parameters are estimated by CfWI*

Please see http://www.cfwi.org.uk/publications/a-strategic-review-of-the-future-

healthcare-workforce-informing-medical-and-dental-student-intakes-1



## ◀ FINLAND

VATTAGE, the Finnish general economic model, as such does not take into account the migration flows.

Migration is monitored in general with data from Statistics Finland and added more as a qualitative variable when determining the final intakes for institutes and universities. This is done by Ministry of Labour discussions with Ministry of Cultures and Education.

Ministry of Social Welfare and Health monitors migration through National Institute for Health and Welfare (THL). THL data is originally from Central Register of Health Care Professionals maintained by the National Supervisory Authority for Welfare and Health (Valvira) and Statistics Finland (Official Statistics of Finland, Employment statistics).

Monitoring is both for inflow and outflow.

Anyway, this data does is not used as any direct input to the Vattage model.

## ◀ NORWAY

In the HELSEMOD model migrated health personnel with foreign citizenship is included in the stock populations, but there are no specific variable on future migration patterns.

No qualitative method is used in the model at the moment, but we are considering to develop this in our coming projections.

## ◀ SPAIN

Migration inflow and migration outflow are considered as input parameters in the Spanish forecasting model.

- ***Migration inflow:***
  - *% specialist's title recognition between 2000-2010*

- *Trend down from 2010 to levels of 2003.*
- *Annual reduction is 8%.*

Data source for migration inflows:

- *Economically Active Population Survey (EAPS)*
- *National Immigrant Survey (NIS) 2007 - social and demographic characteristics of persons born abroad Health professionals entering Spain*
- *Payroll data of regions about foreign doctors. Now, we are updating planning model and we are using this data*
- *We don't have data by nationality*

- ***Migration outflow**: 2010 National Statistics Institute (INE) data (non specific for doctors)*

We don`t use qualitative method of estimation of international mobility

## ◄ THE NETHERLANDS

The migration inflow is a variable considered in the Dutch forecasting model.

The planning system can take into account different policies for the health care system: complete self-providing, minor or major intake (in numbers) of health care personnel from foreign countries, emigration to foreign countries

- *Migration inflow three input parameters in the model:*
  - *Annual immigration*
  - *Gender frequencies immigration*
  - *Yield immigration*

We start out with the number of medical specialists with a foreign diploma that have been registered by the National Medical Registration Committee. We have data on gender, age, country of the diploma and specialization also.

As a reference: The national training program renders an influx of 2000 newly registered medical specialists per year.

Although some information can be used about past international migration this still remains a difficult element to estimate as it presumably strongly correlates with the labour market conditions in other countries. This is why estimation by expert groups on the future number of foreign trained health professionals are required. In 2010, experts expected that the yearly inflow of foreign medical specialists into the Netherlands would diminish due to more elaborate "stick and stay policies" in other European countries. This resulted in an increase in the number of medical graduates entering training programs by more than 10%. In 2013, on the basis of the data then available, it was decided to re-establish the immigration flow in the model. As far as the yield is concerned, we know that roughly 60% of the registered medical specialists reregister 5 years after their first registration. These medical specialists have been working in the Netherlands, else they cannot reregister.

The data source is Medical Registration Committee (RGS) for historical information on the alleged immigration of medical specialists. Entry in the register is not the same as actual immigration. In half of the cases, a foreign medical specialist enters the register and declines a position as specialist later on. We use the BIG register for historical information on immigration of medical graduates and dentists. Here, the same caution must be taken.

Expert estimations for future migration are also required.

For instance, questions typically asked will include their potential desire and/or reasons for wanting to go abroad

*"We will discuss the parameters with lacking quantitative data (almost always the epidemiological and socio-cultural parameters plus working process parameters like vertical substitution and labour time changes) with experts in different ways. Interviewing them separately, discussing in Delphi-like settings, meetings in our Chambers, and electronic group decision rooms, workshops, depending on the preferences of the group. The experts are from all three parties: insurance companies, universities/ hospitals, and the professionals. They have to reach consensus"*[48]

- ***Migration outflow*** *has not been monitored until 2014 because it was not considered to*

(48) WP6 D061 - User guidelines onqualitative methods inhealthworkforce planningand forecasting http://euhwforce.weebly.com/uploads/2/3/0/5/23054358/jahwf_d061_user_guidelines_on_qualitative_methods_approved.pdf

*be of any significance by all stakeholders. In 2014 a project has started to determine the outflow to other European countries. This monitoring of already existing data will go back to the year 2000 and will result in more knowledge on the outflow and the net result of inflow and outflow by the end of 2015.*

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## 8 - SEGMENTATION OF THE FUTURE ESTIMATIONS

### ◄ BELGIUM

The projections are segmented by different health sectors. Separate analysis are made between

- *health care sector*
- *and non-health care sector.*

For example, in scenarios regarding nurses forecasting, the health sector are distinguished depending on the health care profession (i.e. nurses: hospital sector; nursing home sector; home care sector and"other health care" sector, which includes welfare sector.)

The projections on "non – health" sector are made combined all the non-health sectors (public sector, private sector and education sector). As results, the projections concern 5 sectors: hospital sector, nursing home sector, home care sector, other health care sector and non-health sector.

*Depending on the characteristics and existing activity sector of a given health profession, the used sectors can be adapted.*

### ◄ DENMARK

The projections are segmented in profession and specialty.

The projections concern both public and private sector overall.

### ◄ ENGLAND

Workforce demand and supply models are currently segmented **by specialty and profession**. They are developing approaches that model along a care pathway, which may include a number of care settings.

## ◀ FINLAND

The projections are segmented **by industries** and **different occupational groups** in each of the industries.

E.g. the demand for new labour is divided into six main occupational categories in health and social work (practical nurses, nurses and other health care professionals, medical doctors and other health professionals, social service workers and instructors, social work professionals, health and social service managers).

The educational intake needs are distinguished by field of education and level of education.

**Health care is dealt as a whole** covering the public and private sectors as well as hospital care and primary health care.

**FOR A DETAIL:**

- *http://www.oph.fi/tietopalvelut/ennakointi/ennakoinnin_tietopalvelu_ensti/sosiaali-_terveys-_ja_liikunta-ala*

## ◀ NORWAY

The HELSEMOD does **not** produce different estimation along **different service delivery settings**, but include all health and social care sectors, both primary health and care and hospital care at a national level. The model as a consequence is not fit to cope with regional variations of the HWF or the situation in different setting like in municipalities or hospitals.

## ◀ SPAIN

Projections are segmented by **medical specialties** (age and gender). The main outputs of the model are, for each specialty and year, the number of specialists, the demographic pyramid, the ratio for 100 000 inhabitants, the percentage of women, and the percentage of those under 49 years of age.

## ◄ THE NETHERLANDS

At the moment, there is **no segmenting**, since the ACMMP states that all medical and nursing professions are interlinked by substitution.

There is a research program that breaks down the forecasts into 7 sectors: Hospitals, elderly care, handicapped care, mental care, youth care, child care, and others.

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## 9 - INTEGRATION BETWEEN / WITHIN PROFESSIONAL GROUPS

### ◀ BELGIUM

**No integration** of different professional groups are included in the model. The forecasting model is been designed to forecast every health profession separately.

### ◀ DENMARK

No integration of different professional groups is included in the model.

However there is **some qualitative consideration** of horizontal or vertical substitution in the planning process.

This could for example be that when deciding the future intake of dentists it is considered whether dental hygienists in the future is expected to do some of the work that today is handled by dentists. If a vertical substitution is expected or pursued it can make sense to increase the intake of dental hygienists while reducing the intake of dentists.

These qualitative considerations is **dependent on input from the different stakeholders**.

### ◀ ENGLAND

The integration between different occupational categories is taken into account where it's appropriate, including **role substitution and skills mix.**

### ◀ FINLAND

The workforce demand projections made by the VATT cover the healthcare workforce as a single unit.

The integration between different occupational categories is taken into account by the Mitenna model in terms of the change in occupational structures of industries; including role substitution and skills mix. However, **integration between medical specialties is not included.**

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## ◀ Norway

The last HELSEMOD projectiondidnot take task shifting into consideration as a specific variable. However there are calculation on different scenarios on task shifting between dentists and dental assistants. Also there are some assumptions of a shift of special trained personnel to be provided in the primary health care following the introduction of the Coordination reform in 2012.

## ◀ Spain

**No integration** of different professional groups is included in the model.

## ◀ The Netherlands

Both **vertical and horizontal integration** are taken into account in the forecasting model.

The model develops:

- *scenarios that take into account vertical substitution from medical professions to nurses*
- *and scenarios that take also into account horizontal substitution from medical specialists to general practitioners.*

## 10 - FEEDBACK EFFECTS BETWEEN DEMAND AND SUPPLY

### ◀ BELGIUM

The interaction between supply and demand is not taken into account. A parameter 'supply-induced demand' is available in the forecasting tool but currently it is not activated.

### ◀ DENMARK

Currently **no** interaction between demand and supply is included in the model.

### ◀ ENGLAND

For England, these effects, where relevant, are mentioned in the scenarios that are generated with stakeholder, so taken into account when the model input parameters are quantified for the different scenarios.

There are new developments (system dynamics models) underway in England to incorporate "feedback" processes as part of the modelling supply induced demand and other types of feedback.

### ◀ FINLAND

**No interaction** between demand and supply included in the model.

### ◀ NORWAY

In the HELSEMOD publication there is a calculation of the balance between demand and supply. **No specific supply-induced demand** is calculated in spite of a growing health care market introduced by private insurance companies in Norway to offer additional specialized health care on a personal basis or through the employers (>50000 persons clients exposed to this offer).

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## Spain

**No specific supply-induced demand** is calculated.

## The Netherlands

Currently **no interaction** between demand and supply included in the model.

## *11 - INTERACTION WITH OTHER GOALS OF THE NHS*

### ◀ BELGIUM

Even though the planning system does include all health system goals (such as access to care, quality of care, costs containment), they aren't incorporated into forecasting model. The main objective of this mathematical model is to get an accurate view of the current workforce size and its future evolutions.

### ◀ DENMARK

No relationship between health workforce projections and other health system goals incorporated in the forecasting model.

### ◀ ENGLAND

The health workforce projections are looked in relation to **outcomes, cost-effectiveness and affordability.**

### ◀ FINLAND

**No relationship** between health workforce projections and other health system goals is incorporated the forecasting model but a more general macroeconomic equilibrium is incorporated in the planning system thanks to the use of a AGE model (applied general equilibrium)

### ◀ NORWAY

In the draft national budget 2015 the main focus for the government health policy is:

1. *reducing unnecessary waiting time for treatment;*
2. *increasing the capacity and quality in the health and care sector;*

3. *higher priority of treatment and prevention within mental health and substance abuse.*

These areas are not explicitly included in the HELSEMOD forecast model, although **quality improvement** is introduced as a parameter into the model through the expectation in growth rate in the coming 20 years.

## ◄ Spain

Spanish model does **not** include **interaction with other goals** of the National Health System.

Even if, indirectly, take into consideration goals of the regional health services.

## ◄ The Netherlands

The projections are put in relationship with the goal concerning the **access to care**.

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## 12 - ASSESSMENT OF THE OUTPUTS

### ◀ BELGIUM

The assessment of the forecasting model and its results is made through a **follow-up comparison** between the actual inflow and the inflow predicted by forecasting which is carried out in the yearly report of the Planning Commission (RAPAN, available at http://health.belgium.be/eportal/Healthcare/Consultativebodies/Planningcommission/Rapports_Annuels/index.htm#.VKPt7SuG9PM) but the uncertainties associated with the modeling process and with the outcome of the model itself are also unknown.

For example: the projections from 2009 to 2014 (based on data known in 2009) could be looked with the data that will be available in 2014 to see the accuracy of them.

### ◀ DENMARK

**No assessment** of the forecasting model and its results is currently made. However every time a new forecast is made it is considered whether changes in the model are necessary to give a more accurate projection of the future.

### ◀ ENGLAND

The assessment of the forecasting model and its results is made:

- *comparing the results with previous simulation models that represented the relevant workforce;*
- *backcasting to see if the model can predict historical changes;*
- *sharing results, along with the model assumptions, with relevant stakeholders to perform a sanity check;*
- *assessing the sensitivity of the model outputs to the input data.*

### ◀ FINLAND

Ex post evaluation of the quality of results through an analysis of economic variables (growth accounting).

A **Peer Review process** was conducted to examined the Finnish approach both to

- *labour market forecasting and the anticipation of educational needs (Mitenna model);*
- *and to macroecnomic forecasting (VATTAGE model).*

For the results of the peer review process see http://www.oph.fi/tietopalvelut/ennakointi/koulutus_ja_osaamistarpeiden_ennakointi/kansainvalinen_ennakointi/arviointeja_suomen_ennakointimalleista

## ◀ Norway

The Ministry and the Directorate commission of HELSEMOD does **not include an analysis of the accuracy of the forecasts**, for example by evaluation of the real situation compared to the projections made in a former published version.

## ◀ Spain

**No assessment** of the forecasting model and its results is made currently.

## ◀ The Netherlands

The assessment of the forecasting model and its results is made through **tests** on the historical data, tests on the reliability of the model and sensitivity tests.

For an example of how the assessment works see "*The 2013 Recommendations for Medical Specialist Training*", pag. 41 (http://www.capaciteitsorgaan.nl/Portals/0/capaciteitsorgaan/publicaties/Capaciteitsplan%202013/DEFINITIEF%20hoofdrapport%20engels%20compl.pdf)

# DATA SOURCES

## 1 - DATA COLLECTION

### ◀ BELGIUM

Belgium has developed a **comprehensive system** for the monitoring of human resources for health. Data is provided through **three** complementary **sources** of information, which cover all health and medical professions, all sectors (independent and employed personnel) and multiple data indicators (age, gender, professional status, professional specialty, inflows, outflows). Data collection and reporting is **centralized** at the federal level, ensuring the comparability of data. Moreover, the Ministry of Health has developed a sophisticated and comprehensive database where data from FPS are made accessible to all institutions involved in health workforce planning.

### ◀ DENMARK

Primarily **two databases** are used.

- *Register of health personnel registered at the Danish Health and Medicines Authority (Authorization register): contains relevant data regarding profession, gender, age, date of registration etc.*
- *The mobility register: a combination of information from the authorization register combined with information from "DanmarksStatistik" regarding education, occupation etc.*

For the projection model itself the mobility register is used as the main source.

### ◀ ENGLAND

There is **more than one database** where data used for planning are stored. However these databases aren't created only for planning purposes (really the main purpose concern the **payroll system**).

Anyway, there is a dedicated agency with responsibility for producing comprehensive regular reports from the HR & payroll systems to improve planning and decision making across the NHS,(Information Centre for Health and Social Care).

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## ◀ FINLAND

**A comprehensive and complete database**, covering stock and flows of health professionalsin the private and public sector is available.

## ◀ NORWAY

Data mainly is collected on an **annual basis** by the Statistics Norway, used for a variety of planning purposes and aims. In addition there are other **data sources**:

- *register of all student in higher education (Ministry of Education and Research)*
- *State Register of Employers and Employees (Central register of employment relationships in Norway) operated by NAV, and Register of health personnel with authorization (HPR) operated by SAK.*
- *central register of all physicians (GPs - NAV) and specialists (Directorate of Health)*
- *other relevant data at registers in Statistics Norway.*

## ◀ SPAIN

There isn't a unique database with data stored in for the planning purpose, but data used for planning are captured by the **multiple sources available**.

Anyway a **National Register of Health Professionals** was created in 2012,and will be full operative in 2016.

The register has the following characteristics:

- *Compulsory for public/private sector and self-employed health professionals*
- *Designed for planning and help policy makers to take decisions*
- *Improve quality and availability of data, including mobility and migration data*

## ◀ THE NETHERLANDS

There isn't a unique database with data stored in for the planning purpose, but to

complete the physicians' forecasting model, data are collected from a **number of sources** by a dedicated government agency contracted to produce workforce planning scenarios for the ministry.

- *Sources used for planning purposes include government bodies such as the Central Bureau of Statistics (CBS), the national register for health professionals working for individual patients (BIG-Registry) and the National Institute for Public and Environmental Health for forecasts on demographics and the development of need/demand for health care.*
- *Professional Associations such as the Royal Netherlands Society for Medicine keep detailed personal registers for each specialism and for each training program.*
- *Data are collected from training institutes on success rates/ attrition of training programs, duration of training programs, number of applicants per vacancy, male/ female ratio, age at entry, university of origin etc.*
- *Data on production can be drawn from the databases of the health insurance companies and the hospitals themselves.*

The ACMMP does not keep a database of its own but uses databases and data analyses from all kinds of data collectors.

## 2 - INDIVIDUAL / AGGREGATED DATA

### ◀ BELGIUM

The database contains **individual data** that is collected for the preliminary analysis. This individual, **anonymized** data are **aggregated** along the required dimensions for input into the mathematical model. The aggregated data is then used in the mathematical model to predict future workforce size.

### ◀ DENMARK

It depends on the type of database considered.

- *The Authorization Register that contains both individual and aggregate data.*
- *The Mobility Register that contains aggregated data*

### ◀ ENGLAND

The databases contain **individual data.**

### ◀ FINLAND

The databases are registers based on **individual data** collected every year.

### ◀ NORWAY

The database contains **individual data** on student, employees, authorized health personnel and GPs. The specialist register is data on job positions in hospital as the variable, not the individuals.

### ◀ SPAIN

Data used for planning are **aggregated**. The new tool for planning available in 2016,

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National Register of Health Professionals will contain individual data. Probably, Spain continues using aggregated data when the register is available.

## ◄ The Netherlands

The databases contain **individual data** that can be aggregated in different ways.

## 3 - UNIQUE / MULTIPLE SOURCES

### ◀ BELGIUM

Data used in the forecasting model come from **multiple data sources.**

In general there are three sources available:

1. *the federal database of registered health professionals which includes "**licensed to practice**" (in Federal Public Services health);*

2. *the National Institute of Health Insurance and Disability for information about the "**practicing**", i.e. the persons whose medical acts are reimbursed by the health insurance (this does not necessarily include all medical activity of a given group of professionals);*

3. *the Crossroads Bank for Social Security for information about those professionals, who are "working" as employees and information about other socio-economic situations (unemployed, retired,…).*

In order to link these sources, a specific "research request" has to be approved by the Commission for the Protection of the **Privacy.** Therefore the planning commission do not always get all the information they ask for. The level of detail of the requested variables needs to be restricted in some instances to prevent identification of individual health care professionals.

At last, from the authorities competent for education, aggregated data is sourced on the number of inscriptions, students and obtained degrees.

!The Crossroads Bank manages the collection of numerous administrative databases from the Belgian social security sector.

### ◀ DENMARK

Data is mainly gathered from **two sources:**

- *Authorization Register: managed by the Danish Health and Medicines Authority and collects data on authorized health personnel.*
- *Occupation Register: managed by Danish statistical office and providing data through tax*

*information and social security services.*

These two sources are interlinked with social security number. The **combined register** is the Mobility Register which contains data regarding the current workforce, where they work, what profession, age, gender.

The mobility register is the primare source for the forecasting model.

Finally, human resources **reports from hospitals** are used separately to estimate current demand for doctors (but only public hospitals are included).

## ◀ England

Data used in the forecasting models come from **multiple data sources**.

- *Data are collected nationally through a Human Resource (HR) and payroll system (Electronic Staff Record System - ESR).*
- *Data on General Practitioners (GP), and some practice staff who are not directly employed by the NHS, are collected by separate systems.*
- *Other key data sources are the Labour Force Survey conducted by the Office of National Statistics (ONS) and data from University Colleges and Admissions Service and Higher Education Statistics Agency).*

## ◀ Finland

Statistics Finland collects data for industries, economies and personnel from multiple data sources

and forms unified database to be used as data for VATTAGE as well for Mitenna models.

This includes data from payroll systems as well company data bases. For monitoring also data from VALVIRA is used.

## ◀ Norway

The data used in HELSEMOD is not unique, but is available for many purposes.

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## Spain

Data used in the forecasting model come from **multiple data sources**.

In the absence of a registry, there are three alternative data sources:

- *Medical Council Register: providing information of registered professionals*
- *Payroll data of regional health services*
- *Primary care: SNS Information System for primary care (SIAP).*
- *Hospital based-care, ambulatory and inpatient care: National Survey on Inpatient Care Premises (ESCRI)*
- *Register of Ministry of Education: Graduates and Specialist Doctors*

In addition to the above-mentioned sources, the National Statistical Institute (INE) holds data on:

- *retired and active professionals by sex and age;*
- *health professionals entering Spain (Economically Active Population Survey (EAPS); National Immigrant Survey (NIS) 2007 - social and demographic characteristics of persons born abroad).*

The studies on needs in healthcare specialists undertaken by the Ministry of Health take into account all available sources to estimate the number of health professionals both in the public and private sectors.

## The Netherlands

Data used in the forecasting model come from multiple data sources, different for supply and demand.

For the supply side:

- *Central Bureau of Statistics (CBS);*
- *NIVEL;*
- *KIWA Carity;*
- *BIG registry;*
- *Tax registry;*
- *Registration Committee for Specialisms (RGS);*

- *Pension Funds for doctors;*
- *Unemployment agency (UWV);*
- *DUO.*

## For the demand side:

- *National Institute Public Health and Environment (RIVM);*
- *Production data (DIS);*
- *Population forecasts (CBS);*
- *Billing data health insurance companies (Vektis).*
- *Analysis production documents (KIWA Carity);*
- *Consumer polls (NIVEL);*
- *Central Planning Agency (CPB);*
- *Waiting lists (Mediquest).*

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## 4 - DATA UPDATING

### ◀ BELGIUM

The current planning project is based on workforce data from

- ***2004 to 2009 for nurses,***
- ***2004 to 2010 for physiotherapists,***
- ***2004 to 2012 for physicians and dentists.***

### ◀ DENMARK

Considering the two main sources of data:

- *the Authorization Register contains data regarding all health persons with a registration. The register includes historic data on people who are now dead. The register is **updated on a daily basis**.*
- *the Mobility Register was last updated with data as of 31st of December 2012. The register contains data regarding the workforce at this specific date and the years before.*

The register is at the moment being updated with data from later years. According to plan the register from now on is going to be **updated once a year.**

### ◀ ENGLAND

Considering the projections made by CfWI, the supply models are built using data related to **year 2013**.

### ◀ FINLAND

The model, data and calculations have been updated continuously **every year**, although the basic structure of the model has remained unchanged.

### ◀ NORWAY

The current HELSEMOD projection (2012) is based on data mainly from 2010. Data on GPs and specialists are updated continuously, and the most recent data will be used in

HELSEMOD.

## ◀ Spain

The current planning project is based on data collected in **December 2013**

## ◀ The Netherlands

Considering the forecasting exercise made in 2013, the data used on supply side are **updated to January 1st 2013** for the almost all variables considered.

## 5 - ORIGINAL AIMS OF DATA COLLECTION

### ◀ BELGIUM

The main purpose of data collection is different for each data source:

- *the main task of the principal source of the workforce planning (National Cadaster of Health Professionals) is to support the planning commission, anyway this data collection also serves to regulate (monitor and control) the access to the profession;*
- *the main purpose of additional data sources from the administration of the social security and health insurance is not planning-related the which can cause some incompatibility between the needs of the planning commission and the information content of the data.*

### ◀ DENMARK

The main purpose of data collection is **different for each data source**:

- *the Authorization Register's main purpose is to have a database of all persons with authorization to practice for monitoring and controlling the access to the profession;*
- *the Mobility register's main purpose is to generate data showing the current and historic number of employed health personnel within professions and sectors and regions.*

### ◀ ENGLAND

The data are collected from multiple data sources **not having planning as the main purpose.**

### ◀ FINLAND

The data are used **not only for workforce planning purposes.**

The main purpose of data collection is to monitor the labor force and personnel but also for general statistical information of the all Finnish society. It has been used to make projections and calculations both for specific purposes of the Ministry of Employment and the Economy (medium-term and long-term growth projections and labour force projections, budgetary planning, employment effect estimates, assessing the effects of integration on the labour market) and for other users at the ministerial and regional levels.

The VATTAGE model data is general GDP calculation data, this is not done only for planning purposes.

Mitenna uses data for individual persons from Statistics Finland and other source, this is not done only for planning purposes.

### ◀ Norway

The data is **not specific** for HELSEMOD, but a specific analysis is conducted for the specific purpose.

### ◀ Spain

The main data used in the forecasting model are collected **specifically for planning.**

The complementary data used to reduce the actual lack of information in the private sector are collected for others main purposes.

### ◀ The Netherlands

The data used in the forecasting model are collected for **all kinds of purposes**, but never for planning.

Data collection for planning purposes is done only on specific occasions.

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# LINK TO POLICY ACTIONS

## 1 - PLANNING MEASURES AND ACTIONS

### ◀ BELGIUM

The **permanent** planning measures are:

- *Setting of quotas (at the Federal level):*
  - *Maximum number of new professionals in Health Insurance system per year;*
  - *Control access to specialty (physicians and dentists);*
  - *Control access to private practice (physiotherapists).*
- *Control inflow with entrance exams for medical studies (at Communities level).*

Other measures were adopted **ad hoc**:

- *increasing attractiveness of profession with financial mechanisms/ rewards (= revalorizing salaries);*
- *organisation of medical care in group practices to increase attractiveness of profession;*
- *1733 pilot project (national phone number for after-duty periods with triage of calls) to improve the use of available human resources;*
- *special funds to stimulate the establishment of medical personnel in 'under-served' zones (Impulseo funds) consisting in financial incentives for young physicians who start a practice, and for all physicians who start a practice in under-served regions (tackling regional imbalances).*

### ◀ DENMARK

- *The Danish Health and Medicines Authority can regulate the number of postgraduate training posts. For both medical and dental specialists the Danish health and medicines authority produce a plan, that outline how many specialists are to be educated on a yearly basis in a five year period.*
- *The minister for Higher Education and Science can regulate the student intakes.*

### ◀ ENGLAND

There are a wide range of levers and actions outside of numerus clausus that can be

taken.

For a detail list see "*Annex A - Timetable of Short-Term Deliverables*" in "*A mandate from the government to Health Education England*" available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/203332/29257_2900971_Delivering_Accessible.pdf.

## ◀ Finland

The development plan for education and university research adopted by the Government defines targets for educational supply within the next five years as **entrant targets** and **output of qualifications** for every field and level of professional and vocational education and training.

The **intake in universities, polytechnics and vocational institutions** is defined in accordance with the national entrant targets.

Besides the entrant targets set in the national development plan for education and university research, a **national development plan for social and health care services** which is adopted by the Government every four years, defines the development objectives for municipal social and health care services and main measures to achieve them. This plan defines also **measures** to ensure the sufficiency and skills of the personnel, retention policy issues, redistribution of professional responsibilities and well-being at work in social and health care.

## ◀ Norway

There is a **restricted intake of students** to some of the health educations, such as medicine, dentistry, pharmacology, psychology and others.

Also there has been a **national quota system for new positions** as physician in hospitals in the period 1999 to 2013. This has been administered by central health authorities.

Physicians and physiotherapists have an obligation to make agreements with the National Health Economic Administration (HELFO) to receive salary reimbursement from the national social security funds.

The Parliament provided **grants** to facilitate the increase on local level in a long term action period (in 2014 totally 428 municipalities). In 2001 52% of all health and social personnel was employed in the municipalities, on local level.

A Parliamentary White Paper in 2006 launched a long term plan (until 2015) to prepare for the future needs of personnel in the care sector in the municipalities (**Competancy Plan**). The goal for capacity increase of 10.000 man-labour years from 2004-2009 was achieved. For the period 2008 to 2015 the goal was 12.000 more man-labour years which also was achieved.

As part of these action plans there is established an **annual report system** from the municipalities via the regional county level to the national health authorities, both for plans and result of health personnel locally. Every municipality and all regional health authorities (now four) produce health personnel statistics and short and long term personnel plans as part of their strategic planning activity.

In a Parliamentary White Paper of 1997 there was introduced a **national supervision and quota system for medical doctors** for the period 1998 to 2013 for a better distribution of doctors. An evaluation discloses an intended effect of this mechanism, but form 2013 it was cancelled because of being a too rigid system to cope with new management approaches.

In 2001 a primary doctor list patient scheme was introduced. In 2002 the hospitals were transferred from the ownership of 19 counties to five regional health authorities (now four) with national ownership. These two reforms eventually led to an **improved national distribution of the medical doctors** throughout the country and a more even access to health care for a scattered population in remote areas.

## ◄ Spain

The main measure is the regulation of the number of available specialist training vacancies, proposed annually by the Human Resources Commission of NHS and set by the Ministry of Health, Social Services and Equality since 2014.

Others actions were undertaken in the past to incentives the immigration of HWF from other countries or to persuade Spanish HWF gone abroad to come back.

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Since 2003, a great deal of regulatory and legislative activity has taken place to overcome the challenges. These initiatives include

- *the creation of the Human Resources Commission of National Health System;*
- *the creation of a national Registry of Health Professionals;*
- *and a study on needs in medical specialists, updated on a regular basis.*

The studies analyse of supply and current and future needs of medical specialists serves as a basis workforce planning. The first study, published in **2007**, covered the years 2006-2030. It has been updated in **2009** (for the years 2008-2025) and **2011** (for the years 2010-2025). Assumptions, parameters and findings of the forecasting studies are discussed and agreed in the Human Resources Commission of the NHS.

## ◄ THE NETHERLANDS

There are two levers that the ACMMP advices on.

- **The number of admissions to the 8 medical schools** *(so-called "numerus fixus"). This lever is actually controlled by the medical schools, in conjunction with the ministry of Education that finances the medical school.*
- **The number of admissions to the vocational (specialist) training programs** *for medical graduates. This lever is actually controlled by the ministry that subsidizes the 100 different teaching institutes, from university hospitals to homes for the mentally retarded.*

## 2 - RESPONSIBILITIES OF THE PLANNING MEASURES

### ◀ BELGIUM

The **Minister of Health** is advised by the Planning Commission. The minister has the authority to take the necessary measures and introduce required legislation. As Belgian is a federal state with this process can require consultation and/or cooperation between the different levels of government (federal/regional/language community).

### ◀ DENMARK

- ***For medical specialists*** *the postgraduate training posts are announced by Regional Councils for Postgraduate Medical Education who have an obligation to announce all the training posts that the Danish Health and Medicines Authority have outlined that there on a yearly basis has to be.*
- *For **dental specialists** the University of Copenhagen and Aarhus are required to announce the number of training posts in orthodontics decided by the Danish Health and Medicines Authority. For training posts in oral surgery specific hospitals are required to announce the number of training posts decided by the Danish Health and Medicines Authority.*
- *The Minister of Higher Education and Science is advised by the Danish Health and Medicines Authority regarding **student intakes**. The Minister has the authority to decide the intake.*

### ◀ ENGLAND

As stated in the "*Mandate from the government to Health Education England*" there are **numerous plans and stakeholders involved** in realizing the various goals and plans.

See "*A mandate from the government to Health Education England*", available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/203332/29257_2900971_Delivering_Accessible.pdf

### ◀ FINLAND

The **intake** at universities, polytechnics and vocational institutions is defined in accordance with the national entrant targets as part of the development plan of education and university research.

Educational supply is evaluated in the middle of the implementation period for the development plan. This process is commissioned by the **MoEC** and supported by a **national coordination group** appointed by the MoEC. The **Ministry of Social Affairs and Health** is also involved in this process. During this process the production of the qualifications is compared to the entrant targets and assessed in relation to the sufficiency of workforce (shortages among different professional and vocational groups, changes in professional roles and the service structure etc.).

Furthermore, the implementation of the actions defined in the national development plan for social and health care services is supported and assessed by the **Ministry of Social Affairs and Health** as well as **research institutions** governed by the Ministry.

## ◀ NORWAY

The Competancy Plan 2015 was conducted by the **Directorate of Health** but every municipality and all regional health authorities (four) produce health personnel statistics and short and long term personnel plans as part of their strategic planning activity.

Higher Secondary School is the responsibility of county level. Health and social science is a direction many students choose. The county authorities provide sufficient classes according to the number of applicant. The same is more or less the case for vocational education which is established as 0.5 to 2 years practical training according to a separate legislation.

According to the legislation on higher education the institutions for most educational programmes are autonomous to select what kind of education they provide. The public funding is based on number of candidates fulfilling the examination last year. For some profession educations such as medicine, dentistry, pharmacy and psychology and a number of technical educations (engineers, architects) and others there is a maximum capacity set by national authorities (**Ministry of Education and Research**). Nevertheless governmental grants are given to students taking such education abroad.

The Ministry of Education and Research monitors very closely the number of students and candidates in a national register, and data is feed into Statistics Norway every year.

The Directorate of Health gives advice through the Ministry of Health and Care Services into the next year´s budget of the Ministry of Education and Research based on current

imbalance in the health personnel marked.

The **Ministry of Local Government and Modernisation** provide every year statistics (KOSTRA) based on the municipalities annual report on a multitude of data, among those health and social personnel.

## ◄ Spain

The regulation of the number of available specialist training vacancies is decided annually by the **Human Resources Commission of NHS** and approved by the **Ministry of Health Social Services and Equality.**

Assumptions, parameters and findings of the forecasting studies are discussed and agreed in the **Human Resources Commission of the NHS** with the technical support of the **University of Las Palmas de Gran Canaria.**

## ◄ The Netherlands

The only process used to achieve the targets is the advising of government and the stakeholders on the medical student intakes and the intakes for specialist training per specialism. It's possible to show the impact and consequences of different scenario to the stakeholders.

The **responsibility** for the final choices is in the hands of the **government**. Government is aware of the fact that the advice given by the ACMMP is based on consensus of all involved stakeholders.

## 3 - MONITORING AND CONTROLLING

### ◀ BELGIUM

The Belgian health care knowledge center evaluates the Belgian health workforce planning. This center compares the current situation of the Belgian health workforce with other European health workforces.

The NIHDI (Public Social Security Institution) also has published performance reports about the health care system and general physicians.

**FOR FURTHER INFORMATION:**

- *"Physician workforce supply in Belgium. Current situation and challenges", KCE reports 72C, available at https://kce.fgov.be/sites/default/files/page_documents/d20081027309.pdf*
- *NIHDI official web site https://www.kbc.be/site*

### ◀ DENMARK

The Danish Health and Medicines Authority doesn't really assess the success/effectiveness of health workforce planning. But we receive **information about workforce imbalances** during the hearing process in the preparation of the 5-year plans for the number of postgraduate training posts and during preparation of forecasting reports. The Regional Councils for **Postgraduate Medical Education** must **two times per year** report to the Danish Health and Medicines Authority how many training post they have announced and how many of them have been filled.

### ◀ ENGLAND

**Department of Health** ensures that the Mandate is fulfilled even if there are still some concerns related to the measurement of the fixed objectives.

### ◀ FINLAND

**Educational supply** is evaluated in the middle of the implementation period for the

development plan.

This process is commissioned by the MoEC and supported by a national coordination group appointed by the MoEC. The MoSocH is also involved in this process. During this process **the production of the qualifications is compared to the entrant targets and assessed in relation to the sufficiency of workforce (shortages among different professional and vocational groups, changes in professional roles and the service structure etc.).**

Furthermore, the implementation of the actions defined in the national development plan for social and health care services is supported and assessed by the Ministry of Social Affairs and Health as well as research institutions governed by the Ministry.

More in general there is a **continuous monitoring of labor force** in Social care and Health, yearly reports from THL (through data from Statistics of Finland and Valvira). In addition, The Finnish Medical Association and the Finnish Dental Association together with Local Government Employers (KT, www.kuntatyonantajat.fi) collect information on physician and dentist shortages in municipal health centres. KT reports also the shortages of the medical specialists in hospitals. KT makes assessments every two or three years also on the shortages of other professional and vocational groups in municipal social and health care. These assessments on sortages are carried out in collaboration with the MoSocH.

## ◀ Norway

- *There is an annual data register updating in the **KOSTRA** from municipality level to the central government (Ministry of Regional development and modernization).*
- *As part of the National Care Plan 2015 there is an **annual reporting of health and care personnel resources** from municipality level via county level to the central government. Statistics Norway up-date registers and publish relevant data every year. Much political focus has been placed on the result of the upscaling action plans from 2008 - 2015 on the National Care plan 2015.*

## ◀ Spain

**Biannually**, we measured the effects of planning in the number of places in the Faculties of Medicine, in the number of graduates, in the number of GP and the number specialists

of each specialty.

## ◀ THE NETHERLANDS

ACMMP monitors the effects of planning continuously by **different parameters** which we have agreed upon with the experts:

- *on the demand side the waiting lists, demography, epidemiology, policies, literature;*
- *on the working process side efficiency, horizontal and vertical substitution;*
- *on the supply side fte, immigration, vacancies, unemployment, retirement, etc. for each specialism;*
- *on the action side the decisions the ministry has taken and the corresponding actions of the health field.*

The information is used to finetune the next recommendation.

The actual checking is performed by every staff member for his/ her specialism.

And there are several reports and papers evaluating the aims of the ACMMP.

**FOR EXAMPLE:**

- *Factors influencing long term dynamics of health care supply and demand; Smits, M.; Roos, E.; Proceedings of the European Conference on Information Systems ESADE, Barcelona, 2012. Paper 685, pages 1-12.*
- *Improving Workforce Planning in Health Care. Proceedings of Bled, Slovenia, June 2012.*
- *Ten years of health workforce planning in the Netherlands: a tentative evaluation of GP planning as an example; Malou Van Greuningen*, Ronald S. Batenburg and Lud F.J. Van der Velden. Human resources for health 2012.*

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# ORGANISATION

## 1 - WORKFLOW

### ◄ BELGIUM

The core of the workflow is in the **Planning Commission**, that is unique for all the health professions planned. It consists of national representatives of the different health professions, universities, health insurance companies, different government levels (federal & regional) and invited experts.

The planning commission is assisted by the **Unit Workforce Planning at the Federal Public Service of Health**, which provides administrative and statistical support. The Unit Workforce Planning is as well unique for all the health professions planned.

Furthermore, the planning commission is composed of different **working groups**, one for each health profession planned, e.g. nurses, physicians, dentists, physiotherapists. It means that part of the workflow is differentiate by the specific health profession: in the single working group (supported by one person from the Unit Workforce Planning) they reflect on current and future challenges of the profession, provide input for planning research, provide feedback to the preliminary results, validate reports.

### ◄ DENMARK

The Danish Health and Medicines Authority seek to have the **same workflow**, with only small differences for each professions.

- *Danish Health and Medicines Authority decide it's time to update the supply forecast (every 2-3 years).*
- *The planning and Forecasting Committee is involved in deciding whether the supply model needs modifications.*
- *If modifications are needed a small group with stakeholder representatives draw up a draft for a new model.*
- *The model is presented for The Planning and Forecasting Committee.*
- *If accepted, Danish Health and Medicines Authority and Statens Serum Institut makes the forecast.*

## ◀ England

In England local and national planning results in the **Workforce Plan for Englan** which sets out the education and training commissions for the 110 workforce roles for which **Health Education England** is responsible.

The **Centre for Workforce Intelligence** is commissioned by DH, HEE and PHE to undertake reviews of specific workforces. The CfWI follows a specific workflow named **Robust Workforce Planning Framework** (CfWI, 2014) that is the same for each workforce role.

As result of the workflow, CfWI produces several horizon scanning reports, including medicine (CfWI, 2012a) and dentistry (CfWI, 2012b).

## ◀ Finland

The anticipation of workforce demand and educational needs is commissioned by the ordered consortium comprising **four ministries**:

- *Ministry of Finance,*
- *Ministry of Employment and the Economy,*
- *Ministry of Education and Culture,*
- *and Ministry of Social Affairs and Health.*

These feed in to the planning process in the FNBE. In collaboration with a wide **network of experts** from the regional authorities, trade unions, employers' associations, ministerial representatives etc. the VATT produces workforce forecasts for the whole economy (28 different sectors).

Mostly there's unique workflow with no specific procedures for the different health professions.

## ◀ Norway

The planning system in **HELSEMOD** include 20 groups of health personnel and make **analyses**

- *in the total numbers;*

- *and separate for each professions.*

In addition the planning system incorporates calculation for selected professions based on present and future needs (for example special trained nurses, some specialities in medicine, dentist specialist etc.).

## ◄ SPAIN

Spanish planning and forecasting is focused on medical doctors (basic education and specialist training posts).

- *The **Council of University Policy**, composed by Ministry of Education and by education officials of autonomous communities, fixes annual offer of **University posts**.*
- *The **NHS Human Resources Commission** is mainly responsible for planning the specialists. It is involved in the planning and design of training programs and human resource modernization of the National Health System and defines the basic criteria for assessing the competence of healthcare professionals. It proposes annual vacancies of specialized training. It is composed by health officials of the autonomous communities (17) and the central administration (Ministry of Health, Social Services and Equality, Ministry of Education, Culture and Sports , the Ministry of Defense and the Ministry of Finance and Public Administration). The workflow of the planning process is the same for all the specializations and it's focused on the activities of the NHS Human Resources Commission. National Council of Specialists in Health Sciences must advise the vacancies of specialized training. The National Council of Specialists in Health Sciences is composed of more than 500 specialists, representing all specialties.*

## ◄ THE NETHERLANDS

The ministry currently has two contracts in place for data collection, analysis and modeling in order to make recommendations to the health field and back to the ministry on likely future needs.

- *One contract is related to doctors, mental health professions, dentists and specialized nurses (and related professions). The contractor is the **ACMMP**.*
- *The other contract is related to nurses, assistant-nurses, care-takers, social workers and home helpers and is given to a research program.*

In the contract with ACMMP some statutory objectives are set.

Those statutory objectives are translated into **quantitative outputs** regarding numbers of professionals even if, to fix them, discussions on future professional mix, future skills needed and future working conditions are made.

Indeed, ACMMP collects data and information on developments from a wide range of organisations and sources, with focus on both supply (registers, training programs) and demand (demographics, vacancies, technological developments). Experts for each medical specialism are involved to discuss the changes in working processes that will affect the capacity of the workforce in the future.

For instance, questions typically asked will include how much time can be saved by the newest generation endoscopes compared to at present, and whether a specialized nurse can be trained to carry out these tasks. Some specialists are also interviewed about working hours, their personal objectives as to retiring or diminishing working hours, and their potential desire and/or reasons for wanting to go abroad.

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## 2 - DECENTRALIZATION OF THE PLANNING RESPONSIBILITIES

### ◀ BELGIUM

Both central (**federal government**) and local administrations (**Communities**) are involved in the HWF planning process with different roles.

- *The federal government is responsible for health insurance policies and for policies which limit practitioners' access to the health profession and also reimbursement.*
- *Communities are responsible for managing education and training (examination selections, numerus clausus policies).*

### ◀ DENMARK

HWF planning takes place at **central level** (Danish Health and Medicines Authority and Minister of Higher Education and Science) for medical doctors, dentists, clinical dental technicians and dental hygienists (including medical and dental specialists).

- *The Danish Health and Medicines Authority determines the number of postgraduate education posts for medical and dental specialists in each specialty and within regions.*
- *The Danish Health and Medicines Authority makes recommendations for the student intake of medical doctors, dentists, clinical dental technicians and dental hygienists. The Intake is afterwards set by the Minister of Higher Education and Science.*

Regions are the administrations in charge of assigning provider numbers to general practitioners. A provider number is necessary to be reimbursed by the public tax based health system.

Regions are the main employers and therefore play a crucial role in securing the quality of education in the post graduate educationThree regional councils for postgraduate education are responsible for announcing postgraduate training post on the basis of the plan outlined by the Danish Health and Medicines Authority. The three regions decide how the assigned training posts are to be distributed within the region. Furthermore they are in charge of composing the postgraduate training posts and their educational programs.

The University of Copenhagen and Aarhus are required to announce the number of training posts in orthodontics decided by the Danish Health and Medicines Authority

## ◄ England

HWF planning takes place at **central level** (Department of Health DH and Health Education England-HEE) and **local level** (Local Education and Training Board - LETB - and NHS providers).

- *The DH and HEE set the strategic objectives in the areas of workforce planning, health education and training and development.*
- *HEE annually sets out its commissioning intentions (in terms of education and training) in the Workforce Plan for England which is subsequently used as the basis of the contracts that each Local Education and Training Board (LETB) places with local education providers for that academic year.*
- *To inform these training commissions HEE take the five year plans from LETBs, who in turn have taken five year projections from NHS Providers (e.g. NHS Foundation Trust).*

## ◄ Finland

HWF planning takes place at **central level** (Government Institute for Economic Research - VATT, under the Ministry of Finance, and the National Board of Education - FNBE, under the Ministry of Education and Culture) and **local level** (regional councils).

- *VATT produces long term workforce forecasts and FNBE forecasts the educational needs and proposes the entrant targets on the base of workforce demand.*
- *Regional councils, on the base of health care organisations, make analysis and forecast of workforce demand and educational needs.*

**FOR FURTHER INFORMATION:**

- *http://www.oph.fi/tietopalvelut/ennakointi/koulutus_ja_osaamistarpeiden_ennakointi/kansainvalinen_ennakointi/arviointeja_suomen_ennakointimalleista*

## ◄ Norway

Plans are conducted on **national**, regional (hospitals) and local level (primary health care).

In particular the Directorate of Health manage the National Plan with input from local (municipalities) and regional authorities (County Governor) and from the four corporations running Norwegian hospitals.

## Spain

Health workforce planning planning takes place at central level (Ministry of Health Social Services and Equality and Ministry of Education, Culture and Sport) and local level (Health and Education Departments of Autonomous Communities). Ministry of Health Social Services and Equality coordinates and approves the number of the specialized medical training posts.

Ministry of Education, Culture and Sport coordinates and approves the number of enrollments in medical degree courses.

Autonomous Communities are involved as permanent members in the Human Resources Commision (Deparments of Health) and in the Council of University Policy (Departments of Education). The Human Resources Commision proposes to the MoH the number of specialized medical training post and the Council of University Policy set the number of admission in the basic education.

## The Netherlands

HWF planning takes place at **central level** (Advisory Committee on Medical Manpower Planning - ACMMP, Capaciteitsorgaan) for medical doctors, dentists, mental health professions and specialized nurses, dental hygienists.

## *3 - RESPONSIBILITIES IN THE DECISION MAKING PROCESS*

### ◀ BELGIUM

Forecasts developed by the Planning Commission on the basis of the stock and flow model are then used by the Federal Government to regulate the number of physicians, dentists and physiotherapists that are allowed to practice. **Two levels** of government are involved in strategic health workforce planning in Belgium.

- *The **Federal Government** can regulate the supply of health workforce by limiting practitioners' access to practice. The nature of universal health insurance systems enables government to regulate the supply of some medical and health professions by restricting their right to reimburse treatment costs. By preventing health and medical professionals from reimbursing their patients' treatment costs, it is possible to control the number of professionals that are actually practicing. In addition, the government manages and controls access to specialist training.*
- ***Communities** are responsible for managing the education and training system. Thus, they establish the content of courses and the standards for selections. They also govern numerus clausus policies.*

### ◀ DENMARK

- *The minister for higher education on the basis of advice from the Danish Health and Medicines Authority decides the student intake for medical doctors, dental, clinical dental technicians and dental hygienists.*
- *The Danish Health and Medicines Authority decide the yearly number of postgraduate education post for medical and dental specialists.*

### ◀ ENGLAND

If we look at **Health Education England**'s Workforce Plan for England this sets out the planned investments and this goes for approval to the HEE Board.

### ◀ FINLAND

The entrant targets are adopted every four years by the **Government** as part of the national development plan for education and research.

## Norway

**Directorate of Health** have the national responsibility: the Health Directorate advises the government department of health and care which passes the recommendations on to the Ministry of Science in relation to the annul public budget planning. Additionally it is in charge of the allocation of specialist training positions.

In addition regional health authorities plans on regional level for hospitals and municipalities on local level. In addition plans are produced by Norwegain Association of Local and Regional authorities and professional organisations. On the education side higher education institutions are more or less autonomous on build education capacity.

## Spain

The **final decision** on the number of specialized medical training vacancies is up to the **Ministry of Health**, Social Services and Equality, which coordinates the process and approves or modifies the proposal of the Human Resources Commission of National Health System according to realistic indicators and planning criteria.

The **final decision** on the number of posts in Faculties of Medicine is up to the **Ministry of Education**, Culture and Sport, which also coordinates the process and approves the results of the Council of University Policy.

## The Netherlands

- *The responsibility for the final decision on the advice is for the members on the board of the ACMMP.*
- *The CEO of the ACMMP is responsible for the preparation of this advice and the presentation in the board.*
- *Each staff member is responsible for the consulted experts, research findings, and literature review on his/ her field of expertise up to the point where they are presented to the CEO.*
- *Final decision of quotas is made by Ministry of Health, Welfare and Sports and ministry of Education and Science.*

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## 4 - STAKEHOLDER INVOLVEMENT

### ◀ BELGIUM

The stakeholders are officially involved in the Planning Commission in monitoring the workforce levels and trends of the different health professions using the available statistical information and detecting bottle-necks.

**Consensus agreement is reached on possible future scenarios**. The agreed upon future scenarios are fed into the mathematical planning model to calculate the projected future workforce levels.

### ◀ DENMARK

For the forecasting of supply of doctors and supply of dentists some of the stakeholders participate in the Planning and forecasting committee.

During preparation of the plan for how many medical specialists and dental specialists are supposed to be educated on a yearly basis **stakeholders are invited to participate in a public hearing process** where they can advise the Danish Health and Medicines Authority as to how many specialists should be educated.

The Danish Health and Medicines Authority with the help of stakeholder representatives draw up the plan which is presented in the Council for Postgraduate Education. The Danish Health and Medicines Authority typically follows the council's recommendations regarding the plan but is however not obligated to.

For both the forecasting of doctors and the dental professions stakeholders are through the Planning and forecasting committee invited to **participate in the overall designing of the forecasting model.**

### ◀ ENGLAND

The workforce planning and assurance process at a **local level:**

- *Each* **Trust** *was asked to provide their future workforce forecasts setting out their anticipated needs for staff numbers and skills to their LETB;*

- *Each* **LETB** *used these individual Trust forecasts alongside an assessment of their current workforce needs to produce a forecast for their area as the basis for the LETB workforce investment plan;*
- **HEE***'s Workforce Planning Guidance required each LETB to hold local '**Challenge and Review**' sessions with employers and other partners such as commissioners in order to ensure effectiveness forecasts.*

The workforce planning and assurance process at a **national level:**

**HEE** has three national workforce planning roles:

- *to guarantee for each LETB's workforce investment plan;*
- *to lead national workforce planning for a small number of areas where the current characteristics warrant a nationwide approach;*
- *to produce a National Workforce Plan for England based on the aggregate of the final moderated LETB plans and the conclusions of the national workforce planning processes.*

As part of the processes to produce the Workforce Plan for England **HEE**:

- *seeks continual advice and input from stakeholders through a national '**Call for Evidence**';*
- ***discusses emerging trends and themes** with other ALBs such as NHS England, NTDA and Monitor and the Department of Health to ensure alignment wherever possible;*
- *seeks on-going advice from **key professional groups** through Health Education England Advisory Groups;*
- *Held **bilateral meetings** with stakeholders to discuss key emerging issues.*

## ◄ FINLAND

Workforce forecasts are produced by the VATT and commissioned by a collaborative group of four ministries in collaboration with a wide network of experts from the regional authorities, trade unions, employers' associations, ministerial representatives etc.

- *The MoEC appoints a wide **group of experts** to steer and provide expertise of different industries for the phase of forecasting educational needs. These experts present e.g. the Mo SocAH, Local Government Employers, trade unions, regional authorities and other stakeholders.*
- *At the regional level, there are also several partners. **Regional councils** have a statutory responsibility (Act 1651/2009) to coordinate the regional preparation of the long-term and medium-term forecasts in collaboration with other regional authorities, such as universities.*
- *Legislation also defines the responsibilities of the **hospitals districts** within a catchment area for highly specialised medical care to participate in the regional forecasting process and to ensure that the sufficiency of the personnel in health care is in accordance with the*

*care needs of the population (Act 1326/2010).*

## ◀ Norway

The Norwegian Association of Local and Regional Authorities (KS) operate their own personnel register (PAI) based on reports from the municipalities every year. This covers all sectors.

Health profession organisation such as the Norwegian Medical Association and the Norwegian Nurses Organisation develop their own prognosis on the need of respectively doctors and nurses and the distribution within different specialities and special training competencies.

## ◀ Spain

The **Human Resources Commission of the NHS**, as part of its mandate from the Inter-territorial Council of National Health Service (CISNS), has the task of fostering adequate planning for the needs of the NHS. As written in the law on the Regulation of Health Professionals (Law 44/2003) the Commission is composed of:

- *Central Administration of Ministry of Health, Education, Economy, Finance and Public Administration;*
- *17 Autonomous Communities and the Institute of Health Management (represents the cities of Ceuta and Melilla);*
- *Ministry of Defense offers medical undergraduate training for military personnel. The Ministry of Defense currently offers medical and pharmacy specialist training to both military personnel as no military.*

In specialists planning also is involved the National Council of Specialists in Health Sciences, with representatives from all specialties.

## ◀ The Netherlands

The board of the ACMMP consists of (delegates from) the **three major stakeholders:**

- *the health insurance companies,*
- *the professionals,*
- *and the universities/ teaching institutes.*

They formally agree upon each advice before it is given to the government.

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The same three stakeholders are involved in each of the **five "Chambers"**. The Chambers are oriented around specific professions and are asked to clarify issues regarding the parameters needed to make the scenario's where the estimates are based upon. Each Chamber makes use of field experts, designated research, and literature.

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## 5 - STAKEHOLDERS INVOLVED

### BELGIUM

In the Planning Commission there are the following stakeholders participating:

- *Ministry of Public health;*
- *Ministry of social affairs;*
- *Flemish community, French community and German-speaking community;*
- *Professional associations (Physicians needs estimation, validation of reports, providing input for research);*
- *Universities with a full medical curriculum;*
- *4 Universities of Flemish community (University of Antwerp, Ghent University, Catholic University of Leuven, Free University of Brussels); 3 Universities of French community (University of Liège, Catholic University of Louvain-La-Neuve, Free University of Brussels) - the universities deliver necessary information which is used in the planning process; e.g. student enrolment, success rates; also, they act as stakeholder in the planning process and participate in the working group meetings; they actively defend their point of view in the discussions;*
- *NIHDI (National Institute for Health and Disability Insurance);*
- *NIC (National Intermutual College).*

### DENMARK

Stakeholders involved in the HWF planning process are both public

- *health care producers,*
- *health care trainers,*
- *health care payers*
- *and health care workforce through their professional orders.*

The Danish Health and Medicines Authority has two planning and forecasting committees. None of the stakeholders involved in the committee are paid by the Danish Health and Medicines Authority.

**Planning and forecasting committee for doctors**

The composition of the committee is regulated in Danish legislation according to wich the following stakeholders must be represented.

- *The Danish Health and Medicines Authority (Chairman)*
- *Danish Regions (2 members),*
- *Regional Councils for postgraduate Education (1 member per regional council)*
- *Ministry of Health and Prevention (1 member)*
- *Danish Medical Association (1 member)*
- *Danish Medical Societies (1 member)*

Furthermore the Ministry of Higher Education and Science is invited to participate in the committee. For the moment they have one active member.

**Planning and forecasting committee for dentists, dental hygienists and clinical dental technicians.**

The composition of the committee isn't regulated in the Danish legislation but the Danish Health and Medicines Authority have decided to invite the following to the committee.

- *The Danish Health and Medicines Authority (Chairman)*
- *Danish Regions (1 member),*
- *Ministry of Health and Prevention (1 member)*
- *Ministry of Higher Education and Science (1 member)*
- *Association of public dentists (1 member)*
- *Danish Dental Association (1 member)*
- *The Association of dental specialists in Orthodontics (1 member)*
- *The Association of dental specialists in Oral Surgery (1 member)*
- *Local Government Denmark (1 member)*
- *National association of clinical dental technicians (1 member)*
- *The Danish Dental Hygienists Association (1 member)*

## ◄ ENGLAND

A **large range of stakeholders** are involved in the planning process:

- *Department of Health DH and Health Education England;*
- *Local Education and Training Board;*

- *NHS providers;*
- *Professional bodies;*
- *Royal College of Speech and Language Therapists;*
- *Organisations who responded to HEE's Workforce Planning* ***Call for Evidence*** *(Society and College of Radiographers; BMA; British Association/College of Occupational Therapists; Care Quality Commission; College of Emergency Medicine; Epsom and St Helier NHS Trust; Haduma Limited; Health Education England; Medical Schools Council and Dental Schools Council; Royal College of Physicians; Oxford University Hospitals NHS Trust; Royal College of General Practitioners; Royal College of Nursing; Royal College of Paediatrics and Child Health; Royal College of Pathologists; Royal College of Radiologists; The British Association of Stroke Physicians; Royal College of Midwives; University College London; Whipps Cross University Hospital);*
- *HEE Advisory Groups consulted on England wide workforce forecasts and initial Workforce Investment Plan for England (Nursing & Midwifery HEEAG, Medical HEEAG, Healthcare Science HEEAG, Dental HEEAG, AHP HEEAG).*

## ◄ FINLAND

Stakeholders involved in the HWF planning process is based on the principle **three lateral involvement** are mainly:

- *National and regionals authorities, including universities and other educational institutions;*
- *Health care producers and payers (Association of Finnish Local and Regional Authorities, Local Government Employers, Confederation of Finnish Industries);*
- *Health care workforce (professional orders as well trade unions).*

## ◄ NORWAY

Stakeholders involved are mainly municipalities, Regional Health Authorities (RHF), upper secondary school, universities, professional associations.

## ◄ SPAIN

In the **Human Resources Commission** of the NHS there are the following stakeholders involved:

- *health officials of the autonomous communities (17);*
- *central administration (Ministry of Health, Social Services and Equality, Ministry of*

*Education, Culture and Sports , the Ministry of Defense and the Ministry of Finance and Public Administration).*

The Commission is involved in the planning, design of training programs and human resource modernization of the NHS and defines the basic criteria for assessing the competence of healthcare professionals. It proposes the annual supply of specialties posts. The Council of University Policy is composed by Ministry of Education and by education officials of the autonomous communities. They fix annual supply of university places.

In the National Council of Specialists in Health Sciences and National there are **several Specialties Commissions**, in which by law, they must advise the vacancies of specialized training. Each National Commission of Specialty consists of **11 members**, all of them specialists:

- *four recognized specialists proposed by Human Resources Commission;*
- *two proposed by Scientific Societies;*
- *a university professor and a tutor of specialists in training proposed by Ministry of Education;*
- *one proposed by professional chamber and,*
- *finally, two representatives of specialists in training.*

The chairmen of the each Commission form the National Council.

## ◄ THE NETHERLANDS

There are **three parties:**

- *the health care workforce,*
- *the health care training institutes,*
- *and the health care insurance companies.*

Those three parties **each** represented with **eight seats in the board** of the ACMMP.

For the list of the stakeholders involved see "*The 2013 Recommendations for Medical Specialist Training - Appendix 2 - The Plenary Body: the relevant experts and procedures*", pag. 82 at http://www.capaciteitsorgaan.nl/Portals/0/capaciteitsorgaan/publicaties/Capaciteitsplan%202013/DEFINITIEF%20hoofdrapport%20engels%20compl.pdf

## 6 - ROLE OF THE STAKEHOLDERS

### ◀ BELGIUM

The stakeholders **provide** the Unit Planning with **qualitative and quantitative information.**

They are also closely involved in the planning process and co-decide with the Unit Planning about necessary data, research questions/subjects, etc.

In the working groups they help **interpret** the presented information. They take part in the creation of a consensus about the **assumptions** to be used in the creation of forecasting scenarios.

When planning outcomes are presented to the stakeholders, they can use this information to give advice to the minister of health.

### ◀ DENMARK

The stakeholder's primary roles is **to advise** the Danish Health and Medicines Authority

- *on the content and assumptions of the supply forecast;*
- *regarding the number of needed postgraduate training posts;*
- *regarding the needed student intake at schools and universities*

The stakeholders take part in selecting the assumptions used in the supply forecast. For the forecast for doctors and medical specialist this is done in meetings in the planning and forecasting committees subcommittee. The subcommittee consists of members from the Danish health and Medicines Authority, the Danish medical Association, StatensSeruminstitut and the three regional councils. At the meetings it's discussed whether modifications to the current model is needed. This could for example be regarding the expected number of filled postgraduate training posts, what scenarios the forecast should include etc. If needed the subcommittee draws up a new model which is afterwards presented for the Planning and Forecasting committee. If given the green light by the committee the forecast is afterwards drafted.

The stakeholders advise the Danish Health and Medicines Authority regarding the yearly number of postgraduate training posts. This takes place in a public hearing process

where the stakeholders are presented with data regarding the current supply within the specific medical specialty. Both on a national and regional level. Furthermore the stakeholders are presented with the results of the supply forecast within a given specialty. On the basis of the data presented the stakeholders are invited to answer a series of questions. For example:

1. *How is the current balance between supply and demand perceived?*
   .....
2. *Are there any specific regional differences in the supply or demand the plan must take into account?*
   .....
3. *Is the demand expected to exceed or be lower than the expected supply? If so, why?*
   .....
4. *Which factors is expected to influence the future demand within the medical specialty?*
   .....

The stakeholders normally provide the feedback in writing.

The information provided by the stakeholders is first of all considered by the Planning and Forecasting Committees subcommittee. The subcommittee examines the data and information provided by the different stakeholders and draws up a plan for the number of postgraduate training posts. In examining the information provided the subcommittee tries to take different factors into account for example:

- *How many doctors can be expected to begin a postgraduate training post?*
- *Are there any special areas in an acute need of specialists?*
- *If the number of postgraduate training posts is increased in one specialty it can affect the demand for specialists in another specialty*
- *Increasing the number of postgraduate training posts in specialties having no problem recruiting can have a negative effect on recruitment to specialties already facing recruitment difficulties.*
- *The educational capacity in the different specialties*

When the subcommittee has drawn up the plan it's first of all presented in the Planning and Forecasting Committee. If the committee gives the green light the plan (if for doctors) is afterwards presented in the National Council for Postgraduate Medical Education or (if for dentists) presented in the National Council for Postgraduate Dental Education.

This can sometimes make small changes to the plan which is afterwards released by DHMA. As a general rule the plan for the number of postgraduate training posts cover a five year period and the Danish Regions and other stakeholders involved in the postgraduate education of doctors and dentists are required to follow the plan.

## ◄ England

There are a large range of stakeholder and expert groups with **different roles**. There are cases in which stakeholders are just informed and other in which they directly take part to the decision making process.

## ◄ Finland

- *The MoEC appoints a wide groups of experts to steer and provide expertize of different industries for the phase of forecasting educational needs. These experts present e.g. Local Government Employers trade unions, regional authorities and other stakeholders in order to contribute to the preparation of the proposals for intake needs.*
- *Regional councils have a statutory responsibility to regional forecasting process.*
- *In addition, hospitals districts within a catchment area for highly specialised medical care participate in the regional forecasting process in order to provide health care expertise.*

## ◄ Norway

The stakeholders are partly involved in the planning system to give input to policy document, for example by **invitation to developments processes.**

## ◄ Spain

- *The* **regional health departments** *of autonomous communities define their needs of specialists and propose the annual supply of specialist training posts (taking into account the number of training posts for specialties accredited in public and private hospitals and the number of them that can be financed)*
- *to the* **Human Resources Commission** *of National Health System.*
- *The* **Universities** *propose to regional education departments the number of posts per year of Medicine; the supply cannot exceed the number of accredited posts.*

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- *The* **regional education departments** *propose the number of posts in the Faculties of Medicine of its territory to the Council of University Policy.*

## THE NETHERLANDS

The workforce forecasting model provides forecasts which are discussed within the board of the ACMMP (by experts in the Chambers first and then by representatives of the three composing parties); the outcome is an advice on the number of professions to be trained yearly for a certain time period.

The ACMMP has an advisory task. They try to elucidate any decision that the ministry of Health, Welfare and Sports and ministry of Education and Science will take. The ministries take the final decisions. However, the ministries do not often take a decision which is beyond the boundaries of the range of the advice.

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## 7 - ROLE OF COMMUNICATION IN THE PLANNING SYSTEM

### ◄ BELGIUM

Since 2006 the forecasting model can be accessed by authorized users outside the Ministry of Health. Specifically, the different **stakeholders** were given access to the planning tool via an **internet portal**.

The Planning Commission has a web page dedicated to publishing the results from the planning and modelling (http://www.health.belgium.be\hwf ) and publishes reports and statistics concerning the different professions:

- *http://www.health.belgium.be/eportal/Healthcare/Consultativebodies/Planningcommission/StudiesPublication/index.htm?fodnlang=fr#.VBGRDVRCTIU to download the final report of the data linking project physiotherapists (PU2014_0004) and nurses (PU2014_0003);*
- *http://www.health.belgium.be/eportal/Healthcare/Consultativebodies/Planningcommission/Statistiquesannuelles/2013/index.htm#.VBGRkFRCTIU to download the yearly statistics of health care professionals of 2013,*

### ◄ DENMARK

The Danish Health and Medicines Authority publish reports with forecasts of the expected supply within the different professions.

- *http://sundhedsstyrelsen.dk/publ/Publ2013/12dec/Tandplejeprognose2013_2035.pdf to download the final report concerning dentists*
- *http://sundhedsstyrelsen.dk/publ/Publ2013/02feb/Laegeprogn2035.pdf to download the final report concerning physicians*

The Danish Health and Medicines Authority publish 5-year plans which determine the yearly number of postgraduate training posts for medical and dental specialists within specialty and region.

The forecast reports and the 5-year plans are sent by mail to relevant partners and are furthermore published at the Danish Health and Medicines Authority's website.

The website has a page dedicated to publishing the results from the planning and modelling.

## ◀ England

**Every year** Health Education England publishes a **report** containing:

- *information on the HWF status quo;*
- *information on the HWF planning process;*
- *information on the HWF planning goals;*
- *detailed information on the output of the HWF planning process;*
- *and the expected outcome.*

See the last version of the report "Workforce Plan for England - 2014" available at http://hee.nhs.uk/wp-content/blogs.dir/321/files/2013/12/Workforce-plan-UPDATE-interactive.pdf

## ◀ Finland

The goals and outputs, such as entrant targets are published as part of the **development plan of education and university research** which is adopted by the Government every four years for both the year in question and the following five calendar years. The development plan is prepared in accordance with the Decree on the Development Plan for Education and University Research (987/1998) and published by the Ministry of Education and Culture.

In addition, VATT and the FNBE publish **several reports on the forecasting process and outcomes.**

Information on anticipation projects, literature, methods and so on is found in Finnish on web pages of **ENSTI**, the electronic information service for anticipation (http://www.oph.fi/tietopalvelut/ennakointi/ennakoinnin_sahkoinen_tietopalvelu_ensti)

## ◀ Norway

The Norwegian Directorate of Health publishes a tri-annual Helsemod report based on the data collected and analysed by Statistics Norway.

## Spain

The goals and results are publishing in the web of Ministry of Health, only in Spanish (available at http://www.msssi.gob.es/profesionales/formacion/necesidadEspecialistas/home.htm).

Every year, the vacancies for specialist training is published in the official bulletin (BOE). For example: 2014 vacancies are available at https://www.boe.es/boe/dias/2014/09/17/pdfs/BOE-A-2014-9474.pdf

## The Netherlands

The goals and results are communicated once every 2 to 3 years in a series of documents known as the "Capaciteitsplan 20XX"

These documents are accompanied by a letter to the minister with the actual advices in it. The findings of the ACMMP are public. The minister will send them to Parliament.

To download those documents, see http://www.capaciteitsorgaan.nl/Publicaties/tabid/68/language/en-US/Default.aspx

## 8 - STAFF MEMBERS

### ◀ BELGIUM

There are six people (5,5 FTE) working in the Unit of Workforce Planning at the Federal Public Service of Health (FPS), which provides administrative and statistical support to the Planning Commission.

Their role consist in:

- *managing the planning process for one or more specific health profession;*
- *giving administrative support for the working groups of the Planning Commission;*
- *collecting the necessary information.*

Every staff member of the Unit has his or her own unique knowledge on one, two or more healthcare professions, depending on the professions for which he/she already worked out a planning scenario and depending on their working experience in the FPS.

There are also experts for each health profession within the department of Health care (where Unit Planning is a part of) which we can ask specific questions and can consult for more in-depth information.

### ◀ DENMARK

There are 3 people employed by the Danish Health and Medicines Authority which directly work on the HWF planning:

- *the head of the division (senior medical doctor);*
- *one dentist;*
- *one special adviser (Political Science).*

There's also one statistician from an external organisation (Statens Serum Institut). They are all involved in the forecasting for all professions but the dentist engage only in the dental professions.

On a yearly basis the Danish Health and Medicines Authority uses approximately **0,25-0,5 FTE on health workforce planning.**

## ◀ England

There are a **number of organisations involved** in HWF planning and forecasting in England.

To give the example of the **CfWI**:

- *approximately **50 FTE**;*
- *there is a range of profiles which can be divided into the broad roles of Analysts, Modellers, Horizon Scanners, Project Managers, Communications and Leadership*
- *a large range of experts and stakeholders are involved as appropriate in workforce planning projects.*

To look at the CfWI, analysts and modelers have particular specialization in particular professions and specialties and it is also within the remit of some analysts and senior staff to have an overview of the workforce at higher level groupings.

- *Health Education England has a headcount of 2666 persons*
- *The Department of Health (excluding agencies) has a headcount of 2208 persons*

## ◀ Finland

- *At VATT there is a few people working on the HWF planning process but none of them full time.*
- *At MoSocHealth there are five senior level people part time on the HWF planning process. .*
- *At MoEC and FNBE 2-4 full time people senior level, but the work is not only for Health Sector.*
- *At the FNBE: 3-4 senior level researchers.*
- *At National Institute for Health and Welfare (THL ) there is one senior level people part time on the HWF data monitoring*
- *In other organisations, such as Statistics Finland one senior level researchers, part time.*
- *In regional councils, primary health care units in hospital districts and hospital districts within a catchment area for highly specialized medical care: a few people involved part time at each.*

Most of the experts involved are not specialized for single professions.

## ◀ Norway

People with background in political science and political economy from the Norwegian

Directorate of Health are involved for an amount of two FTE. Also people from other Ministries and the Statistics Norway (SSB) are involved occasionally.

## ◀ Spain

There are **4 people** (approximately 3, 3 FTE) involved in HWF planning at the Ministry of Health:

- *two full-time professionals (administrative and technical) coordinate the proposed annual specialized training vacancies.*
- *one technical (part time) in State Register for Health Professionals.*
- *a high technician (part-time) with experience in planning (5 years) supervises the above; collaborates with experts from the University of Las Palmas in the preparation of reports and participates in the proposals for making policy decisions.*

They have a variable annual budget (60.000-100.000€) for health workforce research. In all Communities (17) there are professionals with part-time dedication to the preparation of the annual supply of specialized health training posts.

**Two experts** from University of Las Palmas have collaborated with the Ministry occasionally, in published studies and as advisors. The two experts of University of Las Palmas are university professors of Health Economics. They have extensive experience in health workforce planning and multiple national and international publications.

## ◀ The Netherlands

The ACMMP has a staff of **7 people and 1 administrative person**. The competence profile includes a background in a healthcare education or healthcare performing function, an academic or applied science university degree, research expertise and advisory competences.

The ACMMP has its own regular pool of experts in the different fields/ professions/ specialisms, which are consulted at least once every 6 months, but most of the time every 3 months. There are at the moment almost **100 experts** that can be consulted. These experts are only consulted as long as they are working in the field. Besides the regular experts other experts can be consulted for specific areas of expertise.

Besides these experts, the ACMMP also uses research bureau's and other organisations to obtain data that are necessary to get the job done. There is a steady group of **4 researchers** that are more or less committed to the ACMMP.

The ACMMP staff members are all specialized for certain professions. On top of that they are sparring partner with another staff member for his or her professions.

The principal staff member/ profession combinations are:

- *JorisMeegdes, clinical specialism;*
- *TeusVertooren, mental health professions;*
- *André Esch, general practitioners;*
- *TinekeZijlstra, physicians for the elderly/ mentally disabled;*
- *AliesZandbergen, dentists, oral hygienists, maxillofacial surgeons, orthodontists;*
- *Ellen Dankers, paramedical professions, nurse practitioners, physician assistants;*
- *Victor Slenter, medical graduates, social medicine physicians.*

CHAPTER 12

# INSIGHTS

This sections contained in-depth analysis of some critical points of HWF planning systems. These papers are the work of experts with different roles in HWF planning in EU and contain ideas and thoughts based on practical experience and knowledge from the field.

They are also an inspiration for policy makers and planners to explore and unravel some of the problems discussed in this Handbook.

| TITLE | AUTHOR | MAIN TOPICS |
|---|---|---|
| QUALITATIVE AND QUANTITATIVE FORECASTING METHODS IN HEALTH WORKFORCE PLANNING | MELANIE BOECKMANN | WHICH ARE ADVANTAGES AND DISADVANTAGES OF BOTH QUANTITATIVE AND QUALITATIVE APPROACHES?<br>WHICH INTEGRATION IS POSSIBLE AMONG THE TWO APPROACHES? |
| PLANNING CAPACITY EVALUATION | GILLES DUSSAULT | WHY EVALUATION IS IMPORTANT?<br>WHICH ARE CRITERIA TO ASSESS THE QUALITY AND IMPACT OF HEALTH WORKFORCE PLANNING MODELS?<br>WHAT THE ACTUAL USE IN POLICY DECISION-MAKING?<br>WHICH ACCURACY IS POSSIBLE IN HELPING TO ACHIEVE THE MAIN OBJECTIVE? |
| TO SET TARGET OF HWF PLANNING – GENERAL PRINCIPLES AND DUTCH EXPERIENCE | VICTOR SLENTER | HOW TO HAVE SMART PLANNING GOALS?<br>HOW SETTING THE GOALS IN TIME AND FOR THE DIFFERENT PROFESSIONS?<br>ARE TRANSPARENCY, COMMUNICATION AND INVOLVEMENT USEFUL TO REACH THE RESULTS?.<br>WHAT ARE THE RESPONSIBILITIES IN PLANNING? |

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| | | |
|---|---|---|
| HEALTH WORKFORCE WAGES | MILENA SANTRIC MILICEVIC | HOW DO WAGES DETERMINE THE SUPPLY AND DEMAND OF WORKERS IN THE HEALTH SECTOR?<br>WHAT'S WAGES' RELATIONSHIP WITH ATTRACTIVENESS OF DIFFERENT FIELDS OF STUDY AND OCCUPATIONS, THE CHOICE OF PRACTICE LOCATION, AS WELL AS RETENTION RATES AND RETIREMENT PATTERNS?<br>CAN WAGES ADJUSTMENT MITIGATE OR SOLVE ANY CURRENT OF FUTURE GAPS (SHORTAGES OR SURPLUS)? |
| ASSESSING THE CURRENT SITUATION | MÁRIO AMORIM LOPES, ÁLVARO SANTOS ALMEIDA, BERNARDO ALMADA-LOBO | IS "CURRENTLY NO GAP BETWEEN SUPPLY AND DEMAND" A CONVENIENT ASSUMPTION?<br>WHAT ARE THE IMBALANCES?<br>HOW TO MEASURE THEM? |
| DEPENDENCY OF THE HEALTH CARE SYSTEM ON FOREIGN TRAINED HWF | MATT EDWARDS | WHAT'S A DESTINATION COUNTRY PERSPECTIVE?<br>HOW TO IMPLEMENT POLICIES TO PREVENT THE TARGETING OF DEVELOPING COUNTRIES FOR INTERNATIONAL?<br>WHICH ARE THE POSSIBLE PARTNERSHIP? |

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# *QUALITATIVE AND QUANTITATIVE FORECASTING METHODS IN HEALTH WORKFORCE PLANNING*

**Author: Melanie Boeckmann**

Largely, each forecasting method can be linked to qualitative or quantitative methodologies. These needn't be exclusive: despite a history of perceived incompatibility of both strands within the sciences, recent scholars have argued for an integration of methods where appropriate (Onwuegbuzie & Leech, 2005). Instead, both strands deliver tools that can be used in health workforce policy design.

Health workforce planning can equally profit from an integrated approach. Planners and policymakers are confronted with a decision-making process that requires input on a number of issues: be it forecasting of the future workforce and future patient populations, elicitation of stakeholder perspectives on health workforces, or conducting analyses on the current situation.

Workforce planning occurs in a complex system based on societal realities, and individual aspects of the system may need different tools, or methods, to be adequately understood. Good policy requires those making decisions to be informed, innovative, and thorough in both design and assessment. But what exactly is understood when we talk about qualitative and quantitative planning and forecasting approaches? Qualitative data basically refers to "data that do not indicate ordinal values"(Guest, Namey, & Mitchell, 2013; Nkwi, Nyamongo, & Ryan, 2001).

## Quantitative methods in health workforce planning and forecasting

When planning the future workforce, policymakers need information: on the current workforce, including such details as headcount, full-time equivalents, tasks and productivity. This type of information usually comes in numbered form: behind these numbers are persons working, hours worked and tasks completed. Which planning tools can these quantified data be used for? An assessment of the current situation could include the distribution of the workforce and of disease patterns. Models for projecting supply and demand require numerical input and deliver a numeral output about hours to be worked, persons to employ or patients requiring care. Similarly, gap analyses rely on quantitative comparisons between care provided and care desired. Also, monitoring and evaluation approaches can investigate and contrast numerical goals and actual effects of planning approaches.

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| ADVANTAGES OF QUANTITATIVE PLANNING METHODS | DISADVANTAGES OF QUANTITATIVE PLANNING METHODS |
|---|---|
| INTERPRETING CORRECTLY QUANTITATIVE DATA ALLOWS THE KNOWLEDGE THE CURRENT SITUATION AND CAN SHOW THE "BIG PICTURE" OF AN ISSUE WITHIN HEALTH WORKFORCE PLANNING: FOR INSTANCE, NUMBERS IN A PROJECTED SUPPLY GAP HIGHLIGHTS A SKILLS GAP IN THE FUTURE WORKFORCE. | QUANTITATIVE FORECASTING REQUIRES INPUT OF PARAMETERS AND RELIES ON THE QUALITY AND QUANTITY OF AVAILABLE DATA. THIS IS LIKELY TO BE AN ISSUE WHERE ONLY CERTAIN TYPES OF DATA ARE ROUTINELY COLLECTED AND SO PROXY DATA MAY OFTEN BE USED. |
| IF ROUTINE DATA ARE AVAILABLE, INFORMATION CAN BE GATHERED RELATIVELY EASILY AND CHEAPLY. | DESCRIPTIVE QUANTITATIVE APPROACHES ARE UNABLE TO ANSWER WHY FEWER PERSONS CHOOSE A PROFESSION OR MORE PEOPLE MOVE ABROAD TO WORK. THIS MIGHT IMPEDE THE POLICYMAKING PROCESS. |
| EXPERIMENTAL APPROACHES, FOR EXAMPLE TO EVALUATE POLICY, MIGHT EVEN CONTRIBUTE TO EFFECTIVENESS OF INDIVIDUAL POLICY MEASURES | IF PRIMARY DATA IS REQUIRED, THE COLLECTION PROCESS CAN BE LENGTHY. |
| THE UNCERTAINTIES INHERENT TO FORECASTING MAY ALSO BE QUANTIFIED, RESULTING IN CHALLENGES IN HOW TO PRESENT THIS INFORMATION TO DECISION-MAKERS | |
| IF ALL INVOLVED ARE FAMILIAR WITH STATISTICAL LANGUAGE AND METHODOLOGY, NUMERICAL DATA CAN BE COMMUNICATED EASILY. STANDARDIZED NUMERICAL DATA MAY ALSO ALLOW FOR COMPARISON BETWEEN SECTORS, REGIONS OR EVEN COUNTRIES AND THUS MAY THEN BE USEFUL FOR BENCHMARKING. | |

*In short quantitative data and methods are particularly useful for:*

- *Models for projecting or forecasting*
- *Data for assessing the past and current situation*
- *Gap analysis*
- *Monitoring and evaluation*

## Qualitative methods in health workforce planning and forecasting

In principal, most qualitative research methods might also be used in health workforce planning. Among the most common qualitative methods are semi-structured or narrative interviews, focus groups, document analyses, and qualitative scenarios (Given, 2008).

Why collect and analyze qualitative data for workforce planning?

Some information is difficult to obtain with quantitative data collection methods: which supply and demand factors are most important for a particular workforce? What are the

challenging scenarios that could impact on supply and demand? Which influences drive a medical student to choose a specialty? At what stage in their illnesses do patients seek their physicians, and how far are they willing to travel for a consultation? Or: what makes a position abroad attractive for some nurses but not for others? These questions cannot be answered by quantitative data as they depend on in-depth information about values, thought processes and lived experiences. Views of professional stakeholders might be of special interest for the planning process: where collaboration is required, it may be necessary to understand aims and motivations.

Qualitative approaches provide a useful forum for gathering knowledge on issues that the planners themselves were possibly not aware of, knowledge that a structured survey might not ask about. Qualitative data may also provide the information that used to develop narrative scenarios.

| ADVANTAGES OF QUALITATIVE PLANNING METHODS | DISADVANTAGES OF QUALITATIVE PLANNING METHODS |
|---|---|
| QUALITATIVE DATA COLLECTION CAN BE A PARTICIPATORY PROCESS. | USUALLY NOT MUCH ROUTINE DATA AVAILABLE AND PRIMARY DATA COLLECTION CAN BE LENGTHY. DEPENDING ON THE KIND OF INFORMATION ONE IS INTERESTED IN, ETHICAL CONSIDERATIONS MIGHT NEED TO BE TAKEN INTO ACCOUNT. |
| THEY CAN BE USED TO GATHER INFORMATION AND TEST QUANTITATIVE INSTRUMENTS (SUCH AS SURVEYS) SO THAT MEANINGFUL QUANTITATIVE DATA IS COLLECTED. | COMPARABILITY IS LIMITED. |
| THEY PROVIDE CONTEXTUAL INFORMATION ON SUPPLY AND DEMAND FACTORS AND SOURCES OF DATA WHICH CAN BE USED TO ENHANCE WORKFORCE PLANNING MODELS, AND ALSO ON BROADER ISSUES SUCH AS MOTIVATION, AIMS AND EXPERIENCES THAT CAN BE USEFUL FOR RETENTION, RECRUITMENT, OR SIMILAR POLICIES. | |
| IT ALLOWS AN EXPLORATION OF MORE THAN ONE ASPECT OF AN ISSUE IN DEPTH. | |

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*In short Qualitative approaches are particularly useful for:*

- *Methods to assess the current situation through stakeholder elicitation*
- *Understanding needs for the future and forming scenarios*
- *Gathering information on reasons and motivation*
- *Monitoring and evaluation*

## The best of both worlds? Integrating quantitative and qualitative methods

Both qualitative and quantitative approaches to health workforce planning have advantages and disadvantages. Individual methods should be chosen based on specific aims in the planning process and the context of the environment where they are to be applied.

Where can they be linked? One example for an integrated approach is scenario-building. Scenarios have been defined as "description[s] of a possible and plausible future situation" (CfWI, 2014:6)[49]. These future situations are created with stories targeting uncertainties in future developments. The key here is plausibility: how do we decide what is plausible in the future and what is not? In this case, qualitative methods such as expert elicitation, focus groups, stakeholder interviews, workshops or document analysis, among others, may be used to synthesize information about the present and develop narratives about the future. This is especially important as underlying assumptions as part of scenario generation shapes the plausible futures developed: future estimates are sensitive to both numbers and expected paths that are put into the model (Costa-Font et al., 2007).

Assumptions therefore likely influence which policy levers to target in order to arrive at a desired future outcome. Methods to quantify uncertainties in the scenarios increase the quality of results through the ability to understand the scale of potential issues and there relation to health workforces. Quantified scenarios are therefore a useful example of an integrated approach.

Yet challenges to the combined use of quantitative and qualitative planning methods remain. The two approaches require different expertise: if an integrated approach is desired, the necessary experts in each methodology need to be recruited or trained.

(49) For a detailed description of scenario development in workforce planning, see the publication by the UK Centre for Workforce Intelligence (CfWI, 2014).

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Qualitative data is often confronted with skepticism among quantitatively trained personnel; awareness raising about the strengths of each could be helpful in these situations.

Within qualitative expert elicitation, additional challenges include how to understand the different perspectives of stakeholders included in interviews or expert panels, and the context-specific results that are not easily generalised. On the other hand, the use of routine data collected for purposes other than planning has its own drawbacks: data generated for a different use may not adequately fit the questions they are supposed to answer.

Reflexivity needs to be a central aspect of any data collection and analysis, in both quantitative and qualitative planning. Are we using the methods correctly? Which conclusions are we drawing from the gathered information? Do our planning approaches fit the planning goals? Such questions should be an integral part of the planning regardless of the approach or methods used. Careful choice of planning approaches and ongoing reflexivity and challenge can contribute to higher quality health workforce planning and outcomes.

*In short:*

- *Integration of qualitative and quantitative methods in workforce planning is desirable*
- *Scenario generation for estimating future supply and demand relies on a structured qualitative method, and quantifying scenarios allows these plausible futures to be projected*
- *Examples from both methodologies can be found in this Handbook*

## For further information

- *D061 - User guidelines on qualitative methods in health workforce planning and forecasting available at*
- *http://euhwforce.weebly.com/uploads/2/3/0/5/23054358/jahwf_d061_user_guidelines_on_qualitative_methods_approved.pdf*

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# *PLANNING CAPACITY EVALUATION*

**Author: Gilles Dussault**

The aim of health workforce planning is to rationalize decision-making in relation to future HRH needs so as to respond more effectively to a country's objectives, such as universal/equitable access to high quality services corresponding to the needs and expectations of the population.

Planning takes place in a context of high uncertainty as changes can rapidly occur at various levels: needs/expectations, supply, demand, which are all affected by demographic, epidemiological, cultural, technological, political and economic factors which are not always predictable.

In other words, planning is not rocket science, but some elements of reflection can be provided in order to respond to three basic questions:

1. *1. How to assess the quality and impact (effectiveness) of health workforce planning?*

2. *2. To what extent does the effectiveness of health workforce planning depend on technical factors (competencies of planners, quality of data) or on political decision-making?*

3. *3. Is it possible to pursue long-term objectives in developing the health workforce?*

## 1 - How to assess the quality and impact (effectiveness) of health workforce planning?

The evaluation of a planning strategy and system is not only possible, but it is desirable. It can take place at different stages of the process of health workforce planning:

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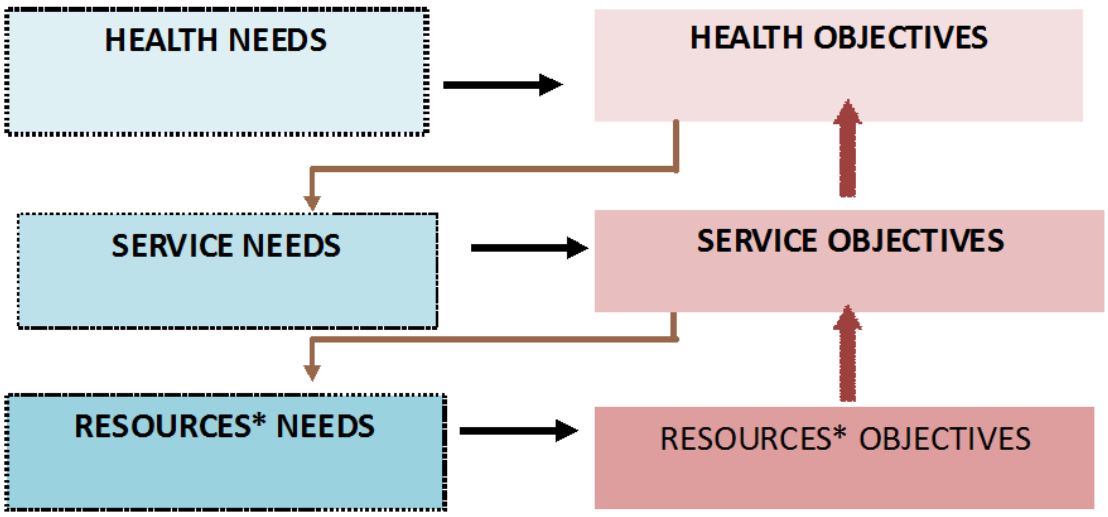
**BEFORE (EX-ANTE)**

AN ASSESSMENT OF THE FOLLOWING CAN BE PERFORMED WITH A VIEW TO ENSURING THAT PLANNERS ARE "DOING THE RIGHT THING

**Alignment of HRH objectives** on service and health objectives




**Soundness of underlying conceptual framework:** any approach to planning is based on a "theory", whether explicit or implicit, e.g. a set of assumptions about the composition and the behavior of the health workforce, the functioning of the health labour market or about the evolution of the health care systems, and the factors which influence them? Various frameworks are available to help make more explicit, and therefore easier to assess, the approach selected[50].

**Validity of assessment of baseline situation:** if planning is based on poor quality or incomplete data and information on the current situation, the probability of error increases. Good tools for doing the analysis of the health workforce situation are available[51].

(50) Examples are: HRH Action Framework(HAF- http://www.capacityproject.org/framework/), Working lifespan); Conceptual Framework for Needs-Based HHR and Health Systems Planning (http://whocentre.dal.ca/frameworks/conceptual); Stages of the Health Workforce Development, World Health Report 2006 (http://www.who.int/whr/2006/en/ ); Comprehensive Health Labour Market Framework for Universal Health Coverage, Sousa et al, 2013A comprehensive health labour market framework for universal health coverage. *Bulletin of the World Health Organization*.November; 1;91(11):892-4 (http://www.who.int/bulletin/volumes/91/11/en/ )

(51) Bossert T. Bärnighausen T., Bowser, D., Mitchell A., Gedik G. 2007. Assessing financing, education, management and

**Assessment of the various dimensions of feasibility**, which all have an impact on the success/failure of planning :

- *Economic: what is the fiscal space to support the costs meeting future HRH needs?*[52]
- *Legal: are there legal obstacles to changes in scopes of practice, to the creation of new cadres?*
- *Technical/ Organisational: Soundness (validity) of data and information on which planning is developed; availability of resources (information systems, research infrastructure) and competencies (policy analysts, statisticians, managers, technicians) for implementation*
- *Political: Support of political (ministries and government agencies) and other stakeholders (education institutions, professional organisations, civil society groups); tools for stakeholders analysis are available*
- *Social: does the planning approach include a mechanism to test the acceptability of proposals to come by health professionals and users of services?*

**DURING THE COURSE OF THE PROCESS**

AT VARIOUS STAGES OF THE PLANNING PROCESS, IT IS IMPORTANT TO CHECK WHETHER THE PLAN IS ON TRACK. THIS CORRESPONDS TO ADMINISTRATIVE OR NORMATIVE EVALUATION WHICH CONSISTS IN:

**Comparing** the **observed** changes to the **expected** ones

**Looking for the explanation of the differences**? Are these intrinsic to the planning process (wrong assumptions, technical failures, poor management) or to external factors (unexpected economic or political change)?

**Deciding** whether a **change** of course is needed?

policy context for strategic planning of human resources for health, Geneva, World Health Organization www.who.int/hrh/tools/situation_analysis/en/index.html .

(52) The following report focused on lower income countries, but its recommendations are applicable at all levels of economic development: McIntyre D, Meheus F. Fiscal Space for Domestic Funding of Health and Other Social Services.Centre on Global Health Security Working Group Papers, London, Chatham House (The Royal Institute of International Affairs). 2014

**AFTER A PLANNING CYCLE (EX-POST):**

**AN ANALYSIS OF RESULTS CAN BE CONDUCTED TO ASSESS THE DIMENSIONS OF:**

**Effectiveness** (the plan worked and helped reach service and health objectives)

**Efficiency** (the plan helped optimize the utilization of the health workforce),

**Satisfaction** of health professionals and of users of services.

Research can help explain what worked, what did not work, which lessons can be learned, which practices proved good and may be recommended

## 2 - To what extent does the effectiveness of health workforce planning depend on technical factors (competencies of planners, quality of data) or on political decision-making?

Effectiveness of planning corresponds to obtaining satisfactory results, given the improbability of obtaining the exact expected results as planners cannot control all variables that may affect results. Technical capacity and political support are equally necessary but not sufficient on their own:

- *Technically solid health workforce planning requires access to valid, updated and comprehensive data and information, the capacity to analyze it, to design plausible and feasible scenarios. Planning can be excellent in technical terms, but it will not change reality if it is not politically supported by influent actors in (Ministry of Health, regulation agencies, professional organisations) and beyond (Ministries of Education, Finance, Public Administration, Regional institutions, e.g. European Commission) the health sector.*

- *Political decisions can translate plans into reality, but for change to be effective, decisions need to be based on solid information about the baseline situation and on the best available information on the possible evolution of population needs, of the organisation of services, and of the health workforce itself (labour market dynamics), which technically competent planners can provide.*

## 3 - Is it possible to pursue long-term objectives in developing the health workforce?

It is well established that health workforce development is a long-term process.

- *Decision taken today may produce their results in 5-10 years' time. This is the case when an education reform (shift to problem-based learning) or a new service delivery model*

*(primary health care) or a new service delivery model (primary health care) is launched, a decision is made to expand the functions of an existing cadre (nurses in England), or a plan to scale-up the production of a category of health providers (family physicians in various countries).*

- *Continuous support from the political decision makers is therefore needed over a time span that goes beyond the typical political cycle of 4-5 years.*
- *Continuity is important, but so is flexibility to adjust the planning process as new information becomes available or unexpected changes occur, which is likely to be the case when planning is for 10 years as seems to be a good practice[53].*
- *It is easier to pursue long-term HRH development objectives when the responsibility for planning is in the hands of an independent agency, preferably accountable to Parliament rather than to a ministry.*
- *Building social support within and beyond the health sector, from professional organisations and education institutions to civil society can then help maintain the pressure on political decision-makers even when power changes hands.*

## Conclusion

To be effective, planning must be technically solid and politically supported. It is as much an art as a science. Planners need to understand the dynamics of the health labour market and to have the competencies to analyze and use data and information to propose credible plans, well aligned on policy goals, and at the same time to understand the political process of making and implementing strategic decisions.

(53) (2010) Dussault G., Buchan J., Sermeus W., Padaiga Z., Assessing future health workforce needs, Brussels, European Observatory on Health Systems and Policies, http://www.euro.who.int/__data/assets/pdf_file/0019/124417/e94295.pdf

# *TO SET TARGET OF HWF PLANNING - GENERAL PRINCIPLES AND DUTCH EXPERIENCE*

**Author: Victor Slenter**

*In the Health Workforce planning there are basically two dimensions to consider:*

1. *the targeted quantities for any health profession*
2. *the year in which these set quantities are to be accomplished.*

The **first dimension** could be expressed in working full time equivalents or in headcount. The expression in full time equivalent is important because in most countries there appears to be a gender difference in average working FTE between males and females that changes very slow. Females tend to work less fte on average than man. In combination with an expected feminisation of the health workforce this will augment the number of students required to enter educational programmes.

The **second dimension** is the biggest challenge in most cases. Most health professions require a prolonged education period, and in case government wants to implement new policies there is also a lead time due to all the legislative hurdles that have to be passed before any change can be started. Therefore, any Country commencing with health workforce planning has to dampen the expectations on the short term, e.g. the first 6 to 10 years. The implementation of a new policy will take at least one year. If a new policy implies creating additional educational and training facilities is can even take more time before this policy can be implemented.

After implementation, the duration of the training is the major contributing parameter. There is a vast range of education years for the different professions, from 4 years for a nursing profession to 12 years for a fully trained clinical specialist. Under normal circumstances it is therefore for the latter advised to create a certain stock of medical graduates to enable earlier responses to shifts in the need for medical specialists. In the Netherlands, this stock of medical graduates is sufficient to fill all training places for one year. By this means the response time to changes in need for medical professions can be relieved from 12 to 6 years.

If a period of 6 to 7 years is considered realistic for any policy to result in more newly registered health professionals entering the work force, what would be a feasible time

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to expect noticeable changes in the workforce? In the Netherlands it is considered realistic to use a short term of 5 additional years and a long term of 12 years for changes to be accomplished. The total time frame is therefore usually 12 to 18 years from the present time, where the 12 year timeframe is considered an intermediate one. This may seem very far away, but by starting HWF planning now countries will gain insight in the effects of changes in parameters or strategies besides training more professionals. This gives them the opportunity to adjust their training policies timely.

Member states that expect or endure substantial differences between the need and the supply of health workforce should consider other (temporary) means of increasing the health workforce on a shorter time span. There are a number of options on the time dimension and a number of options on the quantity dimension. For the time dimension, there is an annual flow into the stock of health care professionals and an annual flow out of the stock. The inflow into the stock can be augmented instantaneously by lowering the attrition e.g. improving the quality of the training. An even more radical approach is by reducing the total duration of the education, e.g. to the European standard. This will cause a substantial single extra flow of medical specialists into the stock.

Besides the inflow in the stock government can develop policies to postpone outflow out of the stock. These policies will also have an instantaneous effect on the total number of FTE available for the health workforce. Policies that might be considered are an increase of the actual retirement age for the health workforce and/ or relieving work stress in order to prevent professionals from leaving the health workforce early, be it into another profession or into another country.

## Setting differences between goals for different professions

*It is common to set different goals for different professions on both the dimension time and the dimension quantity.*

It is possible that there are differences between professions on the **dimension "quantity"**, considering the need and the supply of the population. In circumstances where there is a chronic shortage of supply in a specific profession there evolves a tendency of other, adjacent professions to fulfil those needs as best as they can. A shortage of gastroenterologists can be partially resolved by enrolling more general

internal medicine physicians, a shortage of radiotherapists can be partially resolved by hiring more radiologists, a shortage of surgeons can partially be resolved by having general practitioners doing minor surgery procedures. This type of work/ time shifts between two academic professions is called horizontal substitution. This may cause differences in goals set for the different professions. In the Netherlands, emphasis is placed on a shift of work towards outpatient care, performed by the general practitioner. The corresponding quantitative goal is adjusted downwards for the workforce of clinical professionals and upwards for the workforce of general practitioners.

The same mode is practised in vertical substitution, from an academic profession to an applied sciences profession. Nurse practitioners and physician assistants are able to relieve the medical doctors partially from time-consuming protocoled work. Because the training to become a nurse practitioner takes only 5 years whereas the training to become a medical specialist in total may take up to 12 years it is advantageous to implement a strategy that stimulates the deployment of nurse practitioners. This will lead to a higher target for the nursing workforce and a more modest target for the medical workforce. This strategy is the final (and most discussed) one in possibilities to shorten the time elapsing between implementing a strategy and observing results in the work force.

Further, looking at the **dimension "time"** there may be differences for the different professions. The present balance between need and demand could be different for nurses, midwives, pharmacists, dentists, and medical doctors. Anyway, this does not have influence on the long term goal of reaching balance between need and supply for each profession, but it may have an impact on the pace in which the goal has to be reached. In case of slight (<3%) differences between need and supply a long term time frame of 18 years may be perfectly suitable. In cases of major differences between need and supply the time frame of 12 years will be the absolute maximum for measures to be taken in order to accommodate need and supply. For nurses and midwives an even more comprehensive time frame of 10 years might be considered. The average training duration is four years, so a 10 year time frame plus a one year introduction will allow for 5 years attaining balance between need and supply.

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## Goals have to be Specific, Measurable, Acceptable, Realistic and Timed (SMART)

- *The goal has to be specific in at least the two named dimensions*
- *The degree of acceptance of a set goal is crucial*
- *The goal has to be realistic from the perspective of the health field stakeholders and from the perspective of the government*

"By the year 2025, in Netherlands there will be 12.000 fte working general practitioners". We will attain this goal by permitting 720 medical graduates as of 2015 to enter vocational training to become a general practitioner each year. This is an example of **specific, measurable**, and **timed** goal. In most cases however, these are not the problematic letters in the word. The missing letters are the "a" for acceptable and the "r" for realistic.

The degree of **acceptance** of a set goal is crucial for the chances of reaching it. In most health professions, part of the education and training is done in the actual health settings. Broad acceptance of the goals by health (teaching) institutes and (teaching) health professionals is vital to obtain cooperation in case of changing numbers of students that have to be trained or otherwise facilitated. The institutes are academic or applied sciences universities and academic or general hospitals that have their own research facilities. If they do not accept the set goals they will hamper the planned efforts by not enabling the set number of students to start (or continue) with their training programmes. The health professionals, especially in the case of medical doctors, are crucial in teaching and coaching medical graduates during their training to become a medical specialist, as it is a hands-on training. If their scientific associations disagree on e.g. the used vocational parameters they will disagree on the set goal.

Basically, the government and the health field have the same objectives. Both parties want an adequate health care system that takes care of the needs of the population. Both parties realize that an adequate health care system can only thrive when the health workforce is adequately staffed. There can be differences in opinion on the operationalization of "adequately staffed" in terms of FTE. It is helpful to create room for this discussion to be held by using a number of different scenarios in the planning. By choosing the two most likely scenario's, consequently, the "numbers needed to train" will be within a certain range. This will facilitate the discussion and the acceptance because is visualizes the "safe" margins irrespective of the underlying scenario's.

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The "r" for **realistic** is more of a challenge. The goal has to be realistic from the perspective of the health field stakeholders and from the perspective of the government. For the latter the financial dimensions of the set goal are in most cases the limitation. For the stakeholders in the field it is the number of practical solutions they experience for the problems that encompass changes in the number of students to be trained. The problems range from the training and hiring of additional professors up to the founding of an additional university. In most cases, training institutes opt for gradual changes, giving them more time to adapt to the new circumstances.

## Goals shared or agreed with stakeholders

- *The goals will have to be agreed upon by the stakeholders*
- *To reach agreement on the set goals, different methods can be used*
- *Participation of the stakeholders in the process of setting the goals is advisable*

Stakeholders may differ between member states but generally this will include the training institutes (universities, both academic and of applied sciences, academic, general and specific hospitals, nursing homes, revalidation institutes etc.), the professionals themselves in their function as teacher, researcher, and potential colleagues, the health insurance companies and the general public. The general public can be represented either by government or by patient organisations.

As long as the goals are still global, sharing the goals does not create any problem. Every organisation and professional wants that the needs of the population are met by an adequate supply of professionals in the future. The problems arise when the goals become smarter. In this stage there will be comparisons made with the historical numbers entering training. In practice, the goals will have to be agreed upon by the stakeholders.

For the education and training institutes there are two major derivative questions: will there be changes in the number of needed training institutes and will there be changes made in the distribution of the trainees between the different institutes? This will influence the discussion. For the professionals themselves the discussion will be more vocational oriented. Is the number needed to train different form the present number? Are there enough professionals willing and able to train the student/ graduates?

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The issue of having enough training institutes and enough teachers is mainly depending on the cooperation of the training institutes. They are the ones that can estimate how realistic the set goals are in terms of changing the capacity. Of course, the government has to facilitate these changes. Government cannot force the institutes and professionals to cooperate. This leads to the conclusion that agreeing upon the set goals by the stakeholders is fundamental for swift changes to be made.

For the medical specialists, the first step to be taken is to assess the number of medical graduates that are going to be needed. This number can be based on the overall number of medical specialists that are going to be needed in 12 to 18 years. In the first years, a breakdown into individual specialisms is not even necessary to accomplish the number of medical graduates needed. There is ample time to make or improve this breakdown in the period during which the medical students do their training. An agreed set goal on the (extra) number of medical students can ease the way for agreeing upon set goals for the different medical specialists.

The first step in getting the stakeholders to share and agree should be the joint building and agreeing upon the model that will be used by the health workforce planners. To reach agreement on the set goals, different methods can be used. We advocate participation of the stakeholders in the process of setting the goals. They are unmistakably involved in getting all the supply parameters and most of the parameters concerning the working process. They also have expertise on the needs, as far as demographic changes, epidemiology, and cultural changes may be involved. Their expertise is valuable in approximating the parameters as close as possible.

## Transparency and communication of the goals and of the reached results

- *Regular communication on the topics under revision and on monitor results of the progress made is essential to keep stakeholders involvement guaranteed*
- *The planning instrument has to be at the disposal of all stakeholders in order to create a level playing field*

In most cases there is only a limited attention span in public for matters concerning health workforce planning. It is best to widen these attention spans by being as transparent as possible. This means that evaluations and contra-expertise of the model and the results should be organised and communicated. Once the model is approved by an independent

auditor, the results of the model become important. Most people are not interested in the modelling itself or the calculations that have to be done, but merely in the results and the corresponding goals.

Communication on the set goals should not be to frequent. There really is not that much of a change in the workforce to be expected in 3 months when training programmes last 4 to 6 years. For the stakeholders however, regular communication on the topics under revision and on monitor results of the progress made is essential to keep their involvement guaranteed. The monitoring should include the core numbers of the supply side: number, gender and FTE of professionals working, number leaving the workforce, number entering the workforce, number entering training, dropouts from training, numbers entering and leaving the country. These data will be the monitors of the reached results for each of the incidental and structural policy measures that are taken. They should be accessible by a website. Besides the supply side, data on policies having impact on the set goals should be included in the communication.

The planning instrument should also be used as an instrument to aid policy makers in assessing the financial and workforce consequences of newly developed policies. This means that the instrument has to be at the disposal of all stakeholders in order to create a level playing field. As a matter a fact, the planning instrument does not always has to be the only input for the set goal. If the results from the planning instrument are not realistic there have to be adaptations made to conclude with a realistic goal. If the planning instrument is constructed correctly, it will take into account the decisions made earlier and adapt correspondingly for the next period.

The reached results should be communicated to the government, the public, and the shareholders. There are many processes operating in the health field, so one should not be too eager to claim any positive changes to be due to the planning process. It can be advantageous to monitor a few trends that can tell something about the effects of additional supply, e.g. changes in trends in waiting times or job vacancies. Previously reached results should always be mentioned in new health workforce planning goals.

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## Decision making process: goals set by one or many ministries

- *Usually there are at least 3 ministries involved in setting of the goals*
- *The health workforce planning team should provide an advice to the ministries*
- *In the unlikely event that ministries do not reach consensus on the goals, it's important that the other stakeholders intervene in order to reach an equilibrium between needs and supply*

The setting of the goals for the health workforce planning by government is never accomplished by one ministry. At least, there will be 3 ministries involved: the ministry of Health, the ministry of Education, and the ministry of Economic Affairs. Depending upon the importance of changes being made the ministry of Labour can also be a stakeholder. Usually, the ministry of Health will be in the lead but there may be financial or logistical constraints placed by the other ministries. However, this may differ between member states

This leads to the following statement regarding the unravelling of the goal. The health workforce planning team should agree on an advice to the ministries. This advice should be smart and authentic, without taking into consideration any financial or quality constraints. The ministry of Health then has its own responsibility to translate the advice in a set goal, together with other ministries. This goal may differ from the given advice. The ministry can use its own discretion to decide on promoting certain strategies by training more students than advised by the planning team. By splitting the advice and the set goal, the advice can keep its imago of being independent, professional, and scientifically correct. Otherwise, the planning process will lose its basis of trust amongst the stakeholders. The process of formulating the advice, based on the planning data and the agreement of the stakeholders, should be kept apart from the process of setting the goals, which is usually done by the ministries.

In some cases there could be **contrasted goals by different ministries**. This is a very worrisome scenario. However, the phenomena of contrasting goals will only very rarely occur. In the unlikely event that ministries do not reach consensus on the goals, the other stakeholders will try to intervene because the final goal to reach an equilibrium between needs and supply is jeopardized. In case these interventions are not successful, the stakeholders will have to adapt a strategy of their own. The chances that they will base their strategy at least partly on the given advice -or do not change training

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numbers at all- are more than likely. In both cases the advice still can bear its original function.

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## *HEALTH WORKFORCE WAGES*

**Author: Milena Santric Milicevic**

This desk-search study intends to be informative for purpose of health workforce planning and forecasting and illustrative by drawing on experiences from countries with developing and developed market economies countries. Five lines of the presented paper are not meant to be exhaustive. The paper starts with description of the usual role of wages in policy actions to balance the supply and demand for health care professionals. The following part of the text explores the effect of wages in the dynamics of health professionals labour market. In view of that, expected wage effects on labour market supply side were discussed. Than, in the focus were wage effects on labour market supply side encompassed with some countries' experiences. Finally, the paper moves to explore the potential of using wages in models for health workforce planning and forecasting, by drawing on mechanisms to overcome obstacles related to quality of health workforce expenditures data and it concludes with brief descriptions of several models for health workforce planning and forecasting.

**Inclusion of wages as a variable may affect the future supply and demand for health professionals.**

*Ono T, Lafortune G, Schoenstein M, 2013*

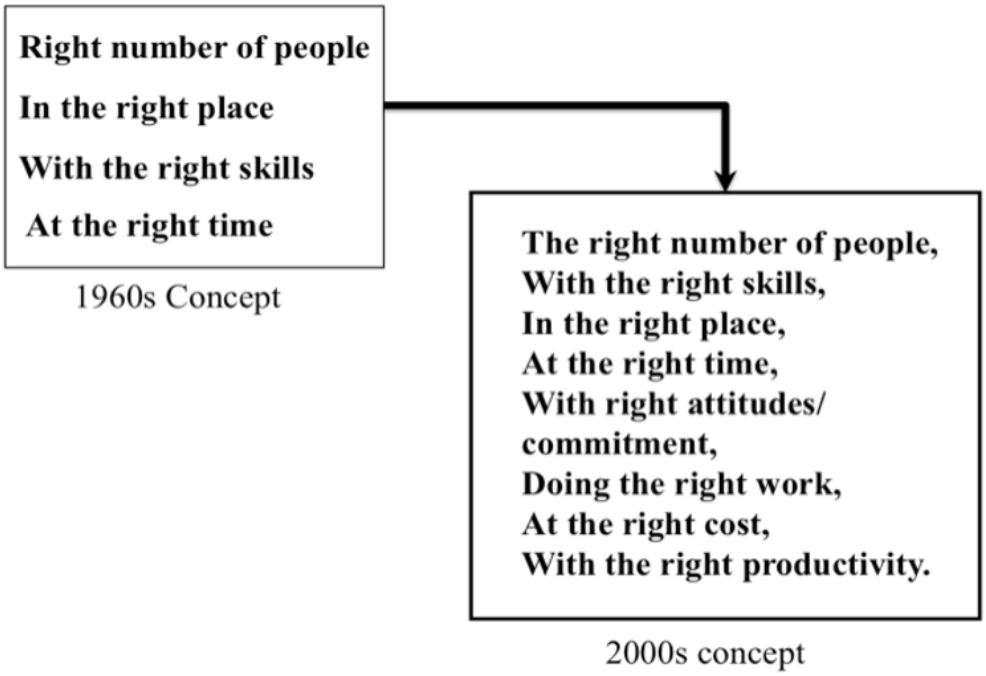
Among global factors in the last three decades, macroeconomic problems and crises have been important causes of public health sector reform usually by imposing fiscal and structural stabilization measures.

In such situation, financial decisions taken at health sector level (or and other sectors policy) are manifested in changes of working conditions (i.e. decreasing salary and benefits, altering the career prospects, extend of retirement age, changed workload, capital investments and other medical resourcing)[54]. In turn, those financial modifications determine the dynamic of components of health professionals labour market including fluctuations of the total workforce stock and flow, skills-mix and distribution, labour relations, motivation and productivity. Those changes variously affect performance dimensions of health system - equity of access to services, service effectiveness, efficiency and responsiveness; and capacity of financial protection against

(54) Buchan J, Wismar M, Glinos IA, Bremner J, editors (2014). Health professional mobility in a changing Europe. New dynamics, mobile individuals and diverse responses. Copenhagen: World Health Organization, EuropeanObservatory on Health Systems and Policies.

the impoverishing effects of ill health[55].

Accordingly, for all health care stakeholders the central issue is how to reduce cost of the health workforce, which generally consumes 60-80% of the annual health expenditure in the large majority of country health systems, while maintaining or improving both the quality of service and the development of the service itself. In case of financial interventions, imbalances in supply and demand for health care professionals characterize health workforce labour market, such as surpluses or shortages. As a response in some countries, the health workforce planning process moved away from traditional health workforce planning with limited attention to costs or efficiency, to strategic one in which staff numbers, mix and deployment are the central focus.




*Changing concepts of HRH planning*

*Source: Hornby P, SantricMilicevic M. Human resources in health planning. In: Basics of health care system management. Health management guides, readings and references. Training in Health Service management in Serbia Belgrade: Ministry of Health of the Republic of Serbia, 2011; p.109-127.*

Effects of health workforce surpluses and shortages are not possible to be solved neither by sole year-to-year planning nor isolated health workforce supply- nor by demand side measures. What has become clear is that disorders in supply, demand and mobility of health professionals have to be addressed in a comprehensive approach that includes

(55) Idem

both strategic and tactic actions. For example, health workforce surplus because of decreased demand for health workforce (due to economic measures to control health expenditure growth) are commonly addressed in tactic mode by downsizing, hiring freeze, pay-freeze or/and reduction and demotions, and strategically by early retirement, re-profiling, work sharing, and private sector and migration encouragement.

However, health workforce surplus, because of overproduction (manifested usually in unemployment), can be addressed tactically by extension of service packages or retirement age, and strategically by raising the criteria for training enrolments, reducing training capacities and increasing qualification standards. If not monitored and controlled, after a certain period the effects of those measures may turn the surplus into shortage of health professionals. Shortage of health professionals because of failure at the supply or demand side of labour market is usually addressed by short- or long term actions such as the following: turnover reductions; increase in the remuneration/ benefits; hiring temporary employees and retrained transfers; enhancement of workers internal mobility; recruitments and outsourcing; overtime work; reduction of service packages; improvement of reputation and increase of training capacities including institutions, quotas and access to education.

Again, if not planned and evaluated, measures to resolve health workforce shortages can turn into surplus after a while, and may produce shortage in less advantageous work environment (manifested in rural and remote areas to urban moves, public sector to private outflows, primary to hospital care transfer). In addition, it can also distort health professionals choice for profession and career (by going for higher wages and greater prestige i.e. generalists versus specialist occupation).

Strategic health workforce planning and projections has a purpose to rationalize abovementioned health workforce policy options recommended to match expected health workforce supply and requirements with regard to financial feasibility and the overall health plans. It assumes benchmarks to determine the relative success of any policy measure aimed at addressing a projected shortage or surplus at health workforce labour market.

**The role of wages in determining the supply and demand of workers in the health sector**

*Ono T, Lafortune G, Schoenstein M, 2013*

In economic theory, health care labour market equilibrium occurs when demand and supply for health professionals are equal[56]. Demand for health professionals derives from the demand for health services (a proxy measure of health needs), while the health workforce supply side is linked to the market for health professionals training. That equilibrium in health system means at least determining and assuring the provision of right skill-mix of health professionals with available financial resources (see Diagram 1). Number of factors may (de)stabilize the balance between needs, demand and supply of health professionals and skills. For instance, demand for health professionals tends to increase as populations and economies growth, as levels of urbanization, private and population mobility increase, with investment in health facilities and in new health technologies, with unexpected environmental and epidemiological emergencies and growth of private health care sector.

Changes in wages and vacancies are key indicators in health professionals labour market[57]. In general, their increase indicates a shortage, and vice versa, when their decrease indicates a surplus of health professionals. In case of health workforce surplus, reductions in wage rates are not always easy to implement, in particular if they were already low, because of workforce resistance. Instead, the response may be to evade or delay wage payments, and by that, encouraging private or other sectors to compete for health professionals. In case of health professionals shortages, if wages are not permitted to increase enough to remove them, then the vacancies are the result of low wages rather than of a health workforce shortage.

A labour market approach defines how many workers are employed and at what wage level. Mathematically, an overall measure of the responsiveness of the labour market to changes in wages is the wage elasticity of health professionals employment - E. It points to the needed percentage increase of wages to increase worker employment by a certain percentage. (E= % change in employment / % change in wages). The E equals 1 when percentage change in employment generate adequate percentage change of wages. Elasticity below 1 is pointing at wage per cent increase insufficient to yield required health workforce employment. Based on a health service demand analysis, one might observe how much of a wage increase is required to generate the necessary number of health professionals at the market in order to satisfy health care requirements.

(56) Scheffler RM (2012). The Labour market for human resources for health in low- and middle-income countries. Human Resources for Health Observer 11. Geneva: World Health Organization.

(57) See above annotation n. 53

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When health labour markets do not follow labour market forces, they are at risk to fail. Often, it is the case when government regulates or small number of employers dominate the health workforce labour market, causing the market to behave differently from a competitive market. For instance, in case of health workforce shortage, the increasing wages to address it may have a big effect on overall wage costs, thus, a monopsonistic employer may be reluctant or could take a long time to adjust increase wages to remedy a shortage. For that reason, the calculation of health workforce demand is not equal to the calculation of health professionals based on health needs. A symptom of market failure is the presence of "ghost workers" in public sector. Those low motivated and unproductive workers draw salaries regardless of their attendance and often decide for dual practice. The remedy in this case would be to link health professionals remuneration with their productivity, and to tie productivity growth with a wage raise[58].

By understanding the interplay of demand and supply components of labour market, wages potential and of other compensation is recognized to influence on the number and location of health professionals deployment; by changing wages and other benefits one also can change the health workforce supply and demand across time.

**Wages expected influence on attractiveness of different fields of study and occupations, the choice of practice location, as well as retention rates and retirement patterns**

*Ono T, Lafortune G, Schoenstein M, 2013*

Wage related payments, such as annual income guarantees, or bonus payments are used to compensate for less advantageous and challenging working conditions in rural and underserved area[59].

They can be set at different points of the career of a health professionals in rural postings this areas. The kind of financial incentive (salary, fee-for-service payments, capitation-based payments) and its dynamics depends on the outcome that was meant to be guaranteed[60]. For example, it could be for establishment and the first two years

(58) Idem

(59) WHO (2011). Technical Meeting on Health Workforce Retention in Countries of the South-eastern Europe Health Network Bucharest, 28-29 March 2011. Copenhagen: World Health Organization and Ono T, Schoenstein M, Buchan J (2014). Geographic Imbalances in Doctor Supply and Policy Responses", OECD Health Working Papers, No. 69, OECD.

(60) See annotation above: Ono T, Schoenstein M, Buchan J (2014). Geographic Imbalances in Doctor Supply and Policy Responses"

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of a practice in an underserved region (in France and Denmark), or during the entire career in underserved areas (in Canadian province of British Columbia). Also, it could be at the end of the career to improve health workforce retention and to postpone retirement (in Alberta, Canada and in Germany), or to smooth over retirement and replacement.

Financial incentive could be based on a fixed list size of patients and linked with a return-of-service obligation of few years (in Denmark), based on the characteristics of their community (in Canadian province of British Columbia), when they meet certain quality standards (family doctors in the Republic of Moldova), or measures of population deprivation related workload and a rurality index to assign overall weightings to patients (England and Wales)][61].

Monitoring and evaluation of the effect of financial incentives may be difficult for various reasons. Frequent reasons are that instead of on source and one kind of financial incentive there is a package of various incentives, or multiple grants from different sources at the same time, which are making difficult to delineate variety of payment mechanisms across a range of institutional arrangements.

Available evidences report mixed effects of direct financial incentives to practise in rural areas or placing medical graduates in developing and in developed countries, ranging between positive and inconclusive results. For example, in Australia financial incentives succeeded to sustain a 65% retention rate of long-servicing physicians in remote and rural areas five years after financial incentives[62]. Nigerian financial incentives scheme in two years attracted 42- 46% of health professionals to rural areas[63]. Some South-eastern Europe countries have also moderately increased the number of general practitioners and nurses in rural or remote areas by offering them financial incentives[64].

Financial incentives besides education, regulation, and personal and professional support are included in WHO Global Policy recommendations evidence-based to be

(61) See annotation above: Ono T, Schoenstein M, Buchan J (2014). Geographic Imbalances in Doctor Supply and Policy Responses" and WHO (2012). Attracting and retaining health workers in the Member States of the South-eastern Europe Health Network A policy brief. Copenhagen: World Health Organization.

(62) WHO (2010). Increasing access to health workers in remote and rural areas through improved retention. Global policy recommendations. Geneva: World Health Organization.

(63) Idem

(64) See above WHO (2012). Attracting and retaining health workers in the Member States of the South-eastern Europe Health Network A policy brief

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effective in improving attraction, recruitment and retention of health professionals in remote and rural areas[65]. Its quality is low, but supportive evidence implies for the long-term effects and they have to outweigh the opportunity costs of living in rural areas, and that implies high recurrent costs and combination with other interventions.

Financial incentives are frequently used as a "first-aid" measure to address acute health professionals retention in rural regions[66]. They are strongly recommended to be used to increase retention rates and for only short term, but are less effective for recruitment, since staffing levels remained low in these areas across time. Strongly recommended was to provide bundle of retention strategies in order to successfully attract and retain health professionals in remote and rural areas[67].

**Wage level can be expected to influence the number and mix of health** professionals **that can be employed under any overall or sector budget constraints**

*Ono T, Lafortune G, Schoenstein M, 2013*

The level of remuneration and other recurrent costs is important determinant of the number and skill-mix of deployed health professionals, particularly in countries that have global budgets for public spending on health. Particularly in those countries, evidences suggest that crisis-related financial measures led to reduced intake in medical schools numbers and retirement benefits[68]. In addition, some health systems extended retirement age, diminished job and career prospects, which has in turn increased outflow of health professionals[69].

For example, in Spain, many physicians opted for early retirement after announced changes in penalties for early retirement, out of which some went to the private sector. Due to salary and promotions freeze and authorized only 50% post-replacement, some

(65) See above WHO (2012). Attracting and retaining health workers in the Member States of the South-eastern Europe Health Network A policy brief and Dieleman M, Kane S, Zwanikken P, Gerretsen B (2011). Realist review and synthesis of retention studies for health workers in rural and remote areas. Incresing access to health workers in rural and remote areas, Technical report 1. Geneva: World Health Organization.

(66) See above annotation n. 51

(67) See above annotation n. 59

(68) See above annotation n. 51

(69) Idem

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evidence pointed to increased emigration of nurses and physicians[70]. In Estonia and Poland, the significant fall of number of health professionals applying for recognition of qualifications coincided with salary increase and improved working conditions, introduced in the preceding years to decrease move abroad and retain the active workforce in the country[71].

Similarly, Lithuania introduced structural wage increase for medical professionals (by 220% in the period of 2006 and 2009) in order to keep medical professionals in the system after EU entry in 2004[72]. However, financial incentives alone were not sufficient to keep health professionals in the domestic market. Ghana retaining system also failed due to introduction of relatively low "bonding schemes" requiring health professionals to serve for a number of years after graduation before leaving the Ghana health service, otherwise pay back[73].

**Any current or future gaps (shortages or surpluses) of different categories of health care providers can also be expected to be mitigated through wage adjustments, though these adjustments were almost never taken into account in the models.**

*Ono T, Lafortune G, Schoenstein M, 2013*

All models for health workforce planning and projection require data on health workforce expenditures to make meaningful policy recommendations. Policy questions, feasibility and costs of data collection and processing determine the number and type of these indicators and the level of data disaggregation to be used in the model. A minimum set of indicators for monitoring expenditure on health professionals consist of[74]: total and per capita health workforce expenditure, GDP proportion of total

(70) Idem

(71) Kautsch M, Czabanowska K (2011). When the grass gets greener at home: Poland's changing incentives for health professional mobility. In Wismar M et al., eds. Health professional mobility and health systems. Evidence from 17European countries. Copenhagen, WHO Regional Office for Europe on behalf of the European Observatory on Health Systems and Policies: 419–448 and Saar P, Habicht J (2011). Migration and attrition: Estonia's health sector and cross-border mobility to its northern neighbour. In Wismar M et al., eds. Healthprofessional mobility and health systems. Evidence from 17 European countries. Copenhagen, WHO Regional Office for Europe on behalf of the European Observatory on Health Systems and Policies: 339–364.

(72) Tjadens F, Weilandt C, Eckert J, MoHProf consortium (2012). Mobility of health professionals. Health systems, work conditions and patterns of health workers' mobility in, from and to 25 countries at the crossroads of a major crisis. MoHProf summary report. Bonn: WIAD.

(73) Idem

(74) Hernandez P, Tan-Torres T, Evans D: Measuring expenditure on the health workforce: concepts,data sources and methods. In. Mario R Dal Poz MR, Gupta N, Quain E, Soucat ALB editors (2009). Handbook on Monitoring and Evaluation of Human Resources for Health with special applications for low- and middle-income countries. Geneva: World Health Organization.

expenditure on health, government expenditure on health workforce as a proportion of general government expenditure on health, and government expenditure on health workforce as a proportion of recurrent general government expenditure on health. Besides those data on health workforce expenditures, models have to use estimations of: economic growth (average predicted annual percentage change in GDP; total public health sector expenditure, public health sector expenditure on personnel/ non-personnel expenditures), projected changes of remuneration and other recurrent costs (salary bands for each type of staff, in the annual real wage costs and other non-wage compensation (health benefits, housing moving expenses, pension, job security) and estimated private sector expenditure in health care and personnel costs, over the planned period.

Data validity directly determines model accuracy and reliability of the workforce requirements and supply projections. Accordingly, due to variety of validity related reasons, data on wages are not often used in health workforce planning, mainly because of: lack of centralized database, boundary problems to distinguish between labour resources and other activities in health care system, partial coverage of costs, inconsistent information across various data sources, differences in methodologies for collecting and processing data; and potential double-counting due to multiple qualifications or job positions.

Since remuneration of professionals in the health sector should be linked to their productivity, the latter can be used to indirectly estimate the former. To be precise, health professional, productivity is described as the relationship between the input of health professionals, such as the number of hours they work, and the health service output (number of patient visits per hour per health professional over a period of a week or a month, days spent in hospital and other encounters). By using "calculation square"[(75)], total earnings represent annual earning multiplied by number of jobs or, it can be obtained with multiplying of hourly wages and paid hours. To get annual earnings, hourly wages are multiplied by paid hours per job. In addition, paid hours represent the product of number of jobs multiplied by paid hours per job.

The search for data on health workforce expenditures should include multiple sources. To name some: routine administrative records (employment registries), social health insurance records, budgetary records and others earnings statistics, periodic labour

(75) Van Polanen PV. Health labour accounts and the system of national accounts. Presented at the fifth meeting of the Eurostat Technical Group on Health Care Statistics, Luxembourg, 19-20 June 2006.

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force and other household surveys and censuses, professional regulatory bodies, business and facility registries, book keeping records of private facilities; sickness absence and seasonal workers database; published studies, reports and unpublished information from the ministries of health, education and finance. However, in the absence of reliable data, professional judgement and estimates of key stakeholders may be required. WHO has developed some documents to strengthen health information system (A System of Health Accounts, the Guide to producing national health accounts and other)[76].

The process of simulation is the major tool for assessing the potential impact of various changes on future remuneration for health workforce. Deterministic models assume that an outcome is certain while stochastic models allow for the introduction of random changes in variables and reveal the most likely outcomes and the most robust array of inputs. A range of tools and resources exists to assist countries in developing a national health workforce strategic plan[77]. Examples of models that used wages as a variable in health workforce projections are listed briefly in chronological order:

- *WHO Simulation models for health workforce planning, developed by Thomas L. Hall in 2001, explores consequences of alternative policies, includes alternative scenarios and sensitivity analysis to compare input costs and output effects and identify those input variables where errors are likely to have greatest impact on outputs. It also uses economic feasibility test to compare projected public sector workforce costs with projected funds to pay workforce salaries, assuming scenario is considered "feasible" if costs are within 20% of available funds[78].*

- *For most low- and middle-income countries, the WHO workforce projection model is among the most useful tools available for HRH planning and projections with viable policy proposals. It incorporates two validity tests of the projections of the stock of health professionals, first against the likely finances available and, second, against the ability of the health and education systems to produce the type and size of the workforce proposed[79].*

- *Keel University (UK) 1.0 2006 software for health workforce planning is applicable for 400-500 workplaces with option to be electronically linked to WHO HRH Strategic projection model (Box 1 presents example of its application)[80].*

- *Western Pacific Workforce Projection Tool is a software application designed to facilitate the production of comparative, cadre-specific and summary reports for health workforce*

(76) See above annotation n. 71

(77) See above annotation n. 72

(78) Hall TL (2000). WHO simulation models for intermediate-term health workforce planning. Toolkit for planning, training and management.

(79) Hornby P (2007). Exploring the use of the World Health Organization human resources for health projection model. Presented at the HRH Workforce Planning Workshop, Washington, DC, 13–14 December 2007, http://www.capacityproject.org/workforce_planning_workshop/ presentations/WHO_hornby.ppt, accessed 2014-08-24.

(80) Idem

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*projections and cost parameters[81].*

- *The iHRIS Plan software package is an open source application for human resources information systems strengthening developed by the Capacity Project with financial support from the United States Agency for International Development[82].*
- *Dewndey model used estimates of national economy forecasts and proportion of government budgets allocated to health and to personnel and annual staff training costs[83].*
- *The 2012 report from the Centre for Workforce Intelligence (United Kingdom) describes the model that used wages as a variable affecting the future supply and demand for health professional. It identified that different growth rates in public spending on health might influence the future ability to employ doctors in the NHS over the 30 years projection period[84].*

All models are consistent in that formal evaluation of accuracy, quality and impact of a health workforce planning model means its actual use, regular review and appropriate adjustments as circumstances require.

(81) Models and tools for health workforce planning and projections. Human Resources for Health Observer, 3. Geneva: World Health Organization, 2010

(82) Idem

(83) Dewdney J. The WPRO/RTC Health Workforce Planning Workbook. Sydney: Centre for Public Health The University of New South Wales, 2001

(84) Ono, T., Lafortune G. Schoenstein M. (2013), "Health Workforce Planning in OECD Countries: A Review of 26 Projection Models from 18 Countries", OECD Health Working Papers, No. 62, OECD Publishing. http://dx.doi.org/10.1787/5k44t787zcwb-en, accessed 2014-08-24.

## *ASSESSING THE CURRENT SITUATION*

**Authors: Mário Amorim Lopes, Álvaro Santos Almeida, Bernardo Almada-Lobo**

At its core, HWF planning consists in forecasting the evolution in the supply of and in the demand for healthcare services, the two main drivers of the healthcare market in any of its possible forms: a decentralized and free market; a government-sponsored insured market with both private and public run hospitals; or a centrally planned national healthcare system. A more comprehensive analysis would also factor in the skills of the workforce, their geographical distribution, the impact of technological progress, the epidemiological needs of the population or the kind of services provided, but the underpinnings of sound HWF planning is a credible and reliable forecast.

Healthcare workforce forecast models function by projecting supply, demand, or both. To determine the evolution of supply, the initial stock of physicians, nurses, or any other health care professional is considered. The current health workforce is then updated according to the evolution of the factors known to affect it, like changes in the mortality and retirement rates, migration flows, medical school intakes, etc. Forecasting demand is arguably more complex, mostly due to a higher uncertainty over the estimate of the underlying parameters. Common economic factors like the evolution of demography, income or the GDP growth rate influence the demand for healthcare services, but epidemiological factors, or needs, also play a major role[(85)]. How all these factors evolve and the interactions within the system will then be used to obtain an estimate of future supply and demand, so that a gap analysis between the two forces of the market can be conducted.

Ideally, the starting point of HWF forecasting would be to assess the present situation by performing a gap analysis of the de facto supply and demand in order to find current imbalances, as these imbalances profoundly influence the outcome of the projections. In fact, the World Health Report 2006: Working together for health estimates that 57 countries, developing and developed, already face an absolute shortage of 2.3 million physicians, nurses and midwives[(86)]. Estimates for 2015 point to a dramatic shortage of physicians in the WHO African region alone[(87)]. On a global scale, WHO estimates that at

(85) Birch, S., Sutton, M., Mason, T., & Whittaker, W. (2013). *Not enough doctors or not enough needs? Refocusing health workforce planning from providers and services to populations and needs* (pp. 1-22).

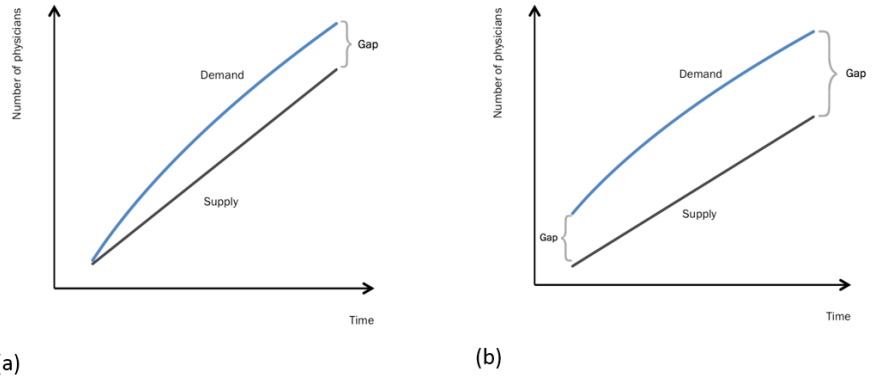
(86) *The world health report 2006: working together for health*. Geneva: WHO; 2006.

(87) Scheffler RM, Liu JX, Kinfu Y, Dal Poz MR. (2008). *Forecasting the global shortage of physicians: an economic- and needs-based approach*. Bull World Health Organ.;86(7):516-523B. PubMed PMID: 18670663; PubMed Central PMCID: PMC2647492.

least 15% more doctors are needed[88].

## Imbalances in the health workforce

From an economic perspective, an imbalance occurs when the quantity of a given skill supplied by the present workforce at a given market or government-stipulated price is insufficient to attend to the quantity demanded by patients. Such imbalance is in fact a disequilibrium between the demand for and supply of labour in the health market.




*Crisp, N., & Chen, L. (2014). Global Supply of Health Professionals. N Engl J Med, 370(10), 950-957. doi:doi: 10.1056/NEJMra1111610*

Alternatively, imbalances may also be measured by value judgment or professional determination by experts in the field, extending the economic definition of demand effectively observed or measured with the perceived biological needs of the population that ought to be attended to[89]. Such normative stance is usually not bounded by any budget constraint of either the individual agent, the insurance company or of the national healthcare system, as the objective is to pinpoint the "unmet care needs".

## The cost of ignoring initial imbalances

Evidence in several countries suggests that some are already in the presence of shortages or surpluses, but despite this growing concern, few HWF planning models actually

(88) Crisp, N., & Chen, L. (2014). *Global Supply of Health Professionals. N Engl J Med*, 370(10), 950-957. doi:doi: 10.1056/NEJMra1111610

(89) Zurn, P., Dal Poz, M. R., Stilwell, B., & Adams, O. (2004). *Imbalance in the health workforce*. Human Resources for Health, 2(1), 13. doi:10.1186/1478-4491-2-13

consider the presence and magnitude of these imbalances[90]. Instead, most models assume that the market is in equilibrium, i.e., there is no shortage or surplus of health human resources, and depart from there, which will affect the estimated gap both in the baseline year and throughout the projection period. Some models perform the forecasting so as to guarantee that current worker-to-population ratios are maintained; other models assume that demand, indirectly measured through the current levels of utilisation, will stay constant, providing no statement or assessment whether such levels of utilisation already satisfy all the needs of the population.

Regardless of the method applied, the key point is to identify current labour shortages or surpluses in the health market, as they may have a considerable impact in the welfare of the population. A surplus in the supply of medical professionals is known to lead to economic inefficiencies, misallocated resources, unemployment, inflated costs or supply-induced demand. Conversely, a labour shortage may result in lower quantity and quality of medical care; work overload of the available physicians and nurses, which may cause sleep-deprived professionals and expensive overtime wages; or queues and waiting lists[91]. All these anomalies in the health labour market may, in the end, compromise patient safety[92] and even lead to avoidable patient deaths[93].

| SHORTAGE | SURPLUS |
|---|---|
| - LOWER QUANTITY AND QUALITY OF MEDICAL CARE<br>- WORK OVERLOAD WHICH MAY RESULT IN SLEEP-DEPRIVED PHYSICIANS AND NURSES<br>- INCREASED MEDICAL COSTS DUE TO RAMPANT WAGES<br>- QUEUES AND WAITING LISTS<br>- PATIENT SAFETY IN JEOPARDY WITH POTENTIAL PATIENT DEATHS | - ECONOMIC INEFFICIENCIES AND MISALLOCATED RESOURCES<br>- UNEMPLOYMENT<br>- INCREASED EDUCATION COSTS<br>- SUPPLY-INDUCED DEMAND TO COMPENSATE FOR POTENTIALLY LOWER PRICES AND WAGES |

*Table 1 - The cost of not tackling imbalances.*

**Contrarily to a competitive market** where supply and demand tend to adjust to

(90) Ono, T., Schoenstein, M., &Lafortune, G. (2013). Health Workforce Planning in OECD Countries (Vol. 62). doi:10.1787/5k44t787zcwb-en

(91) Amorim Lopes, M.; S. Almeida, A.; Almada-Lobo, B. (2014). Handling health care workforce planning with care: where do we stand?. Journal of Human Resources for Health (publication pending).

(92) Williamson, A.M., Feyer, A.-M.: Moderate sleep deprivation produces impairments in cognitive and motor performance equivalent to legally prescribed levels of alcohol intoxication. Occupational and Environmental Medicine 57(10), 649-655 (2000)

(93) Steinbrook, R. Private Health Care in Canada. N Engl J Med 354(16), 1661-1664 (2014)

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equilibrium, with prices and wages adjusting accordingly and the market clearing, **the healthcare sector exhibits rigidities** that may preclude immediate or complete adjustment[94]. For instance, institutional and regulatory arrangements and government-fixed prices may prevent automatic price and wage adjustment, implying sticky prices; imperfect market competition under the form of monopsony, as in some countries hospitals are the single buyer of healthcare services, although empirical evidence is mixed and does not fully sustain this hypothesis[95][96], ; monopoly power of the health providers and labour unions, especially physicians, may restrict supply and impose price-fixing[97][98]; access to universities severely conditioned by numerusclausus controlled by the government; long and demanding licensure processes that create a delay in the time required to educate physicians; etc., may all prevent self-adjustment. Under these circumstances, where the market is subject to a considerable amount of intervention and rigidities, and therefore unable to adjust automatically, **imbalances are static**, requiring further intervention to promote the adjustment.

- *Institutional and regulatory arrangements preventing price and wage adjustment (sticky prices)*
- *Market concentration in the hospitals (monopsony)*
- *Monopoly power of health providers and labour unions*
- *Government-fixed numerusclausus restricting access to medical universities*
- *Long and demanding licensures that create a delay in formation of new professionals*

*Table 2 - Potential cases when the market may be unable to self-correct for shortages or surpluses of health resources.*

Considering this, it is of paramount importance to effectively **monitor the current situation and identify any imbalances** that may condition the forecasting, so as to

(94) Mavromaras, K.; Healy, J.; Richardson, S; Sloane, P.; Wei, Z.; Zhu, R. (2013). *A System for Monitoring Shortages and Surpluses in the Market for Skills*. National Institute of Labor Studies, Australia.

(95) Staiger, D.; Spetz, J.; S. Phibbs, C. (2010). *Is There Monopsony in the Labor Market? Evidence from a Natural Experiment*. Journal of Labor Economics, University of Chicago Press, vol. 28(2), pages 211-236, 04.

(96) Feldman R, Wholey D. *Do HMOs have monopsony power?* Int J Health Care Finance Econ. 2001 Mar;1(1):7-22. PubMed PMID: 14626004.

(97) Seldon, Barry J.; Jung, C.; Cavazos, R. (1998). *Market Power Among Physicians in the U.S., 1983-1991*. Quarterly Review of Economics and Finance, Vol. 38, No. 4.

(98) Mossé P., Tschobanian, R. (1999). *France: The restructuring of employment relations in the public services*. In Public service employment relations in Europe: Transformation, mordernization or inertia?London: Routlege; pp. 130-163.

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include it in the analysis. Failure to do so may give origin to valid but useless projections, as they will tend to perpetuate current imbalances. The latest report from OECD on HWF planning stresses this point as a necessary condition, although not sufficient, to obtain useful forecasting models.

## Typologies of imbalances

Imbalances may occur at several levels and are more complex than a simple mismatch in the number of professionals. To this purpose, several categories should be considered:

1. *Profession/specialty imbalances cover disproportions between different professions, like physicians and nurses, but may also expose shortages of a particular type of specialist;*

2. *Geographical imbalances reveal asymmetries between cities, regions or states, with urban-centres usually benefiting from a significantly larger workforce than the countryside. In average, the headcount may seem appropriate, but without a fine-grained analysis of the distribution of professionals, some regions may end up with an excess of human resources while others strive to fill vacancies;*

3. *Institutional and services imbalances reflect the differences in the endowments of health care facilities and services, with separate health service units providing disparate quality of service;*

4. *Public/private imbalances may assist in revealing divergences in the allocation of professionals between the private and public sector, a phenomenon ever more common in mixed economies. With disparaging wages between the two sectors, health labour tends to flow to the sector capable of providing higher wages, creating a potential deficit in the other sector;*

5. *Gender imbalances relate to disparities in the male/female distribution of the workforce, which may be a fundamental criterion in countries where the human sex ratios differ considerably.*

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Measuring imbalances in the health workforce

If labour shortages or surpluses are a critical determinant to the accuracy of HWF planning, the question of how to measure these imbalances then arises. Theoretically, such exercise should be straightforward. In practice, there is no single indicator capable of providing an instant snapshot of the health market, and so several proxies have to be used and weighted against each other to achieve an estimate of the current gap.

Some countries analyse current imbalances by incorporating data on the available vacancies for physicians in the hospital sector6. Others consider also the distribution of general practitioners in rural areas, anticipating a potential imbalance in the geographical distribution6. Alternatively, a survey of the main healthcare providers, hospitals, private-run clinics and long-term care facilities, was undertaken in order to obtain information on potential difficulties in recruiting physicians or nurses.

In other specific studies, current demand for a given speciality is estimated using three indicators[(99)]:

1. *increase in office visits in previous years;*

2. *waiting times in comparison to other specialties;*

3. *Health Maintenance Organization (HMO) benchmark on the future requirements for that particular specialty. Also, benchmarking the current situation against a needs-based estimate is also common practice in models where present imbalances are accounted for.*

*In fact, the combination of which indicators to use will mostly depend on the typology of the market and the type of healthcare system.*

*In fact, the combination of which indicators to use will mostly depend on the typology of the market and the type of healthcare system.*

Countries with a large private sector can use **economic indicators** like real wage rates and rates of return of the market as signs of abundance or scarcity. Highly paid specialties may signal a small supply and, therefore, the lack of market-driven competition; on

(99) Rizza, R.; Vigersky, R.; Rodbard, H.; Ladenson P.; Young, W.; Surks, M.; Kahn, R.; Hogan, P. (2003). *A model to determine workforce needs for endocrinologists in the United States until 2020.* J ClinEndocrinolMetab. 88:1979-1987.

the other hand, low wages combined with high unemployment rates may suggest an excess of that specific profession given current demand. Complementarily, **operational indicators** obtained from hospital units and other health facilities may also provide insightful information. Unfilled vacancies, waiting lists, surveys to the hospital board of management, hours of overtime work, etc., are all suggestive of a mismatch in the health labour market. Additionally, simple **benchmarks between regions or countries** using physicians and nurses to population ratios may also be used, although this a very unreliable comparison, as experience suggests[100].

In Table 3 we provide a list of the economic and operational indicators, along with the advantages and disadvantages of each approach. They are a critical asset to uncover potential imbalances, but complications may arise when using multiple indicators[101]. For instance, two indicators may exhibit negative correlations between them, yielding conflicting conclusions. Furthermore, the same indicator may present negative autocorrelations between observations in different moments in time, complicating its interpretation. Finally, indicators may also be changing as a response to cyclical adjustments or a temporary peak in demand, and as a result it may not correctly portray the structural trend in the long term.

In the end, these indicators do not provide a definite answer to the problem, but rather a building block on the likelihood of a shortage or a surplus to exist. Continuous monitoring and calibration may enhance the quality of the assessment. In fact, the repeated incidence may in fact suggest a distortion in the market, originating more robust results. Consider, for instance, a country where the following is observed at the same time in the health sector: rising wages; low unemployment; high or persistent vacancies; increasing use of overtime work; increasing use of temporary workers; waiting lists; increasing use of non-traditional workers (retirees, foreign doctors, etc.). These relevant indicators are highly suggestive of a shortage[102].

It is also worth noting that there is a positive correlation between health professionals density and positive health status and outcomes[103]. Such empirical evidence helps

(100) Bloor, K.; Maynard, A. (2003). *Approaches to human resources in health: an international comparative review.* Canadian Health Services Research Foundation, 1–34.

(101) Veneri, C M. (1999). *Can occupational labor shortages be identified using available data?*, Monthly Labor Review 122(3): 15-21.

(102) Richardson, S. (2009) *What is a skill shortage?*, Australian Bulletin of Labour 35(1): 326-354.

(103) Joint Learning Initiative, Human Resources for Health, 29–32.

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to support the proposition that a shortage and a surplus have different degrees of importance, as we have already stressed in the beginning of this chapter. In this sense, if an exact balance is difficult or impossible to attain, it is better to err on the side of caution and have a skilled and available workforce to attend to the needs of the population at any time rather than a shortage of health professionals. That is even more so in the extreme case of pandemics, where all the assistance from healthcare professionals is critical.

| INDICATORS | ADVANTAGES | DISADVANTAGES |
|---|---|---|
| **I. Economic indicators** | | |
| OCCUPATIONAL UNEMPLOYMENT RATE | ALMOST ALL COUNTRIES COLLECT EMPLOYMENT AND UNEMPLOYMENT STATISTICS. | DOES NOT DISCLOSE THE SPECIALTY. |
| GROWTH OF THE WORKFORCE (VS POPULATION GROWTH) | CAN BE APPLIED TO ANY HEALTH PROFESSION AND HEALTH SYSTEM. | DIFFICULT TO ASSESS IF THE GROWTH OF THE WORKFORCE IS A RESPONSE TO A PREVIOUS SHORTAGE. |
| REAL WAGE RATE | EASY TO OBTAIN FOR STATE-RUN HEALTHCARE SYSTEMS. | ONLY USEFUL FOR COMPETITIVE MARKETS WITHOUT PRICE FIXING; PRIVATE HOSPITALS WILL BE RELUCTANT TO SHARE CRITICAL BUSINESS INFORMATION. |
| RATE OF RETURN | PROVIDES INFORMATION ABOUT THE NUMBER OF SUPPLIERS AND THE COMPETITIVENESS OF THE MARKET; MAY ALSO BE USED TO COMPARE RELATIVE WAGE DIFFERENTIALS WITH OTHER LABOUR MARKETS. | HARD TO CALCULATE AND TO CONVERT INTO NUMBER OF PERSONNEL. |
| **II. Operational indicators** | | |
| VACANCIES (UNFILLED POSITIONS) | EASY TO MEASURE; WIDELY USED. | INFORMATION MAY NOT BE AVAILABLE FOR PRIVATE PRACTITIONERS. |
| WAITING LISTS | EASY TO MEASURE. | DIFFICULT TO CONVERT INTO SUPPLY NUMBERS. |

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| | | |
|---|---|---|
| OVERTIME WORK | EASY TO MEASURE AND QUANTIFY. | MAY BE A RESPONSE TO A SPIKE IN DEMAND; IT MAY REFLECT A DELIBERATE POLICY; UNDERSTANDING WHETHER IT IS A CONTINUOUS PRACTICE IS REQUIRED. |
| TURNOVER RATE | EASY TO MEASURE. | TURNOVER MAY DEPEND ON OTHER FACTORS OTHER THAN LACK OR ABUNDANCE OF PROFESSIONALS. |
| TEMPORARY WORKERS | EASY TO MEASURE. | LIKE THE OVERTIME WORK, IT MAY BE A RESPONSE TO A SURGE IN DEMAND, OR A WAY TO AVOID WORK CONTRACTS AND REDUCE COSTS. |
| LEVEL OF SUBSTITUTION | PROVIDES INFORMATION ON WHAT PROFESSIONALS ARE DOING WHAT. | VERTICAL AND HORIZONTAL SUBSTITUTION MAY BE A MANAGEMENT DECISION, NOT A LACK OF PROFESSIONALS; SOMETIMES IT MAY BE HARD TO MEASURE WHO IS QUALIFIED FOR WHICH TASK. |
| FOREIGN DOCTORS | RESORTING TO FOREIGN DOCTORS IS USUALLY A GOVERNMENT-ENACTED POLICY, SO IT IS EASY TO GET AN EXACT NUMBER. | MAY BE MISLEADING IF CONFUSED WITH IMMIGRANT PROFESSIONALS. |

*Table 3 - List of indicators that can be used as a proxy to assess current imbalances in the healthcare market*

## AN EXAMPLE: NURSES IN THE US

As an example of the application and of these multiple indicators, we provide an example in Table 4 with data collected in the United States referring to the labour market of registered nurses. In this particular case, indicators are well-aligned and exhibiting valid correlations. If vacancies for nurses are increasing, it is expected that unemployment in the sector should be reducing as well. This goes inline with the yearly growth of the population, far behind that of the population, and the low turnover rates, typically low in markets where human resources are scarce.

| INDICATORS | VALUE (YEAR 2000) | SHORT-TERM TREND |
|---|---|---|

I. Economic indicators

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| | | |
|---|---|---|
| OCCUPATIONAL UNEMPLOYMENT RATE | 13% | ▼ |
| YEARLY GROWTH OF THE WORKFORCE | 1.4% | ▲ |
| YEARLY GROWTH OF THE POPULATION | 15% | ▲ |
| REAL WAGE RATE | 23 369USD | = |

## II. Operational indicators

| | | |
|---|---|---|
| VACANCIES | 13% | ▲ |
| VACANCIES | 1% | ▼ |

*Table 4 - Imbalance indicators for registered nurses in the United States*

## SUMMARY AND KEY POLICY IMPLICATIONS

1. *Forecasting is one of the fundamental tools of sound HWF planning. For the forecasting model to be accurate it needs to properly account for current imbalances between supply and demand for healthcare services. Future initiatives in HWF planning need to properly assess these potential imbalances.*

2. *Failure to account for imbalances has several consequences, in the limit putting patient safety in jeopardy. Identifying shortages or surpluses of healthcare professionals is, therefore, critical not only for good HWF planning but also to ensure a sane and functional healthcare system.*

3. *There are several indicators that can be used as proxies to identify imbalances. Some can*

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*be retrieved from economic indicators; others concern operational activity of the health providers. Nevertheless, they should always be interpreted with care and continuously monitored, as statistical anomalies may lead to erroneous interpretations.*

4. *It can be argued that the consequences of a shortage far exceed those of a surplus. Therefore, if a policy is to be enacted, a shortage should be altogether avoided, even if it comes at the cost of a potential surplus.*

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## *DEPENDENCY OF THE HEALTH CARE SYSTEM ON FOREIGN TRAINED HWF*

**Author: Matt Edwards**

The mobility of health personnel has distinct characteristics within and between specific national contexts (OECD, 2010). It is likely to be a dynamic situation with particular factors affecting the health workforce overall[104] and potentially specific workforces.

Highlighting that this is a dynamic situation, health economies such as the United States, United Kingdom (UK), Australia and Canada have seen considerable changes over time to the flows of health workforces and their perception as destination countries to health workforces and individuals globally. In 2010 the OECD identified that:

*"For example, in the United States, the number of overseas-educated doctors passing Step 3 of the USMLE exam (the stepping stone to full registration to work as a medical doctor in the United States) has increased by 70% between 2001 and 2008. Over the same period, temporary migration of doctors has increased two-fold in Australia and by 40% in Canada. In these two countries, regulations on permanent migration for doctors have been relaxed and flows have been increasing rapidly. Inflows of foreign doctors with long-term permits have also increased markedly in Switzerland (+70% between 2001 and 2008), mainly from Germany. On the contrary, the number of new full registrations of foreign-trained doctors has been declining in the United Kingdom since 2003, when it peaked at about 14 000. In 2008, only just over 5000 new registrations were recorded."*

Historically and as seen in the late 1990's the UK has implemented significant increases of domestic health professional education and training with the aim of self-sufficiency and enabling improvements in healthcare delivery and outcomes. In 1960 the UK medical school intake was 2000, this grew to almost 8000 in 2010[105] as part of this strategy.

The continued aim of a self-sustaining workforce is subject to the reality that the size, nature and complexity of health workforces suggests there may always be some

(104) Buchan, 2006. ***Migration of health workers in Europe: policy problem or policy solution?*** Accessed online September 2014. Available at: http://www.lse.ac.uk/LSEHealthAndSocialCare/pdf/eurohealth/VOL13No1/Buchan.pdf

(105) Centre for Workforce Intelligence, 2012. *Shape of the medical workforce - Starting the debate on the future consultant workforce*. Accessed online September 2014. Available at: http://www.cfwi.org.uk/publications/leaders-report-shape-of-the-medical-workforce

gaps between supply and demand in specific contexts. The debate on health personnel migration has often been polarised between negative migration effects and freedom of individual health professionals to migrate (OECD, 2010), whilst the World Health Organization (WHO) Code focuses also on the need for Member States to take effective measures appropriate to the areas of greatest need, built upon an evidence based workforce plan[106]. Specifically on intra-European Union health professional mobility, Directive 2005/36/EC ensures the mutual recognition of qualifications of dentists, doctors, midwives, nurses and pharmacists[107].

The UK places importance on observing treaty obligations, including those which require the allowance of free movement and to support EURES, meaning that the UK may likely be attractive to some people wishing to take up individual employment or indeed countries with excess numbers of professionals from within the EEA.

This has led to some changes in flows of international workforces and how the UK is perceived as a destination country. The reasons for these movements are multi-factorial[108] that span the macro, meso and micro levels with push and pull features. The same study reveals that factors such as professional development and the environment for learning within the UK healthcare system may surpass financial reasons. For some workforces such as nurses, the largest healthcare profession across Europe, there has been a net outflow since 2006-07[109] which highlights the dynamic nature of mobility.

(106) WHO, 2010. *WHO global code of practice on the international recruitment of health personnel*. Accessed online September 2014. Available at: http://www.who.int/hrh/migration/code/code_en.pdf?ua=1

(107) European Commission, 2013. *Directive 2005/36/EC*. Accessed online September 2014, available at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2005:255:0022:0142:en:PDF

(108) Young, 2011. *A major destination country: the United Kingdom and its changing recruitment policies*. In Wismar M et al., eds. Health professional mobility and health systems. Evidence from 17 European countries. Copenhagen, WHO Regional Office for Europe on behalf of the European Observatory on Health Systems and Policies. , Accessed online September 2014. Available at: http://www.euro.who.int/__data/assets/pdf_file/0017/152324/e95812.pdf and Buchan et al, 2014. Health professional mobility in a changing Europe. Volume II.Accessed online September 2014. Available at: http://www.euro.who.int/en/publications/abstracts/health-professional-mobility-in-a-changing-europe.-new-dynamics,-mobile-individuals-and-diverse-responses

(109) RCN, 2012. *Labour Market Review 2012*, Accessed online September 2014. Available at: http://www.rcn.org.uk/__data/assets/pdf_file/0016/482200/004332.pdf and HEE Strategic Framework, 2014. Accessed online September 2014, http://hee.nhs.uk/work-programmes/strategic-framework/

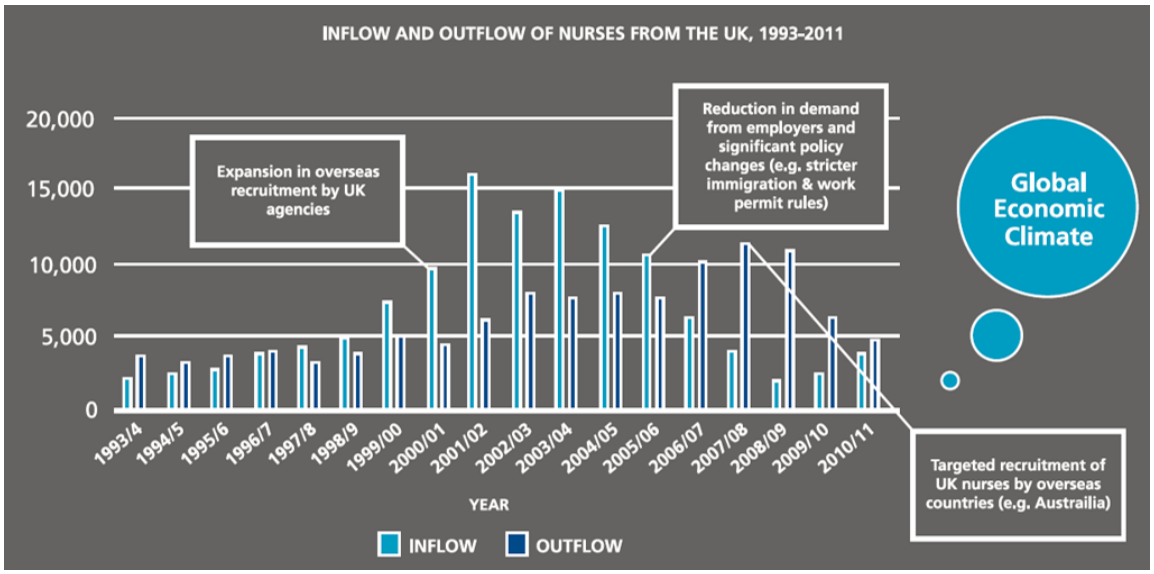


*Figure 1 - Inflow and outflow of Nurses from the UK, HEE Strategic Framework, 2014*

## Investment in the UK healthcare workforce

There has been substantial investment into the NHS workforce and in training new healthcare professionals. The aim was for the NHS to become more self-sufficient and less dependent upon healthcare professionals from outside the European Economic Area (EEA). There is no centralised recruitment of healthcare professionals and the NHS recruits to fill staff shortages when required.

Because of the time it takes to expand medical school capacity and the lengthy training period, the NHS initiated measures to address this in the late 1990's as shown within Figure 2.

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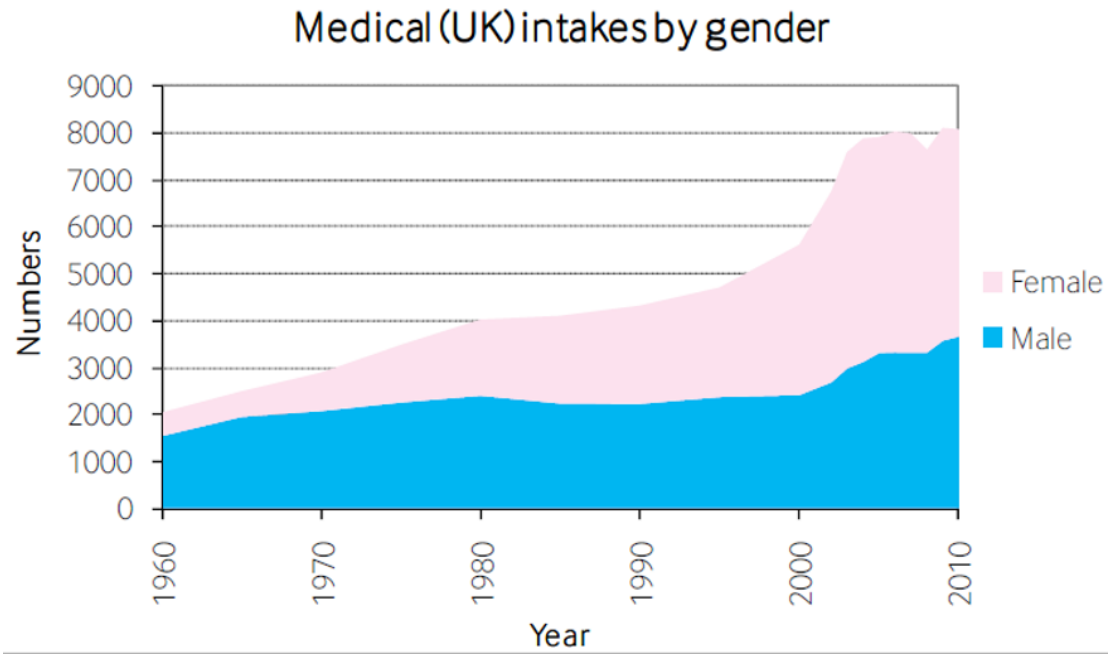


*Figure 2 - Headcount of UK medical students by gender from 1960 to 2010, HEFCE 2010 and CfWI 2012*

Source: Medical School Intake

Data from the General Medical Council shows that between 2008 and 2013 the number of UK qualiifed doctors applying for registration increased by 13%[110]. In the same time period there was a decrease of 45% of applications from doctors qualified ouside the EEA.

Recent information on nurses from the Royal College of Nursing in 2013 showed that "the UK has moved from being a net importer to an exporter of nurses". The outflow of nurses surpassing inflow after 2005/6 (see Figure 3) and that English speaking countries such as Australia, Canada, USA and Ireland were now the main destinations of UK nurses.

(110) GMC, 2014. Annual Reports 2008 and 2013. Accessed online September 2014, available at: http://www.gmc-uk.org/publications/corporate_publications.asp#Annual_Review

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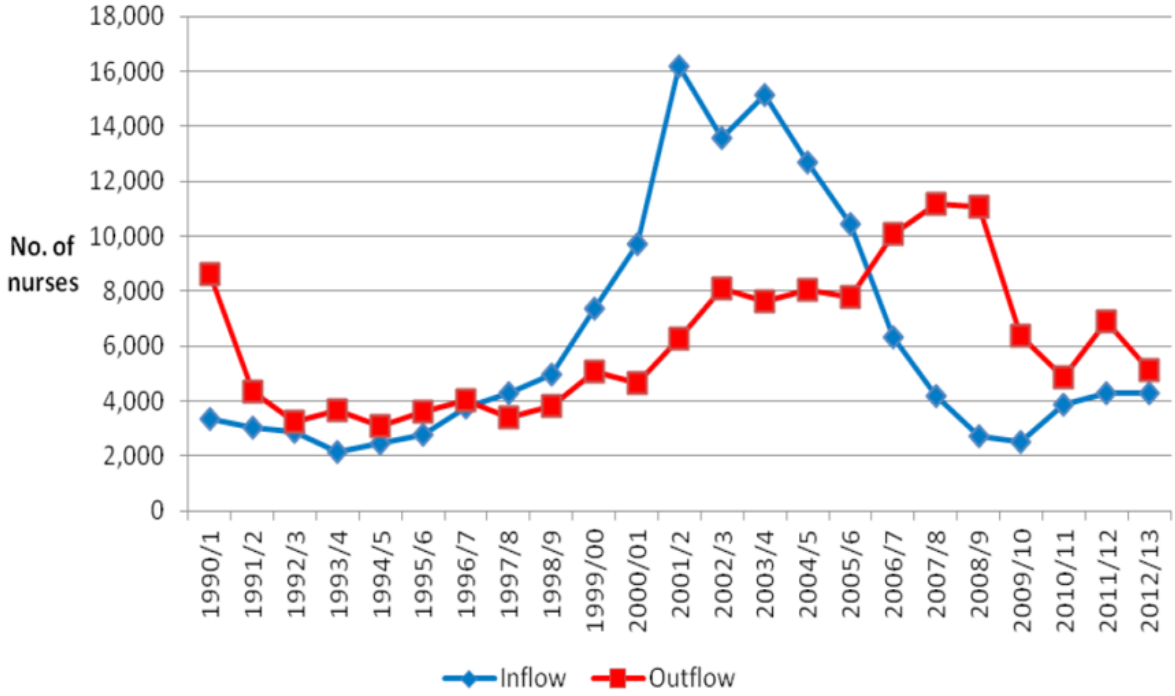


*Figure 3: Inflow and outflow of nurses from the UK, 1990/1 - 2012/13, RCN Labour Market Review 2013*

While the NHS is increasing the number of UK medical graduates to help ensure a sustainable workforce long into the future, NHS services and International doctors continue to benefit in many ways through training and practice and from the rich mix of healthcare professionals who come to work in the UK, whether for a short or a sustained period.

## Health Education England (HEE)

From April 2013, responsibility for workforce planning and delivery of education and training in the NHS and the public health system was mandated to Health Education England (HEE). The key purpose of HEE is to ensure that the healthcare workforce has the right skills, behaviours and training, and is available in the right numbers to support the delivery of healthcare and health improvement. HEE supports healthcare providers and clinicians to take greater responsibility for planning and commissioning education and training through the development of Local Education and Training Boards (LETBs), which are statutory committees of HEE. HEE spend approximately £5bn a year to ensure that the whole health and healthcare sector in England, including the NHS, the independent sector and public health have the most highly qualified new professionals in the world.

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HEE provides leadership for the new education and training system. It will ensure that the shape and skills of the future health and public health workforce evolve to sustain high quality outcomes for patients in the face of demographic and technological change. The workforce plan for England[111] sets out the investments it will make in 2014/15 on behalf of the system.

## Health Partnership Scheme (HPS)

On 4 June 2010, the Prime Minister announced the £5m HPS. It aims to improve health outcomes in low-income countries through effective transfer of health services skills, in ways that also benefit the UK public health sector. It provides opportunities for British nurses, doctors and health professionals to play a crucial role in the UK's effort to reduce maternal and child deaths in some of the world's poorest countries. It will be an umbrella for a diverse range of links activity, from small-scale institutional pairing, through to multi-country partnerships. It will include existing International Health Links activity funded by DFID, as well as launch new activity.

The HPS aims to:

- *Support International Health Links activity that is consistent with supporting the delivery of the Millennium Development Goals*
- *Focus on UK priorities and strengths (in particular maternal, neonatal and child health in the first instance), but not exclusively. Other areas (e.g. mental health) will be able to make a case for funding*
- *Promote innovative approaches to linking, and innovation in the delivery of activity*
- *Take existing good practice and International Health Links activity to the next level - with more ambitious activity*
- *Achieve benefits for the UK Public Health sector (NHS)*
- *Enable effective, long-term volunteering*
- *Evaluate and share good practice*

To date the scheme has involved 68 UK institutions including hospitals, universities and Royal Colleges. In April 2014, the Secretary of State for International Development announced a £10 million extension of the HPS which will allow it to continue running

(111) Health Education England, 2013. *Investing in people: Workforce Plan for England - proposed education and training commissions for 2014/15*. Accessed online September 2014. Available at: http://hee.nhs.uk/wp-content/blogs.dir/321/files/2013/12/Workforce-plan-UPDATE-interactive.pdf

until 2017.

## Key aspects

The UK was the first developed country to implement and systematically review policies that explicitly prevent the targeting of developing countries for international recruitment. This led to the Department of Health publishing a Code of Practice, implemented by NHS Employers, involved in the International Recruitment of Healthcare Professionals in 2001, updated in December 2004[(112)].

The UK's Code outlines guiding principles promoting high standards in the recruitment and employment of healthcare professionals from overseas. It is also concerned with the protection of developing countries and seeks to prevent targeted recruitment from those developing countries who are experiencing shortages of healthcare staff. There is much commonality between the WHO Code and the UK DH Code.

The Department of Health has commissioned the NHS Employers organisation to promote the use and adherence to the principles of the WHO code of practice both to employers and agencies who supply permanent and temporary staff to the NHS.

Domestically, NHS organisations are strongly advised to adhere to the Code of Practice in all matters concerning the international recruitment of healthcare professionals across all disciplines - including the appointment of medical staff, nurses, dentists, radiographers, physiotherapists, occupational therapists and all other allied health professionals.

Current immigration rules allow an employer to recruit skilled workers from outside the European Economic Area (EEA) only after an employer has demonstrated there is no suitable candidate available from the UK or EEA. The Department of Health works with the Department for International Development (DFID) to produce an agreed list of developing countries that should not be targeted for recruitment. This is based upon the economic status of the countries and how many healthcare professionals are available.

(112) Department of Health, 2004. *Code of Practice for the International Recruitment of Health Professionals*. Accessed online September 2014. Available at: http://webarchive.nationalarchives.gov.uk/20130107105354/http:/dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_4097734.pdf

CHAPTER 13

# RESEARCH METHODOLOGY

## The choice of the five key elements of a planning system

Based on the available literature[113] and, in particular, on the basis of two recent studies that have analyzed the methodologies for planning and forecasting in some European countries[114][115], have been identified five key elements of a planning system.

Experts and partners of WP5 of the Joint Action on Health Workforce planning and Forecasting discussed and analyzed some peculiar aspects of these five elements, refer to seven planning systems (see next section) in a workshop held Florence on May 2014, the 8th and 9th. On the base of the findings of this meeting we prepared a detailed grid in which the five key elements have been split into specific items[116].

Below the descriptive grid is presented.

### Key planning element: GOALS

| ITEMS | DESCRIPTION |
|---|---|
| OBJECTIVES AND PURPOSES | THE GOALS ARE: EXPLICIT OR IMPLICIT (COMMUNICATED OR NOT); SPECIFIC OR GENERIC (TYPE OF OBJECTIVE); MEASURABLE OR NOT (IS IT POSSIBLE TO SET INDICATOR?; ATTAINABLE (IS THERE AN ACTION PLAN) OR NOT; REALISTIC (ARE THERE RESTRICTION?) OR NOT; TIMELY OR NOT (IS SET A TIME FRAME TO REACH THE TARGET? IF SO, WHICH TIME FRAME?). |

(113) See Bibliography and list of pubblications in appendix.

(114) European Commission (2012) EU-level Collaboration on Forecasting Health Workforce Needs, Workforce Planning and Health Workforce Trends - A Feasibility Study. http://ec.europa.eu/health/workforce/docs/health_workforce_study_2012_report_en.pdf

(115) OECD: Projection Models from 18 Countries", OECD Health Working Papers, No. 62, OECD Publishing. http://dx.doi.org/10.1787/5k44t787zcwb-en

(116) The grid was finally implemented,on request of the Executive Board of the Joint Action on Health Workforce Planning and Forecasting, with a new item of the key element "Forecasting model" regarding the issue of international mobility.

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## Key planning element: FORECASTING MODEL

| ITEM | DESCRIPTION |
|---|---|
| FORECASTING APPROACH | THE PROJECTIONS CONCERN ONLY SUPPLY, SUPPLY AND DEMAND, SUPPLY AND POPULATION NEEDS. |
| QUANTITATIVE FORECASTING METHODOLOGY | THE MAIN APPROACHES TO HEALTH WORKFORCE PLANNING INCLUDE THE SUPPLY-PROJECTION APPROACH, THE DEMAND-SIDE APPROACH AND NEEDS-BASED APPROACH. WHICH STATISTICAL FORECASTING METHOD IS USED? CLASSICAL TIME SERIES ANALYSIS; STOCHASTIC TIME SERIES ANALYSIS; MULTIPLE REGRESSION ANALYSIS; OR OTHER. |
| QUANTITATIVE FORECASTING METHODOLOGY | FORECASTING METHODS USED ARE ONLY QUANTITATIVE METHODS, ONLY QUALITATIVE METHODS OR A COMBINATION OF QUANTITATIVE AND QUALITATIVE METHODS? WHICH ARE THE QUALITATIVE FORECASTING METHOD (IF USED): DELPHI; BRAINSTORMING; MARKET SURVEY; OTHER. |
| QUANTITATIVE FORECASTING METHODOLOGY | SCENARIO ANALYSIS: JUST ONE SCENARIO DEVELOPED; MORE SCENARIOS DEVELOPED WITH NOT ADJUSTABLE ASSUMPTIONS; MORE SCENARIOS DEVELOPED WITH ADJUSTABLE ASSUMPTIONS. |
| QUANTITATIVE FORECASTING METHODOLOGY | WHICH ARE THE PROJECTION PERIODS? |
| FORECASTING METHODOLOGY PERIOD | |
| FREQUENCY OF UPDATING | HOW FREQUENTLY DO YOU UPDATE HEALTH WORKFORCE FORECASTING EXERCISES? |
| MIGRATION FLOWS | ARE THERE VARIABLES ON INTERNATIONAL MIGRATION INFLOW AND OUTFLOW CONSIDERED AND INCLUDED IN THE FORECASTING MODEL? ARE THESE QUANTITATIVE VARIABLES OR PARAMETERS ESTIMATED THROUGH QUALITATIVE METHODS? WHICH IS/ARE THE SOURCE/S OF DATA? IF A QUALITATIVE METHOD OF ESTIMATION OF INTERNATIONAL MOBILITY IS USED, COULD YOU DESCRIBE IT? |
| SEGMENTATION OF THE FUTURE ESTIMATIONS | IS THE PROJECTION SEGMENTED ALONG DIFFERENT HEALTH SERVICE DELIVERY SETTINGS? WHICH DELIVERY SETTINGS DOES THE PROJECTION TAKE INTO ACCOUNT? (E.G. HOSPITALS VS. AMBULATORY HEALTH CARE; PUBLIC VS. PRIVATE SECTOR) |
| INTEGRATION BETWEEN / WITHIN PROFESSIONAL GROUPS | DOES THE FORECASTING MODEL TAKE INTO ACCOUNT ANY KIND OF HORIZONTAL INTEGRATION (DIFFERENT SPECIALTIES WITHIN THE PROFESSIONAL GROUP) OR VERTICAL INTEGRATION (DIFFERENT PROFESSIONAL GROUPS)? |
| FEEDBACK EFFECTS BETWEEN DEMAND AND SUPPLY | DOES THE MODEL TAKE INTO ACCOUNT ANY INTERACTION BETWEEN DEMAND AND SUPPLY? (E.G. SUPPLY-INDUCED DEMAND) |

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| | |
|---|---|
| INTERACTION WITH OTHER GOALS OF THE NHS | DOES CONSEQUENCES OF HEALTH WORKFORCE PROJECTIONS ARE EXPLORED IN RELATION TO OTHER HEALTH SYSTEM GOALS? (E.G. ACCESS TO CARE, QUALITY OF CARE, COST CONTAINMENT)? |
| ASSESSMENT OF THE OUTPUTS | FORECAST ERROR CALCULATION (MAD, PERCENT CONFIDENCE INTERVAL, TRACKING SIGNAL, ETC); TEST ON HISTORICAL DATA; OTHERS. |

## Key planning element: DATA

| ITEM | DESCRIPTION |
|---|---|
| DATA COLLECTION | LIST OF THE DATA COLLECTED FOR PLANNING (INDICATING ALSO THE DATA USED BY THE MATHEMATICAL FORECASTING MODEL) AND WHO REPORTS THE DATA. |
| INDIVIDUAL / AGGREGATED DATA | THE DATABASE CONTAINS:<br>1. AGGREGATED DATA<br>2. INDIVIDUAL DATA |
| UNIQUE / MULTIPLE SOURCES | WHICH ARE THE DATA SOURCES? UNIQUE OR MULTIPLEIS<br>THERE A UNIQUE DATABASE WITH DATA STORED IN FOR THE PLANNING PURPOSES? |
| DATA UPDATING | NOW YOU ARE WORKING ON SUPPLY SIDE DATA REGARDING WHICH YEAR? |
| ORIGINALS AIMS OF DATA COLLECTION | WHICH IS THE DATA COLLECTION MAIN PURPOSE? SPECIFICALLY FOR PLANNING; FOR OTHER PURPOSES AND USED FOR PLANNING. |

## Key planning element: LINK TO POLICY ACTIONS

| ITEM | DESCRIPTION |
|---|---|
| PLANNING MEASURES AND ACTIONS | WHICH ARE LEVERS AND ACTIONS THAT PLANNERS CAN MANAGE TO REACH THE GOALS? BARRIERS TO UNIVERSITY (BASIC DEGREE); BARRIERS TO SPECIALIZATION; BARRIERS TO AND/OR SPECIFIC AUTHORIZATIONS TO WORK; OTHER LEVERS OR ACTIONS. |
| RESPONSIBILITIES OF THE PLANNING MEASURES | HOW ARE THE PLANS REALIZED AND WHO IS INVOLVED? WHO IS IN CHARGE OF ACTING IF THE OBJECTIVES ARE NOT REACHED? |
| MONITORING AND CONTROLLING | HOW ARE GOALS AND ACTIONS CHECKED? WHO IS THE CHECKER? |

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## Key planning element: ORGANISATION

| ITEM | DESCRIPTION |
|---|---|
| WORKFLOW | ORGANISATION OF THE WORKFLOW: DIFFERENT WORKFLOW FOR EACH PROFESSIONS MANAGED BY DIFFERENT PLANNING INSTITUTIONS; SAME WORKFLOW WITH SOME SPECIFIC ARTICULATION FOR THE DIFFERENT PROFESSIONS MANAGED BY THE SAME PLANNING INSTITUTIONS; UNIQUE WORKFLOW WITH NO SPECIFIC PROCEDURES FOR THE DIFFERENT PROFESSIONS MANAGED BY THE PLANNING INSTITUTIONS. IN THE PROCESS TO REACH THE DEFINED GOALS, THE RESPONSIBILITY OF THE FINAL DECISION IS UP TO ONE SUBJECT OR TWO OR MORE SUBJECT (SHARED RESPONSIBILITY)? |
| DESENTRALIZATION OF THE PLANNING RESPONSIBILITIES | AT WHAT LEVEL DOES WORKFORCE PLANNING TAKE PLACE? REGIONAL (LOCAL); NATIONAL (CENTRAL); SEPARATED BETWEEN CENTRAL ADMINISTRATIONS AND REGIONAL (LOCAL) ADMINISTRATIONS; SHARED AMONG CENTRAL ADMINISTRATIONS AND REGIONAL (LOCAL) ADMINISTRATIONS. |
| STAKEHOLDER INVOLVEMENT | ORGANISATION OF THE STAKEHOLDERS REPRESENTATION: INVOLVEMENT IN THE DECISION MAKING PROCESS OF THE STAKEHOLDERS. |
| STAKEHOLDERS INVOLVED | WHICH ARE THE STAKEHOLDERS INVOLVED? HEALTH CARE PRODUCERS (PUBLIC AND PRIVATE); HEALTH CARE TRAINERS; HEALTH CARE PAYERS; HEALTH CARE WORKFORCE (PROFESSIONAL ORDERS); HEALTH CARE USERS. |
| ROLE OF THE STAKEHOLDERS | WHICH IS THE ROLE OF THE STAKEHOLDERS? CONTRIBUTING TO GIVE ADDICE OR CONTRIBUTING TO THE TAKE THE DECISIONS. |
| ROLE OF COMMUNICATION IN THE PLANNING SYSTEM | HOW THE DECISIONS REGARDING "THE GOALS" AND "THE RESULTS" ARE COMMUNICATED/ PUBLISHED? |
| STAFF MEMBERS | HOW MANY PEOPLE ARE INVOLVED IN THE PLANNING INSTITUTION? WHICH COMPETENCE PROFILE? OTHER PEOPLE INVOLVED FROM EXTERNAL ORGANISATIONS?<br>SPECIALIZATION OF THE STAFF MEMBERS: STAFF MEMBERS SPECIALIZED FOR SINGLE PROFESSIONS OR STAFF MEMBERS COMPETENT FOR ALL PROFESSIONS? |

## THE SELECTION OF THE SEVEN PLANNING SYSTEMS

Among all the experiences, according to the purposes of this Handbook, we have selected those most complete and for which it was more feasible to provide a standardized description with respect to the key elements of a planning system (see the above section).

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Considering that:

- *planning systems include forecasting (a projection model) and involving relevant stakeholders into the process; both the projection model and involving the stakeholders are very important elements of the entire planning process;*
- *in EU there are thirteen countries "that engage in model-based workforce planning" and carry out gap analysis; all thirteen countries use some form of supply-side projections and eight of them use also a demand/need based approach[117];*

we defined the following criteria to select the planning system to include in our analysis.

- *Criteria #1: we took into account the models that provide sound experimentations using both demand and supply based.*
- *Criteria #2: considering the scope of the Handbook will only assess planning system developed and implemented in the EU countries.*
- *Criteria #3: the planning system should be incorporated a projections tool.*
- *Criteria #4: there are experts in the planning system available to provide information, contributions and detailed descriptions of the planning system developed in their country in line with the Joint Action timeframe and deadlines.*

The planning system developed in the following countries respond to both criteria:

1. *Belgium;*
   .....
2. *Denmark;*
   .....
3. *England;*
   .....
4. *Finland;*
   .....
5. *Norway;*
   .....
6. *Spain;*
   .....
7. *7. The Netherlands.*
   .....

(117) For a complete description of the Health Workforce planning purposes in the EU countries see "EU level Collaboration on Forecasting Health Workforce Needs, Workforce Planning and Health Workforce Trends – A Feasibility Study", pag. 112, http://ec.europa.eu/health/workforce/docs/health_workforce_study_2012_report_en.pdf

## The description of the seven planning systems

Experts for each of the seven planning system, as partners of the Joint Action on Health Workforce Planning and Forecasting, were identified and collaborated providing information about their system according to the grid presented above. The final description of the seven planning systems (presented in the section "Focus On" of the Handbook) is the result of an reiterated approach consists of the following steps:

1. *description;*
2. *comparison;*
3. *review.*

The first description was made using information already available from other studies (see reference 3 and 4) and was carried out in April 2014. A first comparison and discussion was held during the workshop in Florence (May 2014) and a review in the following months. The descriptions reviewed and updated were the subject of further discussion in the workshop of Turin (September 2014). The feedback collected have provided useful elements for a further review which involved experts of the seven planning systems in October 2014.

Finally, based on the recommendations of the Executive Board of the Joint Action (November 2014), the descriptions have been further revised and subsequently validated by experts of each planning system (January 2015).

## The analisys of the seven planning systems

To analyze the seven planning systems and facilitate the comparison between them we defined a check list containing 32 features of "good planning" (presented below). The 32 characteristics were obtained from the literature[118], from other check list made on

(118) OECD, Health Workforce Planning in OECD Countries, 2013

WHO, Models and tools for health workforce planning and projections, 2010

WHO, Handbook on Monitoring and Evaluation of Human Resource for Health, 2009

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this subject[119], from the findings of the Joint Action workshops[120], and have gotten the validation of the experts of the selected planning systems.

The same check list was also used to identify the good practices presented in the second part of the Handbook (see next section).

| SECTION | ITEM | ITEM DESCRIPTION | IS IT TRUE FOR MY PLANNING SYSTEM? | POSSIBLE ANSWER |
|---|---|---|---|---|
| A -GOALS | A.1 | THE GOALS OF THE HWF PLANNING SYSTEM ARE EXPLICIT AND CLEARLY DEFINED. | | NAA: NO EXPLICIT GOALS NOR EXPLICIT SCOPE.<br>P: EXPLICIT GOALS OR SCOPE BUT NOT CLEARLY DEFINED (NO SPECIFIC OBJECTIVES).<br>C: EXPLICIT GOALS AND CLEARLY DEFINED (THUS WITH SPECIFIC OBJECTIVES). |
| | A.2 | THE GOALS OF THE HWF PLANNING SYSTEM ARE BASED ON A COMPREHENSIVE AND UPDATED ANALYSIS OF THE FUTURE HEALTH NEEDS OF THE POPULATION. | | NAA: NO GOALS BASED ON ANALYSIS OF THE FUTURE HEALTH NEEDS OF THE POPULATION.<br>P: GOALS BASED ON ANALYSIS OF THE FUTURE HEALTH NEEDS OF THE POPULATION EVEN IF NO COMPREHENSIVE AND/OR NO FREQUENTLY UPDATED.<br>C: GOALS BASED ON A COMPREHENSIVE AND UPDATED ANALYSIS OF THE FUTURE HEALTH NEEDS OF THE POPULATION. |

(119) See: "A Framework for Collaborative Pan-Canadian Health Human Resources Planning" - September, 2005 Revised March 2007; "Building the Public Health Workforce for the 21 Century: a Pan-Canadian Framework for Public Health Human Resources Planning" - October 2005; "Health Workforce Impact Checklist & Guidelines: Informing the decision making process" - AUSTRALIAN HEALTH WORKFORCE OFFICIALS COMMITTEE.

(120) See the findings of the Firenze in http://euhwforce.weebly.com/140508-wp5-firenze.html.

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|---|---|---|---|
| A -GOALS | A.3 | THE GOALS OF THE HWF PLANNING ARE BASED ON THE ANALYSIS OF SKILLS NEEDED TO DELIVER PLANNED HEALTH SERVICES IN THE FUTURE. | NAA: NO GOALS BASED ON ANALYSIS OF SKILLS NEEDED TO DELIVER PLANNED HEALTH SERVICES.<br>P: GOALS BASED ON ANALYSIS OF SKILLS NEEDED TO DELIVER PLANNED HEALTH SERVICES EVEN IF NO COMPREHENSIVE AND/OR NO FREQUENTLY UPDATED.<br>C: GOALS BASED ON A COMPREHENSIVE AND UPDATED ANALYSIS OF OF SKILLS NEEDED TO DELIVER PLANNED HEALTH SERVICES. |
| | A.4 | THE HWF PLANNING SYSTEM INCLUDES SHORT- AND LONG-TERM TARGETS WITH MULTIPLE TIME FRAMES. | NAA: NO EXPLICIT TARGETS OR NO DIFFERENT TIMEFRAMES<br>P: TARGETS WITH DIFFERENT TIMEFRAMES BUT NOT FOR ALL THE PROFESSIONS.<br>C: TARGETS WITH DIFFERENT TIMEFRAMES (FOR EXAMPLE LONG TERM TARGET WITH SHORT AND MEDIUM TERM RELATED TARGET) |
| B - FORECASTING MODEL. | B.1 | THE ASSUMPTIONS IN THE FORECASTING MODEL ARE REGULARLY RE-ASSESSED IN LIGHT OF CHANGING CIRCUMSTANCES, NEW DATA, NEW POLICIES AND PROGRAMS. | NAA: NO ASSUMPTIONS RE-ASSESSMENT IN THE FORECASTING MODEL.<br>P: PARTIAL ASSUMPTIONS RE-ASSESSMENT.<br>C: REGULARLY ASSUMPTIONS RE-ASSESSMENT IN THE FORECASTING MODEL. |
| | B.2 | THE HWF FORECASTING MODEL IS FLEXIBLE AND CAN EASILY BE CHANGED AND ADAPTED BY AUTHORITIES COMPETENT FOR PLANNING. | NAA: NOT FLEXIBLE IN THE LIGHT OF NEW CIRCUMSTANCES AND NOT EASY TO CHANGE BY ALL THE AUTHORITIES.<br>P: FLEXIBLE BUT NOT EASY TO CHANGE BY ALL AUTHORITIES.<br>C: FLEXIBLE AND EASY TO CHANGE. |
| | B.3 | THE HWF PLANNING TOOL ESTIMATES ANY CURRENT IMBALANCES AND IT DOESN'T ASSUME A CURRENT EQUILIBRIUM BETWEEN SUPPLY AND DEMAND. | NAA: ASSUMING CURRENT EQUILIBRIUM BETWEEN SUPPLY AND DEMAND FOR ALL THE PROFESSIONS.<br>P: ASSESSING CURRENT IMBALANCES BUT NOT FOR ALL THE PROFESSIONS.<br>C: ASSESSING CURRENT IMBALANCES FOR ALL THE PROFESSIONS. |
| | B.4 | THE HWF PLANNING TOOL CONSIDERS THE EXPECTED IMPACTS OF HEALTH SERVICE DELIVERY CHANGES. | NAA: IT'S NOT POSSIBLE<br>P: IT'S POSSIBLE BUT IT'S NOT USE CURRENTLY.<br>C: IT'S POSSIBLE AND IT IS USED. |

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| B - FORECASTING MODEL. | B.5 | THE HWF FORECASTING MODEL PRODUCES DIFFERENT SCENARIOS ON THE BASE OF DIFFERENT PATTERNS VALUES (I.E. UNIVERSITY TRAINING CAPACITY, ATTRITION RATES, RETIREMENT PATTERNS, MIGRATION FLOWS). | NAA: NO MORE THAN ONE SCENARIO.<br>P: MORE SCENARIOS BUT NOT BASED ON DIFFERENT PATTERN VALUES.<br>C: DIFFERENT SCENARIOS BASED ON DIFFERENT PATTERN VALUES. |
| | B.6 | THE HWF PROJECTIONS ARE SPECIFIC TO THE DIFFERENT HEALTHCARE SECTORS (E.G. ACUTE CARE VS. PRIMARE CARE; PUBLIC SECTOR VS. PRIVATE SECTOR). | NAA: NO PROJECTIONS FOR DIFFERENT SECTOR.<br>P: PROJECTIONS FOR ONLY ONE SECTOR AND ONLY FOR ONE PROFESSION.<br>C: PROJECTIONS FOR DIFFERENT SECTOR AND FOR THE MAIN PROFESSIONS. |
| | B.7 | THE HWF PLANNING IS HARMONIZED WITH SOCIAL AND ECONOMIC DEVELOPMENT AND THE PLANNING OF OTHER RELATED SECTORS: I.E. BASIC ASSISTANCE, SOCIAL PROTECTION, PREVENTION, SPORT, EDUCATION. | NAA: NOT AT ALL.<br>P: PARTLY.<br>C: COMPLETELY. |
| | B.8 | THE FORECASTING MODEL CAN BE APPLIED TO DIFFERENT HEALTH PROFESSIONS. | |
| | B.9 | THE HWF PLANNING SYSTEM TAKES INTO ACCOUNT THE INTERACTION BETWEEN PROFESSIONS USING A MULTI-PROFESSIONAL TEAMWORK APPROACH. | NAA: NOT AT ALL.<br>P: PARTLY.<br>C: COMPLETELY. |
| | B.10 | THE PLANNING SYSTEM FORECASTS THE TREND OF DEPENDENCE OF THE HEALTH CARE SYSTEM ON FOREIGN TRAINED HWF PERSONNEL. | NAA: NO DEPENDANCE INDICATOR AND NO FORECAST ON THAT.<br>P: DEPENDANCE INDICATOR AND NO FORECAST ON THAT.<br>C: DEPENDANCE INDICATOR AND FORECAST ON THAT. |
| | B.11 | THE HWF PLANNING SYSTEM TAKES INTO ACCOUNT BUDGET CONSTRAINTS IN ITS SCENARIOS AND IT ALLOWS TO EVALUATE ALTERNATIVE ALLOCATIONS OF RESOURCES (I.E. BUDGET FOR SPECIALIST TRAINING FOR MEDICAL DOCTORS). | NAA: NOT AT ALL.<br>P: PARTLY.<br>C: COMPLETELY. |

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| C - DATA SET AND DATA COLLECTION | C.1 | DATA USED IN THE FORECASTING MODEL ARE REGULARLY UPDATED IN ORDER TO HAVE A REALISTIC PICTURE OF WHAT IS THE CURRENT SITUATION OF THE HWF DEMAND AND SUPPLY. | NAA: DATA NO REGULARLY UPDATE ON THE SUPPLY AND ON DEMAND<br>P:<br>C: DATA REGULARLY UPDATE ON THE SUPPLY AND ON DEMAND (IF DEMAND SIDE EXISTS). |
| | C.2 | THE HWF PLANNING TOOL CONSIDERS THE ENTIRE WORK LIFE CYCLE (SUPPLY SIDE). | NAA: NOT AT ALL.<br>P: PARTLY.<br>C: COMPLETELY. |
| | C.3 | DATA COLLECTED ON CURRENT STOCK OF HWF ALLOW TO KNOW: NUMBER OF ACTIVE PROFESSIONALS; NUMBER OF FULL-TIME EQUIVALENT; TYPES OF PROVIDERS; WHERE THEY WORK; THEIR SKILLS; THE SERVICES THEY PROVIDE; WORKLOADS. | NAA: NOT AT ALL.<br>P: PARTLY.<br>C: COMPLETELY. |
| | C.4 | THE HWF PLANNING TOOL USES DEMAND DATA WHICH ALLOW ESTIMATING THE HEALTH CARE UTILIZATION AND THE POPULATION NEEDS, IN ADDITION TO SIZE AND STRUCTURE (AGE AND SEX) OF THE POPULATION. | NAA: NOT AT ALL.<br>P: PARTLY.<br>C: COMPLETELY. |
| D - LINK BETWEEN PLANNING AND POLICY ACTIONS. | D.1 | THERE IS A CONTROL AND CONTINUOUS MONITORING PROCESS TO CHECK IF THE PLANNING OBJECTIVES ARE REACHED. | NAA: NO CONTROL<br>P: CONTROL BUT NOT REGULARLY<br>C: REGULARLY CONTROLLING |
| | D.2 | THE PLANNING SYSTEM DEVELOPS TOOLS (I.E. CHECK LISTS, GUIDELINES) TO EVALUATE AND INFORM THE DECISION MAKING PROCESS ON ITS OWN PLANNING CAPACITY (SELF-EVALUATION). | NAA: NO TOOLS<br>P: TOOLS BUT NOT REGULARLY USED<br>C: TOOLS USED REGULARLY |
| | D.3 | THE PLANNING SYSTEM ALLOWS POLICY MAKERS TO RECEIVE UPDATED REPORTS ON DEMAND IN A REASONABLE TIMEFRAME (3 TO 6 MONTHS). | NAA: NO REPORTS<br>P: REPORTS BUT NOT WITHIN 6 MONTHS<br>C: YES WITHIN 6 MONTHS |

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|---|---|---|---|
| D - LINK BETWEEN PLANNING AND POLICY ACTIONS. | D.4 | THE HWF PLANNING SYSTEM DEFINES OBJECTIVES AND ACTIONS ON RETIREMENT PATTERNS AND ATTRITION RATES. | NAA: NOT AT ALL.<br>P: PARTLY.<br>C: COMPLETELY. |
| | D.5 | THE HWF PLANNING SYSTEM DEFINES OBJECTIVES AND ACTIONS TO ADDRESS GEOGRAPHICAL MAL-DISTRIBUTION AND IMBALANCES. | NAA: NO REPORTS<br>P: REPORTS BUT NOT WITHIN 6 MONTHS<br>C: YES WITHIN 6 MONTHS |
| | D.6 | THE PLANNING SYSTEM ALLOWS THE MINISTRY OF EDUCATION TO FIX THE NUMBER OF POSITIONS FOR TRAINEES | P: PARTLY. |
| | D.7 | THE PLANNING SYSTEM PROVIDES INDICATORS THAT REGULARLY MEASURE THE IMPACT ON THE HEALTH CARE SYSTEM IN TERMS OF IMPROVING, ATTRACTION AND KEEPING SKILLED HWF (PROFESSIONALS ARE SATISFIED WITH THEIR WORK, WORKING ENVIRONMENT AND CAREER PATHS). | NAA: NO REPORTS<br>P: REPORTS BUT NOT WITHIN 6 MONTHS<br>C: YES WITHIN 6 MONTHS |
| E - ORGANISATION OF THE PLANNING SYSTEM | E.1 | THE HWF PLANNING SYSTEM PROVIDES GUIDELINES ON HOW TO COMMUNICATE THE RESULTS TO POLICY-MAKERS AND OTHER STAKEHOLDERS. | NAA: NO GUIDELINE NO REGULAR REPORTS<br>P: REGULAR REPORTS BUT NOT DEFINED BY GUIDELINE OR RULES.<br>C: GUIDELINES |
| | E.2 | THE IT FORECASTING TOOL HAS A "USER FRIENDLY" INTERFACE WHICH ALLOWS STAKEHOLDERS AN EASY INTERACTION. | NAA: NO GUIDELINE NO REGULAR REPORTS<br>P: REGULAR REPORTS BUT NOT DEFINED BY GUIDELINE OR RULES.<br>C: GUIDELINES |
| | E.3 | THE PARAMETERS IN THE FORECASTING MODEL ARE DISCUSSED AND AGREE WITH STAKEHOLDERS. | NAA: NOT AT ALL.<br>P: PARTLY.<br>C: COMPLETELY. |
| | E.4 | STAKEHOLDERS PARTICIPATE IN THE ELABORATION OF SCENARIOS. | NAA: NO REPORTS<br>P: REPORTS BUT NOT WITHIN 6 MONTHS<br>C: YES WITHIN 6 MONTHS |

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| E - ORGANISATION OF THE PLANNING SYSTEM | E.5 | TASKS AND CORRESPONDING COMPETENCES OF PEOPLE AND INSTITUTIONS INVOLVED IN THE PLANNING PROCESS ARE CLEARLY DEFINED. | NAA: NOT AT ALL.<br>P: PARTLY.<br>C: COMPLETELY. |
| | E.6 | THERE IS A FORMAL MECHANISMS FOR HEALTH EDUCATION PLANNERS TO DISCUSS ON HWF NEEDS | NAA: NO REPORTS<br>P: REPORTS BUT NOT WITHIN 6 MONTHS<br>C: YES WITHIN 6 MONTHS |

For each element of the check list, has been chosen to use an evaluation scale providing three different answers, depending on how each planning system is "near" to the statement:

- *"Not at all"*,
- *"Partially"*,
- *"Completely"*.

The comments written for each element are important as well as the synthetic answers provided. Further they allow a better understanding of the planning system and they were also used as a driver in the process of selection of good practices.

## The identification of the good practices

In order to individuate, select and organise the presentation of practices and experiences considered in some way demonstrative (good practices), the above check list has been used in order to evidence in an appropriate way the most significant aspects connected with the utility and exemplarity of the analyzed systems.

In particular, the check list has evidenced for each of the "key elements" of the HWF planning system the strengths of each planning system.

Good Practices presented in the Handbook describe in detail the individuated strengths.

Through a process of assessment it has been possible to individuate, for each of the analyzed planning system, which experiences are representative of a complete application of at least one of the criteria considered of "good planning", composing the

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check list.

In a first application, priority has been done to the experiences representative of the element of “good planning” considered as a minimum planning requirement.

On that base have been individuated a first set of initiatives, that will be object of a periodical implementation, also on the base of advices and contribution received by the “network of expertise”.

Thematic ambit to which the good practices refer are those illustrated in the section “Themes”, in which it is possible to find more further of in-depth analysis.

Sheets available up to today refer to initiatives, actions and application realized in the selected Countries Here follows a schematic list of the good practices individuated:

| MAIN ASPECT OF HWF PLANNING SYSTEM | COUNTRY | TITLE |
|---|---|---|
| GOAL | ENGLAND | DEFINITION OF THE GOALS IN THE ENGLISH PLANNING SYSTEM |
| FORECASTING | DENMARK | THE “EASY AND FLEXIBLE” FORECASTING MODEL IN THE DANISH PLANNING SYSTEM |
| | THE NETHERLANDS | ASSESSMENT AND ESTIMATION OF THE CURRENT IMBALANCES: FOR GENERAL PRACTITIONERS IN THE DUTCH PLANNING SYSTEM |
| | THE NETHERLANDS | FORECASTING THE DEMAND FOR DENTIST IN THE DUTCH PLANNING SYSTEM |
| | FINLAND | HWF PLANNING HARMONIZED WITH SOCIAL AND ECONOMIC DEVELOPMENT IIN THE FINNISH SYSTEM |
| | NORWAY | FORECASTING THE DEMAND FOR THE HWF IN THE NORWEGIAN PLANNING SYSTEM |
| | ZSPAIN | BUDGET CONSTRAINTS AND ALLOCATION OF RESOURCES IN THE SPANISH PLANNING SYSTEM |

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| | | |
|---|---|---|
| DATA | BELGIUM | DATA COLLECTION AND FTE CALCULATION IN THE BELGIAN PLANNING SYSTEM |
| | THE NETHERLANDS | GOOD PRACTICE ON DATA COLLECTION, IN PARTICULAR ON FTE ESTIMATION (EXAMPLES, DETAILED DESCRIPTION OF THE PROCESS, TOOLS, ETC). |
| | ENGLAND | DATA COLLECTION PROCESS IN THE ENGLISH PLANNING SYSTEM |
| LINK BETWEEN PLANNING AND POLICY ACTION | THE NETHERLANDS | SELF-EVALUATION OF THE EFFECTIVENESS OF THE PLANNING MODEL IN THE DUTCH PLANNING SYSTEM |
| ORGANISATION | BELGIUM | INVOLVEMENT OF STAKEHOLDERS IN THE BELGIAN PLANNING SYSTEM |
| | ENGLAND | "CALL FOR EVIDENCE" AND THE PROCESS OF "TRIANGULATION" IN THE ENGLISH PLANNING SYSTEM |
| | SPAIN | MULTI REGIONAL PLANNING IN THE SPANISH SYSTEM: ORGANISATION ASPECTS AND FORECASTING MODELZ |

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