Describing the fundamental aspects of the HWF planning systems in selected European Countries

The purpose of the handbook on HWF (Health Work Force) planning systems (D52) is to become a guide to all European states wanting to improve their planning of the HWF but in particular those who are starting up a planning system now.

In order to respond to the future requests on the handbook we have decided to distinguish between the activities that need to be done during the starting up of a planning system and a description of that one. In this document we will treat the description of the planning system.

When we have analysed the different planning systems that could be used as “good practice” and compared with the literature on the subject, we have found five main elements to describe a planning system:

1. **How the planning system is organized** in order to guarantee a permanent process. The literature defines planning (also called forethought) as the process of [thinking](http://en.wikipedia.org/wiki/Thinking) about and organizing 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.
2. Which **goals** are set and with which time frame. If the goals are set on fifteen years from now, probably there will be less restrictions in the system than if you plan for the next year. For example, in most European countries in fifteen years from now, half of the doctors of today will have left the active working life and the new doctors may have different characteristics.
3. How the planning process is connected with the actions that will achieve what has been planned, (the **cycle of continuous improvement** of Deming with the phases Plan, Do, Check, Act). Within the planning phase, the literature highlights the need to adopt a method that is consistent with the time frame. It might be necessary to include in the planning the skills needed, the future professional mix, the quantity, the working conditions and the training.
4. Which **data** is really used in the planning.
5. The type of the **forecasting model** and its use.

The attached template is to be used when describing some selected existing planning systems in European Countries[[1]](#footnote-2). In the expert meeting in Firenze in May the template and the descriptions will be used to:

* compare the different systems;
* choose criteria for assessing the systems;
* assess the systems according to these criteria.

During the following months the results of the expert meeting will be used to organize and develop the Handbook.

**ORGANIZATION OF THE HWF PLANNING SYSTEM** (staff, competences, workflow, responsibilities)

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| **Main aspects** | Description / Examples | Documents |
| At what level does workforce planning take place?1. Regional (local).
2. National (central).
3. Separated between central administrations and regional (local) administrations.
4. Shared among central administrations and regional (local) administrations.
 | Two levels of government are involved in planning. 1.The federal government is responsible for health insurance policies and for policies which limit practitioners' access to the health profession and also reimbursement 2. Communities are responsible for managing education and training (examination selections, numerus clausus policies). The two level governance leads to diverging outcomes: the number of students graduated each year from universities exceeds sometimes the federal fixed numbers, The system monitors the numbers over a period of time (e.g. medical doctors headcounts are monitored up to 2018).(Source. Matrix Feasibility Study) |  |
| Staff members.1. How many people are involved in the planning institution?
2. Which competence profile?
3. Other people involved from external organizations?
 | 6 person (5,5 FTE) The Unit is involved in the planning of all the Health Professions.+ Administrative support for the working groups+ Collection of necessary information for workforce planning(Source: WP5 survey)0 |  |
| Specialization of the staff members.1. Staff members specialized for single professions.
2. Staff members competent for all professions.
 | Every staff member of the Unit Planning 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 the nurses, dentists, physicians, midwives,… 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. |  |
| Organization of the workflow.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.
 | The Planning Commission 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.Furthermore, the planning commission is composed of different working groups (one for each health care profession e.g. nurses, physicians, dentists, physiotherapists). They reflect on current and future challenges of their profession, provide input for planning research, provide feedback to the preliminary results, validate reports...(Source: WP5 survey) |  |
| Organization of the stakeholders representation.Please, describe the involvement in the decision making process of the stakeholders and, if possible, design the chart. | - The planning commission monitors the workforce levels and trends of the different healthprofessions using the available statistical information and detects bottle-necks;- Further research is conducted (if necessary), using the resources of the Unit Workforce orvia public tender process;- The collected quantitative data will be analyzed in combination with qualitative input fromthe members of the working groups. Consensus agreement is reached on possible futurescenarios;- The agreed upon future scenarios are fed into the mathematical planning model tocalculate the projected future workforce levels;- The planning commission provides policy recommendations to the minister of health,based on these projections;- The minister can take corresponding policy actions and adjusts the quota.(Source: WP5 survey) |  |
| Which are the stakeholders involved?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.
 | Unit Workforce Planning at the Ministry of health provides administrative and scientific support.Ministry of Public health (2 representatives);Ministry of social affairs (1 representative).Each community is represented in the planning commission (Flemish community, French community and German-speaking community).Professional associationsPhysicians needs estimation, validation of reports, providing input for researchUniversities with a full medical curriculum :4 Universities of Flemish community (University of Antwerp, Ghent University, Catholic University of Leuven, Free University of Brussels (Dutch-speaking)).3 Universities of French community (University of Liège, Catholic University of Louvain-La-Neuve, Free University of Brussels (French-speaking)).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)(Source: WP5 survey) |  |
| Which is the role of the stakeholders?1. Contributing to give advices.
2. Contributing to the take the decisions.
 | 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,…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. Source: wp6 template on qualitative methods |  |
| Responsibilities in the decision making process:In the process to reach the defined goals, the responsibility of the final decision is up to1. One subject (who?);
2. Two or more subject (shared responsibility).
 | The health workforce planning institution in Belgium is Planning Commission, which provides forecasts to the Federal Ministry of Health.Forecasts are developed on the basis of a stock and flow model, which looks at both the demand and supply of health workforce. On the basis of these forecasts, the Federal Ministry sets quotas on the number of health professionals allowed to practice. The communities are in charge of setting numerus clausus at university level.(Source. Matrix Feasibility Study)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.a. 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.b. 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.(Source. Matrix Feasibility Study) |  |
| Communication: How the decisions regarding “the goals” and “the results” are communicated/ published?1. Goals;
2. Results.
 | 1996: foundation of Planning Commission.At first, the mathematical modelling was done internally. Only the results of these workforce forecasts were published together with policy recommendations.This work method changed in 2006: the planning and modeling became more open, and our planning model can be accessed by users outside the ministry. The different stakeholders were given access to the planning tool via an internet portal.In 2010: a data linking project was set up. This project combines information from different sources about health work professionals, in order to obtain information from their professional activity (sector of activity, number of active health care workers, FTE’s) (source: WP5 survey) |  |

**GOALS OF THE HWF PLANNING SYSTEM** (reporting and describing the goals of the HWF planning system)

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| **Main aspects** | Description / Examples | Documents |
| The goals are1. Explicit or Implicit (communicated or not);
2. Specific or Generic (type of objective);
3. Measurable or not (is it possible to set indicator?;
4. Attainable (is there an action plan) or not;
5. Realistic (are there restriction?) or not;
6. Timely or not (is set a time frame to reach the target? If so, which time frame?).
 | Health workforce planning has been set up in the Belgian health care system in order to contain health expenditure and overcome discrepancies across communities (Source. Matrix Feasibility Study)The objectives are rather implicit.The planning commission does not actively pursue any targets regarding the planning process for health care professionals. 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 nocommon or official position on which workforce level is required or preferred (the desired number of health care professionals/ habitant).The main goal of the planning commission is to monitor and observe the current workforcesituation. For now, the planning commission tries to maintain the current level and workforcedistribution. When problems arise (e.g. an expected shortage of the number of health care professionals), the ministry can take corresponding policy initiatives. e.g. 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).  |  |

**CONTROL AND CONTINOUS IMPROVEMENT OF THE HWF PLANNING PROCESS** (Deming cycle: Plan, Do, Check, Act)

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| **Main aspects** | Description / Examples | Documents |
| PlanWhich “objects” are taking into account in the planning?1. Skills needed.
2. Future professional mix.
3. Quantity of professionals.
4. Future working conditions.
5. Future necessary changes in training.
 | Quantity of professionals:* 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).

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.Objectives of planning:* Adapt the supply to the variations of the demand.
* To guarantee a constant supply with the hypothesis of a constant demand.
* Adopt the supply to economic constraints.
* Eliminate differences between cities and rural zones
* Give correct information in order to permit young people to choose the training pathway.
* Advise the minister on the outcomes

Source = template on hwf planning system and models (wp5) |  |
| Which are levers and actions that planners can manage to reach the goals? 1. barriers to university (basic degree);
2. barriers to specialization;
3. barriers to and/or specific authorizations to work;
4. other levers or actions.
 | The central planning measures are the ones in bold:* **Setting of quotas (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 (Communities)**
* Increasing attractiveness of profession with financial mechanisms/ rewards (= revalorizing salaries,
* Better organisation / work conditions :
	+ organization 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 -> better use of available resources
* Tackling regional imbalances:
	+ special funds to stimulate the establishment of medical personnel in ‘under-served’ zones = Impulseo funds (financial incentives for young physicians who start a practice, and for all physicians who start a practice in under-served regions)
 |
| DoHow are the plans realized and who is involved? | The minister is advised by the planning commission. The minister has the authority to take the necessary measures and introduce required legislation. |  |
| CheckHow are goals and actions checked? Who is the checker? | 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 also has published performance reports about the health care system and general physicians.(Source: WP5 survey) |  |
| ActAre there any example or documentation on acts to correct the activities in order to reach the goals?Who is in charge of acting if the objectives are not reached?Are there any examples of re-actions to external events (for example increase/decrease in working hours or in retirement age introduced for economic reasons)? | Continually improving the quality and quantity of the necessary information.No longer only planning and forecasting the registered health work force (= licensed to practice) But recently, also plan and forecast the active health work professionals (= practicing) (thanks to the data linking project) |  |

**DATA ON CURRENT SITUATION ON SUPPLY SIDE** (What are the supply side data on the current stock and flow and how they are collected)

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| **Main aspects** | Description / Examples | Documents |
| Data sourcesIs there a unique database with data stored in for the planning purposes? | 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.(Source. Matrix Feasibility Study) |  |
| The database contains:1. Aggregated data
2. Individual data
 | Individual data is collected for the preliminary analysis.This individual data is 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. |
| Which are the data sources?1. Unique
2. Multiple
 | In general there are three sources available: "licensed to practice" (in Federal Public Services health), "practicing" (in National Institute of Health Insurance and Disability) and "working" (in Cross Road Social Security). In order to link these sources, a specific research request needs to be submitted to the Committee on Privacy. This is already done for nurses and physiotherapists. The data collected can be grouped in the following categories: Identification data: allowing for the identification of the practitioner. Includes the number of the national registry, academic, professional and specialty qualifications, the home and business address. Certification data: number of issued certificates of practice Social security data: professional status (employee/independent/retired). Data provided by practitioner about their practice (not yet available) Number of visas granted to foreign medical doctors.(Source. Matrix Feasibility Study)Data collected by: Ministry of Health (main source of data), National Institute of Health Insurance and Disability National registers, National office of social security National, Institute of Social Insurance for the Self-Employed, National Office of Retirements Professional, associations Practitioners Licensed care facilities Nursing homes and public or private agencies providing care or performing preventive activities).(Source. Matrix Feasibility Study) |
| Who reports the data? | Data is reported by the Planning Commission using a compiled database. (Source. Matrix Feasibility Study) |
| Timely DataNow you are working on supply side data regarding which year?1. 2014
2. 2013
3. …
 | The Unit Planning is currently finishing the planning project for the nurses (data from 2004-2009) and the physiotherapists (2004-2010). Later this year, they will start analyzing data for physicians and dentists (2004-2012).Supply side data regarding professional activity of nurses (from 2004-2009) and physiotherapist(2004-2010). This includes information about the professional activity (in head count and FTE), and also the sector in which they are active.Supply side data regarding inflow of new health care workers (until 2012).E.g. success rate and the attractivity rate of the education/training. |  |
| Data collectionWhich Is the data collection main purpose?1. Specifically for planning
2. For other purposes and used for planning.
 | While one of the main tasks of the principal source of the workforce planning (=National Cadaster of Health Professionals) is to support the planning commission, this data collection also serves to monitor and control the access to the profession.Furthermore the planning commission uses additional data sources from the administration of the social security and health insurance. Obviously, the original purpose of these data sources is not planning-related, which can cause some incompatibility between the needs of the planning commission and the information content of the data.Additional data sources & their information obtainedNational Cadaster of Health Professionals: age, sex, place of residency, type of degree, language of degree, possible specializations… INAMI (NIHDI: National institute for health and disability insurance): qualification code of health care professional, number of health care activities delivered to patientsCrossroads Bank for social security: socio-economic information, sector of activity, FTE, professional activity (employee, self-employed, unemployed, …)DGSEI: Directorate General Statistics and Economic Information |  |
| List of the data collected for planning (indicating also the data used by the mathematical forecasting model) | Detailed list of data collected for planning and forecasting and their sources**New Inflow:** * population of 18year olds (= possible new inflow in health care studies),
* number of students (= actual inflow in health care studies),
* attractivity rate of the study,
* success rate of the students (number of students who obtain their degree) ,
* registration rate (= percentage of students with a degree who are registered in the National Cadaster of Health Professionals)
* Communities (for educational information)
* DGSEI (for number of 18year olds)

Migration Flows : emigration and immigration of nurses (mobility of nurses)* Department of healthcare agreements

Starting stock: number of health care professionals at the start of the simulation* Data linking project

Survival rate* National register

Inactivity rate (= number of nurses without a professional activity; retired, disabled, unemployed,…)* Data linking project

Activity rate (= number of nurses with a professional activity, in headcount and FTE)* Data linking project

Bridge Flows: movements from one sector to another, e.g. a shift from hospitals to  Starting Stock * Data linking project

Weighted density of individuals (number of professionals per 10.000 inhabitants)Weighted density of full time equivalents (number of FTE per 10.000 inhabitants)**Demand**: * Belgian population (divided by community) (by age group)
* DGSEI
* Population Consumption rate (by age group)
* NIHDI
* Supply induced demand (not yet developed)
* Society evolution factor: impact of technological, sociological and economical evolutions on health demand (not yet developed)
* Weighted population based on consumption rate, supply induced demand and society evolution factor
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**MATHEMATICAL FORECASTING MODEL** (How future scenarios are made? How future HWF needs are calculated?)

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| **Main aspects** | Description / Examples | Documents |
| The projections concern1. Only Supply
2. Supply and Demand
3. Supply and population needs
 | Forecasts are developed on the basis of a stock and flow model, which looks at both demand and supply of health workforce. The supply side of the model takes in consideration headcounts, annual inflows from universities, annual inflows through migration and annual outflows. Other factors influencing supply and productivity are also considered: feminisation of the labour force, ageing of health workforce and part-time policies. Through this model it is possible to estimates trends in the supply of health workforce, factoring in multiple scenarios regarding various levels of inflows in the workforce. The demand side of the model instead takes in consideration the evolution of demand based on health expenditures. Ultimately, demand modelling is based on past utilisation of services according to age, sex and region. It does not include an assessment of care pathways and epidemiological parameters, but does factor in the ageing of the population.(Source. Matrix Feasibility Study) |  |
| Is your 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) | The professional activity is known for every registered health care professional.The unit Planning has information about the FTE in every sector they work. The health sectors are distinguished depending on the health care profession. Non-health sectors are distinguished for every profession. E.g. nurses = Hospital sector; nursing home sector; home care sector; other health sector; welfare sector; public sector; private sector; education sector. |  |
| Does the model take into account any interaction between demand and supply?(e.g. supply-induced demand) | A parameter ‘supply-induced demand’ is available to simulate this effect, but currently it is not activated in our planning scenarios |  |
| Which are the projection periods? | 5 year intervals, from 2004 to 2054  |  |
| Do you explore the consequences of health workforce projections in relation to other health system goals?(E.g. access to care, quality of care, cost containment)? | no |  |
| How frequently do you update health workforce forecasting exercises? | 1 profession per yearIt depends on the available staff in the Unit planning and of the working groups who can ask for a detailed analysis of their profession;At the moment, forecasting is done for the nurses and physiotherapists. In 2014 and 2015, the Unit Planning will do a forecast exercise for the dentists and the physicians. |  |
| Integration of different professional groupsDoes the forecasting model take into account any kind of 1. horizontal integration (different specialties within the professional group) or
2. Vertical integration (different professional groups)
 | It is not possible to include different professional groups at the same time in the mathematical model. The mathematical forecasting is done separately for every profession.The model can only distinguish between the different specialties within the professional group of physicians. Distinction: general practitioners and other specialists. |  |
| Forecasting methods used1. Only quantitative methods
2. Only qualitative methods
3. Combination of quantitative and qualitative methods
 | Quantitative: information about age, sex, language, professional activity, FTE, number of students, number of migrants, Belgian population… |  |
| Quantitative forecasting methodWhich statistical forecasting method is used?1. Classical time series analysis
2. Stochastic time series analysis
3. Multiple Regression Analysis
4. Other
 | * + - 1. Classical time series analysis
 |  |
| Qualitative forecasting method (if used)1. Delphi
2. Brainstorming
3. Market survey
4. Other
 | Delphi interviews were conducted for the dentists and general practitioners (and nurses, in context of the JA on HWFP)Brainstorming: in working group meetings, about a variety of subjects. E.g. calculating a FTE for self-employed nurses, physicians, dentists…Survey research: when extra qualitative information is needed |  |
| Evaluation of forecast1. Forecast error calculation (MAD, percent confidence interval, tracking signal, etc)
2. Test on historical data
3. Others.
 | A follow-up comparison between the actual inflow and the inflow predicted by forecasting is carried out in the yearly report of the Planning Commission (RAPAN). |  |
| Scenario analysis 1. Just one scenario developed
2. More scenarios developed with not adjustable assumptions
3. More scenarios developed with adjustable assumptions
 | E.g. for the profession of nurses we have created a baseline scenario and two alternative scenarios (one low scenario and one high).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. |  |

1. See document in Sharepoint at

https://collab.health.fgov.be/sites/dg1/CW/JAEUHWF/WP\_5/Shared%20Documents/D052%20Handbook%20on%20planning%20methodologies/140312\_Inclusioncriteriaforassessmentofplanningmethodologies\_WP5\_PM.docx . [↑](#footnote-ref-2)