

WP4

Terminology gap analysis

D041



Version/ Status	Last updated	Owner
Module Concepts	22.05.2014.	Hungarian Team + WP1 + Reviewers
Draft 01	20.07.2014.	Hungarian Team + WP1 + Reviewers
Draft 02	11.08.2014.	Hungarian Team + WP1
Draft 07	03.09.2014.	Hungarian Team + WP1
Draft 08	06.10.2014.	Hungarian Team + WP3 + WP1
Draft 08/2	20.10.2014.	Core reviewers + WP3
Draft 09	24.10.2014.	Executive Board (WP1 + WP2 + WP3)
Draft 09/2	05.01.2015.	WP4 Partners
Draft 09/3	29.01.2015.	WP3
Draft 09/4	20.02.2015.	Submission to the Executive Board
Draft 09/5	10.03.2015.	Submission to General Assembly
Draft 09/5	24.03.2015.	Submission for scientifying editor
Draft 1	19.08.2015	Submission for WP7

Index

The Joint Action on European Health Workforce Planning and Forecasting	4
Contributors and Acknowledgements	5
Glossary	6
Executive Summary	10
Introduction	16
The context and activities of Work Package 4	16
D041 report: Terminology gap analysis (Activity 1 report)	17
JQ data collection - a brief description	18
The D041 report and the JQ data collection	19
WP4 Activity 1 links with EU activities	20
1 – The purposes of the Joint Questionnaire and its difficulties in collecting high quality data	23
1.1 The purposes and usefulness of JQ data collection	23
1.2 National HWF information flow	26
2 – The activity status categories and the Headcount and FTE data categories of the Joint Questionnaire	36
2.1 The "practising", "professionally active" and "licensed to practise" data categories	37
2.2. Full Time Equivalent and Headcount data categories	53
3 – Gap analysis on the professional data categories of the Joint Questionnaire	59
3.1. The Doctors, Dentists and Pharmacists data categories	59
3.2. The Nurses and Midwives data categories	65
4 - Recommendations	77
Reference list	86
Core documents	86
Further HRH-relevant literature	92
Appendices	104
Appendix I. - Methodology	105
Appendix II. - Protocol	112
Appendix III. - WP4 Questionnaire Survey	116
Appendix IV. - Semi-structured interview guide	125

Appendix V. - List of interviewed experts.....	128
Appendix VI. - List of interviewed JQ National Focal Points.....	129
Appendix VII. – Literature framework	132
Appendix VIII. – WP4 general description	135
Appendix IX – Usefulness of JQ data collection	142
Appendix X – WHO definitions for health workforce.....	144
Appendix XI – Main elements of labour market participation	145
Appendix XII. - ECHIM remarks on comparability.....	146
Appendix XIII – Summary and conclusions on WHO definitions for health workforce ..	150
Appendix XIV – Definitions for the three JQ activity status categories.....	152
Appendix XV – National FTE calculation methods with a focused Belgian case study ...	153
Appendix XVI – The ISCO-based data categories of the Joint Questionnaire	157

The Joint Action on European Health Workforce Planning and Forecasting

The Joint Action (JA) on European Health Workforce (HWF) 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 including non-EU countries and international organisations. The JA 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 on European Health Workforce Planning and Forecasting (JA EUHWF) is to provide a platform for collaboration and exchange between partners, in order to better prepare Europe's future health workforce. The JA aims to improve the capacity for health workforce planning and forecasting by supporting collaboration and exchanges between Member States (MSs), 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 should contribute to the development of a sufficient number of health professionals, aid in minimising the gaps between the need for and supply of health professionals equipped with the right skills, through forecasting the impact of healthcare engineering policies, and by re-designing education capacity for the future.

This document contributes to achieving this aim by providing an analysis on HWF terminology and data source gaps in European Member States.

This document was approved by the Executive Board of the Joint Action on Health Workforce Planning & Forecasting on March 5th, 2015.

Contributors and Acknowledgements

The preparation of this report was led by the Health Services Management Training Centre of Semmelweis University, Budapest, Hungary.

In addition, we would like to highlight the contributions that have been invaluable in preparing the materials reflected on in this document. Within this particular work, we are grateful for the knowledge and expertise of associated and collaborating partners who participated in Activity 1 of Work Package (WP) 4 and produced this document.¹

Our sincere gratitude goes to the following authors from Semmelweis University, Budapest, who directly contributed to the preparation of this deliverable: Zoltan Aszalos, Edit Eke, Eszter Kovács, Réka Kovács, Zoltán Cserháti, Edmond Girasek, András Wéber, as well as to Michel Van Hoegaerden, from the Catholic University of Leuven, the Programme Manager of the JA.

We are particularly grateful to Sigurlaug Hauksdottir, Gretel Dumont, John Fellows, Paolo Michelutti, Melanie Boeckmann, Nándor Rikker, Cris Scotter, Pascale Steinberg, Reijo Ailasmaa, Aurelie Somer, Giovanni Leonardi, Rui Santos Ivo, Irene A. Glinos, Pascal Meeus, Sarada Das, Nina Bernot, Sara Roda, Jamie Wilkinson, Pilar Carbajo, Lud van der Velden, Heinz Rothgang, Gilles Dussault, Matt Edwards, Paul Giepmans and Frédéric Destrebecq for their dedication and diligence in reviewing this document.

We thank all those WP4 Partners who completed our Questionnaire Survey as well as those National Focal Points for the OECD/Eurostat/WHO-Europe Joint Questionnaire who gave their support towards the completion of this survey.²

The following members of the WP3 evaluation committee have formally evaluated the document: Johanna Lammintakanen, Alisa Puustinen and Andrew Xuereb, under the leadership of Marjukka Vallimies-Patomaki from the Finnish Ministry of Social Affairs and Health.

We would like to extend our thanks to all partners engaged in the JA, especially to Michel van Hoegaerden, Lieve Jorens, Tina Jacob and Maria D'Eugenio (Belgian Federal Public Service of Health, Food Chain Safety and Environment; coordinator of the Joint Action) for their leadership and support.

Finally, the financial support from the European Commission is gratefully acknowledged and appreciated. In particular, we would like to thank Caroline Hager, Balázs Lengyel and Leon van Berkel from the European Commission DG Health and Consumers, as well as Antoinette Martiat from the Consumers, Health and Food Executive Agency (CHAFAE).

¹ See Appendix VIII. for the list of WP4 Associated and Collaborating Partners

² The list of JQ Focal Points involved in the completion of the WP4 Questionnaire Survey is in Appendix VI.

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.
Circular mobility	A form of migration that is managed in a way allowing some degree of legal mobility back and forth between two countries.
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.
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 will often influence one or more other factors in the system.
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. 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. 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 professions (within 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.
Health workforce (HWF)	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 <i>underserved/overserved areas</i> .
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.
Migration (inflow)	The act of (either temporarily or permanently) moving into a country, in this context in order to practice a profession.
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 planned to achieve these goals.
Planning system	Strategies that address the adequacy of the supply and distribution of the health workforce in relation to policy objectives and the consequential demand for health workforce.

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.
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 HWF.
Qualitative methodologies	Methods used to gather qualitative information on key factors which are likely to affect the supply and demand of HWF through a variety of techniques, such as interviews, document analysis, or focus groups. They include 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 worker following termination of, and withdrawal from the healthcare system. It is expressed in the number of health professionals retiring from the labour market.
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.
Stock (of HWF)	Number of available practising and non-practising 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).
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	The situation in which a healthcare system 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 area	A region or area that has a relative or absolute deficiency of health professionals or healthcare resources. This deficiency could present itself in shortages of professionals/specialities/skills required to deliver health services.
Variable	A characteristic, number or quantity that can increase or decrease over time, or take various values in different situations.
Health workforce planning	The combined system of strategies that address the adequacy of the supply and distribution of the HWF, according to policy objectives and the consequential demand for health labour (National Public Health Partnership, 2002).
Health workforce forecasting	The process of 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).

Executive Summary

Health systems cannot exist without a proper health workforce. Various European healthcare systems are under constant strain of tight budgets and reveal symptoms of weak performance³. One major underlying cause is the shortage and maldistribution of qualified and skilled health professionals.

Currently, political responses are developing at the EU level. This has been catalysed by the principles of ethical recruitment put forward by the WHO Global Code of Practice on the International Recruitment of Health Personnel⁴, and the strong need for a new employment dynamic,. Unfortunately, the relative unavailability and inadequacy of data are major obstacles to thoroughly assess the extent and impact of health workforce (HWF) challenges and possible policies.

Since 2010, Eurostat, the OECD, and WHO have carried out a joint data collection exercise to improve the consistency of data reported on human resources for health, known as the Joint Questionnaire (JQ) on non-monetary health statistics.

The benefits of the JQ are related to in-country data collection and inter-country comparisons. For the in-country data collection, the JQ could potentially provide a useful motivation, while it could also support a benchmarking system between countries leading to a self-assessment by national health systems. However, the quality of the data submitted by Member States makes analysis unreliable, despite the growing number of categories for which data is provided.

Most data providers are unaware of the potential usefulness of the JQ, which is explained primarily by lack of information, fragmented processes in data collection and analysis, as well as frequently too high and thus unfulfilled expectations towards this data collection.

Despite the limitations of the JQ from the perspective of health workforce planning and its non-mandatory character, the JQ is an important step towards comprehensive data collection on human resources for health and supporting international benchmarking. To make it even more useful for HWF analysts and policy makers, some improvements are needed.

Even though raw values collected by the JQ cannot and should not be compared across countries, the following categories of information for example can be benchmarked:

- the relative evolution of the health worker/population density of all collected categories;
- the ratio of the number of different types of health professional groups and their evolution over time.

Work Package 4 of the Joint Action has performed an analysis and presents this report on the Joint Questionnaire, aiming to contribute to the improvement of this data collection scheme. Work Package 4 thus contributes to a better understanding of available data on the Member State and European level, and to providing policy

³ See e.g. the WHO Health Care Systems in Transition (HiT) country profiles

⁴ WHO (2010a)

recommendations to improve health workforce data collection in EU Member States. This activity, together with Work Package 5 activities on quantitative planning methodologies, and Work Package 6 activities on qualitative HWF Planning and horizon scanning - contribute to the overall aim of the Joint Action to support Members States in developing a reliable health workforce planning system that enables the fulfillment of national healthcare needs.

At data collection level, the *major findings* of the analysis on international HWF data terminology and collection are:

TYPE OF DATA	RELEVANCE	JQ LEVEL	LOCAL DATA COLLECTION LEVEL
PROFESSIONAL CATEGORIES: doctors dentists pharmacists nurses midwives	Current professional categories cover an important part of the supply of health professionals. While the application of different categories may be required to map real future demand for HWF, the current HWF production categories are still covered by the current professional categories.	The definitions can be fine-tuned for EU usage, but evidence suggests that for Doctors, Dentists and Pharmacists, the divergence between the EU and the ISCO categories does not create a significant error. The current definitions of nurses and midwives need rethinking to reflect reality.	Minor to medium improvements can be made, though most of them relate to the synchronisation of data among many stakeholders, and the lack of quality data in some areas.
ACTIVITY STATUS CATEGORIES: "licensed to practice" "professionally active" "practicing"	These data are very relevant when used in ratios and for analysing variations.	The interpretation of the relationship between the 3 JQ activity status categories as concentric circles needs reworking. Comparability cannot be achieved in the current context.	The large variation of local legal concepts and practices impairs proper comparability. Still, good practices and local improvements can be identified.
HEADCOUNTS & FULL TIME EQUIVALENT (FTE)	Both categories are highly useful for international benchmarking, but interpretations must be cautious, especially of FTE, due to differing FTE measurements across countries.	While the headcount definition is straightforward, the current FTE definitions cause a major mathematical incoherence that needs to be remedied.	A large variance of FTE calculations is identified, which impairs any benchmarking based on those data.

The analysis in this report leads to a set of **recommendations**, which can be grouped under the following 5 overarching recommendations:

Recommendation 1

National data collection should be improved by developing strategic directions, with the involvement of national stakeholder organisations. The rationale behind this recommendation is that data collection is an important instrument for the monitoring and planning of healthcare systems, especially in the health workforce planning context.

Recommendation 2

National HWF data collectors and owners (such as ministries of health, professional chambers, health workforce planners and data providers) **should work together to achieve better HWF data flow at the national level**, thus improving the current JQ data collection.

Recommendation 3

International data collecting organisations should facilitate the training of and working in partnership with data providers and the JQ National Focal Points, in order to facilitate the understanding of the usefulness of international HWF data collection in serving national interests. The identification of clear domestic benefits resulting from investment in international data provision is essential for motivation and engagement at the national level.

Recommendation 4

The JQ data collection in the activity status data categories of health workforce (“Licensed to Practice”, “Practicing” and “Professionally Active”) **in both headcount and full-time equivalent (FTE) should be improved**. This will allow for a better streamlining in international comparability and serve a better HWF monitoring and planning at national level.

Recommendation 5

Strategic changes in data categorisation at the international level for the nursing, midwifery and caring professions should be implemented, in order to increase the value of JQ reporting.

Conclusions

European health systems, despite their diversity of ambitions and structure, may no longer be managed in isolation from each other, as resources, patients, and services are subject to free movement. Improving the availability, quality and comparability of data reported to the Joint Questionnaire, a recognised worldwide data collection tool, is an important task to sustain a common understanding across countries on the different categories of health workforce. This improvement is also needed to have a more accurate picture of the health workforce in order for national health systems to plan their future health workforce needs better, with a dedication to meet future population

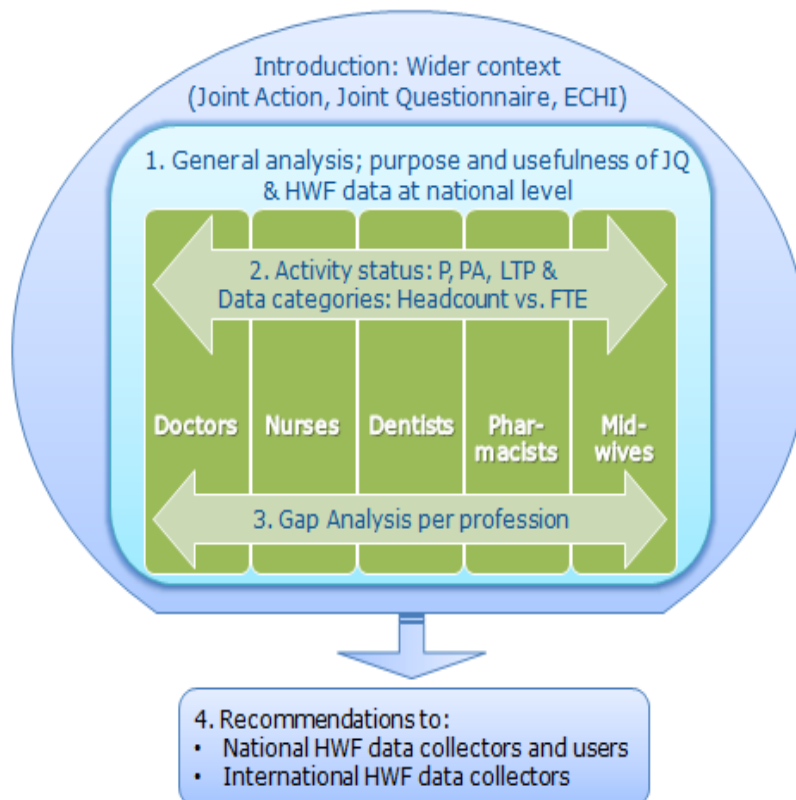
healthcare requirements. Despite the complexity and challenges of the needed improvements, the recommendations contained in this report will help to sustain and develop this international data collection process.

This report contains the results of a shared process involving more than 90 representatives of 48 associated and collaborating institutional partners of the Joint Action on European Health Workforce Planning and Forecasting (European Member States as well as stakeholder organisations)⁵. These partners are primarily health workforce data user departments of ministries of health and universities.

The final recommendations represent a consensus of Work Package 4 partners, which was achieved through a collaborative process. This process started with the Joint Action WP4 kick-off meeting in April 2013, then included two workshops (in June 2013 and March 2014). After the review process ended in January 2015, this deliverable was submitted to the Executive Board of the Joint Action (in March 2015).

Document structure

The structure of the document in a visual chart:

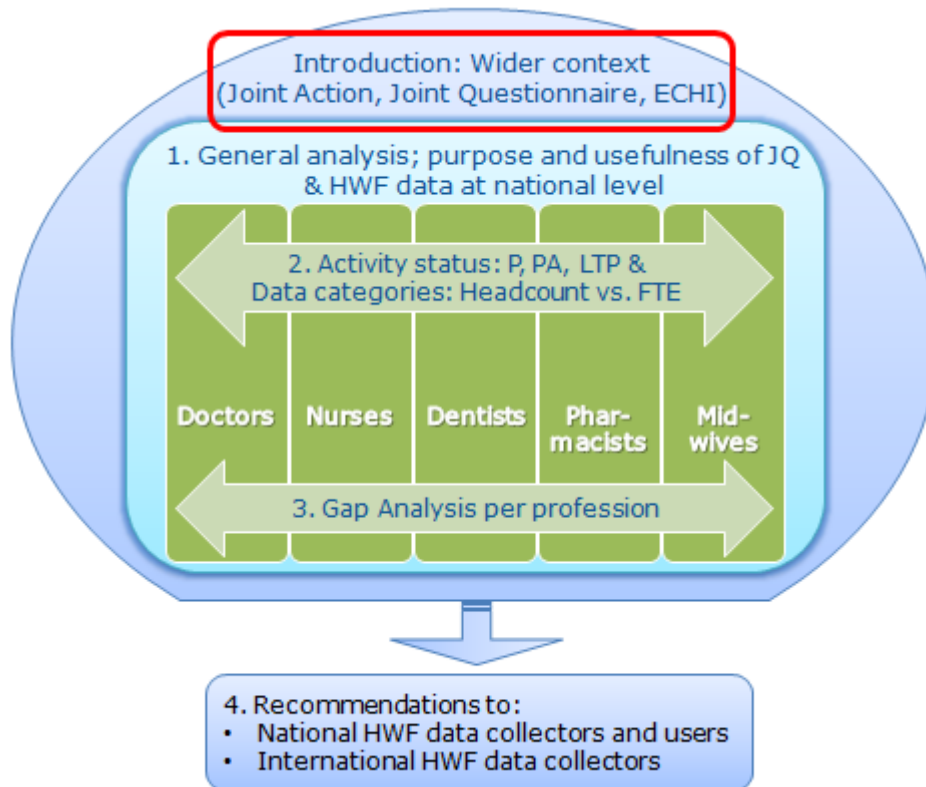


⁵ See the list of all WP4 Partners in Appendix VIII.

The contents of the Chapters

Executive Summary	
Introduction	Describes the wider context of the activity presented in this document and the annual joint data collection of Eurostat-OECD-WHO, as well as cooperation with ongoing EU initiatives in the area of HWF data collection.
Chapter 1	Constitutes a summary of the general issues concerning data collection by the Joint Questionnaire, including a discussion on the purposes and usefulness of JQ data collection, as well as an analysis of the health workforce data flow at the national level.
Chapter 2	Provides a gap analysis on the activity status categories as well as on the headcount and Full-Time Equivalent (FTE) data categories of the JQ.
Chapter 3	Presents a gap analysis on data collected by the JQ in the 5 sectoral professions (doctors, dentists, pharmacists, nurses and midwives).
Chapter 4	Offers recommendations to international data-collecting organisations and to national HWF data collectors and users.
References	This section includes references cited in the text as well as a <i>Further Readings</i> sub-chapter, with additional HWF literature covering HWF terminology, HWF mobility and HWF monitoring & planning.
Appendices	

Introduction



The general objective of the Joint Action on European Health Workforce Forecasting and Planning is to provide EU Member States (MSs) with a platform for collaboration and exchange that supports planning the future of the national health workforce.⁶ This enables MSs to take more effective and sustainable measures concerning national level health workforce planning. As part of these efforts, various tools are developed within the JA to enable MSs to implement national HWF planning or to enhance the current planning processes.

The JA has four core WPs in charge of different areas of HWF planning, as follows: WP4 - Data for health workforce planning; WP5 - Exchange of good practices in planning methodologies; WP6 - Horizon scanning, and WP7 - Sustainability of the JA.⁷

The context and activities of Work Package 4

As the Grant Agreement of the JA indicates, the activities of WP4 provide the “key building blocks of the HWF planning and forecasting systems by providing a better understanding of available data on the Member State (MS) and European level, and on

⁶ For detailed information on the Joint Action please visit <http://euhwforce.weebly.com/>

⁷ In addition to the four core work packages, the coordination, dissemination and evaluation work packages (WP1-3) support the core work packages in achieving their purpose as a platform for collaboration and knowledge exchange.

that basis providing policy recommendations to improve data collection in the Member States of the EU.”⁸

For this purpose, WP4 is undertaking three activities, focusing on specific groups of HWF data. Each activity produces a formal report:

- Activity 1: **Terminology gap analysis** based on the data supplied by MSs to the Joint Questionnaire of OECD-WHO-Eurostat (discussed in this document) - Deliverable D041: Report on terminology mapping;
- Activity 2: **HWF mobility data** available at the European level - Deliverable D042: Report on mobility data in the EU;
- Activity 3: **HWF planning data** collected by Member States - Deliverable D043: Report on HWF planning data.

These activities harmonise well with some of the activities of WP5 and WP6. The findings of this activity on HWF terminology contribute to the production of the Handbook on quantitative planning methodologies by WP5, and also to the qualitative HWF Planning activities of WP 6.

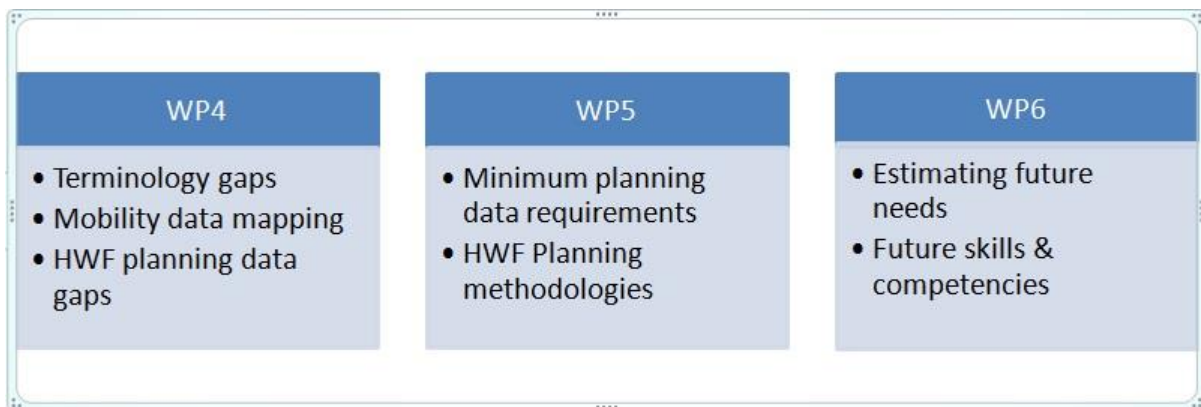


Figure 1. The focus areas of the activities in WP4, and the most closely related focus areas of WP5 and WP6 of the JA. (For a full description of WP5 and WP6 activities, please see the Grant Agreement)

D041 report: Terminology gap analysis (Activity 1 report)

This report is the first deliverable (D041) from WP4 of the Joint Action on European Health Workforce Forecasting and Planning. This report, based on a research methodology⁹ and structured protocol¹⁰, building on the contribution of WP4 partners¹¹, will

- (1) identify and analyse the terminology and data gaps in the international-level HWF data collection¹² ;

⁸ For a scope description of WP4 scope and Activities, see Appendix VIII.

⁹ The research methodology for this deliverable is presented in Appendix I.

¹⁰ The Protocol for this deliverable is presented in Appendix II.

¹¹ See the full list of WP4 Partners in Appendix VIII.

¹² Data collection by the Eurostat-OECD-WHO Joint Questionnaire on Non-Monetary Health Care Statistics

(2) provide recommendations on how MSs can provide more reliable data for JQ data collection;

(3) make recommendations to international data-collecting organisations on improving data collection by the JQ, in order to make it more useful for the strategic HWF monitoring and planning purposes of MSs.

The development of this report was based on various sources of information: literature review; information received from WP4 partners, during the workshops in Budapest (June 2013) and Utrecht (March 2014); a Questionnaire Survey sent out to all 14 WP4 partners; interviews with health workforce experts, as well as other JA activities and results. (The research methodology for this deliverable is presented in Appendix I).

JQ data collection - a brief description

Currently, the primarily institutionalised international scheme for collecting HWF data is the Joint Questionnaire on non-monetary healthcare statistics by Eurostat, the OECD and WHO. Previously, these three organisations sent out separate surveys, but in order to lower the administrative burden on countries, they decided to develop one joint questionnaire.

The first JQ was sent out in January 2010 to National Focal Points¹³ for completion, with the primary objective¹⁴ to provide internationally comparable data to monitor and compare (benchmark) key non-monetary aspects of healthcare systems. As of March 2014, 61 countries received the Joint Questionnaire, including 53 countries in the WHO-Europe region and 8 OECD countries outside Europe, including Canada, the United States and Japan. This data collection “constitutes an important step towards comparison of human resources for health across Europe.”¹⁵

The health workforce data collection of the JQ focuses on the major groups of health professionals: doctors, nurses, midwives, dentists, pharmacists, physiotherapists, caring personnel and other hospital employees. This is used on the only available international classification for workforce: the International Standard Classification of Occupations (ISCO-08), developed by the International Labour Organisation (ILO). ILO describes ISCO “as a tool for organizing jobs into a clearly defined set of groups according to the tasks and duties undertaken in the job” developed to serve as “a basis for the international reporting, comparison and exchange of statistical and administrative data about occupations”¹⁶. Qualifications and education requirements are not specified in the ISCO definitions; however, in many fields, a qualification is a prerequisite to fill in a vacancy.

¹³ National Focal Points of the JQ are in general national statistical offices or departments belonging to Ministries of Health.

¹⁴ Based on the presentations of Gaetan Lafortune, senior economist, Health Division, OECD, at the Budapest and Utrecht Workshops of Work Package 4 in June 2013 and March 2014 respectively, and at the JA Conference, Bratislava, Slovak Republic on 29th January, 2014.

¹⁵ EC Feasibility study (2012, p. 12)

¹⁶ ILO (2014)

JQ data collection assembles data on the five sectoral professions in the three activity status categories as follows: “*Licensed to practise*”, “*Practising*” and “*Professionally active*”.¹⁷

As Figure 2 shows, the JQ collects only a segment of data needed for HWF planning, as it focuses on the supply side of health workers and only on those graduates entering the HWF.

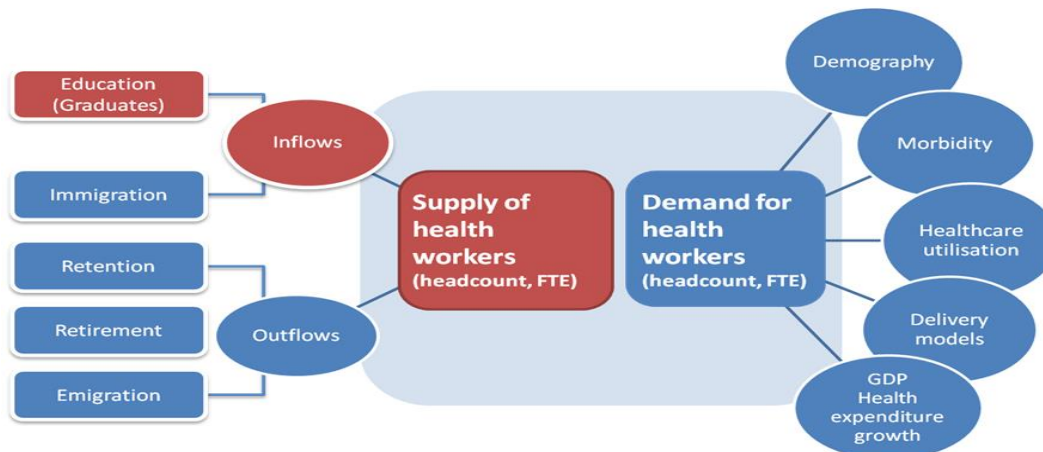


Figure 2. Data collected by the Joint Questionnaire (in red) compared to all of the data necessary for HWF planning - OECD.¹⁸

As of November 2014, two initiatives should be mentioned below that may further expand the health workforce data collected by the JQ:

- the first pilot collection of a minimum data set on **health workforce mobility** (focusing on doctors and nurses). This data collection was completed by October 2014, and it will be part of the regular data collection every three years.
- a new pilot **data collection on student admissions in medical and nursing education programmes** (with the intention to complement current JQ data collection on medical and nursing graduates).

The above initiatives will obviously amend the pool of data collected by the OECD on a global level.

The D041 report and the JQ data collection

According to the JA Grant Agreement, “participants of Work Package 4 will identify MS level [data source] terminology gaps [in international data reporting] i.e. the difference between the JQ definitions related to doctors, dentists, pharmacists, nurses and midwives (including the “Practicing”, “Professionally Active” and “Licensed to Practice”

¹⁷ For a detailed description on the categories and statuses. please see the list of the ISCO-based data categories of the Joint Questionnaire in Appendix XVI.

¹⁸ Presentation of Gaetan Lafortune, senior economist, Health Division, OECD, at the WP4 Workshop in Utrecht, Netherlands on 6 March 2014

categories) and the data Member States actually provide in these categories in their annual JQ report.”¹⁹

The table below summarises the data categories in the focus of the WP4 analysis.

Table 1. The data categories serving as a base for the WP4 analysis

ISCO Code	Licensed to practice	Practising	Professionally active
Doctors: 221, 2211, 2212			
Nurses: 2221, 3221			
Dentists: 2261			
Pharmacists: 2262			
Midwives: 2222, 3222			

The gap analysis exercise cannot undertake an in-depth-analysis of the quantitative data reported by the MSs and does not aim to allow a quantitative comparison of the HWF in different countries. Instead, the focus is primarily on studying the definitions used, data sources, data availability and quality of data content. Eventually, this effort will help reveal the national characteristics in education structure and healthcare systems that can lead to some uncertainty in comparability. Moreover, the WP4 Questionnaire Survey was not filled out by all EU and EFTA countries, and the non-representative composition of respondents (mainly representatives of human resources departments of Ministries of Health) could also lead to biased conclusions.

WP4 Activity 1 links with EU activities

The European Commission and some EU-level professional organisations share a strong commitment to improve the quality of HWF data in the European Union. The EU initiatives introduced below, and especially the one based on the Eurostat Action Plan, build mostly on the data categories applied by the JQ, but they also express a need for EU-specific data categorisation. This deliverable is strongly interconnected with current and past HWF policy activities at the European Union level. The main connection points between WP4 and these activities are summarised below.

Work Package 4 builds on the findings of the **2011 Eurostat project on analyzing the results of the Joint Questionnaire of Eurostat, OECD and WHO on non-monetary health care data**, a key piece of literature supporting the development of this global HWF data collection scheme.

¹⁹ Grant Agreement Annex Ib, p. 19. In: Specific Objective 1 - Better understanding of terminology used on health workforce description.

As a follow-up to the first round of the 2010 JQ, the Eurostat network on Public Health Statistics delivered a special report²⁰ that was completed in April 2011. This report consisted of a series of analyses and a review of the results of the JQ. The overall aim is to prepare a report with recommendations for improving data availability on a global scale in order to achieve consistent, relevant, and more comparable reporting by all MSs. This report was based, inter alia, on the requirements of the European Statistical System's network on Public Health (ESS-PH) Handbook for Quality Reports and addressed the problem of incomplete metadata information in the advent of a future Implementing Regulation (IR) on care for Regulation 1338/2008²¹.

According to the *Conclusions and Recommendations* section of this document, "in view of the preparation of the Implementing Regulation (IR) on non-monetary data, there is a need to further improve comparable, timely, and consistent reporting of all variables in the JQ by all Member States and to further investigate development of metadata information."²²

The current deliverable document builds its analysis partly on this evaluation. The only difference is that, while the Eurostat report was developed through cooperation of national-level statistical offices, WP4 predominantly involved the representatives of European Ministries of Health (MoH) who apply HWF data to their work.

Work Package 4 integrates **European Core Health Indicator (ECHI)** analysis on the international comparability of HWF data in the current deliverable.

European Community Health Indicator Monitoring (ECHIM) was a three-year Joint Action aiming to develop and implement health indicators and health monitoring in the EU and all EU MSs.²³ It continued the work of the previous ECHI and ECHIM projects, and finished in June 2012. The most important ECHIM products are the ECHI shortlist of 88 indicators and their metadata, and a three-volume Final Report²⁴.

Out of the 88 indicators, the following two also appear among the JQ categories:

- Practising doctors: Indicator No. 63
- Practising nurses: Indicator No. 64

In fact, these two indicators on the number of practising doctors and nurses identify the JQ as data source. In other words, these two indicators are unique connection points between international HWF data and ECHIM.

The ECHI project provided a useful analysis of the issues concerning the international comparability of data supplied to the JQ. This analysis was published online in the

²⁰ Stig, K. and Lütz, I. P. (2011)

²¹ This work/task comes under the Agreement European Statistical System Network Project on Public Health Statistics, 10501.2009.003-2009.405 concluded between the Contractor and the European Commission.

²² Chapter 3., p. 16 in Conclusions and proposals.

²³ Originally ECHI stood for European Community Health Indicators; since 2013, it stands for European Core Health Indicators.

²⁴ The final report of the JA ECHIM with the documentation sheets of the indicators and the source of data collection for all the indicators. In: ECHI (2012).

document “ECHI remarks on comparability”.²⁵ The findings of the ECHI project on the comparability of international HWF data on practising doctors and nurses are also integrated in the gap analysis within this deliverable document.

Work Package 4 had an exchange of information with the Task Force (TF) for a **Commission Regulation on non monetary health statistics.**

The Task Force consists of representatives from nine Member States from national statistical authorities and assists Eurostat in the development of a set of mandatory variables/indicators for health workforce data collection in the EU.

The planned regulation implementing **Regulation (EC) No. 1338/2008 on Community statistics on public health and health and safety at work**²⁶ is including HWF data and builds on the existing variables of the JQ. It may have an impact on HWF data collection in Europe due to its mandatory nature.

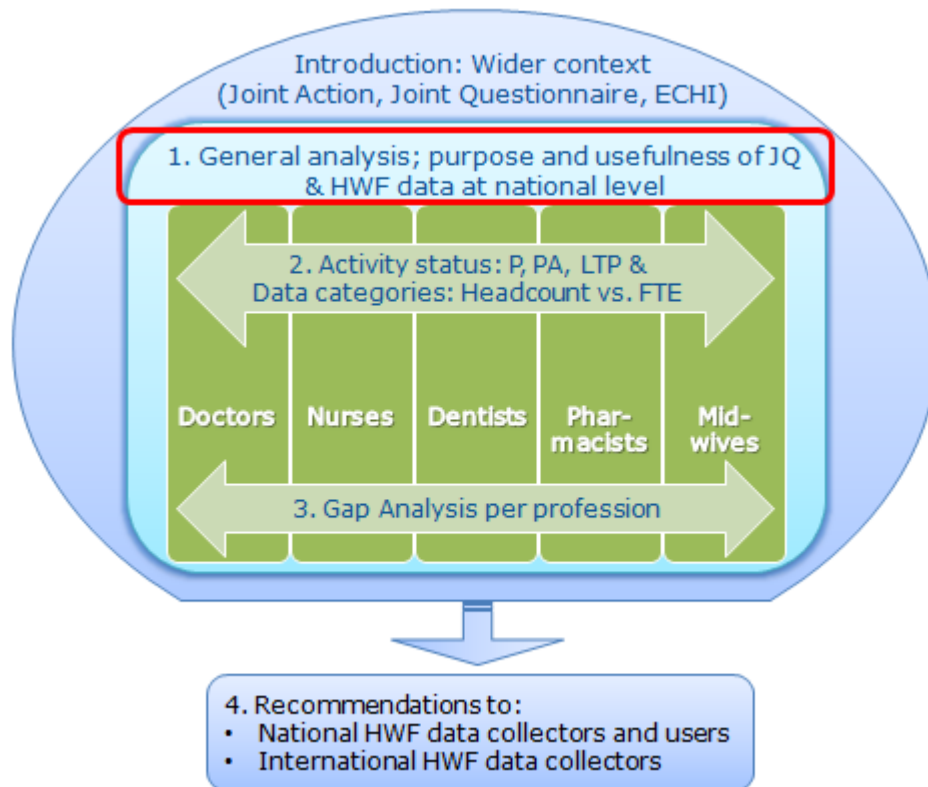
Whilst the JQ is based on voluntary agreements coordinated by Eurostat, WHO and the OECD on data collection, the preparation of the EU regulation is an entirely European Commission (Eurostat) led process for a legislative proposal, which will require formal adoption by EU Member States in 2016 and will be legally binding.

WP4 offered to contribute to the work of the Task Force via sharing research results of its Activity 1 presented in this document.

²⁵ ECHI (2012b)

²⁶ EC (2008)

1 – The purposes of the Joint Questionnaire and its difficulties in collecting high quality data



This chapter offers answers to the following questions:

1. What are the purposes of the JQ from an international and national perspective?
2. How useful is the JQ data collection and can JQ data be used for national HWF planning?
3. Which actors are involved in collecting data at a national level and how do they cooperate?
4. What are the problems countries face when supplying the data to the JQ?

1.1 The purposes and usefulness of JQ data collection

The Guide for the JQ states that "the overall objective of this Joint Questionnaire is to **provide internationally comparable data on key aspects of health care systems** as they relate to health care resources (and physical/technical resources)."²⁷

According to the European Commission Feasibility Study, "stakeholders in the Member States have argued that the JQ constitutes an important step forward for the collection of comprehensive and complete data on human resources for health across Europe. The work carried out by WHO, OECD and Eurostat as part of the development of the Questionnaire has also led to the identification of key definitions (of health professions)

²⁷ Guide for the 2012 data collection. An alternative statement from the OECD: The purpose of the data collection is to provide a minimum dataset that can be used to compare the number of health care workers across countries and over time. In: OECD (2012)

and of key indicators. These have been effectively used for *benchmarking at national level* and have, in certain cases, influenced national data collection methodologies. However, it still seems that data collected through the JQ are not used at national level to inform *health workforce planning* and are still not sufficiently accessible.”²⁸

The Eurostat and OECD standpoint

The JQ collects an essential but limited scope of data required for HWF planning. The OECD underlines that this dataset may serve only as one of the starting points (or as one of the various types of required inputs) to HWF planning at the national level.

National-level HWF planning, however, will always need to use more precise and detailed data available at the national level, in order to assess and plan the current and future supply of different health workers in each country. As countries have different health systems, different planning policies and goals, as well as different resources and data calculation arrangements for HWF data collection, only a limited set of comparable data may be collected at the international level.

The 2011 Eurostat report on the JQ already underlined that “there must be an aim and objective for collecting the variables that is useful for comparison, analysis and evaluation of the health care systems between countries. It is also important for countries to know why different variables are to be collected. It would also be an advantage if the Member States themselves had a benefit of the variables collected for national analysis.”²⁹

Eurostat drew attention to the resources necessary at national level for a data supply that can match JQ requirements. As long as countries do not invest in data-collecting methodologies that yield the proper data, the JQ cannot become a genuine decision-making tool for HWF experts and policy makers.³⁰

JA partners on the purposes of the JQ

In April 2013, during the kick-off meeting of WP4 in Brussels,³¹ out of the 46 participants - primarily from the HWF data management or HWF planning departments of Ministries of Health, or representatives of research institutes - only three participants confirmed their awareness about the existence of the JQ.³² This is an important signal that this data collection primarily involves data producers at the national level, and does not receive the attention of national-level experts using HWF data for their work.

²⁸ EC Feasibility Study (2012, p. 32)

²⁹ Stig, K. and Lütz, I. P. (2011, p. 11)

³⁰ Hartmut Buchow, Eurostat, during the WP4 Workshop in Utrecht, March 6th, 2014

³¹ April 12th, the day of the kick-off meeting of the Joint Action

³² Later on, while participating in the terminology-related activities of WP4, all participants obviously became familiar with the JQ data collection system

A separate section of the WP4 Questionnaire Survey³³ was developed to discover the viewpoints of WP4 Partners on the data categories and with respect to reporting to the JQ, as well as the *usefulness* of the JQ for international benchmarking and HWF planning. The following four statements were rated on a Likert-type scale by WP4 partners, indicating the level of agreement ('1=completely disagree', '10=completely agree').

Table 2. Statements on the JQ and their average ratings

Statement on the JQ	Average rating
The JQ categories correspond well to the national composition of the five sectoral professions (doctors, nurses, pharmacists, dentists and midwives) in your country.	7.1
JQ reporting raises no issues for the national data collection system of your country.	5.1
The JQ provides an excellent resource to benchmark national data with data from other countries.	6.2
The JQ provides an excellent resource for contributing to national health workforce planning.	4.7

Based on the average ratings, we can say that , while country representatives find that their countries have limited difficulty in matching JQ categories to national data collection, the overall JQ reporting system may prove to be difficult for the national data collection system. There is a better than average rating for benchmarking national data with data from other countries, while the JQ has a limited value as a resource for national health workforce planning. The distribution curves representing the various answers to the above four questions are presented in Appendix IX.

Views of HWF data experts

HWF experts³⁴ expressed differing views on the purposes and usefulness of the JQ. Some experts highlighted the importance of the *impact of the JQ on the standardisation of HWF terminology*. In line with this, at the European and global level, the standardisation of HWF categories - although with moderate steps - is developing in the right direction, partly due to JQ data collection.

There is also a strong agreement among experts that *JQ is a tool with potential* - but it should evolve to be more useful, as the data collection process is currently not in line with the data needs of many EU countries, due to its ISCO-based data categories.³⁵ (See the analysis of ISCO definitions vs. the 2005/36/EC Directive definitions in Chapter 3.) Therefore, data produced for the JQ cannot be applied to national HWF monitoring purposes in some cases.

³³ See the WP4 Questionnaire Survey in Appendix III. - Question 1.B. on applying JQ and ISCO definitions in national data collection to support better HWF planning

³⁴ Expert views presented here include the pool of HWF professionals introduced in Appendix V., as well as national experts (Giovanni Leonardi - Italy, Rui Santos Ivo - Portugal, Aurelie Somer - Belgium)

³⁵ See the list of the ISCO-based data categories of the JQ in Appendix XVI

Whilst ILO and the developed ISCO codes promote a global vision of all professions, Ministries of Health across EU MSs have a sectoral vision that would promote the establishment of more focused and detailed data categories. The JQ dataset, although not a planning tool at the national level, should constitute a reference for indicators at the international level relevant to planning or related activities at the national level.

The special consideration OECD has given in its recent pilot study³⁶ to the collection of mobility data is a positive development, since mobility data plays a pivotal role in HWF monitoring for those EU countries having a high inflow or outflow of health professionals.

Some critical comments are raised by some of the experts concerning the JQ. According to them, despite its substantial approach, the JQ may be considered an inadequate tool. This is because the data collection is based on *ISCO codes*, which *do not correspond to the context of healthcare*, and it reflects neither the mix of skills nor the health services environment. As such, the JQ has insufficient granularity to be a relevant tool for HWF monitoring and planning.

The *scope* of JQ data collection is also *frequently questioned*, and some experts requested that data beyond the healthcare sector (with special emphasis on the social sector) should also be collected, while *new professions* should also be integrated into the data collection. Another remark requests that the JQ should also include the *social sector*, with a special consideration for the numerous health workers employed in this field. Moreover, the JQ *focuses primarily on doctors* and is less articulated on nurses, while EU forecasts clearly underline the importance of managing the phenomenon of nurses missing from European healthcare systems.³⁷

1.2 National HWF information flow

The national HWF information flow and specifically the national process of data provision to the JQ has a significant impact on the quality of the data submitted. Most WP4 participants refer to the deficiencies in the national data collection process as a primary reason for divergence from JQ data definitions. The present chapter aims to investigate the process of data collection and the actors involved in different MSs. In the end, this will serve to achieve greater clarity on the distribution of responsibilities and to learn from best practices by MSs concerning the collection of HWF information and their submission to the JQ.

“monitoring and evaluation of HRH requires good collaboration between the ministry of health and other sectors that can be reliable sources of information, notably the central statistical office, ministry of education, ministry of labour, professional licensing or certification bodies, and individual health-care facilities and health training institutions. Discussions between representatives of the ministry of health, central statistical office and other stakeholders, such as professional associations and development partners, are recommended from the beginning to set an agenda for data

³⁶ Data collection initiated undertaken by OECD and preliminary results presented in Paris, October 2014

³⁷ WHO (2009b)

harmonization.....” WHO Handbook on Monitoring and Evaluation of Human Resources for Health³⁸

Baseline analysis

The impact of the cooperation between national data suppliers on data quality

The EC Feasibility Study revealed that in the overwhelming majority of EU MSs, several national institutes collect HWF data and contribute to JQ reporting, and as the table below shows, the number of organisations involved in the compilation of JQ data may reach up to five data suppliers.

Table 3. HWF data collecting institutions³⁹

Member State	Regional/ National Statistics Office	Ministry of Health	Ministry of Education	Other Public Institutions ***	Universities	Professional Associations	Health/Social Security Insurers	Service Providers
Austria	x			x		x		x*
Belgium		x		x		x	x	
Bulgaria	x	x	x				x	
Croatia	x	x		x		x	x	x*
Cyprus	x	x				x		
Czech Republic	x	x	x			x		x*
Denmark	x	x						
Estonia								x
Finland	x	x	x	x		x		
France		x	x	x				
Germany	x					x		
Greece								
Hungary	x	x			x			
Iceland	X	x				x	x	
Italy	x		x	x		x		
Latvia	x	x						
Liechtenstein	x					x		
Lithuania				x		x	x	
Luxembourg		x						
Malta		x		x				x*

³⁸ Dal Poz *et al.* (eds.). See the broader context of the quote in Appendix XIII.

³⁹ EC Feasibility Study (2012), p.37

Macedonia								
Montenegro								
Netherlands	x	x		x		x		
Norway		x		x		x		
Poland	x			x		x		
Portugal								
Ireland								x
Romania		x				x		
Slovakia		x	x			x		
Slovenia	x	x				x		
Spain	x					x		
Sweden	x	x						
Turkey								
United Kingdom	x	x	x			x		x

*Hospitals

***Other public institutions involved include regional governments and accreditation bodies.

Source: EC Feasibility study (2012) Table 6.

Most frequently, the *National Focal Point* (NFP) is the *National Statistical Office*, which conducts the data collection and submits the JQ data. Statistical offices usually collect data from professional associations, chambers, councils that hold the national registries of different professions, or a Labour Force Survey that provides information on the HWF. In some countries, the Ministry of Health has designated departments responsible for HWF monitoring, planning and forecasting and/or they accumulate the data for JQ report.

In some countries, cooperation is well organised, and HWF data organisations have established a stable flow of information. The two best practices used by the Netherlands and Finland demonstrate positive examples of national cooperation as shown in Boxes 1-2, below. Such national cooperation leads to a better management of HWF data flow and may also increase the viability of effective and appropriate reporting to the JQ.

Box 1. Best practice for inter-organisational cooperation - the Netherlands⁴⁰

Although no information system can be perfect, the Dutch information system on health professionals can be qualified as satisfactory in many respects. Several “secrets” lie behind this qualification.

One of these “secrets” is that *the main registration systems have a strong legal base* (“Wet BIG” - the law on professionals who are involved in individual health care delivery). This law ensures cooperation on several levels of the system, both between licensing organisations (mainly run by professionals themselves) and the government. There is an ongoing information flow within the system, not only on the persons who have gained, renewed or lost their license, but also on basic information such as who has died or changed their residence.

Another “secret” behind its success is that key stakeholders are engaged in *the registration system and take the registration process seriously*. This is the case not only for all individuals and organisations involved in its direct control, i.e. those who are involved in formulating the requirements for licensing educational institutes, educators and professionals, but the system is also taken seriously by all individuals and organisations who use the system or are subject to it (e.g. employers and healthcare insurers who demand professionals to be registered, and the professionals who therefore feel the requirement to keep their registration up to date).

Yet another secret is the way in which *information from several sources is combined by Statistics Netherlands*. This has led to an “integrated database” in which data from municipalities (“where people live”), taxes (“who received an income”) and registrations (“who has a license”) are combined. Despite the considerable time lag of about 2-3 years, this integrated database is able to provide answers to important questions, e.g., on how many licensed professionals were indeed active in their profession in the Netherlands.

In addition to the registration system and Statistics Netherlands, there are other organizations involved in *delivering additional data to the information system*. For several specific segments of the health workforce, some additional data is collected, mainly with surveys on representative samples. This additional data collection is often initiated or at least funded by the government. Most of the time, professional bodies are also involved. Some of these data collections are for monitoring purposes, but mainly used for policy development. A good example for such additional data collections is the research program on the “labour market cure and care”, currently conducted by KIWA Carity. In this program, data is regularly collected on employers and employees for - among other reasons - formulating labour market policies for organisations on both a national, regional and local level. Another example is the registration of several professions by the NIVEL. For general practitioners, midwives, physiotherapists, occupational therapists and remedial therapists, information on professionals (“who is working where”, “who seeks what”) and their practices (“who works with whom”, “how are practices organised”) is collected. In its basic form, these registrations can be used for monitoring purposes, but the information that is already available can also be used for policy development.

One of the users of the information system is the Advisory Committee on Medical Manpower Planning (ACMMP). They have specific information needs and *they have intervened in the system* to make it more capable of delivering the data that is needed for planning purposes. They have also funded additional data collections to answer specific questions.

⁴⁰ This summary was put forward by Lud van der Velden, Senior researcher at NIVEL, the Netherlands

Box 2. Best practice for inter-organisational cooperation - Finland⁴¹

The Finnish information system on health professionals is satisfactory in many respects. *The system is used as a planning and as a monitoring information system.* Their data needs and usage are slightly different.

For monitoring, there are several separate data collections and productions. Since all health professionals have to apply for a licence/authorization to practise in the health profession, there is a strong reason to be registered at Valvira (the National Supervisory Authority for Welfare and Health), the government organization responsible for practising and legal rights. This is done by the professionals themselves after their basic information is automatically sent to Valvira from educational institutions. *There is an ongoing information flow within the system, not limited to the people who have gained, renewed or lost their licence.* In Finland the licence is lifelong, unless it is withdrawn by Valvira. There is also a public database for citizens to check if a certain person has the right to practice a health profession.

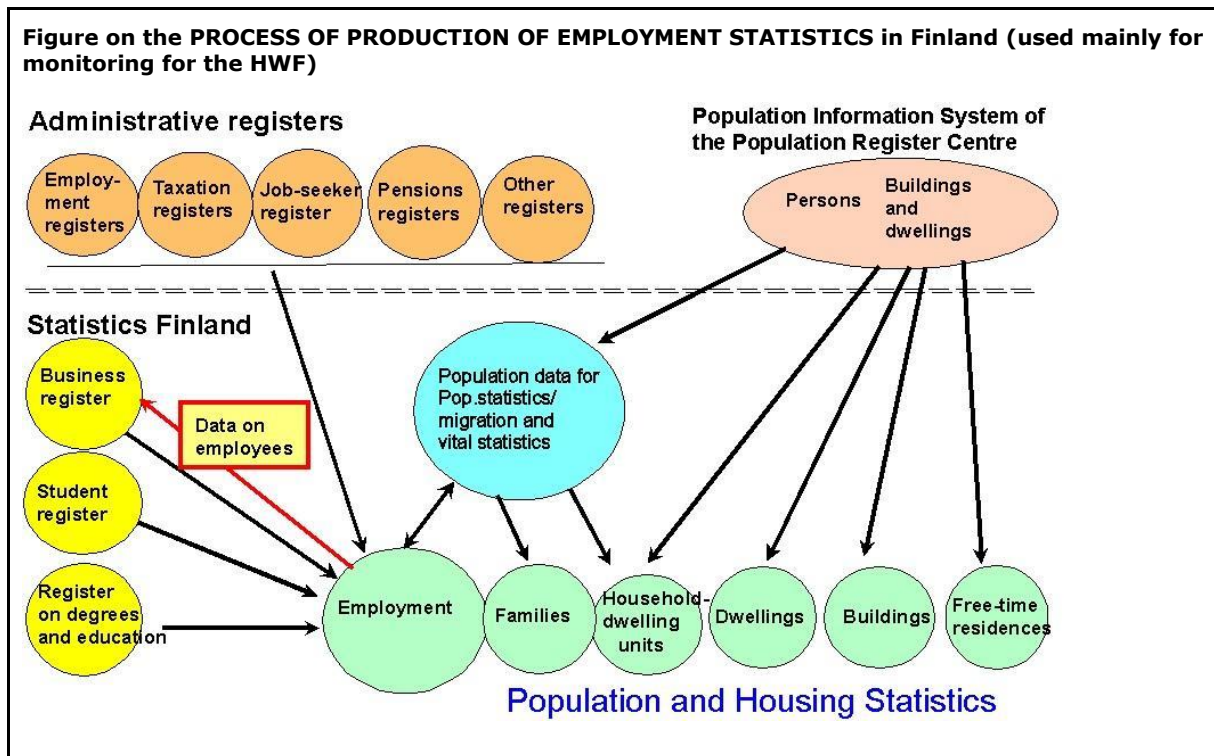
The Valvira database does not show if a person really practises her/his profession. This is done by Statistics of Finland, which combines information from several sources. These *Employment Statistics are an "integrated database" in which data from employers ("where do people work"), taxes and income ("where the main income is from") and education and degrees ("who has an exam at what level") is combined.* Almost all of the people living in Finland (more than 4.2 million of the total population of 5.5 million) are in the "Register on Degrees and Education" which is regularly updated. One of the information sources is Valvira, but the registry at Statistics Finland is larger and uses other sources as well.

Although containing a time lag of 2-3 years, this integrated database is able to answer important questions such as the number of professionals active in their own profession in Finland. This includes information on unemployment and retirement, as well as on maternity leave, etc. *The main purpose is to follow trends such as the need for new entrants to the labour market, and not to handle day to day problems at the hospital or the regional level.*

In addition to the registration system and Statistics of Finland, there are other organisations involved in delivering additional data to the information system. For several specific segments of the health labour market, some additional data is collected, mainly with surveys on representative samples. These include surveys by the The Finnish Medical Association (FMA) for physicians, and by the Finnish Dental Association for dentists to discover regional shortages. The shortages survey for all professions is done by Local Government Employers (KT).

All of the monitoring data provides direct feedback into the planning process. The first phase is the VATTAGE model that is based on Finnish SNA (System of National Accounts) and its data production. For planning purposes, the Mitenna model uses as its base the VATTAGE model. Mitenna uses information from several data producers, but mainly those by Statistics of Finland. For the Mitenna model, the same procedures and principles are in use as those that apply to the monitoring data system.

⁴¹ This summary, including the data flow chart, was prepared by Reijo Ailasmaa, Data Specialist, The National Agency for Health and Welfare - Ministry of Health, Finland



Other national examples report an *inadequate dialogue by the actors*, which frequently leads to difficulties in information/data flow. When data holders are barely collaborating and share or cross-validate their data solely at a minimal level, data provision to the JQ may not run through the most efficient data channels. Building a new strategic approach on HWF data collection and planning faces barriers in some countries due to historical traditions and adherence to a process established decades ago, or to the lack of interest/support from the political level.⁴²

The question may be raised of whether the *number and type of actors* influence the availability and quality of data. Some *existing good practices have been discovered* during WP4 work, where the full range of JQ data is available, easily accessible and no problems are detected in reporting, despite the many actors involved in HWF data collection.⁴³ These examples prove that the involvement and commitment of numerous bodies does not create difficulties in JQ reporting as long as these organizations work together effectively, based on clear responsibilities, distribution and good information flow⁴⁴.

During the 1st Budapest Workshop, examples were collected from other countries about the special efforts that have been made in the recent past to meet the needs of

⁴² This is the case in Bulgaria, where at the political level there is no adequate support to establish the required HWF data collection structures. Source: Dora Kostadinova, WP7 Leader of the JA

⁴³ Sweden is a good example of inter-organisational cooperation. Statistics Sweden ensures that data on all inhabitants (data on occupation, labour market status, industrial sector, place of employment, personal data) is cross referenced with the National Board of Health and Welfare data on licensing of HWF (personal and licensing/educational data)

⁴⁴ HOPE also underlines the importance of good cooperation and sharing information. In: HOPE (2004)

international data provision. In Belgium, a Coordination platform was established to meet this need, involving the Federal Administration, the Ministry of Social Affairs, and the Ministry of Health. Spain developed a national registration database that will begin to operate in 2015, thereby providing more accurate and transparent data.

The WP4 Questionnaire Survey process also triggered a new dynamic in information and communication flow in the countries that participated in this activity. In Hungary and Portugal, the national stakeholders were assembled to discuss how to improve current HWF data collection. In Hungary, this significant initiative was put forth by the Ministry of Health in order to look behind the data with the aim of clarifying the real content and to deepen the understanding of the entire reporting process. As these examples prove, *the opportunities offered by an EU supported cooperation forum have the potential to initiate national level coordination and cooperation among in-country stakeholders involved in HWF data collection and reporting.*

Questions on data availability

National professional registries play a special role in the process of HWF data collection and supply, as the availability of data at the national level and its harmonisation with the definitions of the JQ is a crucial point in the success of international reporting. Recent studies⁴⁵ aiming to explore the complexity of registration and licensing procedures in the EU also demonstrated a large amount of diversity in the use of the terms “registration” and “licensing” in the unique health systems of different countries. These studies also revealed that the challenges found in international reporting are sometimes based only on language and translation issues.

The question arises whether *registration/licensing bodies* have all the data on HWF required for reporting - if they even exist in each of the five sectoral professions analysed.

The regulations and governance overseeing the registration of various professions reveal great differences, and data availability problems can frequently be discovered in case of professions without a national-level registry. *Figure 3* below presents the complexity of actors in registration and licensing procedures for doctors in some MSs. In general, the registries cover headcount data on licensed professionals who are confirmed as being fit to practice.

⁴⁵ E.g. Kovacs *et al.* (2014), Risso-Gill *et al.* (2013; 2014), Solé *et al.* (2014), Struckmann *et al.* (2014)

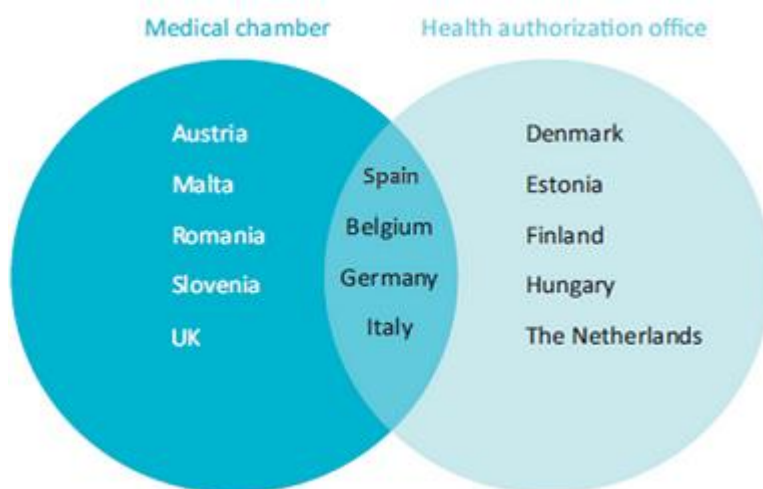


Figure 3. Types of licensing bodies of MSs⁴⁶

Based on WP4 analysis, the *licensed to practice* category of doctors seems to be the most completed in JQ reporting⁴⁷, since every country has professional bodies and authorisation offices for MDs. Difficulties occur, however, in some countries concerning FTE data⁴⁸, or concerning activity categories when, for example, *Practising* and *Professionally Active* categories cannot be distinguished.

The problems surrounding data availability do not always mean a real lack of data, but often relate to other factors:

- In reporting to the JQ, different national-level data is used – *data collection is based on national traditions and methodology* – which sometimes results in *difficulties in matching the definitions* and data categories set by the JQ, as *no distinguished data collection is conducted exclusively for JQ purposes*.
- Missing or unavailable data⁴⁹ might stem from *a failure to reach or involve the proper collecting institutes* and their datasets, or when the national JQ Focal Point submits data that is the *easiest to gather* from data-collecting organisations.

On the other hand, not only the lack of data, but even its *duplication* can cause additional administrative burdens for data-collecting authorities. Professional organisations frequently collect their own data separately from national registries, which requires coordination and, in case of discrepancies, additional examination.

The answer to the question above, of whether registration/licensing bodies possess all of the available data on the HWF, is negative. Collaborating with the other data-collecting bodies is necessary, and the collection of more detailed data should be among the responsibilities of licensing bodies in the registry.

⁴⁶ cf. Kovacs et al (2014)

⁴⁷ See the analysis on licensed to practice, professionally active, and practising in *Chapter 2.1.* of this document

⁴⁸ See the analysis on FTE vs. HC in *Chapter 2.2.* of this document

⁴⁹ Or the lack of confidence about having enough or well-developed datasets and indicators due to high expectations, e.g. in Portugal, Hungary

Other factors with the potential to impact national data flows

Some additional factors were identified during the WP4 discussion process that may also create bottlenecks for national data flows.

1. As mentioned earlier, National Focal Points (NFPs) do not always produce HWF data on their own and do not conduct separate data collection due to the annual JQ data submission. At the same time, they play a crucial role as central data-flow coordinators between other data owner organisations at the national level. In other words, *the responsibility of reporting to the JQ belongs to the NFPs*, however, *the quality of the data relies on the bodies sending the data to the NFPs*. This situation may result in considerable gaps if data-providing bodies are uninterested and do not feel responsible towards this exercise. It is difficult to influence bodies that are *independent* by their very nature and to require JQ-type data collection from them. This task may be even more complicated in countries that have independent regions with local institutes and actors. Without a doubt, *stakeholder engagement*⁵⁰ is essential in data collection and reporting.
2. The involvement of actors in data collection and reporting also highly depends on national traditions, resources, and the agility and institutional *power of different types of institutes* collecting or holding data on the HWF.
3. MSs have several HWF *data collection institutes*, each of them usually operating its own specific methodologies. "The first point to be kept in mind is that National Focal Points are appointed at the national level, by national authorities, not by the international organisations."⁵¹ Thus, in some Member States the appointment of the NFP was a *challenge*, as *the range of data that has to be reported to the JQ is not owned by any specific organisation*. Therefore, to gather all necessary data, the appointed organisation has to overcome gaps in the national data flow process⁵².
4. In some MSs, it is not clear which organisation is in charge of collecting different HWF data categories.
5. Several European countries still *lack information systems* to provide comprehensive and accurate data on the number of individuals in the HWF and their distribution in the health system⁵³.
6. *The JQ is currently voluntarily completed*, and there is no regulatory framework in place that would place pressure on countries to improve their data supply. As stated by an expert: "The JQ data collection is a gentlemen's agreement so far.

⁵⁰ "In identifying and selecting the most appropriate strategies a wide consultative and coordination effort is needed" (p.16), as well as communication between international organisations and Member States (WHO, 2012).

⁵¹ Interview with Gaetan Lafortune, OECD, Health Division

⁵² "The role of NFPs is to act as coordinators for national data submissions. In several cases, they may not have direct access to all the health workforce data (...), in which case they have to 'reach out' to other people in the country who have access to the best data source to respond to the data request. The quality of their work depends on the cooperation they are able to build and maintain within the country with other relevant organizations." Expert interview with Gaetan Lafortune, Senior Economist, OECD Health Division.

⁵³ EC Feasibility study (2012), and Dal Poz (2009).

Now with the Implementation Regulation headed by Eurostat, countries will be under more pressure to provide data, in this sense there will be one more layer of pressure for countries. Some countries will still opt for a derogation, but they will have to justify the lack of data production.”⁵⁴

Conclusions

There is a *variety of interpretations on the overall purposes* of the JQ. The lack of full agreement on the purposes of the JQ and consequent lack of motivation may be among the reasons for explaining the low response rates.⁵⁵ Such *lack of clarity* on the purposes and usefulness of the JQ at Member State level⁵⁶, and also the lack of efficient communication on its purposes may be the reason for the *lack of awareness* about the JQ among European HWF experts, which was experienced during the WP4 activity. A *lack of transparency* on how JQ data is used at the EU/OECD/WHO level may also lead to a reluctance by MSs to deliver.

Furthermore, the JQ National Focal Points responsible for data provision are usually dependent on data from other national databases that are frequently not interested in making an institutional effort to communicate more efficiently and to provide more reliable data to the JQ.

HWF experts from Member States represented in the Joint Action have expressed their belief that the JQ as an international data collection tool *should contribute* - in addition to international benchmarking - *to national-level HWF planning and forecasting* activities. Experts have also communicated their *concerns over the quality* of the JQ results, as well as their *lack of skills to use (analyse and link to policy actions) these data* for national HWF monitoring and benchmarking purposes.

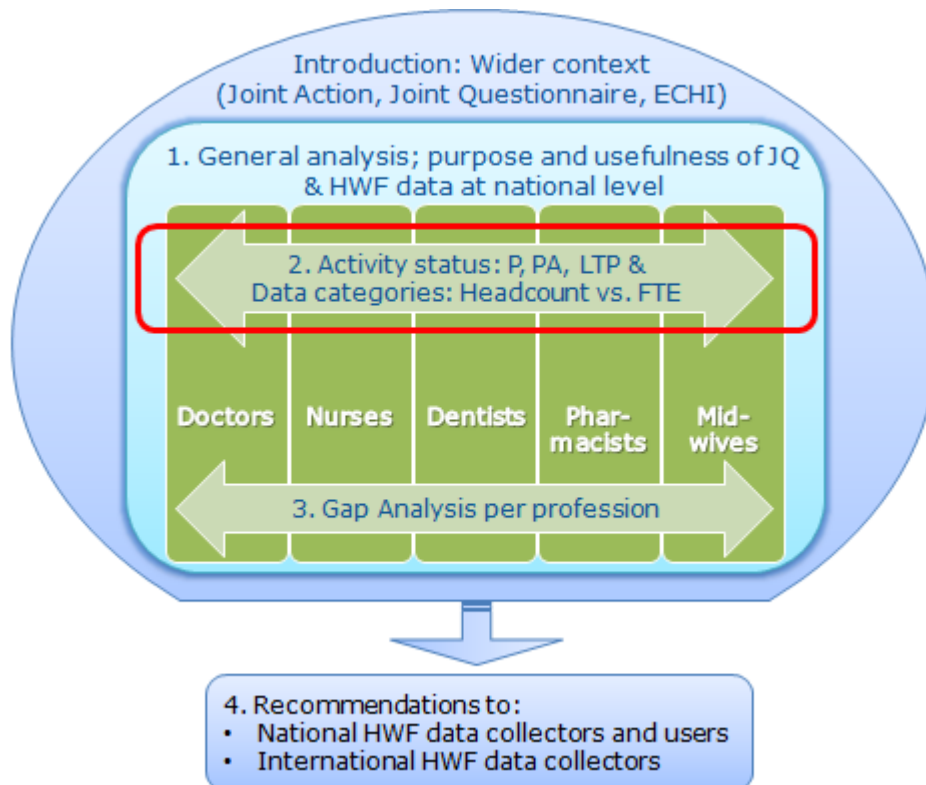
Despite its weaknesses, however, most HWF experts *do not question the value of the JQ*. Experts share the opinion that the JQ data collection system - while requiring further refinement - provides a platform for the harmonisation of national level HWF datasets at an international level and should be maintained in the future.

⁵⁴ Expert interview with Gaetan Lafortune, OECD

⁵⁵ In the latest reference years of 2011-2012, out of the reported 58 variables of the JQ, on average only 59% is reported on by European countries. Source: Presentation by Hartmut D. Buchow European Commission – Eurostat, Public Health Statistics, at the WP4 Workshop in Utrecht, Netherlands on 6 March 2014

⁵⁶ The confusion in some countries about JQ data collection - due to the lack of a well-structured data collection and reporting process - may also have a negative impact on the acceptance and awareness of the JQ

2 – The activity status categories and the Headcount and FTE data categories of the Joint Questionnaire



This chapter offers answers to the following questions:

1. What is the difference between the three activity status categories: "practising", "professionally active" and "licensed to practise", and how do they relate to each other?
2. Is there a justified need for all three activity status categories? If yes, how can data in these categories be used?
3. In which activity status categories do Member States submit data to the JQ and what factors influence their data provision?
4. How do countries calculate a full-time-equivalent (FTE)?
5. Is a common FTE calculation method needed? If yes, what steps are needed to come to an agreement on a common calculation method?

2.1 The "practising", "professionally active" and "licensed to practise" data categories

Health workforce⁵⁷ *stock* (volume) and its labour activity is a key issue for monitoring, studying, operating, and evaluating health systems. The importance of measuring activity can also be justified by its impact on planned healthcare production (outputs and outcomes). When planning future workforce supply, the most appropriate measurements may be: data on HWF education (showing potential future HWF stock), data on current distribution of HWF between activity status categories (practising, professionally active, licensed to practise), and the Full-Time Equivalent (FTE) on actual working activity of the labour force in healthcare systems. Evaluation of the potential of a retention strategy or a work-organisation-restructuring strategy also needs to be supported with valid and reliable numbers on the volume and actual activity of the health workforce, while the measurement of the productivity of health systems also requires this relevant HWF information.

Indicators for monitoring and assessing HWF activity have been discussed for a long time, resulting in several options and considerations that have been challenged by the reality and feasibility of valid information collection.^{58,59}

The term *activity* has different understandings and interpretations. It is also used in other domains and contexts such as HWF performance, productivity and efficiency^{60,61}. "Activity status categories" in this document refer to the general and common indicators ("concepts") used by the Joint Questionnaire since 2010 to monitor and evaluate the status of HWF labour force activity by describing them as follows:

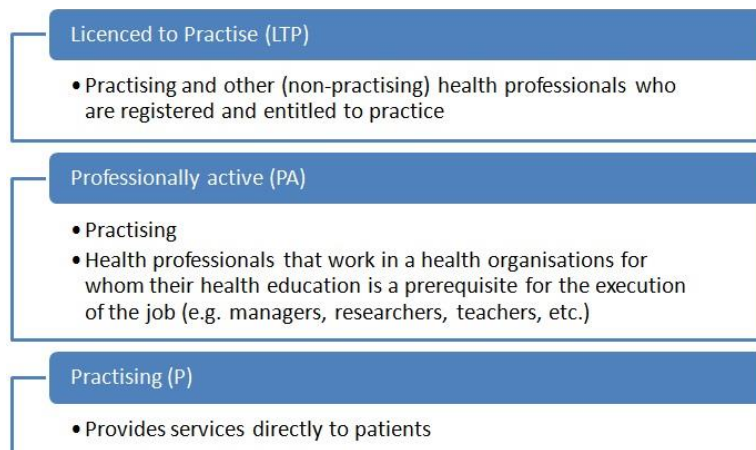


Figure 5. The activity status categories

⁵⁷ WHO (2009, p. 13.) see also in Appendix X

⁵⁸ WHO (2009, p. 25.) see relevant conclusion part of the chapter, p. 34, and also in Appendix X

⁵⁹ Diallo, K. *et al.* (2003), see also in Appendix XI

⁶⁰ See summary table on HRH indicators, including the ones on HWF labour activity in Table 3.1, WHO (2012, p. 28.)

⁶¹ See also several tables of the EC Feasibility Study (2012) and the following part on the WP4 Questionnaire Survey results of this Module on different approaches and interpretations of HWF activity

This raises the following questions: “What is the relationship between these categories?” and “Is the terminology describing the data clear or subject to interpretation?”

OECD definitions⁶² refer to them, but do not clearly define this relationship. By definition there are overlaps, whereas the issue is how these overlaps are understood and can be followed at the national level, especially in relation to the LTP category and the other two (PA, P). The relationship can actually determine the evaluation and potential utility of data in the three categories.

One of the possible relationships of activity status categories is concentric, showing the situation in countries where LTP data is based on automatic admissions with the obtainment of a diploma and where the license is without an expiry date. The recent discussions on Continuing Professional Development (CPD) as standard criteria for maintaining an LTP may result in a deviation from the concentric terminology concept even in these types of countries.

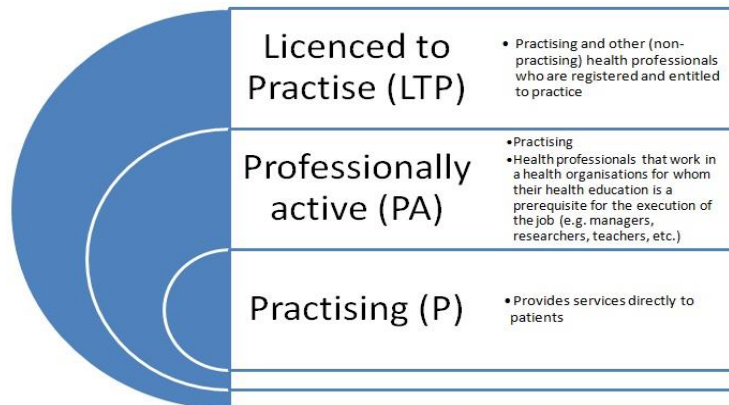


Figure 6a. Activity status categories in a concentric depiction

Another possible situation can be observed when the categories relocate in the depiction: the existence of exceptional groups of professionals contributing to the HWF, for instance, "physicians working in administration and management positions requiring a medical education", but not requiring a license. Additionally, not all practising health professionals are in LTP registries (which may or may not be legal).

⁶² Balestat (2011)

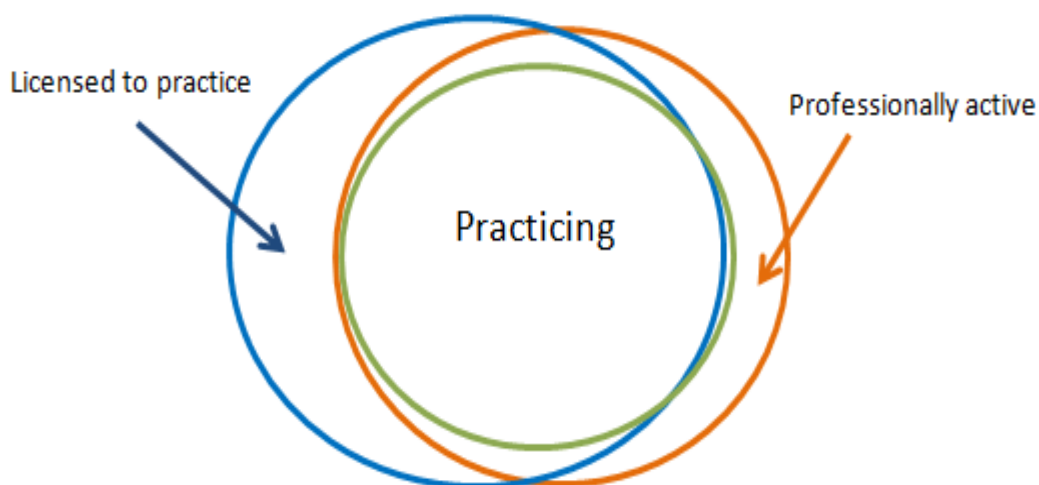


Figure 6b. Activity status categories in an overlapping depiction

As explained above, all three activity statuses show the number of health professionals in different ways, and these numbers may significantly differ. *Table 4* shows OECD statistics (2014) of some EU/EEA/EFTA countries that supply data to the JQ on the number of doctors in the three activity statuses. The table shows that, on average, the difference between professionally active and practising in a country is 8%, ranging from 0% to 17%. Furthermore, the difference within countries between those health professionals licensed to practise and practising is on average 53%, ranging from 28% to 97%.

Table 4. - Country figures on the number of doctors in the three status categories

	Total doctors per 1,000 population			Comparison difference in %		
	P	PA	LP	PA/P	LP/P	LP/PA
Austria	4.9					
Belgium	2.93		5	71%		
Czech Republic	3.67					
Denmark	3.48	3.72	5.4	7%	55%	45%
Estonia	3.28					
Finland			3.29	4.87	48%	
France	3.08	3.32		8%		
Germany	3.96	4.34	5.71	10%	44%	32%
Greece	6.24					
Hungary	3.09		5	62%		

Iceland	3.57	3.57	7.05	0%	97%	97%
Ireland	2.71	3.16	3.96	17%	46%	25%
Italy	3.85	4.14	6.38	8%	66%	54%
Luxembourg	2.8	3.12	3.99	11%	43%	28%
Netherlands		3.13	3.93			26%
Norway	4.23	4.87	5.55	15%	31%	14%
Poland	2.21	2.41	3.56	9%	61%	48%
Portugal			4.1			
Slovak Republic		3.36				
Slovenia	2.54	2.64		4%		
Spain	3.82	4.08	4.89	7%	28%	20%
Sweden	3.92	4.13	6.01	5%	53%	46%
Switzerland	3.92	3.98		2%		
UK	2.75		3.71		35%	
EU/EEA/EFTA-average	3.41	3.74	4.94	8%	53%	40%

Source: OECD Health statistics 2014 (based on the OECD/EUROSTAT/WHO-EUROPE Joint Questionnaire on non-monetary health care statistics)

Literature on the use of different activity categories

According to the WHO *Handbook on Monitoring and Evaluation of Human Resources for Health* "The lack of reliable, up-to-date information on numerous aspects of the HRH situation – including skills mix, sources and levels of remuneration, workforce feminisation, and *even basic stock* – greatly restricts the ability to develop evidence-based strategies at the national and international levels to address the health workforce crisis⁶³."⁶⁴

The literature, however, is divided on the importance and feasibility of data collection in all of the three activity categories representing the stock data referred to above.

From the reviewed literature, the following works have a *specific focus/section on activity status categories*.

- *Evaluation on the Joint Questionnaire on Non-Monetary Healthcare statistics*, Final report. The Swedish National Board of Health and Welfare Eurostat project. ESSnet Public statistics;⁶⁵

⁶³ WHO (2009, p. 25., and p. 34.)

⁶⁴ Highlight in Bold by WP4 team

⁶⁵ Stig, K. and Lütz, I. P. (2011).

- ECHIM project; *ECHI remarks on comparability*, Latest versions available at the end of the Joint Action for ECHIM 30 June 2012;
- OECD documents evaluating JQ results.

The report of the Eurostat project *Evaluation on the Joint Questionnaire on Non-Monetary Healthcare statistics* highlights the importance of data collection in each activity status category, stating that *the three variables are a complement to each other*. It mentions, however, the difficulty involved in measuring various segments of the *professionally active* category, suggesting that the number of professionally active professionals could be used as an estimate together with a template for the number of practising professionals. Another possibility for counting practising professionals is to use the number of professionals licensed to practice together with the NACE⁶⁶ code for the health care sector.

The *ECHIM project*⁶⁷ also underlined the *significance of the practising category* while examining two relevant indicators: (1) practising physicians and (2) practising nurses provided highly-valuable evaluations on the situation of available data and its main problems, focusing on the comparability aspect.⁶⁸ The documents conclude that despite commonly agreed (JQ) definitions, many terminology-related issues - including the challenges of elaborating on exclusion and inclusion criteria at the national level - endanger data comparability for the practising activity status category in the case of physicians and nurses, while differences in the organisation of healthcare provisions also limit comparability. ECHIM analysis also draws attention to a very basic and important aspect that needs further consideration, namely: *the initial purpose of a data source and data collection may differ across countries*, which also influences comparability.

A new paragraph in the latest version of the JQ Guide emphasises the *practising* category: "National correspondents are strongly encouraged to identify suitable data sources or new estimation methods in order to fill any persisting data gaps for the "practicing" concept. This request concerns especially countries which have only submitted data for the "licensed to practise" concept. The priority may be given to practising physicians and nurses."^{69,70}

Some studies do now take into account the various activity status categories, which highlights the importance of the need for data on each HWF activity. For instance, Health Prometheus Volume 2 states that "An additional influencing factor on the accuracy of mobility data is the information available on the total workforce covered, the denominator, for example whether all medical doctors in a registry are covered, all economically active medical doctors or only those practising currently in the profession. At first sight, these may appear to be mere nuances or variations in terminology, but in reality they are decisive to mobility estimates as well as to overall workforce estimates.

⁶⁶ Statistical Classification of Economic Activities in the European Community (known also as NACE from its French name)

⁶⁷ ECHIM (2014)

⁶⁸ ECHI (2012b, p. 41, and p. 43.), and relevant parts also in Appendix XII.

⁶⁹ OECD (2014a), p. 10. and OECD (2012, p. 5.)

⁷⁰ See detailed table on categories In: OECD (2012), and relevant parts also in Appendix XII.

*This dimension is often neglected in data analyses, particularly at international levels.*⁷¹⁷²

As highlighted above, HWF stock data is crucial in the indicator to evaluate HWF mobility. Characteristically these indicators are ratios that correlate the volume of mobile health professionals to HWF stock. HWF stock based on LTP might result in quite a different proportion of mobile health professionals than HWF stock considering practising HWF, even in case of the same numerator. Since *mobile health professionals usually belong to the practising category*, that also justifies the use of data reflecting all practising HWF as a denominator in case of evaluation.

Calculation becomes more challenging if definitions and indicators of “mobile/foreign/emigrating/immigrating” health professionals are based on whether they are foreign born, foreign trained or of foreign nationality. Theoretically altogether nine types of ratios can be formulated based on these three indicators to follow mobile professionals, if the activity status category (licensed to practise, practising, professionally active) differs in the denominator. The denominator, representing the HWF stock - in relation to the type of mobility to be evaluated - is decisive regarding the value of any correlating indicator on HWF mobility.⁷³

The relevance of the different activity categories from the perspective of HWF Planning & Forecasting

The contemporary literature - while emphasising the importance of collecting data in all of the three activity status categories - suggests the significance of the *practising* category. While the *Licensed to Practise* is considered the easiest to collect, data collection in the *Professionally Active* category raises substantial difficulties for many countries.

Further questions emerge over whether the same relevance should be given to the *Practising* category, and what roles the other two categories may have from the perspective of workforce planning and forecasting: *What activity category is to be used for what kind or part of HWF planning in different HWF planning models? How can these activity categories be used to respond to changing trends and population needs in HWF planning and forecasting models? It is important to stress that activity status categories and FTE should optimally be used together in HWF planning.*

Health workforce planning requires information on the *current workforce providing healthcare services, which is the “practicing” (P) category*. The performance of the current workforce can be measured in theory by the *Number of Practising persons X average FTE rate X Productivity rate*.⁷⁴

⁷¹ Buchan *et al.* (2014, p. 106.)

⁷² Highlight in Bold by WP4 team

⁷³ This consideration is also valid for any other HWF estimates.

⁷⁴ The productivity rate concept is of course still under discussion, and the FTE measurement is discussed under different concepts as

HWF planning focuses primarily on the numbers of HWF to be trained. Workforce not directly providing healthcare services must also be considered in the planning of HWF, since they contribute significantly to the provisioning of health service, for example the medical directors of hospitals. These health workers together with those practicing form the "*professionally active*" (PA) category, the full currently active HWF. The planning for the production of the health workforce (incl. immigration) should indeed target the PA as the most relevant number. Still, the gaps in the definition of this category affects impartiality in some countries on this number. Additionally and obviously somewhat in connection with the previous statement, data in the PA category seems to be the most problematic to calculate in many countries.

The current definition of the *licensed to practise (LTP) category* is not fully useful. For planning purposes it should be renamed, preferably as the *Full stock of HWF that potentially could practise*, and it should also be expanded to support retention and recruitment strategies.

Indeed, retention, intake and conversion strategies are usually applied on the LTP category of professionals – e.g. managing labour shortages. Still, for HWF planning reasons, the LTP category as a whole is not yet fully valid. For example, the number of those who are licensed but left the profession, or already retired, the number of either active or not active elderly professionals is important to know in this category, if HWF planning is based on LTP.

HWF Planning may include interventions on retention of:

- the young HWF that choose not to practice, but are still in the PA category (e.g. in education, management, etc.);
- the young HWF that decide to leave healthcare and start their career in another sector (dropouts after graduation);
- HWF that quit after some time spent in practice or due to retirement, but who are still in the condition of returning at least part time or under other special conditions.

To sum up the potential importance of the different activity status categories from the planning perspective:

Currently <i>Practising</i>	It can be useful for planning reallocation and redistribution policies, assuming additional information is available also on the professional, sectoral and geographical distribution of currently practising HWF.
Currently <i>Professionally Active</i>	This category could be the most important figure, but in many countries it is hard to collect and is improperly measured in some contexts. Clear definitions and proper data collection, including the distinction of subcategories of PA are prerequisites.

discussed in the related sections of this document.



Currently <i>Licensed to Practise</i>	A useful data category, provided that improvement is needed in definition, interpretation, and related data collection to best serve planning.
---------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------

Applying the different status categories

As outlined above, the HWF stock can be described by each of the activity status categories, but both in case of absolute values and ratios a clear understanding of their differences is necessary.

The comparison of proportional values based on activity status category values is useful, but such comparability cannot be achieved without closing the most important gaps. Comparability may live with standing small errors, however, relative values containing the same activity status category are to be compared.

From the planning and forecasting perspective, the international comparison of some ratios are especially important (taking into account the differences between health care systems):

- the ratio of practising HWF to patients;
- the ratio of practising versus professionally active HWF;
- the reserve of HWF that could return to work according to policy actions (using amended LTP to PA or P);
- the ratio of activity status categories of different health professions, especially in the P and PA categories - for instance practising nurses/practising physicians;
- the ratio of practising HWF (also by professions) to population;
- the relative variance of those indicators along the years.

WP4 Questionnaire Survey on JQ data provision concerning activity categories

Table 5. Summary table on available data of the three activity status categories for the JQ - WP4 Questionnaire Survey, 14 countries⁷⁵, compared to the official OECD database on JQ data

Country	Doctors			Nurses			Dentists			Pharmacists			Midwives		
	P	PA	LTP	P	PA	LTP	P	PA	LTP	P	PA	LTP	P	PA	LTP
Belgium	✓		✓	✓ est.	✓ est.	✓	✓		✓			✓			✓ est.
Germany	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	plan ned	✓	✓	
The Netherlands		✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓
Finland	✓	✓ est.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Ireland	✓ est.	✓ est.	✓		✓ est.	✓			✓			✓		✓	
United Kingdom	✓			✓			✓			✓			✓		
Greece*	✓		✓	✓		✓	✓		✓	✓		✓	✓		✓
Poland	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Portugal			✓	✓	✓				✓			✓		✓	
Spain	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓			✓
Cyprus	✓			✓			✓			✓#					
Iceland	✓	✓	✓	✓ est.	✓ est.	✓ x	✓	✓	✓	✓	✓		✓ est.	✓ est.	✓
Italy	✓x	✓	✓		✓	✓		✓	✓		✓	✓		✓	✓
Hungary	✓		✓	✓			✓		✓	✓		✓	✓		
Total	12	8	12	10	9	9	9	6	12	10	7	10	8	8	8
	P	PA	LTP	P	PA	LTP	P	PA	LTP	P	PA	LTP	P	PA	LTP

MD: Medical Doctors, N: Nurses, D: Dentists, PH: Pharmacists, MW: Midwives

Bold country names and **red symbols** indicate a difference from available official OECD data (based on JQ results)

#Pharmacists: Data available for the public sector only. xNurses LTP: Only for category 2221 xOnly since 2011

Cyprus is not an OECD country, but completed the WP4 Questionnaire survey.

⁷⁵ WP4 Questionnaire Survey 1A1: Please indicate the professional categories where your country supplied data for the Joint Questionnaire in 2013 by ticking (✓) in the relevant boxes

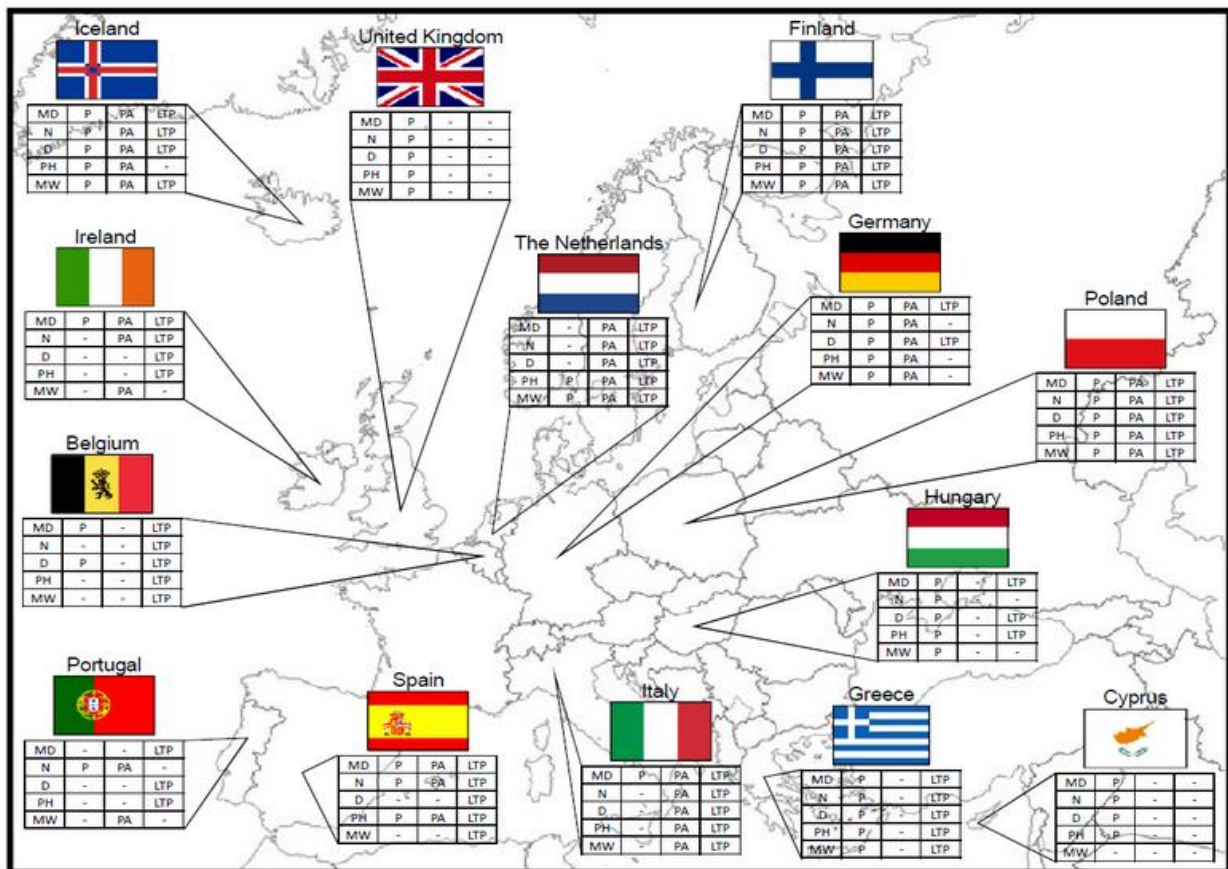


Figure 7. Available data of the three activity status categories for the JQ - WP4 Questionnaire Survey, filled out by 14 countries.

Table 5. and Figure 7. show a diverse picture, and the main observations are as follows:

- Only two of the fourteen countries provide activity status category data in each professional category: Finland and Poland. In these two countries, especially in case of the practicing and professionally active categories, many factors seem to contribute to this outstanding data production. These countries seem to have several, properly managed databases that can be interconnected (even with different owners), as well as the presence of a strong legal background to rule these data collections. In Poland, the role and commitment of authorities (self governments) that are responsible for local health services in data collection and follow-up also seems to be an important element.⁷⁶
- The "professionally active" category seems to be the most problematic in many countries. Caution must accompany this statement, however, as almost each country covers the three categories. In some cases, the practicing and the professionally active categories are based on estimations. At the same time, the licenced to practice category is rarely estimated (e.g. Belgium, but only for midwives).

⁷⁶ Thorough case studies are needed to analyse in depth the real "success factors" and actual quality of comprehensive data provisions by these countries. Exploration and a detailed analysis can reveal potential best practices.

- In the cases of three countries (their names are indicated in bold, whilst the differences are in red) *WP4 Questionnaire Survey results showed differences compared to data officially available*⁷⁷.

Several "lessons learnt" were identified during the WP4 Questionnaire Survey clarification rounds. First of all, these consultations were necessary to understand the real situation at the country level and to see the differences in how the activity status category data is interpreted and created. In some countries, through discussions initiated by these consultations and by the JA in general, a new understanding was developed on the categories or the professional groups covered by JQ categories and reported to the JQ.⁷⁸

Gap analysis on data content and non-provision of data in the different activity categories

Difficulties in data collection and problems of interpretation are certainly the most evident reasons for gaps in the data content provided or for non-reporting to the JQ. The most relevant issues influencing data provision in the activity categories are as follows:

- In most countries, data in the three activity status categories originate from *different sources*. Not surprisingly, licensing/registration corresponds with the LTP category in the most appropriate manner, whilst characteristic information on employment can provide data for the PA and P categories. The issue is if and how the owners of these sources communicate, co-operate with each other, and if and how the databases from different countries are/can be linked together. This works smoothly in some countries, while remaining a challenge in others.
- There is also a difference if a country uses these *HWF activity status categories* and data collection *exists accordingly at the national level*, or if they attempt to match their available data to these activity categories, albeit those data are originally collected according to different requirements.
- *Registration and licensing procedures* of the given country⁷⁹ can influence the understanding of activity categories (certainly this is the case for *licensed to practise*, however they may also influence the *professionally active* and *practising* categories as well), including joint data collections and reporting, and their relationship to each other.⁸⁰ Differences (e.g. national regulation) and difficulties (e.g. lack of updated data) in re-registration, revalidation/renewal of licences must also be underlined as a result.

⁷⁷ The timing of the WP4 Questionnaire-Survey must be noted: it was sent out to partners in September 2013 with a submission deadline of December 10th, the same year. This was followed by a four-month-long clarification process and the Utrecht Workshop, consequently data collection was closed in April. Meanwhile, the official JQ reporting time frame might have been provided evaluation of data for the JQ National Focal Points in March, which also could have supplied with new inputs into considerations, discussions and possible modifications

⁷⁸ Finland - who was actually reporting very complete data - recognized slight differences in nursing professional groups based on the tasks they conduct in Finland. Furthermore, Greece concluded that their PA category is more likely to cover the LTP category, thus they modified their input for the WP4 Questionnaire Survey accordingly

⁷⁹ Kovacs *et al.* (2014)

⁸⁰ See more in detail Chapter 2.1 on national data flow

- *Data provision and management* at the national level can be a decisive factor, including centralisation versus decentralisation, as well as defined objectives or a lack of clear objectives for data collection⁸¹;
- *Language issues*, including proper translation of terms into the national language can also cause difficulties;
- *Options and conditions of HWF employment should be considered*, e.g. type of contract, means of reimbursement, etc., as there are significant differences that are decisive for data collection, especially in the PA and P categories;
- *Healthcare structure and operation*, including public-private distribution of care;
- *Legal issues* defining any aspects of all previous factors;
- *Health education and training systems*, and *cultural issues*⁸².

The following case illustrates the *interpretation problems* caused by the above mentioned factors and also by the non-concentric understanding of the different categories resulting in *overlaps*: The “same” health professional - assuming an MD for instance, who was born in a given country, is a citizen of that country, and obtained his/her diploma and started his/her professional career there - could be classified in different activity status categories in different countries.

- The LTP category - The health professional would be reported in the LTP category in Hungary, but not in Belgium (where he/she could receive “recognition”, but not the licence - called the “visum”.)
- The *practising* category - In Hungary, to continue practising (P), a health professional has to fulfil the requirements of CPD⁸³ in order to obtain the license to practice status and thus get into the Operational Registry. The licence has to be renewed every 5 years. In Belgium, the proof of at least two occasions of reimbursement by the NIHDI (National Institute for Health and Disability Insurance) is the criterion for the *practising* MD category. Data on FTE⁸⁴ can verify if an MD is really practising. In Hungary, all MDs in the “licenced to practice” category can apply for the right to prescribe medicines for family members (“pro familia” prescriptions), without practising at all. That occurs as a reimbursement at the National Health Insurance Fund, but in Hungary this is not a criterion for the *practising* category, hence it does not influence data provision.
- The *professionally active* category- No such data collection exists in Hungary. For instance, hypothetically consider the career of a hospital manager who works as a manager but continues practising part-time. This example expresses difficulties in reporting, i.e. in which category s/he should be reported. The same situation applies in certain countries of the former socialist bloc. The real issue is if and how the overlapping part of these two categories (PA and P) can be identified.

⁸¹ This is in line with ECHIM conclusion that was referred on page 36 of this document: “the initial purpose of a data source and data collection may differ across countries, which also influences comparability”.

⁸² Wismar et al (2011b)

⁸³ CPD: Continuing Professional Development

⁸⁴ See Chapter 2.2 on FTE calculation methodologies

That seems to be a challenge even in countries that can provide data in both categories, and where practising health professionals are usually do not work also as hospital directors at the same time (a common phenomenon in several Central and Eastern European countries). Identification of the common part is only possible with individual data follow-up.

The tables below show some basic information from three countries to present some examples of the differences and challenges in activity status interpretation and different gaps identified.

Table 6. Doctors, dentists, pharmacists - interpretation of differences and gaps

	Licensed to practise	Practising	Professionally active
Belgium	<p>The “Cadaster” is reported, as it contains those who have the licence (called “visum”) delivered either for the specialisation or for the basic diploma, and can be withdrawn under specific conditions. Physicians and pharmacists also need chamber membership to be allowed to practice. <i>No gap detected</i> in reporting.</p>	<p>Practising physicians and dentists are those who have more than one reimbursement from the insurance fund in the given calendar year. Professionals who have independent activity or operate in a capitation system are reported from the INAMI database, covering a very large majority of doctors and dentists.⁸⁵ No data is available for <i>pharmacists</i>, as there is no national level data available on practicing pharmacists.</p>	<p><i>No data provision</i> in this category, as currently the Data-Linking projects are organized as “one-off” projects, showing the activity of registered professionals (if they work, where they work, FTE) at certain points, but not continuously. In 2014, a data-linking project will be undertaken for physicians (2004-2012 data) and dentists (2008-2012 data). A <i>permanent system of data-linking must be set up</i>.</p>
Hungary	<p>Data from the <i>Basic Registry</i> is reported here, including <i>all doctors</i> who have completed their studies in Hungary.</p> <p>This is identified as a <i>considerable gap</i>, as this data includes those who moved abroad, left the profession, work without LTP⁸⁶ or work in jobs where a licence is not required.</p>	<p>Those in the <i>Operational Registry</i> (having a license to practice) are reported. In addition to those who are really practising, this list <i>also includes those who are not active</i>, but want to stay in the registry and therefore fulfil the necessary CPD requirements.</p> <p>As the period for renewal is five years, those who leave the country, quit the profession or retire in a given period are still reported under this category, as well as those who fulfill CPD requirements but are inactive.</p>	<p>Hungary <i>cannot provide data</i> in the professionally active category, as there is no data collected that could serve as a real and valid basis for calculating this category.</p>

⁸⁵ The INAMI database can only identify health professionals who deliver certificates of healthcare provided. Some professionals work within the healthcare insurance, but do not deliver certificates individually. This is the case for professionals working in a group practice under the responsibility of a specialist who delivers certificates for the whole group (e.g. pharmacists). This is also the case for professionals working under an employee status (nurses, midwives)

⁸⁶ This is a legal opportunity in Hungary. Doctors at the beginning of their careers who do not wish to complete the requirements of the Continuing Medical Education, may opt for this. They work under supervision while being in this status.

Germany	<p>No data is provided for pharmacists - which may change in the near future. For doctors and dentists there are no gaps identified. Those excluded are: stomatologists and dentists with "dental, oral and maxilla-facial surgery" specialisation.</p>	<p>No deviations from the definition and exclusion criteria are identified. Concerning doctors, a gap is identified: information available on all doctors with a licence to practice, as well as on people working in medical research if they are regularly employed, but these two sources are not merged.</p>	<p>No deviations from the definition and exclusion criteria are identified. Those excluded - beyond those in the practising category - are those working abroad, unemployed, retired.</p>
---------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Table 7. Nurses, midwives - interpretation of differences and gaps

	Licensed to practise	Practising	Professionally active
Belgium	<p>The “Cadaster” is reported, as it contains those who have the license (called “visum”) delivered either for the specialization or for the basic diploma, and can be withdrawn under specific conditions.</p> <p><i>No gap detected</i> in reporting.</p>	<p>In 2013, the database linking project was carried out for nurses (data from 2004 to 2009). The information provided in the JQ is an estimation based on this project.</p> <p>A data linking project is planned for the midwives in 2016.</p>	<p>In 2013, the database linking project was carried out for nurses (data from 2004 to 2009). The information provided in the JQ is an estimation based on this project.</p> <p>A data linking project is planned for midwives in 2016.</p>
Hungary	<p>For <i>nurses</i> there is no reporting, as there are methodological issues with matching the nursing categories to the ISCO ones. Furthermore, data could be provided for licensed to practice and practising categories from different sources, which they would like to avoid.</p> <p>For <i>midwives</i>, negotiations are carried out to insert this category in the data provision, as it does not have the same complexity as the nurses category.</p>	<p>Data on nurses are collected as part of the annual OSAP (National Data Collection Programme) 1019 report. This covers all healthcare providers, both public and private. Reporting is based on the positions filled, not on educational background.</p> <p>No relevant gaps identified.</p>	<p>Hungary <i>cannot provide data</i> in the professionally active category, as there is no data collected that could serve as a real and valid basis, not even for calculating this category.</p>
Germany	<p>Occupation data is used for the distinction between the three concepts.</p> <p>No data provision, as they would need information on the following groups:</p> <ul style="list-style-type: none"> - Unemployed persons or retired persons no longer practising - People working abroad - People who hold a post/job for which midwifery or nursing education is not required. 	<p>No data available before 2000 due to the revision of healthcare personnel data. Excluded are nurses and midwives working in administration, research and in other positions without direct contact with patients, working abroad, unemployed, retired, and students. Nurses for the elderly (3460 ISCO-88COM) are excluded, as they have a completely different educational path. Data include professional and associate professional nurses.</p>	<p>No data available before 2000 due to the revision of healthcare personnel data. Excluded are the same as for the practising category, with the exception of nurses and midwives working in administration, research and in other positions without direct contact with patients. Data would be needed on persons working in administration, management, research and in other posts that exclude direct contact with patients.</p>

The tables above demonstrate the differences in how the HWF activity status categories are interpreted, evaluated and monitored, and what *inclusion criteria* are used to consider a health professional in a given category at the national level. The feasibility to apply *exclusion criteria* for activity categories is also an issue. Even in the “considered the best available” LTP category, these criteria may be challenging. In the PA and P activity category physicians who are working abroad, unemployed, or retired should be excluded from the database, but most countries can hardly accomplish that. The situation is especially challenging when a health professional works abroad – and for now HWF mobility cannot be tracked with reliable and valid data in Europe. There are many difficulties around this specific exclusion criterion, like dual/mutual employment, telemedicine, registration and licensing abroad (not always resulting in employment), etc. The real picture can only be drawn through international cooperation and an information exchange by competent authorities.

Closing the gaps in activity status categories data - a possible exercise?

There are still significant and at least partly hidden gaps between the data that Member States currently submit to the JQ, and the expected data content of the JQ definitions. This statement stands even for those countries that submit data in all/almost all activity status categories. Regarding comparability, the results of the WP4 terminology activity underpin the evaluation of ECHIM⁸⁷ on the importance of the “practising” category in terms of the composition of national HWF.

In *Chapter 4*, recommendations are put forward on closing the most important gaps, taking into account of course that activity status categories and their use, the precise content, the minimum data requirement, as well as the methodology and management of data collection need further discussions and consensus among Member States.

2.2. Full Time Equivalent and Headcount data categories

Assessing the performance of the national health workforce requires headcount, full-time equivalent and efficiency/productivity information. While currently headcount constitutes the most collected data category, FTE contributes to the assessment of the real performance of a national workforce and it is also an important dimension for describing work conditions⁸⁸.

Headcount measures the stock of healthcare professionals available for performing healthcare services. The number of health workers is not adjusted to working hours (part-time work or actual working hours) or holidays, which may differ between countries. Therefore, Headcount can reveal the maximum potential of a given healthcare system, but in specific countries there are examples of health workers who are employed at a higher than 1 FTE equivalent.

⁸⁷ See the ECHIM analysis in Appendix XII

⁸⁸ From Gaetan Lafortune’s presentation at the Joint Action conference in Bratislava 28-29 January 2014

FTE (or FTE count) demonstrates the real supply of active, currently productive healthcare professionals. The simplest calculation of FTE may be done by adjusting the headcount numbers by part-timers (regardless of their actual working hours) or by working hours. The FTE calculation can be based on different time-periods: weekly, fortnightly, monthly or annual working hours.

In spite of the importance of the FTE indicator, there is currently a lack of international agreement on its calculation method and utilisation. This makes it difficult to count not only with currently practising professionals, but also vis-à-vis the implementation of international legislation such as the Working Time Directive (2003/88/EC). This subchapter aims to:

- (1) outline how countries currently apply FTE calculations, and
- (2) provide recommendations on steps that should be taken towards an agreement on a common FTE calculation and estimation method for countries without sufficient or adequate data for FTE calculation.

As a reference for the discussion on FTE calculation, OECD states the following on FTE data collection: "The JQ includes FTE equivalent, but only for hospital workers. Previously, the OECD used to collect FTE data but only a few countries were able to produce this data category so this data collection category was suspended. For monitoring purposes, the Headcount category is currently the available tool. For planning, FTE is an excellent tool, and, as countries show interest and ability to back such a data collection, the OECD shows interest towards such data collection again."⁸⁹

Calculation methods

The OECD elaborated three types of methods for FTE calculation aiming to encourage countries to use any of them, while providing professional support and reasonable amounts of feedback. The OECD⁹⁰ recommends the following three methods for FTE calculation:

- *Actual/usual working hours*: Number of hours actually worked divided by the average number of hours worked in full-time jobs (e.g. 50 hours actually worked by a doctor / 40 hours per week as a full-time job = 1.25 FTE);
- *Contractual working hours*: A worker with a full-time contract = 1 FTE. Number of hours of work mentioned in contract divided by normal number of hours worked in full-time jobs;
- *In case of a lack of information on working hours*: A worker with a full-time contract = 1 FTE and 2 part-time workers = 1 FTE.

⁸⁹ Gaetan Lafortune, senior economist, OECD Health Division

⁹⁰ Joint Data Collection on Non-Monetary Health Care Statistics (2014)

Based on the results of the JQ data collection, the OECD⁹¹ released the summary table below about the number of countries that supply data to the JQ on hospital employment in Headcount and FTE.

Table 8. Number of countries supplying data on headcounts and FTEs for hospital employment (JQ 2010). OECD Health Data (2010).

	Head Count	Full Time Equivalent
Total hospital employment	23	20
Physicians	25	20
Professional nurses and midwives	26	19
Associate nurses	17	11
Health care assistants	16	11
Other health professionals	19	15
Other staff	18	14

As *Table 8* demonstrates, a notable barrier exists concerning the availability of complete FTE data on health professionals. The JQ collects FTE data *only on active employment in hospitals*, however there are health workers also employed part-time in other types of healthcare institutions, e.g. in general practice or outpatient care. Apart from this, *differences among countries in the definition of hospitals* cause another distortion in the data collected, which poses a challenge for international comparability. Also worth considering is that FTE is context-specific country-by-country, *country-specific features are important*, e.g. in Finland most of the HWF are working full time and in other countries there are more part-time workers.

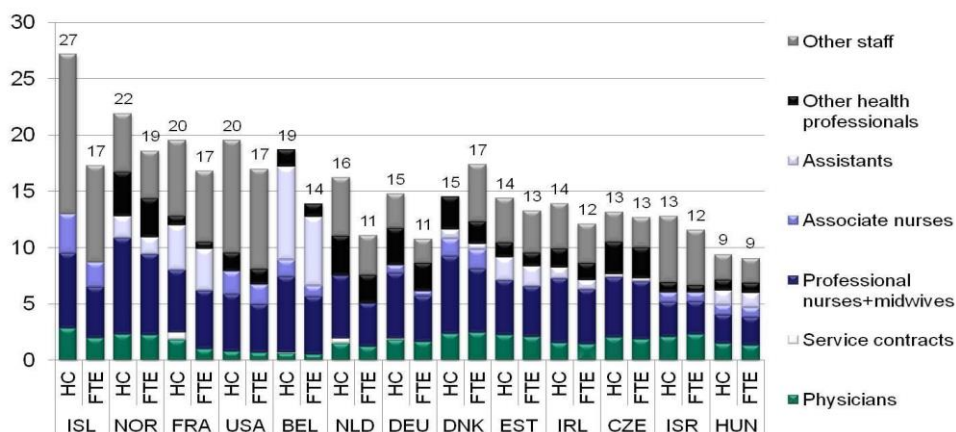


Figure 8. Comparing FTE and HC data for hospital employment per 1,000 population (2008). Source: OECD Health Data 2010.

⁹¹ OECD Health Data (2010)

Figure 8 shows the significant differences between the FTE and Headcount data provided by countries, especially in the case of Iceland, Belgium, the Netherlands and Germany. Thus, clarification and harmonisation of FTE and headcount data should be considered in light of HWF data collection and planning aspects.

Experiences from WP4 activity on FTE calculation

14 countries supplied information to the WP4 Questionnaire Survey. Out of them, only four countries (Belgium, Germany, Hungary and the United Kingdom) indicated that they register FTE data for national purposes. This also means that the other countries that provide FTE data to the JQ (see Figure 8) use special calculations and/or estimation methods for converting Headcount data to FTE data for the annual JQ report, if they report in this category at all.

Appendix XV describes different national calculation methods. The following examples demonstrate the diversity of FTE calculation across EU countries: In **Finland** FTE = 1 for full-time workers, FTE = 0.6 for part-time workers, and FTE = 0 for persons on leave. In **Spain** FTE for men = 0.917x male headcount and FTE for women = 0.826x female headcount. In **Ireland**, the calculation of the Full Time Equivalent is done on the basis of the number of hours worked in the two-week period in the previous month and is divided by the standard number of hours worked in a normal two-week period. These examples already show how **different the calculation** itself is, which can lead to **inaccurate comparisons and conclusions**.

Box 3. Belgium – Country case for good practice⁹²

According to the Belgian method, for practicing physicians, whose activities are registered in the health insurance reimbursement system, 1 FTE = median revenue of the Age group 45-54 years, as these people have established their careers by this stage. The observed median is used in order to temper the effect of the high variability of revenues as well as the absence of revenue.

The selection is based on:

- Practising Doctors (exclusions made based on information on the professional activity, both from social security and health insurance institutions);
- Sector of activity

The FTE, calculated on the basis of the revenue related to performed medical acts, with data obtained from the national health insurance authority, is a relative measure. It indicates the workload of a given professional in relation to the observed activity of a reference person, i.e. the median observed professional in the age-group 45-54. Obviously such an FTE calculation method can be used only in countries where payments to doctors are made according to defined and measured units of performance by the

⁹² Belgian experts participating in the Joint Action trust that with their calculation method on FTE, they managed to solve their problems linked to the inclusion/exclusion discussion introduced in the sub-chapter about activity categories.

insurance company. More information on the possible pitfalls of this method can be found in Appendix XV.

The role of FTE in HWF monitoring, planning and forecasting

If FTE would be used for HWF monitoring, planning and forecasting, at first glance it seems that there is a *great need for the development and establishment of a standard formula*. For countries having no FTE data available, the elaboration of simple methods for FTE estimation could be the solution.⁹³

Many experts agreed that the activity of healthcare professionals should be measured also in FTE, due to its high relevance and special usefulness for planning purposes. Countries that can measure the PA category could also provide FTE in this category. Other experts highlighted the increasing importance of FTE due to the latest trends, for example the feminisation of the HWF (part-time work option), and the expectations for a more balanced lifestyle from new generations. Therefore FTE could provide a better picture of real HWF activity - which is essential for planning purposes. Headcount is currently more akin to the LTP category⁹⁴ - and is not a valuable measurement on its own.

During the Budapest workshop on June 12th-13th 2013, the debate on FTE concluded that FTE may serve as a comparative tool for HWF monitoring and planning. But there are difficulties with data collection, data availability, and the lack of standard, universally accepted calculation methods and other differences (e.g. normal working hours vary between 35 to 55 hours per week and also between professions - nurses vs. doctors - and/or settings - public vs. private - within a country) which constitute a burden that may weaken the robustness of this measurement category.

As a critical note on FTE, some experts dispute the reasonability of using this tool for monitoring and planning for the category on medical doctors and for health workers in general. When looking in depth to the meaning of the Headcount and FTE definitions in the doctors category, FTE often cannot be interpreted, as doctors keep up a "problem solving" thinking process about patients even outside working hours⁹⁵. FTE is more applicable for those doctors who have a part-time job in hospital along with other commitments such as being a family doctor or another job, as their working time (FTE) is a combination of these different components.

Finally, still on the critical side, some experts argue that even if FTE is more reliable than Headcount, it does not add much more. The important factor would be to know productivity levels, but it is difficult to estimate. Ratios such as the number of GPs compared to the number of specialists, or the number of nurses compared to the number of MDs, etc. give a better sense of the whole HWF and its efficiency⁹⁶.

⁹³ This consideration emerged from the discussion at WP4 workshops

⁹⁴ See related issues in 2.1

⁹⁵ This consideration emerged from expert interview with Walter Sermeus, University of Leuven

⁹⁶ Also see related parts on ratios in 2.1

According to other expert opinions, aggregated FTE data for entire professions does not support performing genuine international comparison and benchmarking for HWF planners. Such data does not give the level of detail for refined comparisons to be made. However, for subgroups of the health workforce, (e.g. nurses in elderly care, anaesthetists, hospital pharmacists, etc.) - especially when these groups are further broken down according to age groups and gender - the international differences in cultural and organisational factors may be analysed, and interpretations may be derived by HWF planners. For example, an international comparison of FTE for female intensive-care nurses in the 30-35 age group may be the starting point of an analysis on the differences of how national health systems should consider the family conditions of intensive care nurses raising children. But according to these experts, individual data follow-up could ensure much higher value for analyses and their consequent use for HWF planning and forecasting.

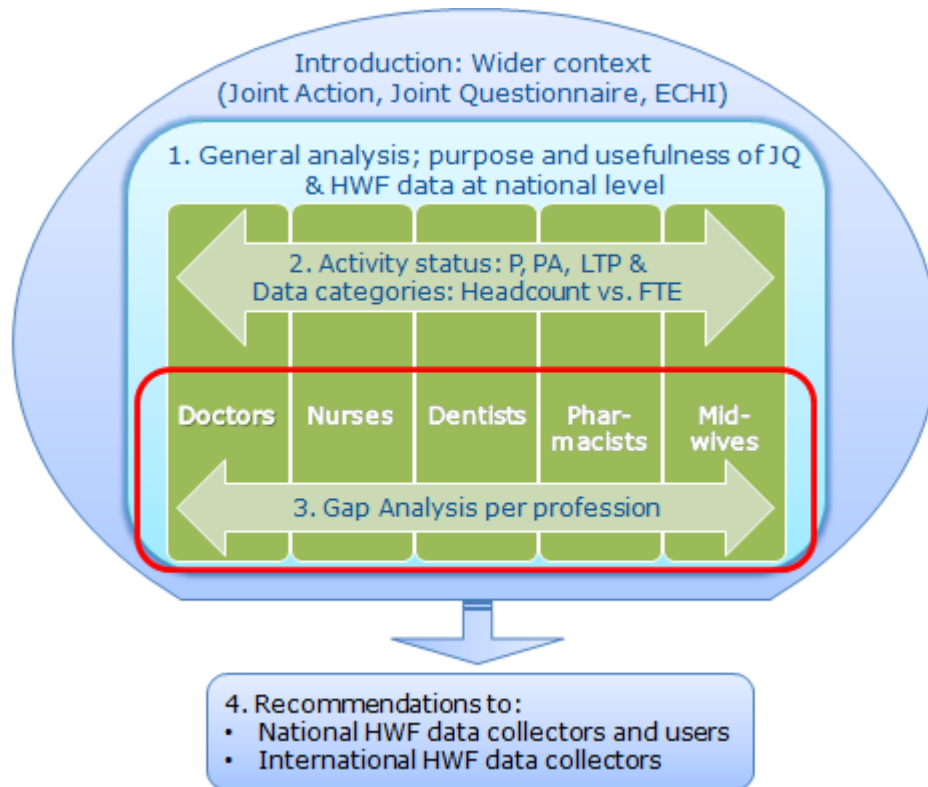
Summary and conclusions

FTE and headcount both reflect health workforce supply from different angles and therefore they complement each other. Since several countries do not follow the OECD recommendations on FTE calculation, the comparison between the FTE data on different health systems may be misleading. It must be noted, however, that the OECD suggests three ways of calculation. Comparability could obviously work the best if each country in question would choose the same method.

Comparing FTE at the international level - even if for well selected subgroups of the health workforce - requires detailed metadata. Considering the complexities and differences of measuring FTE in different countries, FTE may not be regarded as a feasible data collection category at the EU level in the near future across various health professions and sectors. Nevertheless, the exchange of selected FTE information among countries may be feasible and may contribute significantly to the HWF planning process. National FTE - an indicator on its own - could serve as a demanding call to action for HWF planners in light of matching international FTE data.

FTE is not a tool to compare productivity, and it does not demonstrate the time health professionals spend with patient and non-patient related activities. Nevertheless, even with such a constant element of error, FTE may be relevant for highlighting trends in the employment of health professionals.

3 – Gap analysis on the professional data categories of the Joint Questionnaire



This chapter provides answers the following questions:

1. *What are the most significant gaps in reporting data to the JQ in the five sectoral professions?*
2. *What is the relationship between data collected according to the occupation-based ISCO and data collected according to the qualification-based 2005/36 Directive⁹⁷?*
3. *What are the specific reasons for data gaps in the nursing and midwifery professional categories?*
4. *What new data categories would help a more reliable data collection?*

3.1. The Doctors, Dentists and Pharmacists data categories

Introduction

Doctors, dentists and pharmacists form an integral component of the health workforce globally, and also in the European Union. These professions strive to find new paths for

⁹⁷ DIRECTIVE 2005/36/EC on the recognition of professional qualifications

providing appropriate and up-to-date quality health services to the population among rapidly changing conditions (i.e., demographic changes, technological developments, changes of social expectations and government funding for health care).

The numbers of these professionals are highly influenced by previous and current national or regional policies (e.g., on health workforce training numbers) and, in some countries, by systematic national-level health workforce planning. The shortage of health professionals within the EU is difficult to project. Nevertheless, various scenarios and estimates have been put forward both for national and for the EU shortages.⁹⁸

In some countries, the proportionate number of doctors may be high (e.g. in Greece) or low (e.g. in Poland), as compared to other countries⁹⁹. In other countries, the shortage of doctors in one specialist area may result in an oversupply within a decade, due to government-level policy changes, while in other countries the strong political power of medical universities may also lead to or maintain an oversupply of health professionals. The number of doctors to be trained in higher education is frequently debated and influenced by government policies. For example, in the Netherlands, these considerations raise the question whether an oversupply of doctors, which creates a “healthy” competition of professionals, or an undersupply, which provides more opportunities for nurses to fill key positions in the health care system, would be more appropriate in the long run.¹⁰⁰

The number of health professionals is also determined - among other factors - by the attractiveness of the traditionally high, but recently more challenged, prestige of these professions. Moreover, the phenomenon of mobility also plays an important role in many European countries (e.g. in Lithuania and Bulgaria - as source countries, and in UK, Ireland and Germany - as destination countries).¹⁰¹

Gap analysis and evaluation

Definitions of the Joint Questionnaire and the 2005/36/EC Directive

HWF data collection in most Member States is based primarily on the 2005/36/EC Directive as amended by Directive 2013/55/EU, i.e. the data collection follows the professional qualifications-based EU categorisation. Doctors¹⁰², dentists and pharmacists are among the five sectoral professions under this Directive, which sets out the minimum criteria for basic and specialty training, training routes and basic requirements of training contents.

⁹⁸ See e.g. the table on *Information on health workforce shortages in selected Member States* in the *Possible Shortages in Health Workforce* section of EC Feasibility study (2012)

⁹⁹ For the proportionate number of practising doctors per 1,000 population see In: OECD (2013)

¹⁰⁰ Victor Slenter, CEO, Capaciteitsorgaan, Netherlands. Presentation, JA WP5 Florence Workshop, May 2014

¹⁰¹ See country cases on mobility in Buchan *et al.* (2014, p. 106.) Section: The mobile individual

¹⁰² Currently, the 2005/36/EC Directive is fully transposed for doctors in EU countries, while the transposition of its amendment (Directive 2013/55/EU) is on-going, with a deadline of December 2015. As of 2015, the minimum length of basic medical training in all medical universities must be five years

JQ data collection is based on the ISCO definitions.¹⁰³ For all of these three professions the definitions demand a university-level diploma. Since the ISCO codes are broader than the Directive categories, the overall Directive categories for doctors, dentists and pharmacists are integrated in the respective broader 2008 ISCO categories. Therefore, while reporting to the JQ, the question whether a health professional may be regarded as a doctor, dentist or pharmacist does not include methodological questions - except for the *stomatologists/oral surgeons* category, and, in general, for dentists with a medical degree.

Analysis on Doctors

The JQ collects information for doctors in the following 3 categories:

- **Generalist medical practitioners¹⁰⁴** - with two sub-categories: *General practitioners*, and *Other generalist medical practitioners*;
- **Specialist medical practitioners¹⁰⁵** with six sub-categories: *General paediatricians*, *Obstetricians and gynaecologists*, *Psychiatrists*, *Medical group of specialists*, *Surgical group of specialists*, and *Other specialists not elsewhere classified*;
- **Medical doctors not further defined¹⁰⁶** - this is a category used as an option if no information is available to allocate doctors in one of the two broad categories¹⁰⁷.

Thus, at the level of medical specialisations, the medical specialist categories recognised by the Member States and the ISCO group categories do not fully match. Despite European initiatives intended to specify further the ISCO health workforce categories,¹⁰⁸ these global categories are not likely to be amended in the near future. Therefore, the data categorisation gap between the qualification-dependent national level HWF data collection and the ISCO-based JQ data collection is not likely to change.

When reporting to the JQ, each National Focal Point groups the national specialisations into one of these aforementioned groups. Countries follow different methodologies for converting national data to match JQ categories, although in some countries, such as Cyprus, no synchronisation has been performed with the ISCO codes.

The following examples demonstrate some deviations from and various interpretations of the JQ definitions: The *United Kingdom* collects data which covers National Health Service staff only and excludes dental staff, optometrists/opticians, and locum staff (recruited for short term assignments). In *Northern Ireland*, data excludes hospital/medical practitioners who tend to be counted as *General Practitioners*, and data

¹⁰³ See Appendix XVI for the data categories of the JQ

¹⁰⁴ ISCO-08 code: 2211

¹⁰⁵ ISCO-08 code: 2212

¹⁰⁶ ISCO-08 code: 2210

¹⁰⁷ According to ILO recommendations

¹⁰⁸ E.g., The Union of European Medical Specialists approached ILO for more specific definitions

also excludes staff on career breaks, while data provided by *Scotland* excludes *Ophthalmic Medical Practitioners*.

While individual countries may show unique deviations from the JQ definitions, the below general issues represent the the most significant gaps in reporting:

- **The Generalist data category.** This category includes two sub-categories that countries are expected to separate out for the JQ: *General Practitioners* (GPs and family doctors working in primary care) and the *Other generalist medical practitioners* working, for instance, in hospitals. As some countries are unable to make this distinction, the comparability of data on general practitioners/family doctors is limited.
- **Physicians-in-training** (interns and residents who already have a medical degree but are participating in postgraduate specialist training). The JQ aims to include these *physicians-in-training* in the speciality groups that they are currently training for. In general, countries have difficulties in reporting these doctors or in converting them into the six categories of doctors used in the JQ. Additional difficulties/gaps emerge when some countries report them in the *not elsewhere classified* category.
- **Specialists with more than one speciality** constitute a reporting issue for some countries, as these doctors are double counted and reported, and therefore due to this (or other) methodological issues, do not report specialists at all (e.g. Hungary).¹⁰⁹ On the other hand, it is challenging to decide whether the first specialisation, the last specialisation or the specialisation in which doctors spend the majority of their working time in should be the one counted.
- For an analysis on reporting **specialist medical practitioners**, it is important to mention that more than 300 specialisations are currently recognised in different EU countries - including those 54 specialities enlisted in the Directive that fall under automatic recognition.¹¹⁰ This is an additional challenge for classifying the medical workforce under the six specialist groups in the JQ and in some countries.
- In addition to the issues in reporting outlined above, significant differences may be observed across countries in the training background that doctors have, which is to be taken into consideration when comparing data submitted to the JQ:
- Even at the national level a variety of curricula may be followed by universities, and there is currently no political support for a standardized European curriculum, with the exception of an exchange of good practice. In other words, the **data in the JQ report covers doctors with different training backgrounds** across countries and universities.
- **The required length of specialist training** - typically ranging from three to five years - as established by the Directive, has not been amended in the Directive in the past forty years, despite substantial modifications in the scope of practice in certain fields and MSs. Indeed, various countries have extended the

¹⁰⁹ The JQ provides guidelines on criteria that might be used to avoid such double counting

¹¹⁰ Since currently in some countries even universities are allowed to determine the title and contents of some specialities, this situation is not going to change in the near future

length of specialist training, while other countries left the length of training unchanged.¹¹¹ Therefore, the lack of new legislation on specialisations distorts the comparison between data on doctors as supplied by countries to the JQ.

- In many Member States, **General Practice/Family medicine is recognized as one of the medical specialties** and comprises 4-5 years of specialist training. In other countries (e.g. in *Belgium, the Czech Republic and Romania*), GP/Family medicine doctors have a different status. In those countries, they begin their practice as a GP after completing medical university and a supervised period. Here again the training background differs, therefore the contents of the data submitted on GPs varies significantly between countries.

Comparison of HWF data may be considered with the limitation of the different coverage of *current/exact working hours* (full-time equivalents) and *scope of practice*.¹¹²

Analysis on Dentists

Dentistry is practiced under various regulatory frameworks and systems, where the nature of education, the constitution of the dental workforce as well as the practicing arrangements may differ across EU countries.¹¹³

The JQ expects that all those reported under the Dentist category have a diploma in dentistry or stomatology/dental surgery at the university level. Thus, this JQ category includes stomatologists/dental surgeons who are considered as doctors by national registries.

Prior to the adoption of the Dental Directives (78/687/EEC and 78/686/EEC), later repealed by Directive 2005/36/EC, the profession of dental practitioner (or dentist) in many Member States was not a distinguished profession distinct from other general or specialised medical professions. In particular, dentistry was (and still is) practised by stomatologists - practitioners with a six-year diploma in basic medicine combined with a diploma certifying a three-year specialisation in the field of dentistry.

The issue on stomatologists *versus* dentists is still not solved in several countries and led to some gaps in reporting, for example:

- In *Spain*, dental qualifications became independent from medical qualifications in 1986 and until 2001 it was still possible to be trained as stomatologist. Therefore, the number of dentists who are also physicians remains an important issue to be appropriately tackled today. In 1997, Spain developed the *Register of Stomatologists and Odontologists* and in 2011, the *Spanish Classification of*

¹¹¹ Some countries have discussed the introduction of specialist training that is below the minimum requirements, so that these specialists cannot have their degree accepted in other countries, thus impairing their mobility

¹¹² A special perspective was offered by an OECD presentation on the skills use and skills mismatches in the health sector. The presentation suggested that health workforce may be underskilled or overskilled for similar positions across countries. - Michel Shoensten, OECD, 2 June 2014. EU Working Group on Health Workforce meeting.

¹¹³ The diversity of the profession is reflected in the "EU Manual of Dental Practice", Council of European Dentists (2014)

Occupations. Until 2011, as reported in the JQ, dentists have been reported as doctors.

- Stomatologists are classified as physicians in the national statistics of many Member States. However, when a country, e.g. Belgium, transmits data to international organizations, this classification is adapted to comply with the international definitions.¹¹⁴
- In *Germany*, as reported in the JQ, stomatologists are included in the reported dentist data, but physicians with a “dental, oral and maxillo-facial surgery” speciality are excluded as these, having had the possibility to decide on whether to be registered (medical chamber or dental chamber), have decided to be registered in the medical chamber.
- In the *United Kingdom*, and in some other countries, reported numbers also depend on the characteristics of registers. For instance, all dentists who wish to practise dentistry in the UK need to be registered with the General Dental Council (GDC). Every dentist is registered once, but not necessarily all of the registered dentists do practise. The various NHS authorities in the different countries of the UK (England, Wales, Northern Ireland and Scotland) hold separate lists of dentists working in the NHS. There is the potential for duplication if an individual works in more than one country or, for example within Scotland, in more than one administrative area. However, cross-checking of individuals against GDC numbers limits the occurrence of duplication. The NHS figures would also not take into account any dentists working as fully private practitioners.

If the above-mentioned gaps in reporting might have a distorting impact on the number of dentists reported in various EU countries, they do not, however, have a real impact on the supply side. Stomatology is a profession that is likely to disappear, as this type of training has ceased in the EU. Furthermore, maxillo-facial surgery is considered as a medical specialty rather than a dental specialty.

Analysis on Pharmacists

Data on pharmacists is usually the most reliable data category that countries supply to the JQ¹¹⁵, thus their international comparability can be regarded as being of a high standard.

National-level categorisation is based on the fully implemented 36/2005/EC Directive with a minimum level of five years training. The Directive outlines a general list of courses – with the knowledge and skills that must be acquired by those in pharmacist training.

The practice conducted by pharmacists in different countries may vary widely, especially regarding prescribing rights, the range and distribution of available over-the-counter medications, the provision of special consultations and services to patients in pharmacies, or the provision of prescribing veterinary products. However, there are a

¹¹⁴ See e.g. European Court of Justice (2001) Ruling C-202/99

¹¹⁵ Source: interview with Gaetan Lafortune, OECD Health Division, senior economist

number of existing innovative practices, and trial initiatives in several countries (e.g. the UK, Norway, Ireland, France, Spain, Portugal, Switzerland, The Netherlands and Belgium, just to name a few) where the traditional role of the pharmacist is being expanded to include patient-centred services.¹¹⁶ In some Nordic countries, the work of pharmacists overlaps with the work of the so-called *prescriptionists* who are trained for a bachelor degree.

On average, 70-75% of pharmacists work in a community pharmacy in EU countries, and the others work in hospitals and the rest in research, academia, civil service and the pharmaceutical industry. Those working in the community and hospital sector are usually required to obtain registration (also referred to as a license) to practice in a patient-facing role, but those working in the other sectors are frequently not. The Chambers of Pharmacy usually monitor the workforce numbers, and in some countries they are the real source of headcount data.

Data gaps in the JQ reported here may be traced back to different factors in the reporting countries:

- *Denmark* and *Slovenia* do not require registration/licensing of pharmacists, therefore the calculation of the actual numbers of pharmacists requires a special methodology;
- Reporting pharmacists working in the pharmaceutical industry varies among countries: while *Poland* does not report these professionals under the “professionally active” category, *Iceland* does and also reports the full “professionally active” category: pharmacists working as professors or pharmacists working in public administration. Iceland also reports assistant pharmacists (graduating with a shorter university education than full pharmacists) in the pharmacist category.

Summary on analysis on data gaps of doctors, dentists and pharmacists

In summary, data reported on doctors, dentists and pharmacists to the JQ depends primarily on data structures available at the country level, and matching that available data to the JQ categories. The gaps characterising the JQ reporting system are partly due to the differences between the ISCO and the 2005/36 Directive categories on the level of specialisations in the medical and dental professions. Furthermore, the lack of national data sources to turn the Directive-based data in to the JQ is still a challenge in various Member States.

3.2. The Nurses and Midwives data categories

Nurses represent the largest professional group among health professionals, with a crucial role in providing healthcare. Taking into account future healthcare needs, a considerable shortage of nurses may be predicted.¹¹⁷ In several EU Member States, as

¹¹⁶ More on the expansion of the traditional pharmacist role: Pharmaceutical Group of the European Union (PGEU) Overview: <http://pgeu.eu/en/policy/5-adherence.html>

¹¹⁷ A shortage of nurses is foreseen, but no evidence of shortages of specialist nurses or healthcare assistants. - Statement by EFN

described by the EC Feasibility Study¹¹⁸, shortages (e.g. Bulgaria, Hungary) or geographical imbalances (e.g. France) are already reported, while in other countries shortages of nurses occur only in some sectors (e.g. long-term care in Austria) or in some fields of professional expertise.

The tasks performed by nurses and the skill-mix applied in healthcare systems varies from country to country, and a strengthening tendency in task reallocation can be foreseen in the near future for easing the growing need for nursing care.¹¹⁹ Health systems and educational systems also show national variability. Besides the medical and nursing professions, many other types of allied health workers can play an important role in the continuity of care. Some professions may exist in some countries while not in others, so this variability should be taken into account in international comparisons.

In order to tackle the human resources crisis and foster health workforce planning, appropriate data coverage is a necessity. Within the context of growing and changing healthcare needs and new and more exigent requirements for care and cure, there is a need for a broader understanding of the different roles and professional competencies between health professionals and within the nursing profession, in addition to having a clearer picture of the exact and comparable numbers for the entire nursing workforce in order to adequately plan care needs. Monitoring activities usually cover most of the professions, but existing planning models are merely limited to physicians. The nurses workforce is involved in planning models only in seven countries (including Estonia, Finland, Lithuania, Norway, Spain and the United Kingdom), whereas planning for midwives is reported only in five states (Estonia, Finland, Norway, Spain and the United Kingdom).¹²⁰

Nurses and midwives are among the five sectoral professions under Directive 2005/36/EC modernised by Directive 2013/55/EC. The Directive sets for nurses the minimum admission criteria for entry, together with education topics, duration of studies and competences are regulated, thus making comparison in these professions at the European level easier.¹²¹

However, the Joint Questionnaire uses the definitions of ISCO¹²², whose categorisation is based on aggregated occupations and tasks. ISCO definitions for nursing-related activities include various levels (nursing professionals, associate nursing professionals, healthcare assistants, etc.) that do not refer to the education and professional experience criteria described in the EC Directive. Additionally, the definitions and

¹¹⁸ EC Feasibility Study (2012)

¹¹⁹ Niezen and Mathijssen (2014)

¹²⁰ EC Feasibility Study (2012)

¹²¹ The Directive sets out that the education and training of nurses responsible for general care shall comprise a total of at least three years of study and shall start after 10 or 12 years of general education. The nurse education may, in addition, be expressed with the equivalent ECTS credits, and shall consist of at least 4,600 hours, of which 2,300 hours are for clinical practice. Additionally, the Directive includes a list of measurable competencies, highlighting the independence of the nurse profession.

¹²² ILO (2012)

grouping criteria according to which professionals are classified in professional categories and sub-categories might differ across countries^{123,124}.

The targets and limitations of the gap analysis

The gap analysis in this section intends to examine the concordance between the definitions of the JQ, the terminology applied by Member States and the comparison of the expected and provided data content. The aim is to know whether Member States are reporting their nursing workforce in the appropriate categories and whether the Joint Questionnaire allows for the collection of comparable data.

Gap analysis and evaluation

Comments on the Definitions used by the Joint Questionnaire

Categories for nurses and midwives are described in ISCO-08 among health professionals. *Nursing and midwifery professionals* and *Associate nursing and midwifery professionals* are described as professional groups, but in these categories the two professions are handled together, although the two qualifications are differentiated in regulations at the European level. Other professionals in the allied health workforce, such as *paramedical practitioners*, *medical assistants*, and various groups of *medical technicians* are defined in other categories of health professionals or health associate professionals, and *healthcare assistants* are described as a category of *personal care workers in healthcare systems (caring personnel)*.

Table 9. Subgroup structure of ISCO-08 on health professionals, health associate professionals and personal care workers (ISCO Code, 2012)

ISCO 08 Code	
22	HEALTH PROFESSIONALS
221	Medical doctors
222	Nursing and midwifery professionals
2221	Nursing professionals
2222	Midwifery professionals
223	Traditional and complementary medicine professionals
224	Paramedical practitioners
225	Veterinarians
226	Other health professionals
32	HEALTH ASSOCIATE PROFESSIONALS
321	Medical and pharmaceutical technicians
322	Nursing and midwifery associate professionals
3221	Nursing associate professionals
3222	Midwifery associate professionals
323	Traditional and complementary medicine associate professionals
324	Veterinary technicians and assistants
325	Other health associate professionals

¹²³ EC Feasibility Study (2012)

¹²⁴ Stig, K. and Lütz, I. P. (2011)

53	PERSONAL CARE WORKERS
5311	Child care workers and teachers' aides
532	Personal care workers in health services
5321	Health care assistants
5322	Home-based personal care workers

Definitions for each category of the JQ are detailed in the explanatory notes of the Questionnaire. The *contents of the professions* are defined for professional nurses and for associate professional nurses and caring personnel. Only cross-references to ISCO-08 are mentioned for midwives: *Inclusion midwifery professionals (ISCO-08 code: 2222) and midwifery associate professionals (ISCO-08 code: 3222)*.

The task descriptions of nursing professionals, nursing associate professionals and healthcare assistants draw up a picture in which differences appear in the competencies, but clear boundary lines are not stated.

Table 10. Definitions for nursing professionals, nursing associate professionals and healthcare assistants in the Joint Questionnaire

Profession	Definition of the Joint Questionnaire
Nursing professionals	<i>Nursing professionals assume responsibility for the planning and management of the care of patients, including the supervision of other health care workers, working autonomously or in teams with medical doctors and others in the practical application of preventive and curative measures.</i>
Nursing associate professionals	<i>Nursing associate professionals generally work under the supervision of, and in support of implementation of health care, treatment and referrals plans established by medical, nursing and other health professionals.</i>
Health care assistants	<i>Health care assistants provide direct personal care and assistance with activities of daily living to patients and residents in a variety of health care settings such as hospitals, clinics, and residential nursing care facilities. They generally work in implementation of established care plans and practices, and under the direct supervision of medical, nursing or other health professionals or associate professionals.</i>

Providing supervision and autonomous work are key features in the task description for professional nurses, while nursing associate professionals work under supervision and do not have competence for planning and care management, however the job description of healthcare assistants contains similar elements to the tasks of associate professional nurses.

The definitions described in Table 10 do not refer to any differences in *qualifications*, however in practice it is presumable that higher qualifications are a prerequisite for supervision and autonomous work in the same healthcare setting. Professional experience is not mentioned either as a requirement in the description of nursing professionals.

Although JQ definitions cover ISCO categories, they additionally refer to *educational requirements*. Nurses and midwives licensed to practise have to complete the requisite

education and be qualified and authorised to practice in their country. In the case of nurses, a *programme of nursing* is mentioned as an educational criterion without any additional requirements for the programme (educational level, duration, etc.):

Table 11. Definitions for midwives and nurses licensed to practice in the Joint Questionnaire

Profession	Definition of the Joint Questionnaire
Nurses LTP	<i>A nurse licensed to practice has completed a programme of nursing education and is qualified and authorised in his/her country to practice nursing. They include practicing and other (non-practicing) nurses.</i>
Midwives LTP	<i>Midwives licensed to practice have acquired the requisite education and qualifications to be registered and/or legally licensed to practice midwifery.</i>

Qualifications are also an aspect in the definition of professional active nurses and midwives, where it is stated that these categories include professionals “for whom their education is a prerequisite for the execution of the job.”

Educational requirements are also basic elements for the *exclusion criteria*. Nursing aids/assistants, healthcare assistants and personal care workers “who do not have any recognised qualification/certification in nursing” are excluded from nursing categories. It should be noted that educational criteria are also part of the definition of professionally active caring personnel (the category that includes healthcare assistants and personal care workers): *“Professionally active caring personnel include practicing caring personnel and other caring personnel for whom their education is a prerequisite for the execution of the job.”*¹²⁵

Data provided for the Joint Questionnaire

Although data collection by the Joint Questionnaire on Non-Monetary Health Care Statistics is a coordinated effort by Eurostat, WHO and the OECD, the *published statistics* on the organisations’ respective websites are different.¹²⁶ Regarding nurses and midwives, only the OECD provides data for professional nurses and associate professional nurses. Data for nurses and midwives in the “Licensed to Practise”, “Professionally Active” and “Practising” categories are available in the statistics of Eurostat and the OECD. Additionally, Eurostat publishes aggregate statistics: “nurses, midwives and healthcare assistants”, “nurses and midwives”, “nursing professionals and midwives,” but the values indicated in these aggregate categories significantly derive from the sum of values published for nurses and midwives (especially in the LTP and PA categories). In the European Health for All Database (HFA-DB), WHO publishes only one type of indicator in the *“concept closest to practicing”* category for nurses, presenting the sum of headcount data for nursing and midwifery professionals(!). Separate indicators for midwives (closest to practising) are also available in the WHO Database. Having seen the different practices in publishing statistics, it can be stated that although

¹²⁵ Definition for professionally active caring personnel in the Joint Questionnaire

¹²⁶ This difference maybe explained by the intent to follow the previous time series and keep comparability with the previous data collection systems. Nevertheless, efforts should go into agreeing on the unified data collection and presentation of results in order to avoid misinterpretations.

the harmonised Joint Questionnaire is an effective tool for data collection, harmonisation in data utilisation has not yet taken place.

In the WP4 Questionnaire Survey, representatives of 14 countries submitted information on the data they were providing for the JQ.

Table 12. Availability of data on professional categories for nurses and midwives among WP4 Questionnaire Survey respondents (N: data available for nurses; M: data available for midwives; NM: data available for nurses and midwives)

Country	Practising	Professionally active	Licensed to practise
Belgium			NM
Germany	NM	NM	
Finland	NM	NM	NM
The Netherlands	M	NM	NM
Ireland		NM	N
United Kingdom	NM		
Greece		NM	
Poland	NM	NM	NM
Portugal	NM	N	
Spain	N	N	NM
Cyprus	N		
Iceland	NM	NM	M
Italy		NM	NM
Hungary	NM		

Based on the results, it can be concluded that the *availability of data for nurses and midwives shows a very similar pattern* due to the fact that original data sources for nurses and midwives are the same or very similar at the country level. Regarding the data categories, a slight difference occurs between countries, and there are only two countries in the sample (Finland and Poland) that are able to present data for all of the three categories in nursing and midwifery professions.

Gaps determined by available data sources

As presented earlier with regards to national-level HWF data flow, the type and quality of data reported for the JQ highly depends on the *available data sources at the country level*. Data for professionals licensed to practice is easier to obtain by *registers*. Registers can be run by state authorities (e.g. *Federal Database of Healthcare professionals* in Belgium or *Register of health workers competent to pursue a healthcare profession without professional supervision* in the Czech Republic) or, in many countries, the original data is produced by a professional council, chamber or a professional organisation (e.g. *Main Polish Chamber of Nurses and Midwives* in Poland or *Register of nurses council* in Spain). Although registration process for nurses and midwives shows similarities in many countries, availability of data is affected when separate registers

exist for the two professions. This is the situation in Italy (with two different institutes, IPASVI and FNCO for keeping the registers for nurses and midwives) or in Austria where licensed to practice data is available only for midwives due to the *Österreiches Hebammengremium*, the professional organisation of midwives.

Considering the definition for the *Licensed to Practise* category, gaps can be caused by the application of “age limits” in Denmark (where only the number of health professionals below the age of 70 are reported from the Central Personal Register), in Finland (where the age limit is 64) or in Sweden (where only non-retired personnel are reported).

Reports from healthcare providers (e.g. hospital statistics or labour force surveys) are the most specific data sources for the *Practising* and *Professionally active* categories of nurses and midwives, and this data is often collected by statistical institutes. These data sources are suitable to provide information about the main occupational activity. The role of professional bodies is only indicated in Iceland (where three different professional organisations provide data about professionally active nurses and midwives) and in Portugal (on behalf of the Council of Nurses). In the Netherlands the same report is provided for practising and professionally active nurses, and the number of practising nurses is estimated by a calculation from all registered nurses who are economically active. In countries where practising data is based on reports from healthcare providers (e.g. Czech Republic, Hungary) it might cause duplication when a professional works in more than one workplace.

Reviewing the data sources in the field of nursing and midwifery, it can be stated that *licensed to practise* data is more linked to professional registers and more likely to be determined by qualification, while practising and professionally-active data is more related to information collected on occupational activity. It can be concluded that data availability and data quality is highly dependent on data sources. Despite agreed-upon definitions to use when lacking the appropriate data sources for the different variables at the country level, providing proper data for international comparability cannot be expected.

Data gaps determined by the definitions of midwifery

According to the lead statement described in the ISCO classification: “*Midwifery professionals provide care and advice to women during pregnancy, labour and childbirth and the post-natal period*”. The midwifery profession is also one of the regulated professions under Directive 2005/36/EC, which means that training requirements are determined at the European level. The Directive allows *two routes for training in midwifery*, a specific full-time training comprising at least three years of study and a shorter training of at least 18 months duration, where possession of a certificate of formal qualifications as a general care nurse is an admission criterion.

This indicates that the “midwives” category poses a methodological issue: in some countries midwifery is not considered as an independent profession but a *specialisation for nurses*: the nurse-midwives. Some of them, while having the midwife specialisation still work as general nurses. Therefore, the JQ definitions suggest that they should be

reported as a nurse or as a midwife depending on what they do in the majority of their working time. (“Nurses or nurse-midwives who are working most of the time as midwives” are mentioned in the inclusion criteria of the JQ category “practicing midwives”.)

Midwives are *registered separately* from nurses in most of the countries; gaps can be identified only in the cases where the midwifery profession is closely linked to nursing or a distinction cannot be made between nursing and midwifery activity. In *Ireland*, the data on nurses licensed to practice includes midwives, because it is not possible to distinguish between nurses and midwives as virtually all registered midwives also hold registered nursing qualifications. In *Spain*, the midwifery educational programme is based on a nursing qualification, such as other specialty trainings in nursing education. Therefore, the figures of professionally active midwives are not available, because it is not possible to subtract them from the total number of professionally active nurses. In *Portugal* – similarly to Spain - the data for midwives refer to nurses “specialised in Maternal Health and Obstetrics”.

Data Gaps between professional nurses and associate professional nurses

Data on professional and *associate professional nurses* is only published by the OECD out of the three main organisations running the JQ. In ten countries the category “associate professional nurse” does not even exist or does not feature in the health system, and data for associate professional nurses is also not reported for Belgium, the Czech Republic and Sweden.

Table 13. Availability of data on associate professional nurses, 2011.¹²⁷

Data on associate professional nurses is available	Data on associate professional nurses is not available	Data on associate professional nurses reported as not applicable
Austria	Belgium	Estonia
Denmark	Czech Republic	France
Finland	Sweden	Italy
Germany		Ireland
Greece		Luxembourg
Hungary		Norway
Iceland		Poland
Netherlands		Portugal
Slovenia		Slovak Republic
United Kingdom		Spain

It should be noted that data for associate professional nurses in the *Licensed to Practise* category is only provided by Denmark. The distinction between professional nurses and

¹²⁷ OECD (2014b)

associate professional nurses in the LTP category is difficult to make, if the registries of nurses do not include a clear indicator whether a nurse is trained as a professional nurse or an associate professional nurse.

Although the definition of professional nurses and associate professional nurses describes differences in *job content and competence*, qualification differences between the two groups are not mentioned in the JQ definition. The content of these categories can therefore be interpreted differently between Member States and can lead to misunderstandings, distinct uses of terminology and finally to inappropriate comparisons and planning for the nursing workforce.

Despite the occupation-focused definition of the JQ, in several countries *the boundary between the two groups is drawn by qualifications*. In Iceland, a BSc degree for professional nurses is based on four years of university study, while for associate professional nurses it is three years of non-university education and 16 weeks of practical training. In Germany, EC-Directive 2005/36 is used for the distinction: a three-year education criteria is set for professional nurses and a one-year education criteria for associate professional nurses. In Austria, one year of study is required to qualify as an associate professional nurse as well. In the Netherlands, the two groups are differentiated also by education level (qualification level 4 and 5 according to the European Qualification Framework).

In the United Kingdom, the distinction may also be made according to the position in the Agenda for Change pay bands, which reflect the qualification of professional nurses. Non-medical healthcare staff in the National Health Service are placed on one of the nine Agenda for Change pay bands, professional nurses begin at band 5 and so may be categorised as those with Agenda for Change bands 5-9, and associated professional nurses those below band 5. Double counting may be possible were someone to hold two working positions in different bands.

By comparing the *ratio between professional and associate professional nurses* in different countries, other gaps can be seen. In several countries (e.g. Austria, Germany, Hungary, UK) the number of reported professional nurses is 3-6 times more than the number reported for associate professional nurses, while in other countries the number of associate professional nurses is higher (e.g. Finland, Slovenia, the Netherlands). In Finland, this can be explained by the classification system, where even nurses with 4-5 years of tertiary level education (registered nurses and public health nurses) are classified as associate professional nurses. In the Netherlands, five types of qualifications fall under Directive 2005/36/EC, two of them are classified as professional nurses, while the remaining three as associate professional nurses.

Considering the sporadic data availability and differences in interpretation, it can be concluded that the separation between the two categories is not clear, which can result in distortions in data collection and availability. Classification according to the definitions stated in the JQ are possible only when the national data collection is based on ISCO-08 Codes. Making classifications according to qualification criteria is not in line with JQ terminology, this practice could be discarded or qualification criteria could be added to official definitions.

Facing the difficulties in reporting and recognising the lack of a terminology which clearly distinguishes the different categories of nurses, *professional organisations* suggested a simpler form of classification categorisation.

The *European Federation of Nurses (EFN)* recommends a qualification-centred approach with a clear structure from a lower to higher qualification level, in which skills and competencies are also taken into account. Terminology suggested by EFN involves three categories, with a separate focus on the role below the level of “Nurse responsible for general care” under Directive 2005/36/EC, which serves as the main pillar for this categorisation. The *three categories* of professionally qualified nurse are the following:

- nurse responsible for general care (under the Directive 2005/36/EC);
- specialist nurse;
- advanced nurse practitioner.

The separate role below the level of *Nurse responsible for general care* is

- healthcare assistant.

Future work should examine the principles that should underpin the training and development of healthcare assistants.¹²⁸

The *International Council of Nurses (ICN)* worked out a nursing care continuum framework based on practice standards. ICN identified five categories based on competencies.¹²⁹

- nursing support workers (SW): without any registration, licence, defined scope of practice nor mandatory education;
- enrolled, registered or licensed practical nurses (EN): authorised to practise within the limits of a defined scope of practice and under the supervision of a registered nurse;
- registered or licensed nurse (RN): a self-regulated health professional who is entitled to work autonomously with a qualification and licence approved by the nursing board or council;
- nurse specialist (NS): a nurse prepared beyond the level of a nurse generalist and authorised to practice as a specialist in clinical, teaching, administration, research or consultant roles;
- advanced practice nurse (APN): a registered nurse with an expert knowledge base, complex decision making skills and clinical competencies for expanded practice.

Professional organisations show expertise in qualification criteria and professional standards and they can also have a broader view on how the current terminology is applied in real life. When evaluating current reports and considering room for improvement, the involvement of professional organisations can add essential insights.

The role of caring personnel in health workforce data

¹²⁸ The project on the support for the definition of core competences of healthcare assistants by NIVEL, the Netherlands will provide further insight into this. http://ec.europa.eu/chafea/health/tender-04-2014_en.html

¹²⁹ International Council of Nurses (2009)

While analysing data on caring personnel and the allied health workforce is not a core task for this document, it is important to mention that without data on the total health workforce, it is not possible to interpret data on the five sectoral professions either. The JQ contains only one *common category for caring personnel*, which includes healthcare assistants and home-based personal care workers. JQ data on caring personnel is published only by the OECD. Although data is available from 18 EU and EFTA countries, the data on the density of caring personnel shows a higher deviation than the other categories (0.16 practising caring personnel per 1000 inhabitants in Portugal as the lowest, and 19.47 practising caring personnel per 1000 inhabitants in Finland as the highest). Caring personnel are *not employed only in the healthcare system*; in several countries they are more likely to feature in social care.

Not only is the distinction between professional and associate professional nurses challenging, but in several countries the *job content of healthcare assistants* can also overlap with tasks performed by associate professional nurses. For example, in Northern Ireland (UK) nursing auxiliaries are included in the category of associate professional nurses; in Spain, they are classified as home-based personal care workers, but until 2010 they were included in the category of nurses. In Finland, hospital assistants ("*lähihoitaja*" referred to as practical nurses) perform the caring tasks in hospitals. In Germany, medical assistants ("*medizinische Fachangestellte*") carry out tasks similar to nurses, but they are not reported to any categories for the JQ. Considering that the goal of international data collection for healthcare support staff is not precisely defined, while harmonised education and terminology standards are lacking, international comparability is even more difficult to achieve.

The lack of *differentiation between the nursing and caregiving professions* should be also taken into account, for it can lead to biases and misuse. While those assisting in nursing-related activities (without any or with low-level qualifications) are referred to as "caring personnel" in international data collection, education standards exist for care-giving professionals who perform different tasks from nursing care and feature in the social care sector even more than in healthcare.

Gaps determined by the composition of the allied health workforce

Although internally accepted frameworks on the classification of occupations, job contents or qualification systems are widely used, national characteristics are especially present in the *composition of the allied health workforce*. Various types of nurses are also described in the JQ definition of professional nurses (e.g. clinical nurse, district nurse, nurse anaesthetist, nurse practitioner, public health nurse and specialist nurse) and associate professional nurses (assistant nurse, enrolled nurse, practical nurse), but other country-specific professions are not mentioned here, and how they are reported depends on the data providers.

The *professional titles* used in national languages for some professional categories can also lead to misinterpretation. Some professionals are called nurses, but they carry out different tasks (e.g. "*lähihoitaja*" hospital assistant in Finland, "*Altenpfleger*" elderly care

nurse in Germany). Conversely, nursing professionals can be called by names other than nurses.

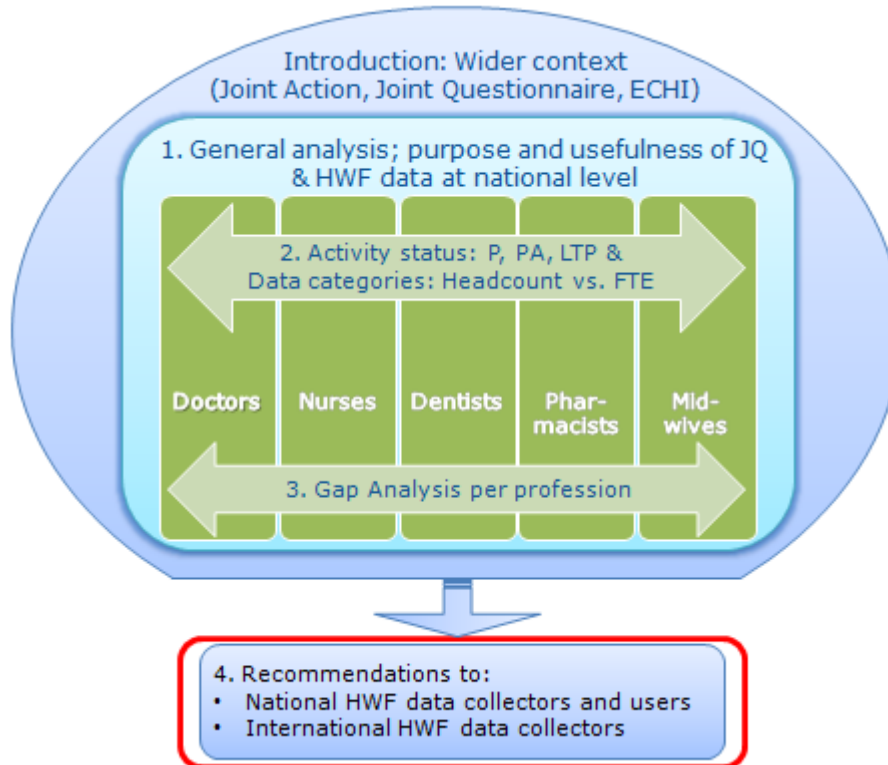
In the W4 Questionnaire Survey, the existing categories reported to the JQ in different countries were examined. *Specialist nurses* feature in most of the health systems, although – depending on the education systems - different specialties are present.

For example, Spain has seven nursing specialties, and specialisation in nursing requires a nursing degree according to the criteria for “nurse responsible for general care” (Directive 2005/36/EC) and a specialisation training (two years), similar to a medical training system. In Italy, except for paediatric care nurses, there are no additional specific qualifications for professional nurses (i.e. specialist nurse in psychiatric care, intensive care nurse, etc.). Italian nurses are professionals with the qualification of “nurse responsible for general care” according to the Directive and they work in different special departments or services. In the United Kingdom, specialisation takes place during general training and nurses are qualified at the end of a 3 year programme in one of the following areas: adult, mental health, learning disability or children’s nursing. In Greece, specialties like paediatric-care nurse, intensive-care nurse, primary-care nurse or emergency-care nurse are linked to a qualification at the MSc level, and even then they are not reported to the JQ as a nurse. On the contrary, in Cyprus the category of specialist nurses is not applicable in the health system at all.

Radiology technicians and medical laboratory technicians are not reported as nurses, except for in Poland. Additionally, until 2012, radiology nurses (with the same job as radiology technicians) were also included in the category of professional nurses in Estonia. Although *nursing directors* usually do not carry out work with direct patient contact, in most of the countries they are reported as professional nurses, elsewhere they are classified under different ISCO codes.

An additional comment needs to be made regarding the German physician assistants (“*medizinische Fachangestellte*”), who are not nurses, but work on various nursing-related tasks, from drawing blood to measuring blood pressure. They are not reported for the JQ, but represent a large number of the German health workforce (647,000 in 2011, according to www.destatis.de).

4 - Recommendations



Conclusion: European health systems, despite their diversity of ambitions and structure, may no longer be managed in isolation from each other, as resources, patients, and services are subject to free movement. Improving the availability, quality and comparability of data reported to the Joint Questionnaire, a recognised worldwide data collection tool, is an important task to sustain a common understanding across countries on the different categories of health workforce. This improvement is also needed to have a more accurate picture of the health workforce in order for national health systems to plan their future health workforce needs better, with a dedication to meet future population healthcare requirements. Despite the complexity and challenges of the needed improvements, the recommendations contained in this report will help to sustain and develop this international data collection process.

There is a shared responsibility for making International Reporting (through the Eurostat-OECD-WHO Joint Questionnaire) an efficient and recognised tool for monitoring and benchmarking the Health Workforce. There is progress to be made by both national reporting and data collecting bodies and the international data collecting organisations.

Our analysis leads to a set of **recommendations**, which are categorized under the following five overarching recommendations:

Recommendation 1

National data collection should be improved by developing strategic directions, with the involvement of national stakeholder organisations. The rationale behind this recommendation is that data collection is an important instrument for the monitoring and planning of healthcare systems, especially in the health workforce planning context.

Recommendation 2

National HWF data collectors and owners (such as ministries of health, professional chambers, health workforce planners and data providers) **should work together to achieve better HWF data flow at the national level**, thus improving the current JQ data collection.

Recommendation 3

International data collecting organisations should facilitate the training of and working in partnership with data providers and the JQ National Focal Points, in order to demonstrate the usefulness of international HWF data collection in serving national interests. The identification of clear domestic benefits resulting from investment in international data provision is essential for motivation and engagement at the national level.

Recommendation 4

The JQ data collection in the activity status data categories of health workforce (“Licensed to Practice”, “Practicing” and “Professionally Active”) **in both headcount and full-time equivalent (FTE) should be improved.** This will allow for a better streamlining in international comparability and serve a better HWF monitoring and planning at national level.

Recommendation 5

Strategic changes in data categorisation at the international level for the nursing, midwifery and caring professions should be implemented, in order to increase the value of JQ reporting.

The below list of detailed recommendations aims to support the EU Member States and Competent Authorities in their data collection processes, while providing a deeper understanding of ongoing International Data Reporting and further proposals to improve its practicality and applicability. These recommendations do not include a feasibility analysis (which will be performed by Work Package 7 of the Joint Action), neither an estimate for the costs of implementation. The current paper also supports Joint Action Work Package 7 on Sustainability to strengthen and facilitate proposals for future initiatives.

Recommendation Sets I & II are addressed to the national bodies producing and using HWF data. While Recommendation Set I aims to provide long term strategic goals, Set II offers recommendations with a potential for a short term return on resources invested.



Recommendation Sets III, IV & V are addressed to international data collectors leading the JQ: Eurostat, the OECD and WHO.



Detailed list of recommendations

I. Strategic directions for developing national data collections in the future in order to support effective HWF planning

Recommendation I.1. Member States should implement **national-level HWF data collection based on the Minimum Planning Data Requirements**¹³⁰. This would offer a starting point for enhancing current national HWF data collection practices. On the long run, these changes in data collection at national level would make it more feasible to add internationally comparable HWF planning data variables to the Joint Questionnaire.

Recommendation I.2. National stakeholders of HWF planning should define clear HWF planning objectives and the necessary data requirements, to increase the quality of data collected. Such purpose driven data collection would meet the criteria of careful cost effectiveness and feasibility assessments..

Recommendation I.3. Data owner organisations in Member States should cooperate with national competent authorities to make individual registration/licensing data available online - within the necessary data protection framework. The strategic goal is to allow electronic sharing and inter-country comparison of HWF. These developments would also facilitate the monitoring of health professionals' international mobility .

Recommendation I.4. The strategic development of data collection systems should reflect the key importance of mobility data for health workforce planning in countries with high outgoing or incoming migration of health professionals. These developments should consider the findings of the upcoming Work Package 4 Report on Mobility Data as well as the considerations of the Work Package 4 Report on the applicability of the WHO Global Code of Practice on the International Recruitment of Health Personnel within a European context.

Recommendation I.5. A multi-sectoral and multi-professional approach for national health workforce planning should be initiated¹³¹, to account for the overlap between healthcare services and services provided by other sectors (e.g. social care). This would require data about health professionals working in other sectors (especially in the social care sector). Furthermore, data about professionals other than health professionals (e.g. social care workers) working in healthcare should be also collected and integrated into health workforce planning. Good practices of some Member States offer a good background to such developments in HWF planning.¹³²

II. Achieving better data flow at the national level with the support of international data collecting organisations

¹³⁰ The set of data that is required for a minimum level of national health workforce planning. The Minimum Planning Data Requirements were put forward by Deliverable 051 by Work Package 5. of the Joint Action

¹³¹ Ono, Lafortune, Schoenstein (2013, p. 11.)

¹³² E.g. UK and Finland have integrated workforce planning across health, social care and public health

Recommendation II.1. Relevant HWF data available at national level (including social insurance, employment and taxation data) **should be mapped**. Consequently new and cost-effective ways of collecting and aggregating the available data have to be implemented, as well as new analytical approaches such as Big Data methodologies. Parallel data collection processes on the same variables should be managed.

Recommendation II.2. A national focal group (or other stable organisational structure) should be established in each Member State, in order to enhance national communication and information flow on HWF data. The national focal groups should include representatives of the JQ Focal Point, data providers and HWF experts. Fostering the cooperation of stakeholders at the national level could support data collection and reporting procedures, as well as underline a commitment towards improving consistency in JQ reporting. The cooperation and management of such regular consultations at the national level itself may need additional resources or an optimisation of existing ones and possibly a strong legal framework.

Recommendation II.3. Member States should seek solutions to set up an international cooperation forum (potentially with EU funding, and with the facilitation of international data collecting organisations) to improve the national level coordination and cooperation among in-country stakeholders. Collaboration at the regional level through the establishment of country clusters would also have a beneficial impact on data collection processes and reporting.

Recommendation II.4. Data suppliers should use survey-based data collections to complement the overall data collections, to overcome the limitations (availability, breadth) of databases collecting individual data (e.g. from registration). Survey-based data collections may also contribute to a comprehensive interpretation of HWF related questions. At the same time, survey-based data may contain limitations in the general relevance of findings due to, for example, sampling errors or invalid assumptions about trends. To understand the opportunities and the methodological issues of applying survey-based HWF data collection, trainings and good practice sharing among HWF data owner and HWF planning organisations should be organised. International data collecting organisations could facilitate the process. For survey-based data collection, see also the recommendations of Deliverable D061 of the Joint Action on surveys and other qualitative methods for workforce planning.

Recommendation II.5. Member States whose national data categories are not yet linked to ISCO codes, should cooperate with Eurostat/WHO/OECD to work on a data transformation process. Mapping the current transformation methods and practices would offer an added value for the countries that could not provide data for some JQ categories due to lack of data transformation skills. This mapping exercise would also result in a higher degree of transparency and comparability in the supplied data.

Recommendation II.6. Web-based national data platforms could serve to pool and disseminate information from different HWF-related in-country databases. This could contribute to improving the updating, use and management of HWF information.

Recommendation II.7. Health workers should be given the right of co-ownership of their personal data, to improve data update and management. Within adequate data protection frameworks, health workers would be more motivated to produce, update and manage data about themselves.

III. International data collecting organisations to work towards demonstrating and improving the usefulness of the JQ

Recommendation III.1. As the future of the Joint Questionnaire depends on the involvement and dedication of the reporting countries, there is an urgent need on the side of the international data collecting organisations to :

- **increase the use and visibility of the JQ results** at national level, by providing more in-depth policy-relevant data analysis for the ultimate HWF data users: policy makers, HWF planners, professional organisations and researchers.
- develop a **clearer and more appealing communication** between Member States and Eurostat/OECD/WHO, to increase the visibility of the JQ results.

Recommendation III.2. A **common understanding** among reporting countries on the relationship between **the JQ data categories and the significantly wider scope of data categories required for HWF monitoring** and planning should be developed, in order to manage the expectations of Member States towards the JQ data collection. Reporting countries should see the JQ data collection as a process improving national level data collections.

Recommendation III.3. The applicability of international data in the national context could be improved by initiating discussions on:

- how international HWF data can or should be used for comparing data across countries or clusters of countries, and be translated to fit the local context;
- what metadata (background to the statistics supplied by different countries) should be taken into consideration in order to reach valid conclusions;
- how to avoid interpretation errors resulting from using data with diverse background factors among the reporting countries.

Recommendation III.4. New forms of **incentives** (e.g. EU funding for the training of data providers and for sharing best practices) **should be introduced for Member States to launch or develop existing national HWF data collection¹³³ to fit the JQ requirements better.** These new forms of incentives - coordinated by the international data collecting organisations - should increase the quality of HWF data in a country with the resources available for healthcare IT operations in all Member States, irrespective of their national budget situation.¹³⁴

¹³³ As Riley *et al.* (2012, p. 2.) states “There is a need for strong national capacity in all countries to regularly collect, collate, analyze and share data to inform policy making, planning, and management”

¹³⁴ As has already been stated by previous studies, e.g. EC Feasibility Study (2012), Dal Poz (2009), WHO (2010c), WHO (2011), and WHO (2012)

Recommendation III.5. The interpretation of relative numbers and indicators on the HWF should be emphasized over absolute values in the communication of JQ results, to increase the use of JQ results for international benchmarking. This should include the density of certain professions (HWF/population ratio), the ratio between different groups of the health workforce, and the ratio of health workforce groups to other monetary and non-monetary indicators of the healthcare system. In addition, this could be complemented by figures on trends.

IV. International data collecting organisations to improve data consistency in the activity and the FTE data categories

Recommendation IV.1: Consensus should be reached on a set of minimum feasible common indicators based on the three activity status categories, including an acceptable methodology with respect to data/information collection.

A feasible two-step process could include:

- defining and agreeing on “ideal” indicators (i.e., indicators that would ideally be available);
- critically considering and agreeing on proxy indicators¹³⁵ (in case of data categories where data is not collected) and accepting the minimum feasible ones.

These indicators should be prioritised, so that the three activity status categories used by the JQ are the first to receive attention.

Projects, workshops and research activities could be dedicated to this, with clearly defined objectives. Case studies on available potential best practices should be shared.

Recommendation IV.2. To increase the use of the results of the JQ, OECD/WHO/EUROSTAT should invest in additional research studies/projects to improve scientific evidence on specific issues, especially:

- the role of licensing and registering practices, including re-validation measures, in order to explore in detail how these influence the content and relationship of the three activity categories and thus determine comparability;
- the link between activity status category data and performance, productivity, and efficiency-related terms and indicators.

Recommendation IV.3. In EU Member States, the sources of the “Licensed to Practice” data category reported to the JQ are mainly, in which registrations are based on qualifications.¹³⁶

Registry data (contained in national registries of regulatory bodies or professional organisations) **should be used across all Member States for reporting the “Licensed to Practice” category,** as long as they include all qualified and/or licensed professionals. This would help to avoid biases caused by data sources with limited access to overall sectoral HWF data. The potential of registries to contain more information than

¹³⁵ Proxy indicator is an indirect approximating measure used in the absence of a direct measure.

¹³⁶ See Chapter 2.1 on limitations and challenges of the LTP category

merely a record of qualifications should be used in several HWF planning fields and policies (e.e., in e-health strategies).

Recommendation IV.4. EUROSTAT/OECD/WHO could set up an evaluation of best practices on methods of calculating FTE within specific segments of the healthcare sector, such as prevention or rehabilitation¹³⁷, in order to increase the value of comparing FTE data. As the FTE calculation shows many variations, Eurostat/OECD/WHO should cooperate with Member States and especially with their competent authorities to agree upon, announce and promote methodological choices for calculating FTE, (such as minimum activity threshold) in line with¹³⁸ the OECD-recommended calculation methods (working time, activity rate, or on a combination of these). This calculation method could then be shared, possibly leading to an international consensus that would also benefit the Joint Questionnaire data collection.

Recommendation IV.5. Improvements made in the FTE data categorisation should be based on the consideration that headcount and FTE data are important and complementary categories of information for both HWF planning and monitoring. At the same time, the relevance of the average values (especially for FTE) is only high for specific sub-groups of the health workforce, while it remains nearly absent for entire groups of professions, given that there the aggregated FTE data blurs the information of a great variety of working patterns. The FTE data categorisation should take full account of labour laws, in particular Directive 2003/88/EC, and ensure that planning recommendations are in line with the legal framework.

Recommendation IV. 6. Data collection on the health workforce should be able to reflect the increasingly diverse nature of the labour patterns of the health workforce. Health workers increasingly move into and out from statuses or are active in multiple statuses simultaneously, work in the private and/or the public sector, others work in two or three countries, while others are registered in the student-active-retired categories. This is especially relevant for data collection in the “Professionally active” category, as the precise data in this category has high relevance for HWF planning.

V. Strategic changes of data categorisation for the nursing, midwifery and caring professions at national and international level

Recommendation V.1. Data suppliers and OECD/WHO/EUROSTAT should agree on reporting less but more consistent categories for the nursing workforce across European countries, to make data more comparable. While understanding that the JQ is a global data collection tool based on the ISCO categories of ILO, the inclusion of the qualifications as defined in 36/2005/EC Directive should be considered for data collection in the EU.

Recommendation V.2. When drawing boundaries in terms of occupation-based categorisation, the capability and authorisation for **independent work** could be the dividing line. In order to reflect the advancement of the roles, OECD thematic meetings

¹³⁷ This would require many countries to develop stronger primary and outpatient care

¹³⁸ Leading to an international FTE definition - iFTE - abbreviation suggested by the European Medical Students Association

should be dedicated to establish clearer dividing lines examining various factors - such as the overall **contents of the professions, the education requirements, the scope of actual work/tasks and competences** - together with the methodology behind the categorisation.

Recommendation V.3. Reporting on nurses and midwives should be a priority area in every Member State, in order to achieve more accurate international data coverage and to foster HWF planning. Where not yet applied, midwives should be registered separately from nurses or data for midwives should be extracted from the total number of nurses.

Recommendation V.4. A distinction between the categories of the nursing continuum and caring personnel should be defined. A clear statement should be elaborated for the classification of "healthcare assistants", if they are part of the caring personnel or the nursing care continuum. This is especially important as data on healthcare assistants is usually reported in the category of caring personnel, although they perform tasks related to the nursing care continuum. Defining the level of education for healthcare assistants is also relevant.

Reference list

Core documents

Aiken, L. H., Sermeus, W., Van den Heede K., Sloane, D. M., Busse R., McKee M., Bruyneel L., Rafferty A. M., Griffiths P., Moreno-Casbas M. T., Tishelman C., Scott A., Brzostek T., Kinnunen J., Schwendimann R., Heinen M., Zikos D., Strømseng S. I., Smith H. L. and Kutney-Lee A. (2012). Patient safety, satisfaction, and quality of hospital care: cross sectional surveys of nurses and patients in 12 countries in Europe and the United States. *BMJ*, 344. p. 1717. Available at: <http://www.bmj.com/content/344/bmj.e1717>

Ausserhofer, D., Schubert, M., Desmedt, M., Blegen, M.A., De Geest, S. and Schwendimann, R. (2013). The association of patient safety climate and nurse-related organizational factors with selected patient outcomes: A cross-sectional survey. *International Journal of Nursing Studies*, 50 (2). pp. 240-252. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/22560562>

Balestat, G. (2011). JQ between OECD, Eurostat and WHO Europe on non-monetary health care statistics, slide 7. Meeting of OECDHealth Data National Correspondents, 3-4 October 2011. Available at: <http://www.oecd.org/health/health-systems/48831012.pdf>

Buchan, J. and Black, S. (2011). The Impact of Pay Increases on Nurses' Labour Market: A Review of Evidence from Four OECD Countries. *OECD Health Working Papers*, 57. Available at: http://www.oecd-ilibrary.org/social-issues-migration-health/the-impact-of-pay-increases-on-nurses-labour-market_5kg6jwn16tjd-en

Buchan J., Wismar, M., Glinos, I. A. and Bremner, J. (eds.) (2013). Health Professional Mobility in a Changing Europe. New dynamics, mobile individuals and diverse responses. *Observatory Studies* 32. Available at: http://www.euro.who.int/_data/assets/pdf_file/0006/248343/Health-Professional-Mobility-in-a-Changing-Europe.pdf?ua=1

Council of European Dentists (2014). Manual of Dental Practice Edition 5. Available at: <http://www.ond.pt/europa/cedmanual/2014/cedmanual2014completo.pdf>

Cooper, R. A., Getzen, T. E. and Laud, P. (2003). Economic expansion is a major determinant of physician supply and utilization. *Health Services Research*, 38 (2). pp. 675-696. Available at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1360909/>

Dal Poz, M. R., Gupta, N., Quain, E., Soucat, A., World Health Organization, World Bank and United States Agency for International Development (eds.) (2009). Handbook on monitoring and evaluation of human resources for health. Geneva, World Health Organization, World Bank and United States Agency for International Development. Available at: http://www.euro.who.int/_data/assets/pdf_file/0011/200009/Handbook-on-monitoring-and-evaluation-of-human-resources-Eng.pdf

Delamaire, M. and Lafortune, G. (2010). Nurses in Advanced Roles: A Description and Evaluation of Experiences in 12 Developed Countries. *DELSA/HEA/WD/HWP(2010)5. OECD Health Working Papers, 54.* Available at: [http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=delsa/hea/wd/hwp\(2010\)5&doclanguage=en](http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=delsa/hea/wd/hwp(2010)5&doclanguage=en)

Diallo, K., Zurn, P., Gupta, N., and Dal Poz, M. (2003). Monitoring and evaluation of human resources for health: an international perspective. in *Human Resources for Health 2003*, 1:3 <http://www.human-resources-health.com/content/1/1/3>

EC (2008). Regulation (EC) No 1338/2008 Of The European Parliament and of the Council. Available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:354:0070:0081:EN:PDF>

EC Feasibility study (2012). EU level collaboration on forecasting health workforce needs, workforce planning and health workforce trends - A feasibility study; Revised Final Report. Matrix Insight. Available at: http://ec.europa.eu/health/workforce/docs/health_workforce_study_2012_report_en.pdf

EC (2012). Commission Staff Working Document on an Action Plan for the EU Health Workforce. *SWD (2012) 93 Final.* Available at: http://ec.europa.eu/dgs/health_consumer/docs/swd_ap_eu_healthcare_workforce_en.pdf

EC (2014). The EU Single Market. Regulated professionals database. DG Markt Database. Available at: http://ec.europa.eu/internal_market/qualifications/regprof/

ECHI-2 Report (2005). The ECHI comprehensive indicator list. Available at: http://www.echim.org/docs/echi_longlist.pdf

ECHI (2012). Indicator development and documentation. Final report II. Available at: http://www.echim.org/docs/Final_Report_II_2012.pdf

ECHI (2012b). Remarks on comparability. Available at: http://www.echim.org/docs/echi_shortlist_remarks_on_comparability.pdf

ECHIM (2014). European Community Health Indicators Monitoring. Available at: <http://www.echim.org/>

European Commission (2008). Green Paper on the European Workforce for Health. Brussels. Available at: http://ec.europa.eu/health/ph_systems/docs/workforce_gp_en.pdf

European Commission (2009). Report on the open consultation on the Green Paper on the European Workforce for Health. Brussels. Available at: http://ec.europa.eu/health/archive/ph_systems/docs/workforce_report.pdf

European Court of Justice (2001). Ruling C-202/99: Commission of the European Communities v Italian Republic. Failure by a Member State to fulfil its obligations - Directive 78/687/EEC - Maintenance of a second system of training leading to entry to the profession of dentist - Maintenance of the possibility of dual registration in the register of doctors and in that of dentists for doctors mentioned in Article 19 of Directive 78/686/EEC. Available at: <http://curia.europa.eu/juris/liste.jsf?language=en&num=C-202/99>

Fujisawa, R., Lafortune, G. (2008). The Remuneration of General Practitioners and Specialists in 14 OECD Countries: What are the Factors Influencing Variations across Countries? *DELSA/HEA/WD/HWP(2008)5. OECD Health Working Papers, 41*. Available at: <http://www.oecd.org/health/health-systems/41925333.pdf>

HOPE (2004). The healthcare workforce in Europe: Problems and solutions. Final report of HOPE's Study Group on Workforce Issues Brussels, May 12, 2004.

ILO (2012). International Standard Classification of Occupations. Structure, group definitions and correspondence tables.

ILO (2014). International Standard Classification of Occupations. Available at: <http://www.ilo.org/public/english/bureau/stat/isco/>

Joint Data Collection on Non-Monetary Health Care Statistics (2014). Joint Questionnaire 2014. Guidelines for completing the OECD/Eurostat/WHO-Europe Questionnaire 2014. Available at: <http://www.oecd.org/statistics/data-collection/Health%20Data%20-%20Guidelines%202.pdf>

Kovacs, E., Schmidt, A. E., Szocska, G., Busse, R., McKee, M., Legido-Quigley, H. (2014). Licensing procedures and registration of medical doctors in the European Union. *Clinical Medicine, 14 (3)*. pp. 229-238. Available at: <http://www.clinmed.rcpjournals.org/content/14/3/229.abstract>

MoHProf (2012). National country reports and Summary report of Mobility of Health Professionals project. Available at: http://www.mohprof.eu/LIVE/mohprof_summary_report.php

OECD (2008). The Looming Crisis in the Health Workforce: How Can OECD Countries Respond? *OECD Health Policy Studies, OECD Publishing, Paris*. Available at: <http://dx.doi.org/10.1787/9789264050440-en>

OECD Health Data (2010). *Health Status*. Available at: http://stats.oecd.org/index.aspx?DataSetCode=HEALTH_STAT

OECD (2012). Assessment of results of Joint Questionnaire between OECD, Eurostat and WHO (Europe) on health workforce statistics (with a focus on doctors). *DELSA/HEA/HD(2012)2* Available at:

http://www.euhwforce.eu/web_documents/JAHWF-130512-WP4-Assesment%20of%202012%20JQ.pdf

OECD (2012b). Health at a Glance: Europe 2012, OECD Publishing. Available at: <http://www.oecd.org/els/health-systems/HealthAtAGlanceEurope2012.pdf>

OECD (2013). Health at a Glance 2013: OECD Indicators, OECD Publishing, Paris. Available at: <http://www.oecd.org/els/health-systems/Health-at-a-Glance-2013.pdf>

OECD Factbook (2013). Economic, Environmental and Social Statistics. Available at: http://www.oecd-ilibrary.org/economics/oecd-factbook-2013_factbook-2013-en

OECD (2014a). Guidelines for completing the OECD/EUROSTAT/WHO-Europe Questionnaire 2014. Available at: <http://www.oecd.org/statistics/data-collection/Health%20Data%20-%20Guidelines%20.pdf>

OECD (2014b). OECD Health Data: Health care resources, OECD Health Statistics (database). Available at: doi: [10.1787/data-00541-en](https://doi.org/10.1787/data-00541-en)

Ono, T., Lafortune, G., and Schoenstein, M. (2013). Health Workforce Planning in OECD Countries: A Review of 26 Projection Models from 18 Countries. *DELSA/HEA/WD/HWP (2013)3. OECD Health Working Papers*, 62. Available at: http://www.oecd-ilibrary.org/social-issues-migration-health/health-workforce-planning-in-oecd-countries_5k44t787zcwb-en?crawler=true&mimetype=application/pdf

Ono, T., Schoenstein, M., and Buchan, J. (2014). Geographic Imbalances in Doctor Supply and Policy Responses. *OECD Publishing. DELSA/HEA/WD/HWP(2014)2. OECD Health Working Papers*, 69. Available at: http://www.oecd-ilibrary.org/social-issues-migration-health/geographic-imbalances-in-doctor-supply-and-policy-responses_5jz5sq5ls1wl-en

Rechel, B., Dubois, C. A., McKee, M. (2006). The Health Care Workforce in Europe. Learning from experience. *World Health Organization on behalf of the European Observatory on Health Systems and Policies, Copenhagen*. Available at: http://www.euro.who.int/data/assets/pdf_file/0008/91475/E89156.pdf

PHEIAC (2013). ECHI Evaluation of the use and impact of the European Community Health Indicators ECHI by Member States. Final report. (2013). Available at: http://ec.europa.eu/health/indicators/docs/echi_report_v20131031.pdf

Riley, P. L., Zuber, A., Vindigni, S. M., Gupta, N., Verani, A. R., Sunderland, N. L., Friedman, M., Zurn, P., Okoro, C., Patrick, H. and Campbell, J. (2012). Information systems on human resources for health: a global review. *Human Resources for Health*, 10 (7). p. 1-12.

Sermeus, W., Aiken, L. H., Van den Heede, K., Rafferty, A. M., Griffiths, P., Moreno-Casbas, M. T., Busse, R., Lindqvist, R., Scott, A. P., Bruyneel, L., Brzostek, T., Kinnunen,

J., Schubert, M., Schoonhoven, L., Zikos, D., and RN4CAST consortium (2011). Nurse forecasting in Europe (RN4CAST): Rationale, design and methodology. *BMC Nursing* 10. pp. 6-9. Available at: <http://www.biomedcentral.com/1472-6955/10/6>

Simoens, S., Villeneuve, M., and Hurst, J. (2005). Tackling Nurse Shortages in OECD Countries. *OECD Publishing. DELSA/ELSA/WD/HEA(2005)1. OECD Health Working Papers, 19*. Available at: <http://www.oecd.org/health/health-systems/34571365.pdf>

Stig, K. and Lütz, I. P. (2011). Evaluation on the Joint Questionnaire on Non-Monetary Health Care statistic. Final report. *Eurostat project ESSnet Public statistics*. Available at: http://www.euhwforce.eu/web_documents/JAWHF_140306_WP4_UTRECHT/JA_WP4_Utrecht_Workshop_EurostatFinalreport-EvaluationJointQuestionnaire.pdf

Squires, A., Aiken, L.H., van den Heede, K., Sermeus, W., Bruyneel, L., Lindqvist, R., Schoonhoven, L., Stromseng, I., Busse, R., Brzostek, T., Ensio, A., Moreno-Casbas, M., Rafferty, A.M., Schubert, M., Zikos, D. and Matthews, A. (2013). A systematic survey instrument translation process for multi-country, comparative health workforce studies. *International Journal of Nursing Studies, 50* (2). pp. 264-273. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/22445444>

Szocska, M., Girasek, E., Kovacs, E. and Gaal, P. (2010). Feasibility study on a sustainable European data collection system. *Health Prometheus. Manuscript*.

The world health report 2006 (2006). Working together for health. *Geneva, World Health Organization*. Available at: <http://www.who.int/whr/2006>

Tjadens, F., Weilandt, C. and Eckert, J. (2013). Mobility of Health Professionals. Health Systems, Work Conditions, Patterns of Health Workers' Mobility and Implications for Policy Makers. Heidelberg: Springer-Verlag Berlin.

Van Den Heede K., Lesaffre E., Vleugels, A., and Sermeus, W. (2008). Benchmarking nurse staffing levels: the development of a nationwide feedback tool. *Journal of Advanced Nursing* 63 (6). pp. 607-618. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/18808582>

Van de Heede, K., Aiken, L. H. (2013). Nursing workforce a global priority area for health policy and health services research: A special issue. *International Journal of Nursing Studies, 50* (2). pp. 141-142. Available at: [http://www.journalofnursingstudies.com/article/S0020-7489\(12\)00153-8/abstract](http://www.journalofnursingstudies.com/article/S0020-7489(12)00153-8/abstract)

Van den Heede, K., Florquin, M., Bruyneel, L., Aiken, L., Diya, L., Lesaffre, E. and Sermeus, W. (2013). Effective strategies for nurse retention in acute hospitals: A mixed method study. *International Journal of Nursing Studies, Volume 50* (2). pp. 185-194. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/22204812>

WHO (2007). Everybody's business: strengthening health systems to improve health outcomes – WHO's framework for action. Geneva, World Health Organization. Available at: http://www.who.int/healthsystems/strategy/everybodys_business.pdf

WHO (2009a). WHO Handbook on monitoring and evaluation of HWF. Available at: http://whqlibdoc.who.int/publications/2009/9789241547703_eng.pdf

WHO (2009b) Nurses and midwives: a force for health. Survey on the situation of Nursing and Midwifery in the Member States of the European Region of the World Health Organization 2009 - <http://www.euro.who.int/en/health-topics/Health-systems/nursing-and-midwifery/data-and-statistics>

WHO (2010a). WHO Global Code of Practice on the International Recruitment of Health Personnel Geneva. Available at: http://www.who.int/hrh/migration/code/WHO_global_code_of_practice_EN.pdf

WHO (2010b). Monitoring the building blocks of health systems: a handbook of indicators and their measurement strategies. *WHO Document Production Services, Geneva, Switzerland.* Available at: <http://www.who.int/healthinfo/systems/monitoring/en/>

WHO (2010c). Models and tools for health workforce planning and projections. *Human Resources for Health Observer, 3.*

WHO (2011). Human Resources for Health Observatories. Evidence-informed Human Resources for Health policies: The contribution of HRH Observatories. Available at: http://www.who.int/hrh/resources/observatories_meeting_report.pdf

WHO (2012). Models and tools for health workforce planning and projections. *Human Resources for Health Observer, 3.* Available at: <http://www.who.int/hrh/resources/observer3/en/>

Wismar, M., Maier, C. B., Glinos, I., A., Dussault G. and Figueras, J. (2011). Health professional mobility and health systems: evidence from 17 European countries. *Euro Observer Summer, 13 (2).* Available at: http://www.sfes.info/IMG/pdf/Health_professional_mobility_and_Health_systems.pdf

Wismar, M., Palm, W., Figueras, J., Ernst, K., and van Ginneken, E. (2011). Cross-border health care in the European Union. Mapping and analysing practices and policies. *World Health Organization 2011.* Available at: http://www.euro.who.int/_data/assets/pdf_file/0004/135994/e94875.pdf

You, L., M., Aiken, L. H., Sloane, D. M., Liu, K., He, G. P., Hu, Y., Jiang, X. L., Li, X. H., Liu, H. P., Shang, S. M., Kutney-Lee, A. and Sermeus, W. (2013). Hospital nursing, care quality, and patient satisfaction: Cross-sectional surveys of nurses and patients in hospitals in China and Europe. *International Journal of Nursing Studies, 50 (2).* pp. 154-161. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/22658468>

Further HRH-relevant literature

covering HWF terminology, HWF mobility and HWF monitoring and planning

Albrecht, T. (2011). Health workforce in times of financial crisis. *European Journal of Public Health, 21 (1)*. p. 1.

Alliance for Health Reform (2011). Health Care Workforce: Future supply vs. demand. Available at: http://www.allhealth.org/publications/Medicare/Health_Care_Workforce_104.pdf

Astolfi, R., Lorenzoni L. and Oderkirk, J. (2013). A Comparative Analysis of Health Forecasting Methods. *OECD Health Working Papers, 59*. Available at: <http://dx.doi.org/10.1787/5k912j389bf0-en>

Bach, S. (2001). International migration of health workers: labour and social issues. *Sectoral Activities Programme Working Paper, 29*. Geneva, International Labour Office.

Bates, R. (2014). Improving human resources for health planning in developing economies. *Human Resource Development International, 17 (1)*. pp. 88

Behan J., Condon N., Milicevic I. and Shally C. (2009). A Quantitative Tool for Workforce Planning in Healthcare: Example Simulations. *Skills and Labour Market Research Unit*.

Bourgeault I. L., Kuhlmann, E., Neiterman, E. and Wrede, S. (2008). How can optimal skill mix be effectively implemented and why? *Health systems and policy analysis, WHO, Copenhagen*.

Birch, S., Mason, T., Sutton, M. and Whittaker, W. (2013). Not enough doctors or not enough needs? Refocusing health workforce planning from providers and services to populations and needs. *Journal of Health Services Research Policy, 18 (2)*. pp. 107-113.

Brewster, C. (1995). Towards a European model of human resource management. *Journal of International Business Studies, 26 (1)*. pp. 1-21.

Buchan, J., Wismar, M. Glinos, I. and Bremner, J. (eds.) (2014). Health professional mobility in a changing Europe. New dynamics, mobile individuals and diverse responses. *European Observatory on Health Systems and Policies*. Available at: http://www.euro.who.int/_data/assets/pdf_file/0006/248343/Health-Professional-Mobility-in-a-Changing-Europe.pdf

Bundred, P.E. and Levitt, C. (2000). Medical migration: who are the real losers? *Lancet* 356. pp. 245-246.

Campbell, J., Buchan, J., Cometto, G., David, B., Dussault, G., Fogstad, H., Fronteira, I., Lozano, R., Nyongator, F., Pablos-Mendez, A., Quain, E.E., Starrs, A. and Tangcharoensathien, V. (2013). Human resources for health and universal health

coverage: fostering equity and effective coverage. *World Health Organisation Bulletin*, 91 (11). pp. 853-863

Campbell, J. (2013). Towards universal health coverage: a health workforce fit for purpose and practice. *Bulletin of the World Health Organization*, 91 (11). pp. 886-887.

Cometto, G. and Witter, S. (2013). Tackling health workforce challenges to universal health coverage: setting targets and measuring progress. *World health Organisation Bulletin*, 91 (11). pp. 881-885.

Cometto, G., Tulenko, K., Muula, A. S., and Krech, R. (2013). Health Workforce Brain Drain: From Denouncing the Challenge to Solving the Problem. *Plos Medicine*, 10 (9). p. e1001514

Connell, J. (2010). *Migration and the Globalisation of Health Care: The Health Worker Exodus?* Sidney: Edward Elgar Publishing Ltd.

Dal Poz, M. R., Gupta, N., Quain, E. and Soucat, L. B. A. (eds.). (2009). Handbook on monitoring and evaluation of human resources for health. *Geneva, World Health Organization, World Bank and United States Agency for International Development.*

Diallo, K. Zurn, P., Gupta, N. and Dal Poz, M. (2003). Monitoring and evaluation of human resources for health: an international perspective. *Human Resources for Health*, 1. p.3

Dubois, C. A. and McKee, M. (2006). Cross-national comparisons of human resources for health: what can we learn? *Health Economics, Policy and Law*, 1. pp. 59–78.

Dubois, C. A., McKee, M. and Nolte E. (eds.) (2006). Human resources for health in Europe, European Observatory on Health Systems and Policies Series. Open University Press.

Dussault, G. and Franceschini, M. C. (2006). Not enough there, too many here: understanding geographical imbalances in the distribution of the health workforce. *Human Resources for Health*, 4. p. 12

Dussault, G. and Vujicic, M. (2008). Demand and supply of human resources for health *International Encyclopedia of Public Health*. pp. 77-84.

Dussault G. (2010). Assessing Future Health Workforce Needs. Policy Summary 2, WHO, on behalf of the European Observatory on Health Systems and Policies, Copenhagen

EC Feasibility study (2012). EU level collaboration on forecasting health workforce needs, workforce planning and health workforce trends - A feasibility study; Revised Final Report. Matrix Insight. Available at: http://ec.europa.eu/health/workforce/docs/health_workforce_study_2012_report_en.pdf

European Foundation for the Improvement of Living and Working Conditions (2013). Mobility and migration of healthcare workers in central and eastern Europe Available at: <http://www.eurofound.europa.eu/publications/htmlfiles/ef1335.htm>

European Commission (2012). Commission Staff Working Document on an Action Plan for the EU Health Workforce, SWD(2012) 93 Final, Strasbourg, 18 April. http://ec.europa.eu/dgs/health_consumer/docs/swd_ap_eu_healthcare_workforce_en.pdf

EC (2014). European Skills/Competences, qualifications and Occupations (ESCO). <http://ec.europa.eu/social/main.jsp?catId=1042&langId=en>

EC (2012). Asylum and Migration Glossary 2.0, A tool for better comparability. European Migration Network. Available at: http://ec.europa.eu/dgs/home-affairs/what-we-do/networks/european_migration_network/docs/emn-glossary-en-version.pdf

EC (2014). Report on the implementation of the Global Approach to Migration and Mobility 2012-2013. Available at: http://ec.europa.eu/dgs/home-affairs/e-library/documents/policies/international-affairs/general/docs/gamm_implementation_report_2012_2013_en.pdf

EPSON Inspire policy making by territorial evidence. Available at: http://www.espon.eu/main/Menu_Publications/Menu_MapsOfTheMonth/map1203.html

Gail, T. M., Kephart, G., Lethbridge, L., O'Brien-Pallas, L., and Birch, S. (2009). Planning for what? Challenging the assumptions of health human resources planning. *Health Policy*, 92 (2–3). pp. 225-233.

Gail, T. M., Birch, S., MacKenzie, A., Alder, R., Lethbridge, L. and Little, L. (2012). Eliminating the shortage of registered nurses in Canada: An exercise in applied needs-based planning, *Health Policy*, 105(2–3). pp. 192-202.

Girasek, E., Molnar, R., Eke, E. and Szocska, M. (2011). The medical career choice motivations-Results from a Hungarian study. *Central European Journal of Medicine*, 6 (4). pp. 502-509.

Gupta, N. and Dal Poz, M. R. (2009). Assessment of human resources for health using cross-national comparison of facility surveys in six countries. *Human Resources for Health*, 7. pp. 22

Hall, J. (2005). Health care workforce planning: can it ever work? *Journal of Health Services Research Policy*, 10. pp. 65-66.

Heinen, M. M., van Achterberg, T., Schwendimann, R., Zander, B., Matthews, A., Kózka, M., Ensio, A., Strømseng Sjetne, I., Moreno Casbas, T., Ball, J. and Schoonhoven, L. (2013). Nurses' intention to leave their profession: A cross sectional observational study in 10 European countries. *International Journal of Nursing Studies*, 50 (2). pp. 174-184.

Holmes, D. E. (2008). From Education to Regulation: Dynamic Challenges for the Health Workforce. Available at: http://www.aahcdc.org/policy/reports/from_education_to_regulation.pdf

HOPE (2004). The healthcare workforce in Europe: Problems and solutions. Final report of HOPE's Study Group on Workforce Issues Brussels, May 12.

HOPE (2009). Health Professionals in Europe: New roles, new skills. Hope Exchange Programme. Available at: <https://www.enpam.it/wp-content/uploads/HEALTH-PROFESSIONALS-IN-EUROPE-NEW-ROLES-NEW-SKILLS.pdf>

HOPE (2011). The Crisis, Hospitals and Healthcare. Available at: http://www.hope.be/05eventsandpublications/docpublications/86_crisis/86_HOPE-The_Crisis_Hospitals_Healthcare_April_2011.pdf

HOPE (2012). Ageing health workforce. Ageing patients. Multiple challenges for hospitals in Europe. Report on Hope Agora.

Hornby, P. and Forte, P. (2003). Human resource indicators and health service performance. Staffordshire, United Kingdom, Keele University Centre for Health Planning and Management. Available at: http://www.who.int/hrh/en/HRDJ_1_2_03.pdf

HRH Global Resource Center (n. d.). Available at: http://www.hrhresourcecenter.org/past_resource_spotlights

HWA (2012a). Health Workforce 2025 - Doctors, Nurses and Midwives - Volume 1, Health Workforce Australia, Adelaide. Available at: http://www.hwa.gov.au/sites/uploads/FinalReport_Volume1_FINAL-20120424.pdf

HWA (2012b). Health Workforce 2025 - Doctors, Nurses and Midwives - Volume 2, Health Workforce Australia, Adelaide. Available at: https://www.hwa.gov.au/sites/uploads/HW2025Volume2_FINAL-20120424.pdf

HWA (2012c). National Health Workforce Productivity Modelling - Final Report, Health Workforce Australia, Adelaide.

HWA (2012d). Health Workforce 2025 - Medical Specialties - Volume 3, Health Workforce Australia, Adelaide. Available at: https://www.hwa.gov.au/sites/uploads/HW2025_V3_FinalReport20121109.pdf

International Council of Nurses (2008). Nursing Care Continuum Framework and Competencies. Available at: [ICN regulation series](#).

ILO (2006a). International dialogue on migration. Migration and human resources for health: from awareness to action. Available at: http://publications.iom.int/bookstore/free/IDM_9_EN.pdf

ILO (2006b). Orientation to social dialogue for countries participating in the Action Programme on International Migration of Health Care Workers: The supply side Action Programme. Final Report, ILO, Geneva. Available at: <http://www.ilo.org/public/english/dialogue/sector/sectors/health/migration.htm>

ILO (2006c). Managing the Migration of Health Care Workers: The Need for Action, Fact Sheet, IOM, Geneva. Available at: <https://iom.int/publications>

ILO (n. d.). Updating the International Standard Classification of Occupations (ISCO) Draft ISCO-08 Group Definitions: Occupations in Health.

Jelfs, E. (2012). Workforce issues in European union health policy. *Health Services Management Research*, 25 (1). pp 48-49.

Kanellopoulos, D. (2012). Comparative Approach at the European Level of the Human Resources Management of the Health System, *Procedia. Social and Behavioral Sciences*, 4. pp. 5274-5279.

Kingma M. (2007). Nurses on the move: a global overview. *Health Services Research* 42. pp. 1281-1298.

Kovacs, E., Schmidt, A.E., Szocska, G., Busse, R. and McKee, M., (2014). Legido-Quigley, H. Licensing procedures and registration of medical doctors in the European Union. *Clinical Medicine*, 14 (3). pp. 229-238.

Kuhlmann, E., Batenburg, R., Groenewegen, P.P., and Larsen, C. (2013). Bringing a European perspective to the health human resources debate: a scoping study. *Health Policy*, 110. pp. 6-13.

Larsen, J.A., Allan, H.T., Bryan, K. and Smith, P. (2005). Overseas nurses' motivations for working in the UK: Globalization and life politics. *Work, Employment and Society*, 19 (2). pp. 349-368.

Larsen, C. and Kuhlmann, E. (2010). Health workforce governance and labour market trends in Germany. *European Journal of Public Health*, 20. pp. 146-147.

Laureen, J. H., O'Brien-Pallas, L., Duffield, C., Shamian, J., Buchan, J., Hughes, F., Laschinger, S. and North, N. (2012). Nurse turnover: A literature review. *International Journal of Nursing Studies*, 43 (2). pp. 237-263

Legido-Quigley, H., McKee, M., Nolte, E. and Glinos, I.A. (2008). *Assuring the quality of health care in the European Union. A case for action.* Observatory Studies Series No 12. Cornwall: MPG Books Ltd.

Leone, C, Conceicao, C, and Dussault, G. (2013). Trends of cross-border mobility of physicians and nurses between Portugal and Spain. *Human Resources for Health*, 11. p. 36.

Levine, R., Russ-Eft, D., Burling, A., Stephens, J. and Downey, J. (2013). Evaluating health services research capacity building programs: Implications for health services and human resource development. *Evaluation and Program Planning*, 37. pp. 1-11.

Lorraine J., McMurtrie, M. C., O’Lunaigh, P. T. and Osborne, Y. (2014). Keeping our nursing and midwifery workforce: Factors that support non-practising clinicians to return to practice. *Nurse Education Today*, 34 (5). pp. 761-765.

Mackey, M. and Liang, B. A. (2012). Rebalancing brain drain: Exploring resource reallocation to address health worker migration and promote global health. *Health Policy*, 107(1). pp. 66-73.

Maier, T. and Afentakis, A. (2013). Forecasting supply and demand in nursing professions: impacts of occupational flexibility and employment structure in Germany. *Human Resources for Health*, 11 (1). p. 24

Marchal, B. and Kegels, G. (2003). Health workforce imbalances in times of globalization: brain drain or professional mobility? *The International Journal of Health Planning and Management*, 18(1). pp. 89-101.

Mariel, S. L. and Puterman, M. L. (2009). Optimizing nursing human resource planning in British Columbia. *Health Care Management Science*, 12 (2). pp. 119-128.

Martinez, J. and Martineau, T. (1998). Rethinking human resources: an agenda for the millennium. *Health Policy and Planning*, 13. pp. 345-358.

Masselink, L. E. (2009). Health Professions Education as a National Industry: Framing of Controversies in Nursing and Migration in the Philippines. Dissertation.

Medscape Physician Compensation Report (2013). Available at: http://www.medscape.com/sites/public/physician-comp/2013?src=mkm_int_ret_comp_1113&uac=107064CK

Mendes, M. De C. and Meadows, A. J. (1997). Personal information acquisition by health professionals in Brazilian and British hospitals: a comparative study. *Journal of Librarianship and Information Science*, 29. pp. 189-193.

Merkur, S., Mossialos, E., Long, M. and McKee, M. (2008). Physician revalidation in Europe. *Clinical Medicine*, 8 (4). pp. 371-376.

Molema, J. J. W., Groothuis, S., Baars, I. J., Kleinschiphorst, M., Leers, E. G. E., Hasman, A., and van Merode, G. G. (2007). Healthcare system design and parttime working doctors. *Health Care Management Science*, 10 (4). pp. 365-371.

Murphy, T.G., Kephart, G., Lethbridge, L., O’Brien-Pallas, L., and Birch, S. (2009). Planning for what? Challenging the assumptions of health human resources planning, *Health Policy*, 92 (2-3). p. 225.

Murphy, T.G. (2012). Eliminating the shortage of registered nurses in Canada: An exercise in applied needs-based planning, *Health Policy*, 105. pp. 192-202.

Nigenda, G. G., Machado, M. H., Ruiz, F. F., Carrasco, V. V., Moliné, P. P., and Girardi, S. S. (2011). Towards the construction of health workforce metrics for Latin America and the Caribbean. *Human Resources for Health*, 9 (24).

Nevidjon, B. and Erickson, J. (2001). The Nursing Shortage: Solutions for the Short and Long Term. *Online Journal of Issues in Nursing*. 6 (1) Manuscript 4.

Niezen, M. G., and Mathijssen, J. J. (2014). Reframing professional boundaries in healthcare: A systematic review of facilitators and barriers to task reallocation from the domain of medicine to the nursing domain. *Health Policy*, 117. pp. 151-169.

Norcini, J. J., and Mazmanian, P. E., (2005). Physician migration, education, and health care. *Journal of Continuing Education in the Health Professions*, 25 (1).

O'Brien-Pallas, L., Baumann, A., Donner, G., Murphy, G. T., Lochhaas-Gerlach, J. and Luba, M. (2001). Forecasting models for human resources in health care. *Journal of Advanced Nursing*, 33. pp. 120-129.

OECD (2008). The Looming Crisis in the Health Workforce: How Can OECD Countries Respond?, *OECD Health Policy Studies*, OECD Publishing, Paris. Available at: <http://dx.doi.org/10.1787/9789264050440-en>

OECD (2010). International Migration of Health Workers: Improving International Co-operation to Address the Global Health Workforce Crisis. *OECD Policy Brief Series*, OECD Publishing/WHO, Paris/Geneva

OECD (2011). Health at a glance 2011. Available at: <http://www.oecd.org/health/health-systems/49105858.pdf>

OECD (2012). Health at a glance: Europe 2012, OECD Publishing. Available at: <http://www.oecd.org/els/health-systems/HealthAtAGlanceEurope2012.pdf>

OECD (2013). Health at a Glance 2013: OECD Indicators, OECD Publishing, Paris. Available at: <http://www.oecd.org/els/health-systems/Health-at-a-Glance-2013.pdf>

OECD Factbook 2013 (2013). Economic, Environmental and Social Statistics. Available at: <http://www.oecd-ilibrary.org/economics/oecd-factbook-2013> factbook-2013-en

OECD (2014). Health Statistics 2014. Definitions, sources and methods. Professional nurses, Associate professional nurses, Practising nurses, Professionally active nurses, Nurses licensed to practice, Practising midwives, Professionally active midwives, Midwives licensed to practice, Practising caring personnel, Professionally active caring personnel

Ognyanova, D., Maier, C. B., Wismar, M., Girasek, E., and Busse, R. (2012). Mobility of health professionals pre and post 2004 and 2007 EU enlargements: Evidence from the EU project PROMeTHEUS. *Health Policy*, 108 (2-3). pp. 122-132.

Oginska, H., Camerino, D., Estry-Behar, M. and Pokorski, J. (2003). In: Working conditions and intent to leave the profession among nursing staff in Europe. Hasselhorn H-M, Tackenberg P, Müller BH, editor. Stockholm: National Institute for Working Life and authors. *Work schedules of nurses in Europe*. pp. 82-87. Available at: http://nile.lub.lu.se/arbarch/saltsa/2003/wlr2003_07.pdf

Ono, T., Lafortune, G., and 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. DELSA/HEA/WD/HWP(2013)3.

Ono, T., Schoenstein, M. and Buchan, J. (2014). Geographic Imbalances in Doctor Supply and Policy Responses. OECD Health Working Papers, No. 69, OECD Publishing. DELSA/HEA/WD/HWP(2014)2

Pittman, P., Aiken, L. H. and Buchan, J. (2007). International migration of nurses: Introduction. *Health Services Research*. 43 (3). pp. 1275-1280.

Price, S. (2009). Future directions for career choice research in nursing: A discussion paper. *International Journal of Nursing Studies*, 46(2). pp. 268-276.

Riley, P. L., Zuber, A., Vindigni, S. M., Gupta, N., Verani, G. M., Sunderland, N. L., Friedman, M., Zurn, P., Okoro, C., Heather, P. and Campbell, J. (2012). Information systems on human resources for health: a global review. *Human Resources for Health* 10 (7).

Price, R. (2012). EU Action Plan on the health workforce. *European Journal of Hospital Pharmacy-Science and Practice*, 19 (5). pp. 453-453.

Reinier, K., Palumbo, M. V., McIntosh, B., Rambur, B., Kolodinsky, J., Hurowitz, L. and Ashikaga, T. (2005). Measuring the nursing workforce: Clarifying the definitions. *Medical Care Research and Review*, 62 (6). pp. 741-755.

Risso-Gill, I., Legido-Quigley, H., Panteli, D. and Mckee, M. (2014). Assessing the role of regulatory bodies in managing health professional issues and errors in Europe. *International Journal for Quality Health Care*, Available at: <http://intqhc.oxfordjournals.org/content/early/2014/04/09/intqhc.mzu036.abstract>

Risso-Gill, I., Panteli, D., Kovacs, E., Solé, M., Struckmann, V., Legido-Quigley, H. and McKee, M. (2013). *Processes and regulatory procedures of doctors in the European Union*. *EuroHealth*, 19. pp. 6-7.

Robinson, V. and Carey, M. (2000). Peopling skilled international migration: Indian doctors in the UK. *International Migration* 38 (1). pp. 89-108.

Roskam, E., Pariyo, G., Hounton, S. and Aiga, H. (2013). Increasing skilled birth attendance through midwifery workforce management. *International Journal of Health Planning and Management*, 28. pp. 62–71.

Røttingen, J. A., Regmi, S., Eide, M., Young, A., J., Viergever, R. F., Årdal, C., Guzman, J., Edwards, D., Matlin, S. A. and Terry, R. F. (2013). Mapping of available health research and development data: what's there, what's missing, and what role is there for a global observatory? *The Lancet*, 382, 9900 (12–18). pp. 1286-1307.

Runnels, V., Labonté, R. and Packer, C. (2011). Reflections on the ethics of recruiting foreign trained human resources for health. *Human Resources for Health*, 9 (2).

Russ-Eft, D., Watkins, K. E., Marsick, V. J., Jacobs, R. L. and McLean, G. N. (2014). What Do the Next 25 Years Hold for HRD Research in Areas of Our Interest? *Human Resource Development Quarterly*, 25. pp. 5–27.

Santric-Milicevic, M., Simic, S. and Marinkovic, J. (2012). Healthcare workforce trends in changing socio-economic context: Implications for planning. *HealthMED*, 6 (4). pp. 1375-1383.

Safie, N. and Aljunid, S. (2013). E-learning initiative capacity building for healthcare workforce of developing countries. *Journal of Computer Science*, 9 (5). pp. 583-591.

Salafsky, B., Glasser, M. and Ha, J. (2005). Addressing issues of maldistribution of health care workers. *Annals of the Academy of Medicine Singapore*, 34 (8). pp. 520–525.

Schafheutle, E. I. and Hassel, K. (2009). Internationally trained pharmacists in Great Britain: what do registration data tell us about their recruitment? *Human Resources for Health*, 7 (51).

Schulz, C. and Rijks B. (2014). Mobility of Health Professionals to, from and within the European Union. IOM. Available at: http://publications.iom.int/bookstore/free/MRS48_web_27March2014.pdf

Scott, P. A., Matthews, A. and Kirwan, M. (2014). What is nursing in the 21st century and what does the 21st century health system require of nursing? *Nursing Philosophy*, 15. pp. 23–34.

Serneels, P., Lindelow, M., Montalvo, J. G. and Barr, A. (2007). For public service or money: understanding geographical imbalances in the health workforce. *Health Policy and Planning*, 22 (3). pp. 128–138.

Sermeus, W. and Delesie, L. (1994). The registration of a nursing minimum data set in Belgium: six years of experience. In: *Nursing Informatics: An International Overview for Nursing in a Technological Era* (ed. S.J. Grobe), pp. 325–333. Amsterdam: Elsevier Science.

Sermeus W. and Delesie, L. (1997). Development of a presentation tool for nursing data. In: ICNP in Europe: Telenurse (ed. R.A. Mortensen), pp. 167–176. Amsterdam: IOS Press.

Sermeus W. and Bruyneel L. (2010). Investing in Europe's health workforce of tomorrow: Scope for innovation and collaboration. *Summary report of the three Policy Dialogues*. Leuven, Belgium. Available at: http://www.healthworkforce4europe.eu/downloads/Report_PD_Leuven_FINAL.pdf

Sheldon, G. F. (2003). Great expectations: the 21st century health workforce. *The American Journal of Surgery*, 185 (1). pp. 35-41.

Simoens, S., Villeneuve, M., and Hurst, J. (2005). Tackling Nurse Shortages in OECD Countries, OECD Health Working Papers, No. 19, OECD Publishing. DELSA/ELSA/WD/HEA(2005)1

Siyam, A., Zurn, P., Ro, O. C., Gedik, G., Ronquillo, K., Co, C. J., Vaillancourt-Laflamme, C., de la Rosa, J., Perfilieva, G. and Dal Poz, M. R. (2013). In Monitoring the implementation of the WHO Global Code of Practice on the International Recruitment of Health Personnel. *Bulletin of the World Health Organization*, 91 (11). pp. 816-823.

Solé, M., Panteli, D., Risso-Gill, I., McKee, M., Busse, R. and Legido-Quigley, H. (2014). How do medical doctors in the European Union demonstrate that they continue to meet criteria for registration and licencing? *Clinical Medicine*, forthcoming.

Standing H. (2000). Gender: a missing dimension in human resource policy and planning for health reforms. *Human Resources Development Journal*, 4 (1). Available at: http://www.who.int/hrh/en/HRDJ_4_1_04.pdf

Stilwell, B., Diallo, K., Zurn, P., Dal Poz, M. R., Adams, O. and Buchan, J. (2003). Developing evidence-based ethical policies on the migration of health workers: conceptual and practical challenges. *Human Resources for Health*, 1 (8).

Strohmeier, S., and Piazza, F. (2013). Domain driven data mining in human resource management: A review of current research, *Expert Systems with Applications*, 40, (7). pp. 2410-2420.

Struckmann, V., Panteli, D., Legido-Quigley, H., Risso-Gill, I., McKee, M., and Busse, R. (2014). What happens if physicians are unfit to practice? An analysis of policies and practice in 11 European Union Member States. *Manuscript*.

Tijdens, K., de Vries, D.H. and Steinmetz, S. (2013). Health workforce remuneration: Comparing wage levels, ranking, and dispersion of 16 occupational groups in 20 countries. *Human Resources for Health*, 11 (1). pp. 11.

Troy, P. H., Wyness, L. A. and McAuliffe, E. (2007). Nurses' experiences of recruitment and migration from developing countries: a phenomenological approach. *Human Resources for Health*, 5 (15).

Van den Heede K., and Aiken L. (2013). Nursing workforce a global priority area for health policy and health services research: A special issue. *International Journal of Nursing Studies*, 50. pp. 141–142

Van Riemsdijk, M. (2013). Obstacles to the free movement of professionals: Mutual recognition of professional qualifications in the European union. *European Journal of Migration and Law*, 15 (1). pp. 47-68.

Villanueva, T. (2010). Europe develops action plan to address health workforce shortfall. *Canadian Medical Association Journal*, 182 (18). pp. 825-826.

Vries H. de S. P., Janta, B., Rabinovich, L., Archontakis, F., Ismail, S., Klautzer, L., Marjanovic S., Patrini, B., Puri, S. and Tiessen, J. (2009). International Comparison of Ten Medical Regulatory Systems Egypt, Germany, Greece, India, Italy, Nigeria, Pakistan, Poland, South Africa and Spain. Cambridge: RAND Corporation.

Wibulpolprasert, S. (1999). Inequitable distribution of doctors: can it be solved? *Human Resources Development Journal*, 3 (1).

WHO (2004). Recruitment of health workers from the developing world. Executive board 114 session. Agenda item 4.3 Geneva WHA. Available at: www.who.int/gb/ebwha/pdf_files/EB114/B114_5-en.pdf

WHO (2012a). Increasing access to health workers in remote and rural areas through improved retention. Available at: http://whqlibdoc.who.int/publications/2010/9789241564014_eng.pdf

WHO (2012b). Action towards achieving a sustainable health workforce and strengthening health systems Implementing the WHO Global Code of Practice in the European Region. World Health Organization Regional Office for Europe. Copenhagen.

WHO (2013). Health 2020. A European policy framework and strategy for the 21st century. WHO, Copenhagen.

WHO (n. d.). Draft guidelines on monitoring the implementation of the WHO Global Code on the International Recruitment of Health Personnel. Part II – Regular national reporting instrument – Section 2: Quantitative information – Minimum Data Sets. Available at: http://www.who.int/hrh/migration/section_2_quantitative.pdf

WHO (n. d.). resolutions on health workforce development. Geneva, World Health Organization. Available at: <http://www.who.int/hrh/resolutions/en/>

WHO (n. d.). Classification of health workforce statistics. ISCO – Health worker classification. Available at:
http://www.who.int/hrh/statistics/Health_workers_classification.pdf

WHO (n. d.). Global Health Workforce Alliance. Available at:
<http://www.who.int/workforcealliance/en/>

WHO 2012. Toolkit for country health workforce strengthening. Available at:
http://www.euro.who.int/_data/assets/pdf_file/0018/172413/Toolkit-for-Country-Health-Workforce-Strengthening-FINAL2014.pdf

WHO 2012. (n. d.). Country Assessment tool on the uses and sources for human resources for health (HRH) data. Available at:
http://www.who.int/hrh/resources/HRH_data-online_version_survey_use_sources.pdf

WHO (n. d.). Health Metrics Network. Available at:
<http://www.who.int/healthmetrics/en/>

Zander, B., Blümel, M. and Busse, R. (2013). Nurse migration in Europe—Can expectations really be met? Combining qualitative and quantitative data from Germany and eight of its destination and source countries. *International Journal of Nursing Studies*, 50 (2). pp. 210-218.

Zhang, Y. (2009). *The Experiences of Immigrant Nurses in Lowell, MA: A Case Study*.

Zurn, P., Dal Poz, M., Stilwell, B., Adams, O. (2002). *Imbalances in the Health Workforce*. Briefing paper. World Health Organisation, Geneva.

Zurn, P., Dolea, C. and Stilwell, B. (2005). *Nurse retention and recruitment: developing a motivated workforce*. ICN Issue Paper 4. Geneva, International Council of Nurses.

Zurn, P. and Dumont, J. (2008). *Health Workforce and International Migration: Can New Zealand Compete?* OECD Health Working Papers 33, OECD Publishing.

Appendices

Appendices	104
Appendix I. - Methodology	105
Appendix II. - Protocol	112
Appendix III. - WP4 Questionnaire Survey	116
Appendix IV. - Semi-structured interview guide.....	125
Appendix V. - List of interviewed experts	128
Appendix VI. - List of interviewed JQ National Focal Points.....	129
Appendix VII. – Literature framework	132
Appendix VIII. – WP4 general description	135
Appendix IX. – Usefulness of JQ data collection	142
Appendix X. – WHO definitions for health workforce.....	144
Appendix XI. – Main elements of labour market participation	145
Appendix XII. - ECHIM remarks on comparability.....	146
Appendix XIII. – Summary and conclusions on WHO definitions for health workforce .	150
Appendix XIV. – Definitions for the three JQ activity status categories.....	152
Appendix XV. – National FTE calculation methods with the Belgian case in-depth.....	153
Appendix XVI. – The ISCO based data categories of the Joint Questionnaire	157

Appendix I. - Methodology

The D041 Report on several sources of information. Figure 1 below shows these main sources:

- Literature review;
- Workshop information - Meeting (Budapest and Utrecht);
- WP4 Questionnaire Survey results;
- Expert interview results;
- Other JA activities and results.

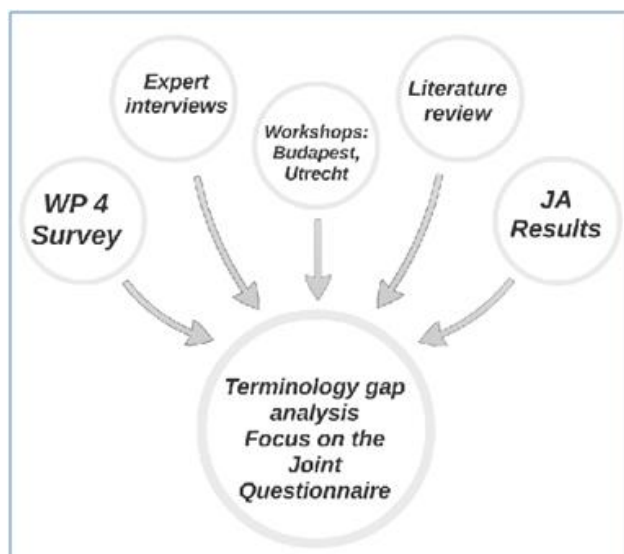


Figure 1. Main sources

Literature review

The literature review was conducted by the WP4 team in the first period during Months 1 to 11 of the JA and is shown as a flowchart in Figure 2. WP4 experts on Human Resources for Health (HRH) identified and suggested the main HRH and mobility projects from the last decade which they considered would be relevant to WP4. As a first step, *key projects, project policy documents, research papers, reports and books* in the field of health workforce terminology and data collection have been identified through the process of expert reference and literature searches (Step 1-2). The objective of this review process was to map literature and synthesise information on European HRH projects and activities, to get an overall picture on the existing literature of EU HRH (see the Core Documents section at the end of the document.) The inclusion criteria was set to include European projects focusing on health workforce and mobility, thus the following project documentations were summarised: EC Feasibility Study, Mobility of Health Professionals (MoHProf), RN4Cast, Health Prometheus, Evaluating Care Across Borders - European Union Cross Border Care Collaborations (ECAB).

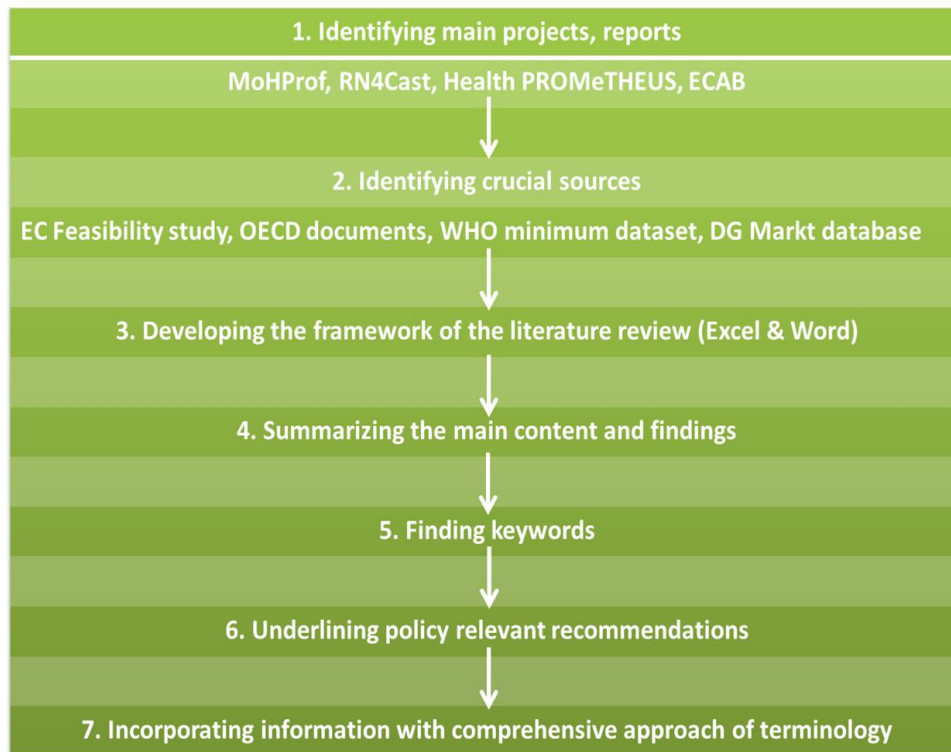


Figure 2. Flowchart of the literature review

After collecting the relevant bibliography - terminology issues linked to Joint Questionnaire (JQ), a **common framework** was elaborated (Step 3) to follow the key points in literature review, using Excel sheets and Word documents (Appendix VII). The main project documentation details were set in the framework, e.g. technical information about acronyms or objectives of projects, contact details of study leaders and partners participating in the projects. Then the studies themselves were categorised by WP4 team members as landmark study, basic, frequently referred study or study focusing on emerging trends. Decisions on categories were reached by consensus between WP4 team members.

Based on the developed framework, within the further steps summary documents were prepared about the main content, results, and keywords of the identified literature sources. WP4 also focused on the previously set policy recommendations in the field of terminology of HWF based on the core sources, thus policy recommendations were summarised. The first summary of WP4 literature review activity was presented at the Budapest workshop in June 2013. The systematic literature review process - analysing crucial sources from OECD/Eurostat/WHO and EU level documents - was completed by additional desk search, where further HRH-relevant literature was considered after searching databases¹³⁹ by using the keywords of "Joint Questionnaire", "HRH

¹³⁹ Scopus, Proquest, ScienceDirect, Web of Science

terminology” and “Healthcare workforce”, “Health workforce”¹⁴⁰. Additionally, in later phases of the working process, literature reviews of the other core WPs (WP5-WP6), international reports and newly published materials were checked and added to the summary (cf. ECHIM, Evaluation on the JQ Non-Monetary Healthcare statistic, Health Prometheus Book Volume 2 etc.).

Workshop information

Two workshops (WSs) were organised during the terminology gap analysis activity. The first WS was held in *Budapest in June 2013* and the second in *Utrecht in March 2014*.

The first WS focused on mapping and exploring the process of data collection and reporting to the JQ, the difficulties experienced on a MS level, and the terminology problems based on the existing literature. The literature review of crucial sources of WP4 was presented. Partners were asked to prepare a brief summary about the country situation and underline the challenges they face when providing data for the international JQ data collection. These issues were discussed at the WS in the frames of small group discussions. This information gathered at the WS was further used in the elaboration of the WP4 Questionnaire Survey.

The second WS aimed to share the preliminary results of the previous activities, namely, the Survey questionnaire and the expert interviews. Further discussions were organised in order to get a better understanding and to reach the consensus about policy recommendations in terms of terminology/data reporting problems. The presentations and additional WS documents e.g. meeting minutes were used in preparing the deliverable.

WP4 Questionnaire Survey

Respondents

A short WP4 Questionnaire Survey was conducted among WP4 partners¹⁴¹. All associated and collaborating partners were invited to take part in the Questionnaire Survey at the time of the Budapest WS in June 2013. The items were finalised during the summer period utilising the information and opinions gathered at the Budapest WS. The WP4 Questionnaire Survey was sent to partners in September 2013 and the indicated deadline for returning the filled in forms was December 2013. *In total, 14 country responses* were received and taken into consideration when preparing the deliverable: Belgium, Cyprus, Finland, Germany, Greece, Hungary, Iceland, Ireland, Italy, Poland, Portugal, Spain, the Netherlands and the UK (plus brief summary of Bulgaria¹⁴²).

¹⁴⁰ This literature monitoring has been a continuous task for WP4

¹⁴¹ As discussed and agreed with WP1 in the preparatory phase (However the Grant Agreement defines all MSs participating in the JA, the feasibility of this high volume participation could not be guaranteed)

¹⁴² Due to current methodological issues with systematic data collection on HWF, Bulgaria could not contribute in depth to the WP4 Survey

Objective of the WP4 Questionnaire Survey

The objective of Section 1 was to explore, reveal, and clarify the details of JQ data reporting process, the definitions/categories/terms and data sources used in different countries, and to map the emerging difficulties at MS level in order to conduct the gap analysis that indicates where a better data collection process might be illuminated for the future. The Survey also contained a quick tool to evaluate the reporting and practical applicability of JQ definitions¹⁴³.

Contents of the WP4 Questionnaire Survey

The structure of the questionnaire consisted of two sections. The present report solely focuses on the findings of the first section (See in Appendix III.) Section 1 Terminology/Data Source Gap Analysis aimed to gain a thorough understanding of the *data that countries supply to the OECD-WHO-Eurostat Joint Questionnaire (JQ)*. Furthermore, information on HWF data available in different countries was collected based on definitions of 5 sectoral professions Doctors (Physicians), Nurses, Dentists, Pharmacists and Midwives and JQ three professional status categories Licensed to practise, Professionally active and Practising.

- Section 1 focused first of all on the *Data reported to the Joint Questionnaire* - i.e. data collected and available for the JQ in different countries. Respondents indicated the professional categories where their country supplied data for the Joint Questionnaire in 2013, than they were asked to explain what definitions/categories/terms they use at national level and whether they experience terminology/data gaps and/or face difficulties in reporting to the JQ.
- The *process of reporting* to the JQ was described, particularly on the method how different countries attempt to match their national data to the JQ required categories. It was also checked deeper, if countries use ISCO codes, differentiation of public and private providers in national level data collection procedures. Information was collected on the type of data they use, namely, headcount statistics or FTE estimations.
- The next part of Section 1 focused on the *nurse category* in a more detailed way. A table was provided with many sub-categories of nurses and allied health workers, and respondents had to indicate how they combine or merge those when reporting to the JQ Professional Nurse and Associated Professional Nurse categories.
- The last part of Section 1 focused on the *practical application of the JQ definitions* and data in a domestic HWF planning context. Four statements were rated on a Likert-type scale indicating the level of agreement with the

¹⁴³ Section 2 of the WP4 Questionnaire Survey dealt with mobility issues and data from different countries. Those results will be incorporated into D042 Report on mobility data in the EU.

items. These items were: "The JQ categories correspond well to the national composition of the 5 sectoral professions (doctors, nurses, pharmacists, dentists and midwives) in your country"; "The JQ reporting raises no issues for the national data collection system of your country"; "The JQ provides an excellent resource to benchmark national data with data from other countries"; "The JQ provides an excellent resource to contribute to national health workforce planning"

Analysis

The results of the WP4 Questionnaire Survey were analysed using SPSS 22.0 software. For descriptive statistics (e.g., mean, S.D., distribution curves), frequency tables and graphs were used.

Validation

The WP4 Questionnaire Survey was sent to partners and they were asked to contact the National Focal Point in their countries to discuss the reporting process and the questions with the responsible body for reporting¹⁴⁴. The list of official National Focal Points involved in this process is in Appendix VI.

The number of actors and their cooperation have also been analysed by the WP4 Questionnaire Survey. Figure 3 shows the number of actors involved in filling out the WP4 Questionnaire Survey at national level - also including the National Focal Points in 12 out of 14 countries.

¹⁴⁴ Definition: The National Focal Points (NFP) are the national experts in member states and additional countries. NFP representatives are appointed by their national health ministries. NFPs are responsible for submitting requested data for the JQ non-monetary healthcare statistics.

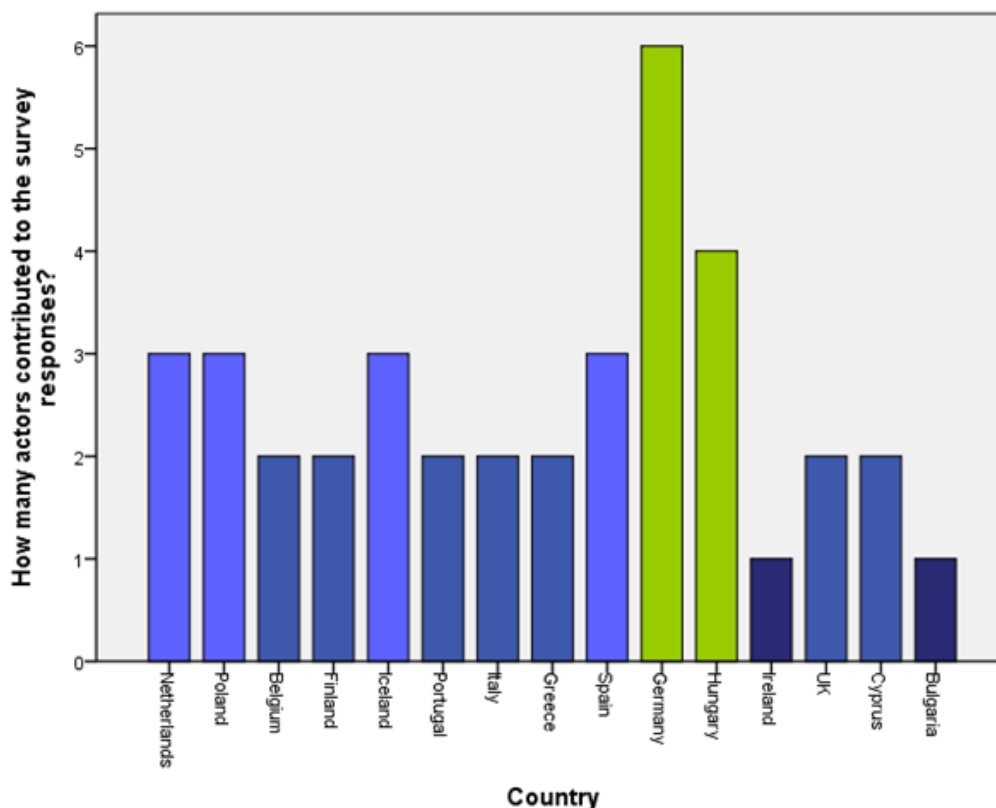


Figure 3. Number of actors contributing to the Survey at MSs level

After receiving the filled in Questionnaires, a clarification process was carried out. Remarks and comments from the WP4 team members were discussed with the partners in written communication and/or phone conversations in order to understand the data collection and reporting process of the countries. Clarification rounds lasted in total approximately four months (December 2013-April 2014). The last clarification was carried out in the second WS in March 2014 in Utrecht and some other pieces of information arrived late March. The data collection for the Survey was terminated at the end of March 2014.

Expert interviews

To gain a deeper understanding of the reporting process for the JQ, and terminology-related issues, expert interviews were conducted. A *semi-structured interview guide* (Appendix IV) was prepared by WP4 based on the first WS in Budapest and the preliminary results of the Questionnaire Survey. The interviewees were international experts whose expertise is linked to the European and/or international projects and data collections identified previously in the literature review process.

The interview guide involved some key issues:

- 1) What are your experiences with the existing terminology/definitions used in different MSs compared to/in reflection of JQ categories?
- 2) What is your opinion about the practical gains of using ISCO codes in the context of JQ data collection, taking into account its content and original purpose?
- 3) How do you see the activities of National Focal Points?
- 4) What actions need to be done in order to develop reliable and valid databases in EU?
- 5) What shall be the main purpose of JQ data collection and database?

Experts from international organisations were selected based on their *fields of expertise* and earlier contribution to the present topic at international level, and were invited for participation in the interviews (Appendix V). In total, 6 semi-structured interviews were conducted via phone/personal conversations. The interviews lasted about 40-50 minutes. A summary of each interview was prepared by the interviewers and the interviewees reviewed and confirmed these summaries. No systematic content analysis was run due to the low number of interviewees. However, the information was taken into account when preparing the report. The expert interviews ensured a great opportunity to *map the views of international organisations*, thus the country level information was triangulated with international-level information.

Other JA activities and results

As a last step in the preparation of the D041, the findings of other JA WPs were also considered and incorporated. The *information gathered by WP5 and WP6* was taken into account when summarising the terminology gaps. WP4 checked and followed all the WP5 and WP6 activities, survey contents, workshop materials and meeting minutes that could support the report by incorporating these additional sources/information strengthening and confirming the existence/presence of terminology gaps.

Limitations

The findings summarized in this deliverable are relying on the information gathered from literature review, WP4 Questionnaire Survey, WS discussions and expert interviews. Although triangulation of data was carried out, there might be some additional comments, aspects not considered in the present text. Also, although we employed different methods in order to have an understanding of the experiences and opinions of several country experts and representatives, the number of partners involved in the activity did not reach the total number of EU/EEA countries.

Appendix II. - Protocol

This protocol introduces the process of how D041 content and structure has been planned (scope, relationships with other JA activities, modular structure), and the timeline for the development of the the D041 Deliverable.

Scope and structure of D041

In course of the D041 composition process, WP4 followed the description of the Grant Agreement (GA) as a basic guideline.

According to the Grant Agreement, “WP4 aims at improving the quality and comparability of HWF data collected and supplied by MSs to international data collecting organizations. The *currently produced data contents on HWF will be compared to the definitions and guidelines of international data collecting organizations responsible for data collection and analysis, setting international standards*, primarily in relation to the **Joint Questionnaire on non-monetary data** of Eurostat, OECD and WHO.”

The objective of Activity 1 is a *terminology gap analysis*, in order to “better understand the terminology used by Member States and international organizations by identifying the actual contents of data collected and the problems in comparability of collected data due to differences in interpretation/translation of definitions and guidelines”.

The work “will be based on the findings of the Commission's study, the ECHI indicators for doctors and nurses, and the findings from the Joint Action ECHIM. After considering other available literature and project findings, the further understanding of definitions applied in practice by MSs will be based on a WP4 Questionnaire Survey to be sent to all Member States participating in the Joint Action. The results of the questionnaire will be discussed at a workshop with the purpose of identifying problems and gaps and formulate suggestions, recommendations.”

D041 and its connections to other WP4 and JA activities

WP4 has been aware of the strong and mutual linkages between its three activities (Activity 1 on Terminology, Activity 2 on Mobility, and Activity 3 on HWF data gap analysis), in line with the overall scope of the JA, including reference to connections to other core WPs (WP5, WP6). D041 takes these connections into consideration and refers to the relevance of terminology issues to HWF planning and forecasting.

In course of the Activity 1 of WP4, it became clear that terminology issues and gap analysis go far beyond the defined primary scope of the JQ analysis. WP4, in agreement with WP1, decided that albeit focus must be on the original scope and fulfillment of tasks and description of the GA, D041 will address and analyse the subject by indicating the broader scope and includes additional findings - as and where it applies - in the D041 report.

Modular structure of the analytical work

The analytical work leading to the elaboration of D041 followed a *modular structure*, by defining overarching and individual modules (see *Figure 1*). Each Module (marked *Mxx*) had a responsible assigned from WP4_HU, in charge of writing and ensuring the appropriate review. Each module was assigned a special group of reviewers, whose task was to revise the development of the module at the concept phase and at the Draft 01 phase.

Table I. Work Units and Modules of the D041 analytical work

Work Unit 1 (1 Module) <i>overarching</i>	Executive Summary M1						
Work Unit2 (3 Modules) <i>overarching</i>	Intro: Contexts, strategy, objectives and rationale M2			Hypothesis, thesis (WP4 overall work) M3		Protocol: Working and JA cooperating strategy M4	
Work Unit3 (1 Module) <i>overarching</i>	Methods and protocols M5						
Work Unit4 (8 Modules) <i>individual</i>	National HWF information flow M6	International HWF information flow M7	License to practise, practising, professionally active categories M8	Doctors & Dentists & Pharmacists M9	Nurses & Midwives M10	FTE, Head Count M11	Other critical issues (Skills & competencies, public-private, etc.) M12
Work Unit5 (3 Modules) <i>overarching</i>	Conclusions (Proposals, Recommendations) M13			References, sources M14			Appendices e.g. relevant documentation M15

Modules were integrated in one overall document after the Draft 02 phase. After several rounds of internal review, they were sent (as Draft 07) to a new round of review to core reviewers, as well as WP1 and WP3.

The modular structure has been chosen in order to:

- enable WP4 team to focus on specific crucial issues derived during the work of WP4 Activity 1;
- support more detailed gap analysis according to specific aspects and the identification of potential further ways to address these specific gaps in proposals/ recommendations;
- enable flexibility during D041 development, assuming that emerging content, structure, necessary replanning and rescheduling issues that naturally become visible in course of the work can be better handled. ensure the option to develop modules individually and to share workload and responsibilities by specifying assigned responsible person for each module from WP4, also to arrange relating work in WP4 and reviewers and oversee module development process allow further development (beyond D041) of some modules to scientific publications, thus supporting the dissemination of JA results support both evaluation work of WP3 in charge of quality control and the review process by providing concepts of each module in an initial phase

Note: Elements of this concept were due to necessary change/recomposition, according to the regular evaluation of D041 work. M3, M4, M5 and M12 have been eventually integrated into other Modules of D041.

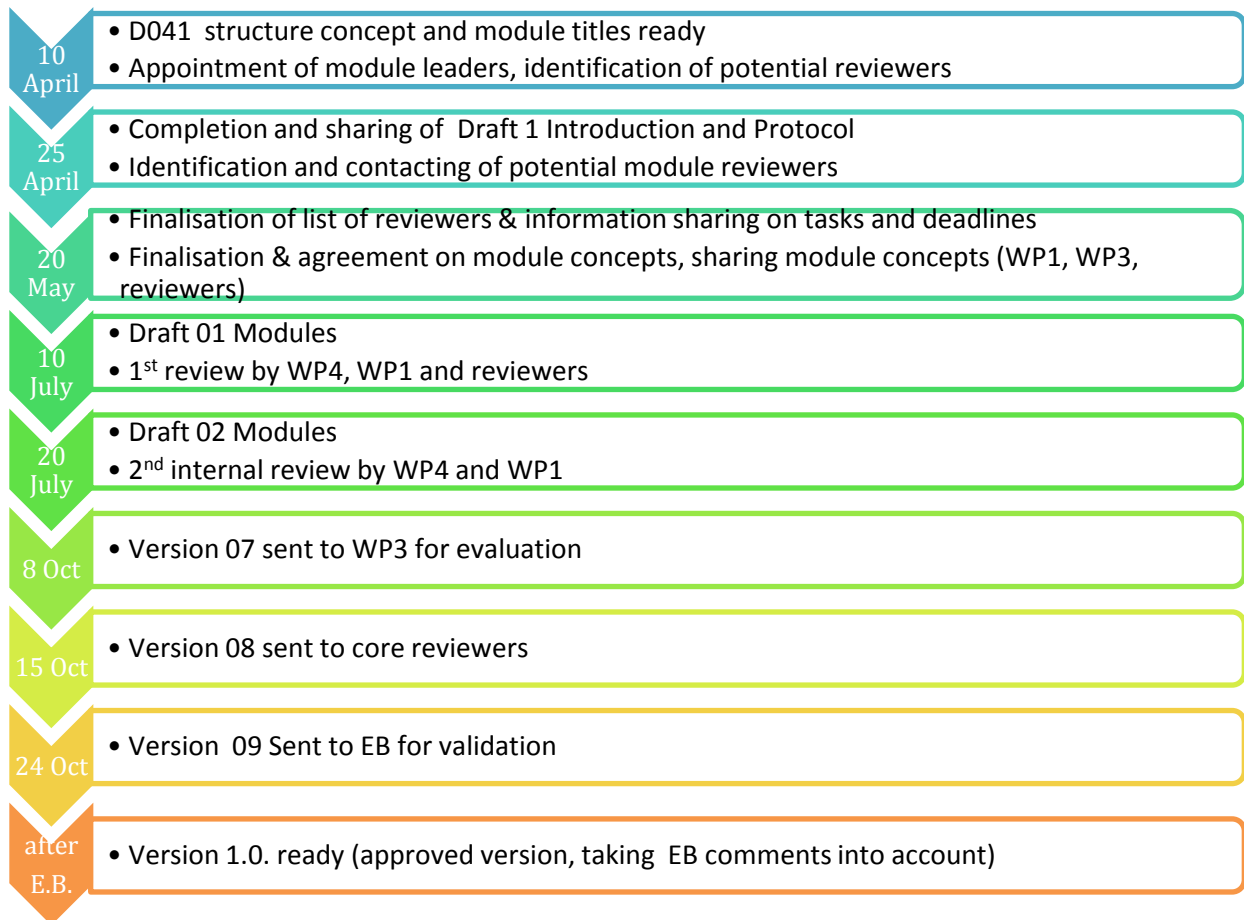


Figure 4. D041 development process: tasks and deadlines in 2014

Appendix III. - WP4 Questionnaire Survey

Section 1. Terminology/Data Source Gap Analysis

1. A. Data reported to the Joint Questionnaire

1.A.1. Availability of Joint Questionnaire data

Please tick (✓) in the cells to indicate where your country produced data for the Joint Questionnaire in 2013. Please note that this information is available from the OECD 2013 report on the JQ. You need to know this information in order to start doing the national level data gap analysis in the next question.

- As mentioned in the Introduction, you will need to understand the structure of the Joint Questionnaire Excel Template, which is sent to you in the same e-mail as this Survey. The results of the 2013 Questionnaire are sent to you in attachment as well.

Table II.a. Blank table used to collect data from countries reported to Joint Questionnaire 2013

Professional category + ISCO code(s)	Licensed practice	to Practicing	Professionally active
Doctors: 221, 2211, 2212			
Nurses: 2221, 3221			
Dentists: 2261			

Pharmacists: 2262			
Midwives: 2222, 3222			

For the categories your country does not provide information, can you give a reason why that data is not available? Please fill in the cell matching the given category. (Reasons may include lack of data, or data collected according to different definitions, etc.)

Table II.b. Blank explanatory form for the purpose to collect reasons on the lack of reporting

By category	Explanation on the lack of reporting

1.A.2. Gap analysis

For the categories your country does provide information, please make a gap analysis whether data supplied fully matches the ISCO codes and the three Joint Questionnaire categories (Licensed to Practice, Practicing, Professionally active) as defined in the JQ Template.

The gap can be explained for example by the fact that the data is based on an [estimation](#) or on a [sample](#), or

- **data is based on job categories other than ISCO code:** professions are defined by the contents of jobs, but the classification in use doesn't fit ISCO codes
- **data based on qualifications according to 2005/36 directive:** professions are defined by qualifications under the 2005/36 directive only
- **data based on other qualifications:** data are based on qualifications, but not on qualifications under 2005/36 directive (e.g. nurses trained in another, older training system)
- **compilation of various data sources:** Data from different sources is compiled and an approximate number is provided - please describe this process. Please indicate what sources you use for such reporting, e.g. data based on the 2005/36 Directive or on other national definition
- **any other special conditions** - please explain

Table III.a. Blank gap analysis table

Professional category and status	Gap analysis
Doctors - Licensed to practice	
Doctors - practicing	
Doctors - professionally active	
Nurses - Licensed to practice	
Nurses - practicing	
Nurses - professionally active	
Dentists - Licensed to practice	

Dentists - practicing	
Dentists - professionally active	
Pharmacists - Licensed to practice	
Pharmacists - practicing	
Pharmacists - professionally active	
Midwives - Licensed to practice	
Midwives - practicing	
Midwives - professionally active	

Table III.b. Blank answer field surveying the method to distinguish between private and public providers

<p>What method(s) do you use to separate public providers from private ones? Please provide a short reference to the relevance of the private sector in your country.</p>
<p><i>(Please add your response here)</i></p>

1.A.3. Special focus on Nurses

The Joint Questionnaire includes two ISCO categories of nurses (professional nurses and associate professional nurses). According to the ISCO, there are other health professions similar to nurses, such as Medical assistants (3256), Ambulance workers (3258) and Health care assistants (5321). In order to identify the possible gaps in reporting, we put a special emphasis on finding out who you report as nurse for the Joint Questionnaire.

Here below you can find a list of different healthcare professionals. In case of every item please choose the category where it is reported (or not reported at all). *Please, tick (✓) the cells accordingly.*

We are aware that job contents, qualifications and registration procedure may vary according to countries. If a profession doesn't exist in your country's health system, please indicate "not applicable".

Table IV. Different healthcare professionals

Categories	Professional Nurse	Associate Professional Nurse	Not reported for JQ, as Classified under different ISCO Code	Not applicable	Classification depends on the following condition(s) - specify (e.g. degree) + Comments
Nurses working in hospitals (with qualification "nurse" according to 2005/36 directive)					
Nurses working in hospitals (with other types of qualification than "nurse" according to 2005/36 directive)					
Specialist					

nurses working in hospitals					
Nursing aids working in hospitals					
Clinical nurse consultants					
Specialist nurses working in ambulatory care					
Nurses working in ambulatory care					
Medical assistants working in ambulatory care					
Nurses in primary care (GP practices)					
Mother and child community nurse (health visitor)					
Dental assistants					
Medical imaging (radiographic, ultrasound) assistants					
Medical laboratory technicians					
Assistants working at gynaecology ambulances					

Endoscopic assistants					
Emergency care practitioners (paramedic)					
Emergency care assistants					
Intensive care assistants					
Home-based personal care workers					
<i>You may add in the below rows any additional HWF categories related to nursing where reporting to the JQ is not evident in your country.</i>					

1.B. JQ and ISCO definitions applied in national data collection for better HWF planning

This section focuses on the practical issues with the Joint Questionnaire definitions and data. In order to fill this section out you may need to consult the organisation(s) and the experts in charge of national HWF planning.

Table V. Questionnaire on practical issues with the Joint Questionnaire definitions and data

<p>How much do you agree with the following statements?</p> <p>Please indicate your level of agreement from 1-10 (where 1= absolutely disagree, 10= absolutely agree) and provide your written explanation.</p>
<p>1. The JQ categories match well the national composition of the 5</p>

harmonised professions (doctors, nurses, pharmacists, dentists and midwives)

1

10

--	--	--	--	--	--	--	--	--

(You may also add an explanation here)

2. The reporting to the Joint Questionnaire raises no issues for our data collection system

1

10

--	--	--	--	--	--	--	--	--

(You may also add an explanation here)

3. The Joint Questionnaire provides an excellent resource to benchmark national data with data from other countries.

1

10

--	--	--	--	--	--	--	--	--

(You may also add an explanation here)

4. The Joint Questionnaire provides an excellent resource to contribute to national health workforce planning

1

10								
<i>(You may also add an explanation here)</i>								

Appendix IV. - Semi-structured interview guide

WP4 Interview guide for semi-structured expert interviews

Interviewee/Affiliation:

Date (length) of the interview:

Interviewer:

Terminology issues concerning JQ

Introduction: WP4 activities focus on several issues, and one of the main crucial issues deals with terminology/data source gaps and the mapping of the existing difficulties in definition-related problems in MSs when reporting to Joint Questionnaire.

Objective: The aim of the present interview is to see what experts think of the existing terminology/definitions/data content, and what experts consider about the accuracy, accessibility, timeliness and comparability of data based on terminology/definitions; and their use, understanding and problematic points/difficulties in different MSs.

1) What are your experiences about the existing terminology/definitions used in different MSs compared to/in reflection of JQ categories?

What is your opinion: Is there a clear and common terminology/definition on EU level? Are they mostly based on qualification or occupation data? What do you think about these categories? What problems do you see in having a comparable data on these? Do/can MSs collect and report these? Are JQ categories feasible to collect in MSs? Shall we keep these three categories (licensed to practice, professionally active, practising)? Would it be sufficient to collect fewer categories? Or shall we need more/more detailed categories? How clearly are these categories divided? Is there a need for new EU terminology? If yes, then how shall we elaborate a new EU terminology?

If professionally active/practising category problems are mentioned: How can we measure activity - direct patient contact? How can we measure the number of professionals without direct patient contact?

If headcount and FTE issues are mentioned: What is more important in HWF monitoring/planning/forecasting: HC or FTE? How shall be FTE calculated? Do we need a standard formula for it? Shall we make a difference on employment: salaried professionals and self-employment?

2) What is your opinion about the practical gains of using ISCO codes in the context of JQ data collection, taking into account its content and original purpose?

How do ISCO Codes support the harmonization of terminology? How does the Directive support the harmonization of terminology? Should ISCO be updated?

If ESCO is mentioned: What is your opinion about ESCO? Can this initiative balance terminology gaps in order to have more real-life data? Shall we combine definition with tasks completed under one profession?

Nurses and midwives: How do you see the overlaps between these categories?

3) How do you see the activities of National Focal Points?

What mechanisms could support this information flow? Shall we/How shall we facilitate international information and data flow?

4) What actions need to be done in order to develop reliable and valid databases in the EU?

What shall be done in order to have/gain the currently non-available data? What practical recommendations and steps do you see in developing EU data collection systems, particularly the JQ?

5) What shall be the main purpose of JQ data collection and database?

How could JQ support monitoring/ benchmarking/planning? What should be the main purpose of this data? How could MSs benefit from the JQ data? What HWF data (e.g. FTE or gender) should be collected at international level? Should national level experts using

HWF data for monitoring and planning purposes be made aware of the potential of JQ data? If yes, what solutions do you recommend?

Is there anything we have not touched upon during this conversation and you think is worth mentioning?

Appendix V. - List of interviewed experts

1. Gaetan Lafortune – OECD, Health Division, senior health economist
2. Walter Sermeus - RN4Cast, International expert in HR for nurses
3. Gilles Dussault - International expert in HRH, Medical University of Lisbon
4. Irene A. Glinos - Health Prometheus, European Observatory
5. Claudia B. Maier - Health Prometheus, European Observatory
6. Matthias Wismar - Health Prometheus, European Observatory

Please note that, in addition to the above international experts, the viewpoint of various national experts are also reflected under the sections presenting HWF expert views.

Appendix VI. - List of interviewed JQ National Focal Points

Country	Focal point - Health care resources
Belgium	Mme. Denise Walckiers Chef de travaux Institut scientifique de Santé publique Section Epidémiologie Rue Wytzmanstraat 14, 1050 Bruxelles, Belgique Tel: +32-2 642 50 35 Fax: +32-2 642 54 01 dwalckiers@wiv-isp.be
Bulgaria	Ms. Evelin Yordanova Health and Crime Statistics Division, Demographic and social statistics Department, National Statistical Institute 2, P. Volov Str 1038 Sofia, Bulgaria Tel: +359-2 98 57 459 Fax: +359-2 98 57 488 EJordanova@NSI.bg
Cyprus	Dr. Pavlos Pavlou Ministry of Health Health Monitoring Unit Prodromou 1 1048 Nicosia, Cyprus Tel: +35722605381 ppavlou@moh.gov.cy
Finland	Mr. Mika Gissler National Institute of Health and Welfare P.O. Box 30 00271 Helsinki, Finland Tel: +358 2952 47279 mika.gissler@thl.fi
Germany	Mr. Michael Cordes Statistisches Bundesamt Zweigstelle Bonn, Groupe VIII A, Grauheindorfer Strasse 198 53117 Bonn, Germany tel. +49 228 99 643 8116

	michael.cordes@destatis.de
Greece	Mrs. Nektaria Tsiligaki Head of the Statistical Data Dissemination Section (Dissemination of the relevant statistics) 46, Pireos & Eponiton str., 18510 Pireas, Greece Tel.: +30 210 - 4852 022 Fax: +30 210 - 4852 312 data.dissem@statistics.gr
Hungary	Dr. György Surjan National Institute for Strategic Health Research Arany János u. 6-8. 1051 Budapest, Hungary surjan.gyorgy@eski.hu
Iceland	Ms. Sigríður Vilhjálmisdóttir Labour market and social statistics STATISTICS ICELAND Borgartún 21a 150 Reykjavík, Iceland Tel: +354 528 1054 Fax: +354 528 1199 sigridur.vilhjalmsdottir@hagstofa.is
Ireland	Mr. Hugh Magee Department of Health and Children Hawkins Street Dublin 2, Ireland Tel: +353 1 635 4300 hugh_magee@health.gov.ie
Netherlands	Mr. Vincent van Polanen Petel Statistics Netherlands Department of Health and Care, Room B6017 P.O. Box 24500 2490 HA The Hague, The Netherlands Tel: +31 70 337 43 64 vpln@cbs.nl
Poland	Mrs. Izabela Wilkińska Central Statistical Office of Poland Al. Niepodleglosci 208 00-925 Warszawa, Poland i.wilkinska@stat.gov.pl

Portugal	Mrs. Eduarda Góis Statistics Portugal Avenida Antonio Jose de Almeida 5 1000-043 Lisboa, Portugal Tel: +351 218 426 237 Fax: +351 218 426 365 eduarda.gois@ine.pt
Spain	Mr. Luis de Andrés Ramos National Statistic Institute Sectorial Social Statistics Unit Pº Castellana, 183 Module 0207 28046 Madrid, Spain Tel: +34 91 583 02 03 Fax: +34 91 583 18 17 luis.andres.ramos@ine.es



DELIVERABLE D041. – Version 09/5
Terminology gap analysis

**WP4, Semmelweis University,
Health Services Management Training Centre, Hungary**

Appendix VII. – Literature framework

1) General information sheet

Study-project-source acronym/ aspects	Full name	Framework of the study (finance, EU programme, etc.)	Main objectives/ scope	Study leader	Partners: participating countries		Source of study information, reference	Contact person	Category of the study in your view			
					collaborative	associated			landmark	frequently referred	emerging trend	other
EC Feasibility Study												
Health Prometheus												
Health Prometheus Volume 2.												
ECAB												
MoHProf												
RN4cast												
Mobility minimum dataset draft guiding principles by OECD and WHO												
OECD documents												
DG Markt Database												
Guide												



Funded by
the Health Programme
of the European Union



DELIVERABLE D041. – Version 09/5
Terminology gap analysis

**WP4, Semmelweis University,
Health Services Management Training Centre, Hungary**

2) Activity 1 - Terminology sheet



Funded by
the Health Programme
of the European Union



Joint Action Health Workforce
Planning and Forecasting

DELIVERABLE D041. – Version 09/5

Terminology gap analysis

WP4, Semmelweis University,

Health Services Management Training Centre, Hungary

Study-project- source acronym/ aspects	Is it an identified focus? (Y/N)	Separate chapter/ part on it? (Y/N)	Parts that relate/ connect to terminology	what professional categories are covered?	What kind of definition(s) are used? (Y/N) (own/ follows international recommendation)		Link to/ use of JQ (Y/N)	Terminology gap analysis (Y/N)	Any identified terminology relating relevant problem(s)? (Y/N)	Any other terminology relating relevant issues? (Y/N)	Any recommendation on terminology?	Evaluation of findings regarding terminology?
					own, method of development	international which one source						
EC Feasibility Study												
Health Prometheus												
Health Prometheus Volume 2.												
ECAB												
MoHProf												
RN4cast												
Mobility minimum dataset draft guiding principles by OECD and WHO												
OECD documents												
DG Markt Database												
Guide												



Funded by
the Health Programme
of the European Union

DELIVERABLE D041. – Version 0.9

Terminology/Data Source gap analysis

WP4. Semmelweis University

**Health Services Management Training Centre,
Hungary**

Appendix VIII. – WP4 general description

WP4 scope

The aim of WP4 is to provide key building blocks of the HWF planning and forecasting systems by providing better understanding of available data on MS and European level, and, on that basis, providing policy recommendations to improve data collection in the EU MSs. By creating a dynamic willingness amongst MSs to collect and deliver better quality data on a timely basis matching fully internationally accepted definitions, and at collecting data required for proper HWF planning, WP4 aims to contribute to the sustainable access to timely HWF planning data on national and international level.

WP4 activities

The WP4 specific objective is to “support international comparability of HWF data”, thus helping an international HWF planning dialogue based on national level data sets better matching international definitions.

N#	Title		WHEN
4.1	Terminology gap analysis		
	MILESTONE 4.1	Discussion on the results of the Survey in order to prepare the reporting and recommendation phase	March 2014
	DELIVERABLE D041	Final report on terminology mapping including: - review of existing literature on terminology gaps; - country level reports; - policy recommendations.	November 2014

N#	Title		WHEN
4.2	Mobility data mapping		
	MILESTONE 4.2.1	Workshop: <ul style="list-style-type: none"> - Distribution of results of literature review; - Exchange of information, experiences; - First discussion on mobility data. 	March 2014
	MILESTONE 4.2.2	Workshop: <ul style="list-style-type: none"> - Applicability of WHO code. Discussion with WHO and MSs involved in this activity and other interested stakeholders on the strategy to discuss the issue of ethical recruitment inside the EU.	June 2014
	MILESTONE 4.2.3	Workshop: <ul style="list-style-type: none"> - Mobility data collection related policy recommendations. 	October 2014
	DELIVERABLE D042	Final report on mobility data in the EU	March 2015
4.3	HWF planning data analysis		

N#	Title		WHEN
	MILESTONES 4.3	Workshop: - Practical issues to overcome gaps in data collection and application for HWF planning including participants of national authorities.	April 2015
	DELIVERABLE D.043	Final report on HWF planning data	September 2015

WP4 team members

WP4 is managed by Hungary. The WP4 Team Leader is Zoltán Aszalós, Human Resources Monitoring Chief Advisor of the Health Services Management Training Centre, Semmelweis University.

Hungarian team members

Zoltán Aszalós – WP4 Leader
Edit Eke
Eszter Kovács
Réka Kovács
Zoltán Cserhádi
Edmond Girasek

Hungary is supported by WP4 Partners and experts, divided into WP Leaders, Associated and Collaborative partners, which together make up the WP4 team. They are:

WP Leaders			
Country	Organization	Role	Name
Belgium	Federal Public Service	Michel Van Hoegaerden	Program Manager
Belgium	Federal Public Service	Lieve Jorens	WP1 Leader
Slovakia	Ministry of Health	Zuzana Matlonova	WP2 Leader
Europe	European Health Management Association	Jeni Bremner	WP2 Leader

Europe	European Health Management Association	Paul Giepmans	WP2 Leader
Finland	Ministry of Health	Marjukka Vallimies-Patomäki	WP3 Leader
Malta	Ministry of Health	Andrew Xuereb	WP3 Leader
Hungary	Semmelweis University	Zoltan Aszalos	WP4 Leader
Italy	Agenas, National Institute for Regional Healthcare	Paolo Michelutti	WP5 Leader
United Kingdom	Department of Health	Matt Edwards	WP6 Leader
United Kingdom	Department of Health	John, Fellows	WP6 Team member
Bulgaria	University of Varna	Todorka Kostadinova	WP7 Leader
Europe	European Commission	Caroline Hager	EC Representative
Europe	European Commission	Leon Van Berkel	EC Representative
Europe	European Commission	Antoniette Martiat	EC Representative
Europe	European Commission	Angela Blanco	EC Representative

Associated partners

Country	Organisation	Name
Belgium	Ministry of Health	Gretel Dumont
Belgium		Machteld Gheysen
Belgium	Social Security Institute	Pascal Meeus
Belgium	Federal Public Service Health	Pieter-Jan Miermans
Belgium	Ministry of Health	Pascale Steinberg
Belgium	Ministry of Health	Aurelie Somer
Belgium	Federal Public Service Health	Veerle Vivet
Bulgaria	University of Varna	Elitsa Ilieva
Bulgaria	University of Varna	Dora Kostadinova
Bulgaria	University of Varna	Nikolina Radova
Finland	Ministry of Health	Reijo Ailasmaa
Germany	University of Bremen	Melanie Boeckmann
Germany	University of Bremen	Heinz Rothgang
Greece	National School of Public Health	Despena Andrioti
Iceland	Ministry of Welfare	Margrét Björk
Italy	Agenas, National Institute for Regional Healthcare	Ragnar Gullstrand

Italy	Agenas, National Institute for Regional Healthcare	Achille Iachino
Italy	Association of Italian Chiropractors	Baiju Khanchandani
Italy	Ministry of Health	Giovanni Leonardi
Italy	Agenas, National Institute for Regional Healthcare	Paolo Michelutti
Italy	Agenas, National Institute for Regional Healthcare	Daniela Parisi
Italy	Association of Italian Chiropractors	Donatello Testerini
Italy	Association of Italian Chiropractors	John G. Williams
Netherlands	Capaciteitsorgaan / NIVEL	Ronald Batenburg
Netherlands	Capaciteitsorgaan	Victor Slenter
Netherlands	Capaciteitsorgaan / NIVEL	Lud van der Velden
Poland	Ministry of Health	Aleksandra Kotowicz
Poland	Ministry of Health	Arleta Zaremba
Portugal	Ministry of Health	Vera Beleza
Portugal	Ministry of Health	Patrícia Henriques
Portugal	Ministry of Health	Ivo Rui Santos
Portugal	Ministry of Health	Filomena Parra da Silva
Portugal	Ministry of Health	Ana Paula Gouveia
Portugal	Ministry of Health	Gustavo Ferreira
Slovakia	Ministry of Health	Jozef Hvozdk
Slovakia	Ministry of Health	Miloslava Kovacova
Slovakia	Ministry of Health	Zuzana Matlonova
Slovakia	Ministry of Health	Marián Nagy
Slovakia	Ministry of Health	Zuzana Slezakova
Spain	Ministry of Health	Pilar Carbajo
Spain	Ministry of Health	Mercedes De Jorge
Spain	Department of Health of the Region of Murcia	Francesc Molina
United Kingdom	Centre for Workforce Intelligence	Matt Edwards
United Kingdom	Centre for Workforce Intelligence	John Fellows
United Kingdom	Department of Health	Cris Scotter
Europe	Union of European Medical Specialists	Frédéric Destrebecq
Europe	Union of European Medical Specialists	Rouffet Jean Baptiste
Europe	UEMS - CEOM Observatory	Marie Colegrave-Juge
Europe	European Federation of Nurses	Paul de Raeve
Europe	European Federation of Nurses	Alessia Clocchiatti

Europe	European Federation of Nurses	Silvia Gomez
Europe	European Federation of Nurses	Nina Kirkolesen
Europe	European Federation of Nurses	Lesley Bell
Europe	French Medical Council	Patrick Romestaing
Europe	Standing Committee of European Doctors	Birgit BEGER
Europe	Pharmaceutical Group of the EU	John Chave
Europe	Council of European Dentists	Nina Bernot
Europe	Council of European Dentists	Sara Roda

Collaborating partners		
Country	Organisation	Name
Belgium	Federal Planning Bureau	Peter Willemé
Croatia	National Public Health Institute	Mario Troselj
Croatia	National Public Health Institute	Maria Pederin
Cyprus	Ministry of Health	Despo Chrysostomou
Finland	Finnish Nurses Association	Nina Hahtela
Ireland	Agency Governance and Clinical Indemnity Unit	Gabrielle Jacob
Italy	Association of Italian Chiropractors	Kenneth Eaton
Italy/Europe	Amref Italy/ Health workers for All and All for Health Workers	Giulia De Ponte
Latvia	Ministry of Health	Silvia Pablaka
Lithuania	University of Health Sciences	Liudvika Starkiene
Moldova	Ministry of Health	Eugenia Berzan
Moldova	Ministry of Health	Nicolae Jelamschi
Norway	Directorate of Health	Kristian Roksvaag
Norway	The Royal Ministry of Health and Care Services	Jon Espelid
Sweden	National Board of Health and Welfare	Hans Schwarz
Sweden	National Board of Health and Welfare	Kristina Stig
Sweden	National Board of Health and Welfare	Magnus Goransson
Europe	OECD	Gaetan Lafortune
Europe	European Associations of Paritarian Institutions	Magdalena Machalska
Europe	The Platform for Better Oral Health in Europe	Sonia Florian
Europe	International Organization for Migration	Benedict Roumyana



Joint Action Health Workforce
Planning and Forecasting

DELIVERABLE D041. – Version 0.93

Terminology gap analysis

WP4, Semmelweis University,

Health Services Management Training Centre, Hungary

The Netherlands/ Europe	Wemos Foundation/ all for health workers	Health workers for all and all for health workers	Linda Mans
Europe	European Network of Authorities	European Network of Medical Competent	Tanja Schubert
Europe	European Network of Authorities	European Network of Medical Competent	Nicola While
Europe	WHO		Galina Perfilieva
Europe	European Hospital and Association	European Hospital and Healthcare Employers'	Elisabeth Benedetti
Europe	European Hospital and Association	European Hospital and Healthcare Employers'	Kate Ling
Europe	European Federation of Unions	European Federation of Public Service Unions	Mathias Maucher



Funded by
the Health Programme
of the European Union

Appendix IX – Usefulness of JQ data collection

Usefulness and purposes of data collection - Distribution of the answers to the questions on the usefulness of the JQ.

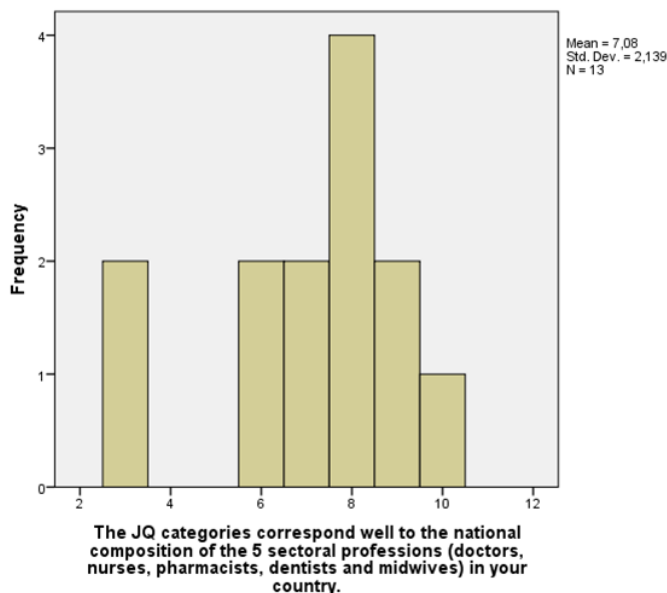


Figure 5.

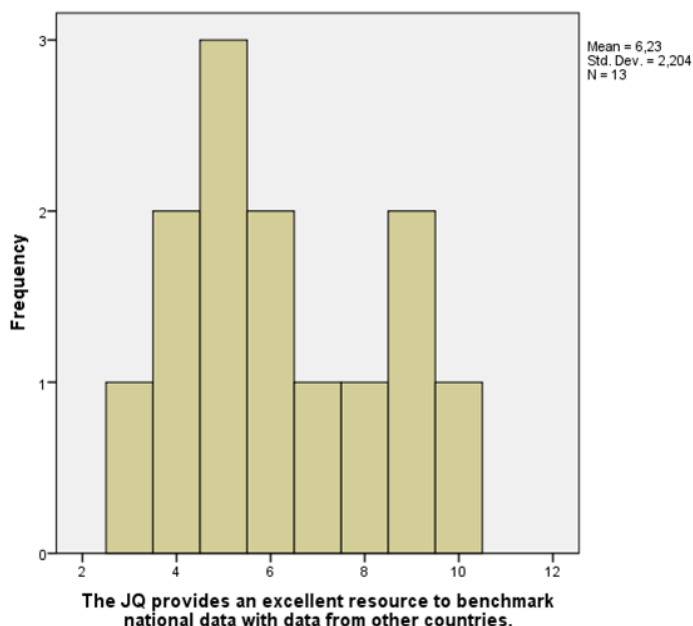


Figure 6.

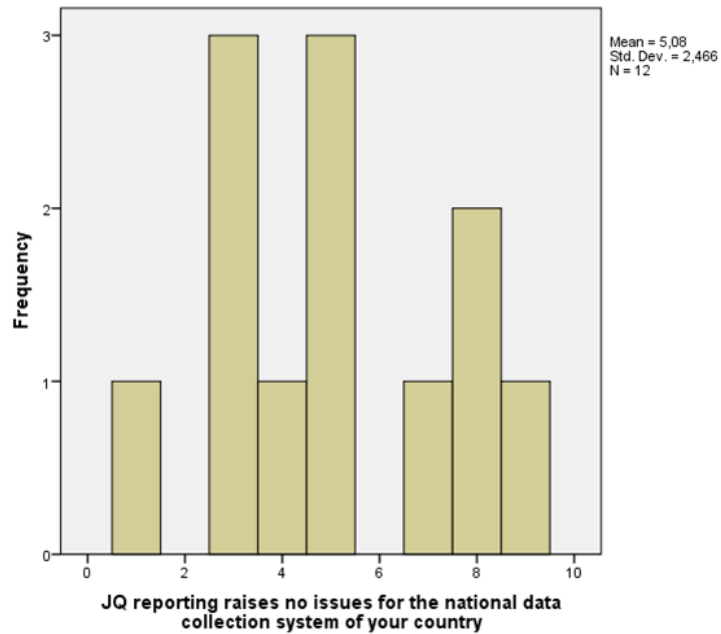


Figure 7.

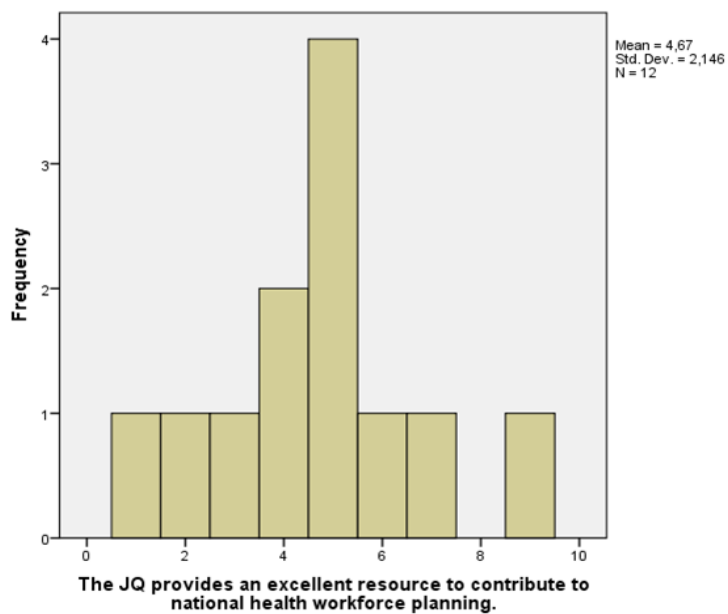


Figure 8.

Appendix X – WHO definitions for health workforce

Source¹⁴⁵:

“Any health workforce analysis requires precise definition of health workers. WHO defines the health workforce as “all people engaged in actions whose primary intent is to enhance health”¹⁴⁶. This statement reinforces the WHO concept of health systems as comprising “all organizations, people and actions whose primary intent is to promote, restore or maintain health”¹⁴⁷. This infers, for example, that family members looking after the sick and other informal caregivers and volunteers who contribute to the improvement of health should also be counted as part of the health workforce. But in practical terms, these are not often counted, due to lack of information on the unpaid workforce and the ensuing difficulty with regard to establishing the boundaries of what constitutes a health system.”

Table VI. Framework for defining the health workforce

Individual's training, occupation & place of work	Working in the health industry	Working in a non-health industry or unemployed/inactive
Training in health and employed in a health occupation	A. For example, physicians, nurses, midwives working in health-care facilities	C. For example, nurses working for private companies, pharmacists working at retail outlets
Training in health but not employed in a health occupation	A. For example, medically trained managers of health-care facilities	C. For example, medically trained university lecturers, unemployed nurses
Training in a non-health field or no formal training	B. For example, economists, clerks, gardeners working in health-care facilities	D. For example, primary school teachers, garage mechanics, bank accountants

¹⁴⁵ WHO (2009), p. 13

¹⁴⁶ The world health report 2006 (2006)

¹⁴⁷ WHO (2007)

Appendix XI – Main elements of labour market participation

Monitoring and evaluation of human resources for health: an international perspective¹⁴⁸

“The participation or not of those with a health-related vocational background in the labour market, and their ensuing participation in the health industry in particular, offer important information for health policy purposes. Indicators on labour force activities capture three main elements:

- participation** (the proportion of individuals with health-related skills currently in the labour force),
- employment opportunities** (the proportion with health-related skills currently employed), and
- retention** (the proportion with health-related skills currently working in a health-related industry).

Complementary indicators may include the proportion of health workers engaged on a part-time basis, or the proportion with more than one current job.”

¹⁴⁸ Diallo, K. *et al.* (2003)



Joint Action Health Workforce
Planning and Forecasting

Appendix XII. - ECHIM remarks on comparability

63. Practising physicians

Remarks on comparability ECHI indicator 63. Practising physicians
<p>Date last modification: 22 November 2011</p> <p><u>Comparability between countries</u> Although common definitions for practising physicians were agreed between Eurostat, OECD and WHO, the type of information available and collected influences the quality of the country data and in turn limits comparability between countries. Differences in organisation of health care provision also limit comparability.</p> <p>The number of practising physicians in most countries are based on administrative data sources, like central registers for medical professionals, owned by statistical institutes, the government, the health inspectorate or professional organizations. Also surveys are used, like general labour force surveys and surveys within the health care sector. These are affected by (selective) non-response. The data sources used may not have been created initially for statistical purposes, and the initial purpose of a data source may differ across countries. It is not known to what extent differences in data collection methods influence comparability.</p> <p>Not all countries meet the Eurostat criteria for the indicator definitions. Deviations are caused by limitations in the possibility to differentiate the several fields on which physicians are working. Important Eurostat criteria (in short) are:</p> <ul style="list-style-type: none">- interns and residents are included;- self-employed physicians and physicians working in private clinics are included;- foreign physicians are included;- medical students are excluded;- dentists and dental surgeons are excluded;- physicians working in administration, management, health insurance, research or social welfare are excluded;- physicians working in public health are excluded;- unemployed and retired physicians are excluded;- physicians working abroad are excluded. <p>Some countries do not report whether their indicator calculation met the criteria, and other countries do not report on all criteria. For example, some countries report that physicians working in public health are excluded, but most countries do not report on this fact. Consequently, for those countries it is difficult to assess whether physicians working in public health are included or not, and whether this influences comparability. From the Eurostat Annex (see further reading) we conclude that all countries that do report on interns and residents, foreign physicians and physicians working abroad, met the Eurostat definition. Only one country reported that medical students were excluded, which is according to the Eurostat criterion.</p> <p>It is not always clear to what extent the deviations from the Eurostat definitions really influence comparability. For example, exclusion of foreign physicians only affects comparability if a considerable number of foreign physicians is working in a country or if the country has a small size.</p> <p>Other factors that can influence the number of practising physicians, apart from definition matters, are the accuracy of the data collection, financial incentives for having low or high number of physicians, the extent to which physicians work part-time in a country and the extent to which physicians are counted twice or multiple times because they work in several health facilities (persons are counted instead of FTE (full time equivalents)). In addition, in some countries it may be difficult to classify physicians who have only occasionally direct contact with patients, as practicing (i.e. providing service directly to patients) or professionally active.</p> <p><u>Comparability over time</u> Some countries have a change in their data collection and therefore a break in series. These breaks in series are flagged with a footnote in the Heidi Table Chart and some information (if available) on these breaks is given in the annexes belonging to the Eurostat metadata.</p>

References and further reading

- [DG SANCO site on health workforce](#)





Joint Action Health Workforce
Planning and Forecasting

DELIVERABLE D041. – Version 0.93

Terminology gap analysis

WP4, Semmelweis University,

Health Services Management Training Centre, Hungary

Remarks on comparability ECHI indicator 63. Practising physicians

- | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none">- Eurostat Metadata Health care resources and patients (non-expenditure data) (last update 12 November 2010)- Eurostat Annex – Health care staff: Physicians (country-specific information)- Eurostat. Definitions and data collection specifications on health care statistics (non-expenditure, available in CIRCA) |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



Funded by
the Health Programme
of the European Union

64. Practising nurses

Remarks on comparability ECHI indicator 64. Practising nurses

Date last modification: 8 December 2011

Comparability between countries

Although common definitions for nurses employed were agreed between Eurostat, OECD and WHO, the type of information available and collected influences the quality of the country data and in turn limits comparability between countries. Differences in organisation of health care provision also limit comparability.

The number of midwives, practising nursing and caring professionals in most countries are based on administrative data sources, like central registers for medical professionals, owned by statistical institutes, the government, the health inspectorate or professional organizations. Also surveys are used, like general labour force surveys and surveys within the health care sector. These are affected by (selective) non-response. Some countries lack data sources of one or more subgroups of nurses (midwifery professionals, midwifery associate professionals, nursing professionals, nursing associate professionals, practising health care assistants, practising home-based personal care workers, professionally active caring personnel). In several countries the data sources include practising nurses as well as nurses licensed to practice. The data sources used may not have been created initially for statistical purposes, and the initial purpose of a data source may differ across countries. It is not known to what extent differences in data collection methods influence comparability.

Not all countries meet the Eurostat criteria for the indicator definitions. Countries with a different organisation of health care may have different definitions of health care personnel. Especially the definitions of subgroups of nurses or midwives may be different between countries, like associate professional nurses and professionally active caring personnel. Because these groups are part of the total group of nursing and caring professionals, these differences may reduce the comparability of indicator outcomes.

In the Eurostat Annex – Health care staff: Nursing and caring professionals – the most important deviations from the Eurostat definition of ‘practising nursing and caring professionals’ are given. These can be divided in deviations that lead to an overestimation and deviations that lead to an underestimation of the number of nursing and caring professionals.

Deviations from the Eurostat definition leading to an overestimation:

- Nursing and caring professionals working in social care services, public health or health insurance institutes are included, whereas no further details are given of the definition of these fields and it is not always clear whether these professionals have direct patient contacts.
- Nursing and caring professionals working in administration, management or research, sanitary technicians and laboratory assistants without direct contact with patients are included in the data.
- Double counting is present for professionals working in more than one health care organization.

Deviations from the Eurostat definition leading to an underestimation:

- Midwives, nursing and caring professionals working outside the hospital (e.g. at home among patients or in the social sector) are excluded.
- Practising caring personnel is excluded because 1) data of these professionals are not registered, or 2) this group of professionals does not exist in the country. If this subgroup is excluded, the cause is not always clear.

Not all countries report on all aspects of the definition of nurses employed. For example, some countries report that professionals working in administration are excluded, but most countries do not report on this aspect. Consequently, for those countries it is difficult to assess whether nurses working in administration are included or not. Groups of health care workers for which it is often unclear whether they are included or not in the indicator outcomes are pharmacy assistants, personnel working in infant care or social care for children and dentist assistants. Furthermore, it is not always clear to what extent the deviations from the Eurostat definitions really influence comparability. For example, exclusion of caring professionals working outside the hospital only affects comparability if a considerable number of caring professionals in a country is working outside the hospital.



Joint Action Health Workforce
Planning and Forecasting

Remarks on comparability ECHI indicator 64. Practising nurses

Other factors that can have an effect on the number of nurses employed, apart from definition matters, can be the accuracy of the data collection, financial incentives for having low or high number of nursing and caring professionals, the extent to which nurses and caring professionals work part-time in a country and the extent to which they are counted twice or multiple times because they work in several health facilities (persons are counted instead of FTE (full time equivalents)).

The comparability of the figures is also decreased by the fact that the educational level, number of years of education and experience of the different subgroups of nursing and caring professionals vary widely between countries.

Comparability over time

Some countries have a change in their data collection and therefore a break in series. These breaks in series are flagged with a footnote in the Heidi Table Chart and some information (if available) on these breaks is given in the annexes belonging to the Eurostat metadata. The most important breaks in series are caused by changes in the methods of the data collection, changes in the data sources used, adaptations of the definitions, in- or exclusion of specific health care settings, in- or exclusion of inactive professionals and reform of the education.

References and further reading

- [DG SANCO site on health work force](#)
- [Eurostat Metadata Health care resources and patients \(non-expenditure data\) \(last update 12 November 2010\)](#)
- [Eurostat Annex – Health care staff: Nursing and caring professionals \(country-specific information\)](#)
- [Eurostat, Definitions and data collection specifications on health care statistics \(non-expenditure data\), available in CIRCA](#)



Appendix XIII – Summary and conclusions on WHO definitions for health workforce¹⁴⁹

“There is growing concern around the world about the current and future availability of health workers for maintaining effective health systems (23). The lack of reliable, up-to-date information on numerous aspects of the HRH situation – including skills mix, sources and levels of remuneration, workforce feminization, and even basic stock – greatly restricts the ability to develop evidence-based strategies at the national and international levels to address the health workforce crisis.

Data and evidence are necessary to inform discussion, prioritization and decision-making among countries and other stakeholders. Even in many low-income countries, a variety of potential information sources exist but remain underutilized in health research. The starting point for any investigative exercise of the HRH situation should be a rigorous review of existing standard statistical sources, including those from outside the health sector: population statistics generated by census bureaus and central statistical offices; work permits from labour departments; income files from tax departments; and others seldom used by health system planners and managers. Decision-making should draw on a meta-analysis, or investigation of the results across several information sources. Ideally, all HRH data sources should be integrated into one comprehensive information system, whereby routine administrative records are complemented with regularly conducted population-based and facility-based surveys and censuses.

The optimization of use of such sources, however, can be hindered by the dichotomy that often exists between the providers of the data and potential users. In particular, while variables on occupation and place of work are typically integral to population census and labour force survey questionnaires, often the final results are not disseminated using a categorization permitting the identification of those with a health-related occupation or working in the health services industry. Even when they are, the results are often not comparable across countries or over time, due to differences in the occupation, education and industrial classifications used.

As such, monitoring and evaluation of HRH requires good collaboration between the ministry of health and other sectors that can be reliable sources of information, notably the central statistical office, ministry of education, ministry of labour, professional licensing or certification bodies, individual healthcare facilities and health training institutions. Ideally a commitment should be established in advance to investigate purposeful ways to put the data to use. Discussions between representatives of the ministry of health, central statistical office and other stakeholders, such as professional associations and development partners, are recommended from the beginning to set an

¹⁴⁹ WHO (2009), p. 34.



Joint Action Health Workforce
Planning and Forecasting

DELIVERABLE D041. – Version 0.93

Terminology gap analysis

WP4, Semmelweis University,

Health Services Management Training Centre, Hungary

agenda for data harmonization, publication and use, taking into account the timeline for data collection and processing and the information needs for HRH policy and planning.”



Funded by
the Health Programme
of the European Union



Joint Action Health Workforce
Planning and Forecasting

Appendix XIV – Definitions for the three JQ activity status categories

DELSA/HEA/HD(2012)2

Box 1: Definitions of physicians “practising”, “professionally active” and “licensed to practice”

Practising physicians	Professionally active physicians	Physicians licensed to practice
<p>Practising physicians provide services directly to patients.</p> <p><u>Inclusion</u></p> <ul style="list-style-type: none"> - Persons who have completed studies in medicine at university level (granted by adequate diploma) and who are licensed to practice - Interns and resident physicians (with adequate diploma and providing services under supervision of other medical doctors during their postgraduate internship or residency in a health care facility) - Salaried and self-employed physicians delivering services irrespectively of the place of service provision - Foreign physicians licensed to practice and actively practising in the country <p><u>Exclusion</u></p> <ul style="list-style-type: none"> - Students who have not yet graduated - Dentists and stomatologists / dental surgeons - Physicians working in administration, research and in other posts that exclude direct contact with patients - Unemployed physicians and retired physicians - Physicians working abroad 	<p>Professionally active physicians include practising physicians and other physicians for whom their medical education is a prerequisite for the execution of the job.</p> <p><u>Inclusion</u></p> <ul style="list-style-type: none"> - Physicians who provide services directly to patients - Physicians working in administration and management positions requiring a medical education - Physicians conducting research into human disorders and illness and preventive and curative methods - Physicians participating in the development and implementation of health promotion and public health laws and regulations - Physicians preparing scientific papers and reports <p><u>Exclusion</u></p> <ul style="list-style-type: none"> - Dentists and stomatologists/dental surgeons - Physicians who hold a post / job under which medical education is not required - Unemployed physicians and retired physicians - Physician working abroad 	<p>Physicians licensed to practice include practising and other (non-practising) physicians who are registered and entitled to practice as health care professionals.</p> <p><u>Inclusion</u></p> <ul style="list-style-type: none"> - Physicians who provide services directly to patients - Physicians for whom their medical education is a prerequisite for the execution of the job - Physicians for whom their medical education is NOT a prerequisite for the execution of the job - Physicians licensed to practice but who due to various reasons are not economically active (e.g. unemployed or retired) - Physicians working abroad <p><u>Exclusion</u></p> <ul style="list-style-type: none"> - Dentists and stomatologists/dental surgeons



Appendix XV – National FTE calculation methods with a focused Belgian case study

Table VII. Summary table on FTE calculation/estimation methods in the countries (source: WP4 Survey – countries' responses).

Finland	<p>FTE= 1 * headcount of full time persons, 0.6 * head count of part time persons and 0 * head count of persons on leave</p> <p>Rough estimation based on municipal data. The estimate of part time is 60 percent and has been estimated from samples long time ago.</p>
Germany	<p>The number of FTE is calculated by adding the full and appropriate proportion of part-time occupied employees. FTE are measured by the number of hours of a standard labor contract.</p>
Hungary	<p>The number of part-time workers is converted into FTE, in the following way: the actually performed weekly working hours are divided by the weekly compulsory labour time (40 or 36 hours) as stipulated by the law for individual jobs. The value of the Full Time Equivalent can be a whole number and one decimal.</p>
Ireland	<p>Wholetime Equivalent (WTE). Calculation is done on the basis of the number of hours worked in the two-week period in the prior month and divided by the standard number of hours worked in a normal two-week period. This is calculated only for the JQ data collection, have not FTE data for other professions.</p>
Italy	<p>The data concerning full time and part time (less than 50% and more than 50%) is available only for the public sector.</p>
Poland	<p>The headcount is conducted on the basis of main employment place. Professionals pursuing the sectoral professions must provide their registers with the information on all the places they are currently employed starting. If they work in more than one place, they have to provide the information on all the other places, too.</p>
Portugal	<p>ACSS_PT has data from NHS, in headcount and FTE. FTE calculated from the the real number of hours/week that a health professional does, the</p>

	percentage of FTE (35H) or FTE (40H), depending on the established on the specific contract.
Spain	<p>Simple calculation method:</p> <p>FTE (male) = 0.917 x male headcount;</p> <p>FTE (female) = 0.826 x female headcount.</p> <p>Holidays and other work permits (illness, teaching, research, etc.), are considered, so 1 male headcount is not equivalent to 1 FTE.</p>
The Netherlands	For salaried professionals, headcount and FTE is available in the integrated database of Statistics Netherlands. For self-employed professionals, only headcount is available at Statistics Netherlands. But often, data on FTE for self-employed professionals can be found in other sources. For instance: the Advisory Committee of Medical Manpower Planning (ACMMP) has done some surveys among self-employed doctors to self-report the FTE.
UK	In one of the four countries of the UK, England, FTE is defined (in the workforce census bulletin) as “a standardised measure of the workload of an employee. An FTE of 1.0 means that a person is equivalent to a full time worker, an FTE of 0.5 signals that the worker is half (part) time. FTE is the full time equivalent and is based on the proportion of time staff work in a role.”

Calculating FTE in Belgium

The concept of “full-time equivalent”

Full-time equivalent (FTE) refers to the quantity of work done by one individual in proportion to the volume of work for normal full-time employment.

The FTE is compared to a fictitious reference worker, i.e. an individual performing full work in the same position for one year. An individual who performs exactly half that volume of work counts as 0.5 FTE.

A FTE-based analysis allows to measure and to compare the volume of work done and not only the number of workers available in a well-defined sector. This includes, among others, measuring the impact of part-time work on existing work volumes.

FTEs in the Belgian social security data system (RSZ/ONSS & RSZPPO/ONSSAPL)

At the request of the Belgian Workforce Planning Unit, Belgium's Data warehouse Labour Market and Social Protection calculated FTE services on a yearly basis for the study population of employees.

So this FTE indicator relates to the total volume of work actually done in all four quarters of the study year, and not to the work pattern as in force at 31 December of the same year.

The calculation for employees is based upon information provided by RSZ/ONSS and RSZPPO/ONSSAPL regarding work days completed by each individual in our reference data system.

FTEs in the National Health and Disability Insurance Data System (RIZIV/INAMI)

It is quite difficult to calculate the full-time equivalent of the self-employed who provide care under RIZIV/INAMI nomenclature.

Unlike employees, there is no *clear indicator* of the volume of work performed by the self-employed. How can we then determine FTEs for these health professionals?

We know how many services are performed every year by each active individual as well as how much he/she is paid for it. Can we use this information as an indicator for the activity level? How can we express it in terms of FTEs? Which level of care provision in the RIZIV/INAMI Database would then correspond to full-time employment?

RIZIV/INAMI uses a similar approach based on the *median amount related to health care services* observed within a reference age group, in casu the medically trained 45-54 year-olds. This median is subsequently used to estimate the activity of 1 full-time equivalent (= 1 FTE) and is calculated separately for each medical specialism.

As a result, the median activity of the above-mentioned group is put forward as an optimum activity level. It is assumed that the health professional (physician) reaches the highest activity level at that stage of his/her professional career. At a previous stage, he or she has not seen enough patients yet, and at a later stage of his/her career, he or she can consider reducing his/her activity for personal reasons.

Let us examine following example. The median observed in our reference age group is EUR100,000 in the calendar year. An individual providing healthcare services for EUR100,000 fees shall be given 1 FTE. Providing services for EUR50,000 fees equals half an ETP.

In case of data linking, and contrary to the usual practice at RIZIV/INAMI, FTEs are not limited to 1. So the health professional who receives EUR150,000 in the above-mentioned example shall correspond to 1.5 FTEs.

It is clear that the methodology we have used has a major influence on FTE values (in volume or in average). Strictly speaking, there is no real full-time equivalent. Here are a few examples to illustrate our point:

If all professionals from one specialty do not perform at their optimal activity level (e.g. because of an oversupply of professionals within a given specialty), it will not be reflected in the way FTEs are calculated: the reference median value will be given the value of 1 FTE anyway, but there is no guarantee the median profile of services really corresponds to 1 FTE.

The opposite is also true, in case of work overload. 1.0 unit of FTE can then reflect an activity which exceeds one full-time employment. Therefore the reported FTE value does not have to be used in a *normative* way. It only aims to inform us about the *relative* magnitude of a service provided, in comparison to a previously defined reference FTE value.

Integrating e.g. the youngest age groups into the reference group used to define the FTE unit will result, for most specialties, in a median activity value with a lower RIZIV/INAMI profile. It will, in turn, lead to an increase in FTE numbers reported as well as in the total volume of FTEs performed.

The FTE value in the RIZIV/INAMI system is calculated in detail in the analysis report of each medical specialty.

An additional difficulty is that services provided by trainees under the RIZIV/INAMI scheme can be recorded under the name of the traineeship supervisor. The same applies to services provided by one department and recorded only under the name of the head of the department. We hope referring to the median value instead of to the average of service provisions will help reducing the impact of those artificially oversized profiles.

The existing ways of recording service provisions in some specialisms inevitably lead to overestimating FTE services provided by older physicians, and to underestimating FTE services provided by the younger generations. In the initial reports, instead of making any changes to the way we work (i.e. awarding services provided by several individuals to only one person), we have decided to summarize the data received as such from RIZIV/INAMI.

Appendix XVI – The ISCO-based data categories of the Joint Questionnaire

OECD/Eurostat/WHO-Europe Joint Data Collection on Non-Monetary Health Care Statistics

Definitions for common variables related to Health Employment and Education

MEDICAL DOCTORS (PHYSICIANS)

Practising physicians

Practising physicians provide services directly to patients.

Inclusion

- Persons who have completed studies in medicine at university level (granted by adequate diploma) and who are licensed to practice
- Interns and resident physicians (with adequate diploma and providing services under supervision of other medical doctors during their postgraduate internship or residency in a health care facility)
- Salaried and self-employed physicians delivering services irrespectively of the place of service provision
- Foreign physicians licensed to practice and actively practising in the country

Exclusion

- Students who have not yet graduated
- Dentists and stomatologists / dental surgeons
- Physicians working in administration, research and in other posts that exclude direct contact with patients
- Unemployed physicians and retired physicians
- Physicians working abroad.

Note: The number should be at the end of the calendar year.

Professionally active physicians

Professionally active physicians include practising physicians and other physicians for whom their medical education is a prerequisite for the execution of the job.

Inclusion

- Physicians who provide services directly to patients
- Physicians working in administration and management positions requiring a medical education
- Physicians conducting research into human disorders and illness and preventive and curative methods
- Physicians participating in the development and implementation of health promotion and public health laws and regulations
- Physicians preparing scientific papers and reports.

Exclusion

- Dentists and stomatologists/dental surgeons
- Physicians who hold a post / job under which medical education is not required
- Unemployed physicians and retired physicians
- Physicians working abroad.

Note: The number should be at the end of the calendar year.

Physicians licensed to practice

Physicians licensed to practice include practising and other (non-practising) physicians who are registered and entitled to practice as health care professionals.

Inclusion

- Physicians who provide services directly to patients
- Physicians for whom their medical education is a prerequisite for the execution of the job
- Physicians for whom their medical education is NOT a prerequisite for the execution of the job
- Physicians licensed to practice but who due to various reasons are not economically active (e.g. unemployed or retired)
- Physicians working abroad.

Exclusion

- Dentists and stomatologists/dental surgeons.

Note: The number should be at the end of the calendar year.

Physicians by age and gender

Age groups include less than 35, 35-44, 45-54, 55-64, 65+, for total, female and male physicians.

The **breakdown by age and gender** should be provided for **practising** physicians. (If not possible, the data can be reported for professionally active physicians or physicians licensed to practise).

Note: The number should be at the end of the calendar year.

Physicians by categories Three main categories and eight sub-categories selected for the common module:

- Generalist medical practitioners (ISCO-08 code: 2211) - General practitioners - Other generalist (non-specialist) medical practitioners
- Specialist medical practitioners (ISCO-08 code: 2212) - General paediatricians - Obstetricians and gynaecologists - Psychiatrists - Medical group of specialists - Surgical group of specialists - Other specialists not elsewhere classified
- Medical doctors not further defined (ISCO-08 code: 2210)

The **breakdown by categories** should be provided for **practising** physicians where possible. (If not possible, the data can be reported for professionally active physicians or physicians licensed to practise).

Note: The following criteria are proposed in order to avoid double counting of doctors who have more than one specialty: 1) the predominant (main) area of practice of doctors; or 2) the last specialty for which doctors have received registration.

Generalist medical practitioners

(ISCO-08 code: 2211)

Generalist medical practitioners do not limit their practice to certain disease categories or methods of treatment, and may assume responsibility for the provision of continuing and comprehensive medical care to individuals, families and communities.

Inclusion

- General practitioners
- District medical doctors - therapists
- Family medical practitioners
- Primary health care physicians
- Medical doctors (general)
- Medical officers (general)
- Medical interns or residents specialising in general practice or without any area of specialisation yet

Exclusion

- Paediatricians
- Obstetricians and gynaecologists
- Specialist physicians (internal medicine)
- Psychiatrists
- Clinical officers
- Feldschers

Note: Medical interns and residents who have completed a basic medical university education and are undertaking postgraduate clinical training are included here, if they are specialising in general practice or if they have not chosen their area of specialisation yet. Although in some countries 'general practice' and 'family medicine' may be considered as medical specialisations, these occupations should always be classified here.

Note: The number should be at the end of the calendar year.

- General practitioners

General practitioners (or “family doctors”) assume responsibility for the provision of continuing and comprehensive medical care to individuals, families and communities.

Inclusion

- General practitioners
- District medical doctors - therapists
- Family medical practitioners (“family doctors”)
- Medical interns or residents specialising in general practice

Exclusion

- Paediatricians
- Other generalist (non-specialist) medical practitioners

Notes:

- Although in some countries ‘general practice’ and ‘family medicine’ may be considered as medical specialisations, these occupations should always be classified here.
- Offices of general medical practitioners (HP.3.1.1 in SHA 2011) include establishments of doctors who hold a degree in medicine and are primarily engaged in the independent practice of general medicine.

Note: The number should be at the end of the calendar year.

- Other generalist (non-specialist) medical practitioners

Other generalist medical practitioners do not limit their practice to certain disease categories or methods of treatment.

Inclusion

- Generalist/non-specialist practitioners working in hospital or in other settings
- Medical interns or residents without any area of specialisation yet

Exclusion

- General practitioners (“family doctors”)
- Paediatricians

Note: The number should be at the end of the calendar year.

Specialist medical practitioners

(ISCO-08 code: 2212)

Specialist medical practitioners diagnose, treat and prevent illness, disease, injury, and other physical and mental impairments in humans, using specialised testing, diagnostic, medical, surgical, physical and psychiatric techniques, through application of the principles and procedures of modern medicine. They specialise in certain disease categories, types of patient or methods of treatment and may conduct medical education and research in their chosen areas of specialisation.

Inclusion

- Paediatricians
- Obstetricians and gynaecologists
- Psychiatrists
- Medical specialists
- Surgical specialists
- Medical interns or residents training for a specialty

Exclusion

- General practitioners
- Dental practitioners
- Dental surgeons
- Oral and maxillofacial surgeons

Note: Medical interns and residents training as specialist practitioners (except general practice) are included here. Although in some countries 'stomatology' may be considered as a medical specialisation, stomatologists should be included in dentists.

Note: The number should be at the end of the calendar year.

- General paediatricians

Paediatricians deal with the development, care, and diseases of children.

Inclusion

- Medical interns or residents specialising in paediatrics

Exclusion

- Paediatric specialties (e.g. child psychiatry, child/paediatric surgery, child/paediatric gynaecology, paediatric cardiology, paediatric oncology, etc.)

Note: The number should be at the end of the calendar year.

- Obstetricians and gynaecologists

Obstetricians specialise in pregnancy and childbirth. **Gynaecologists** are concerned with the functions and diseases specific to women and girls, especially those affecting the reproductive system.

Inclusion

- Child/paediatric gynaecology
- Reproduction medicine
- Genetics
- Medical interns or residents specialising in obstetrics and gynaecology

Note: The number should be at the end of the calendar year.

- Psychiatrists

Psychiatrists are medical doctors who specialise in the prevention, diagnosis and treatment of mental illness. They have post-graduate training in psychiatry and may also have additional training in a psychiatric specialty.

Inclusion

- Psychiatry
- Neuropsychiatry
- Adult and geronto-psychiatry
- Child psychiatry
- Psychiatry - addictive disorders / diseases
- Social psychiatry
- Psychiatric rehabilitation
- Medical interns or residents training in these psychiatric specialties

Exclusion

- Psychologists

Note: The number should be at the end of the calendar year.

- Medical group of specialists



Joint Action Health Workforce
Planning and Forecasting

Medical specialists are doctors who specialise in the diagnosis and non-surgical treatment of physical disorders and diseases.

Inclusion

- Internal medicine
- Cardiology
- Endocrinology
- Gastroenterology
- Pulmonology
- Respiratory medicine
- Oncology
- Gynaecologic oncology
- Immunology
- Rheumatology
- Neurology
- Oto-rhino-laryngology
- Radiology
- Infectious diseases
- Microbiology-bacteriology
- Haematology
- Dermatology
- Pathology
- Occupational medicine
- Medical interns or residents training in these specialties

Exclusion

- Surgery
- Gynecology and obstetrics
- Paediatrics
- Psychiatry
- General practice

Note: The number should be at the end of the calendar year.

- Surgical group of specialists



Surgical specialists are doctors who specialise in the use of surgical techniques to treat disorders and diseases.

Inclusion

- General surgery
- Neurological surgery
- Plastic surgery
- Orthopaedics
- Ophthalmology
- Urology
- Other types of surgery
- Anaesthesiology
- Intensive care
- Accident and emergency medicine
- Medical interns or residents training in these specialties

Exclusion

- Dental surgery
- Oral and maxillofacial surgery

Note: The number should be at the end of the calendar year.

- Other specialists not elsewhere classified

Inclusion

- Community medicine (including hygiene, epidemiology and assessment medicine)
- Other specialists not elsewhere classified
- Medical interns or residents training in these other specialties

Note: The number should be at the end of the calendar year.

Medical doctors not further defined

(ISCO-08 code: 2210)

Inclusion

- Medical practitioners who cannot be classified in the other categories
- Medical interns or residents who cannot be classified in the other categories

Note: The number should be at the end of the calendar year.

MIDWIVES, NURSES AND CARING PERSONNEL

Practising midwives

Practising midwives provide services directly to patients.

Inclusion

- Midwifery professionals (ISCO-08 code: 2222) and midwifery associate professionals (ISCO-08 code: 3222)
- Persons who have completed their studies/education in midwifery and who are licensed to practice
- Salaried and self-employed midwives delivering services irrespectively of the place of service provision
- Nurses (or nurse midwives) who are working most of the time as midwives
- Foreign midwives licensed to practice and actively practising in the country

Exclusion

- Students who have not yet graduated
- Midwives working in administration, management, research and in other posts excluding direct contact with patients
- Unemployed midwives and retired midwives
- Midwives working abroad.

Note: The number should be at the end of the calendar year.

Professionally active midwives

Professionally active midwives include practising and other (non-practising) midwives for whom their education is a prerequisite for the execution of the job.

Inclusion

- Midwifery professionals (ISCO-08 code: 2222) and midwifery associate professionals (ISCO-08 code: 3222)
- Midwives providing services directly to patients
- Midwives working in administration, management, research and in other posts excluding direct contact with patients

Exclusion

- Midwives who hold a post / job under which midwifery education is not required
- Unemployed midwives and retired midwives

- Midwives working abroad.

Note: The number should be at the end of the calendar year.

Midwives licensed to practice

Midwives licensed to practice have acquired the requisite education and qualifications to be registered and/or legally licensed to practice midwifery. They include both practising and other (non-practising) midwives.

Inclusion

- Midwifery professionals (ISCO-08 code: 2222) and midwifery associate professionals (ISCO-08 code: 3222)
- Midwives who provide services directly to patients
- Midwives for whom their midwifery education is a prerequisite for the execution of the job
- Midwives for whom their midwifery education is NOT a prerequisite for the execution of the job
- Midwives licensed to practice but who due to various reasons are not economically active (e.g. unemployed or retired)
- Midwives working abroad.

Note: The number should be at the end of the calendar year.

Practising nurses

Practising nurses provide services directly to patients.

Inclusion

- Professional nurses (see definition below)
- Associate professional nurses (see definition below)
- Foreign nurses licensed to practice and actively practising in the country

Exclusion

- Students who have not yet graduated
- Nursing aids/assistants and personal care workers who do not have any recognised qualification/certification in nursing
- Midwives (unless they work most of the time as nurses)
- Nurses working in administration, management, research and in other posts that exclude direct contact with patients
- Unemployed nurses and retired nurses no longer practising
- Nurses working abroad.

Note: The number should be at the end of the calendar year.

Professionally active nurses

Professionally active nurses include practising nurses and other nurses for whom their education is a prerequisite for the execution of the job.

Inclusion

- Professional nurses (see definition below)
- Associate professional nurses (see definition below)
- Nurses providing services directly to patients
- Nurses working in administration, management, research and in other posts excluding direct contact with patients

Exclusion

- Nurses who hold a post / job under which nursing education is not required
- Unemployed nurses and retired nurses
- Nurses working abroad.

Note: The number should be at the end of the calendar year.

Nurses licensed to practice



A **nurse licensed to practice** has completed a programme of nursing education and is qualified and authorised in his/her country to practice nursing. They include practising and other (non-practising) nurses.

Inclusion

- Professional nurses (see definition below)
- Associate professional nurses (see definition below)
- Nurses who provide services directly to patients
- Nurses for whom their nursing education is a prerequisite for the execution of the job
- Nurses for whom their nursing education is NOT a prerequisite for the execution of the job
- Nurses licensed to practice but who due to various reasons are not economically active (e.g. unemployed or retired)
- Nurses working abroad.

Exclusion

- Health care assistants and personal care workers (nursing aids), who do not have any recognised qualification/certification in nursing.

Note: The number should be at the end of the calendar year.

- Professional nurses

(ISCO-08 code: 2221)

Nursing professionals assume responsibility for the planning and management of the care of patients, including the supervision of other health care workers, working autonomously or in teams with medical doctors and others in the practical application of preventive and curative measures.

Inclusion

- Clinical nurse
- District nurse
- Nurse anaesthetist
- Nurse educator
- Nurse practitioner
- Public health nurse
- Specialist nurse

Exclusion

- Midwife (unless they work most of the time as nurses)
- Paramedical practitioner
- University lecturer
- Vocational education teacher
- Associate professional nurse
- Associate professional midwife
- Nursing aide.

Note: Feldschers should be reported under this category of professional nurses, in those countries where this occupation exists.

Note: The number should be at the end of the calendar year.

- Associate professional nurses

(ISCO-08 code: 3221)

Nursing associate professionals generally work under the supervision of, and in support of implementation of health care, treatment and referrals plans established by medical, nursing and other health professionals.

Inclusion

- Assistant nurse
- Enrolled nurse
- Practical nurse

Exclusion

- Professional nurse
- Clinical nurse consultant
- Specialist nurse
- Midwife (unless they work most of the time as nurses)
- Associate professional midwife
- Nursing aide
- Medical assistant

Note: The number should be at the end of the calendar year.

Practising caring personnel (personal care workers)

Note: Includes both Health care assistants in institutions (ISCO-08 5321) and Home-based personal care workers (ISCO-08 5322).

(ISCO-08 code: 5321)

Health care assistants provide direct personal care and assistance with activities of daily living to patients and residents in a variety of health care settings such as hospitals, clinics, and residential nursing care facilities. They generally work in implementation of established care plans and practices, and under the direct supervision of medical, nursing or other health professionals or associate professionals.

Inclusion

- Nursing aide (clinic or hospital)
- Patient care assistant
- Psychiatric aide
- Foreign health care assistants practising in the country

Exclusion

- Nurse (professional and associate professional).

(ISCO-08 code: 5322)

Home-based personal care workers provide routine personal care and assistance with activities of daily living to persons who are in need of such care due to effects of ageing, illness, injury, or other physical or mental condition in private homes and other independent residential settings.

Inclusion

- Home care aide
- Nursing aide (home)
- Personal care provider
- Foreign personal care workers practising in the country

Exclusion

- Nurse (professional and associate professional)
- Social worker.

Note: The number should be at the end of the calendar year.

Professionally active caring personnel (personal care workers)

Professionally active caring personnel include practising caring personnel and other caring personnel for whom their education is a prerequisite for the execution of the job.

Inclusion

- Caring personnel providing services directly to patients
- Caring personnel working in administration, management, research and in other posts that exclude direct contact with patients

Exclusion

- Unemployed caring personnel and retired caring personnel
- Caring personnel working abroad.

Note: The number should be at the end of the calendar year.

DENTISTS, PHARMACISTS AND PHYSIOTHERAPISTS

Practising dentists

(ISCO-08 code: 2261)

Practising dentists provide services directly to patients. They include stomatologists/dental surgeons.

Inclusion

- Persons who have completed studies in dentistry / stomatology at university level (granted by an adequate diploma) and who are licensed to practice
- Interns (with an adequate diploma and providing services under supervision of other dentists or dental specialists during their postgraduate internship in a health care facility)
- Salaried and self-employed dentists delivering services irrespectively of the place of service provision
- Foreign dentists licensed to practice and actively practising in the country

Exclusion

- Students who have not yet graduated
- Dentists working in administration, research and in other posts that exclude direct contact with the patients
- Unemployed dentists and retired dentists
- Dentists working abroad.

Note: The number should be at the end of the calendar year.

Professionally active dentists

Professionally active dentists are practising dentists and other dentists for whom their education in dentistry / stomatology is a prerequisite for the execution of the job.

Inclusion

- Dentists who provide services directly to patients
- Dentists working in administration and management positions requiring education in dentistry
- Dentists conducting research into oral health and dental care
- Dentists who participate in public action to maintain or improve standards of oral health and dental care
- Dentists preparing scientific papers and reports.

Exclusion

- Dentists who hold a post/job for which education in dentistry is not required
- Unemployed dentists and retired dentists
- Dentists working abroad.

Note: The number should be at the end of the calendar year.

Dentists licensed to practice

Dentists licensed to practice include practising and other (non-practising) dentists, who are registered and entitled to practice as health care professionals in the field of dentistry. They include stomatologists/dental surgeons.

Inclusion

- Dentists who provide services directly to patients.
- Other dentists for whom their education in dentistry / stomatology is a prerequisite for the execution of the job.
- Other dentists for whom their education in dentistry / stomatology is NOT a prerequisite for the execution of the job
- Dentists registered as health care professionals and licensed to practice but who are not economically active (e.g. unemployed or retired).
- Dentists working abroad.

Note: The number should be at the end of the calendar year.

Practising pharmacists

(ISCO-08 code: 2262)

Practising pharmacists prepare, dispense or sell medicines and drugs directly to patients (clients) and provide advice.

Inclusion

- Persons who have completed studies in pharmacy at university level (granted by adequate diploma) and who are licensed to practice
- Salaried and self-employed pharmacists delivering services irrespectively of the place of service provision
- Foreign pharmacists licensed to practice pharmacy and actively practising in the country.

Exclusion

- Students who have not yet graduated
- Pharmacists working in administration, research and in other posts that exclude direct contact with the patients (clients)
- Unemployed pharmacists and retired pharmacists
- Pharmacists working abroad.

Note: The number should be at the end of the calendar year.

Professionally active pharmacists



Professionally active pharmacists are practising pharmacists and other pharmacists for whom their education in pharmacy is a prerequisite for the execution of the job.

Inclusion

- Pharmacists who provide services directly to patients (clients)
- Pharmacists working in administration and management positions requiring a pharmacy education
- Pharmacists conducting research, testing drugs to determine identity, purity and strength
- Pharmacists participating in development of controls and regulations
- Pharmacists preparing scientific papers and reports.

Exclusion

- Pharmacists who hold a post/job for which pharmacy education is not required
- Unemployed pharmacists and retired pharmacists
- Pharmacists working abroad.

Note: The number should be at the end of the calendar year.

Pharmacists licensed to practice

Pharmacists licensed to practice include practising and other (non-practising) pharmacists who are registered and entitled to practice.

Inclusion

- Pharmacists who provide services directly to patients (clients)
- Pharmacists for whom their pharmacy education is a prerequisite for the execution of the job
- Pharmacists for whom their pharmacy education is NOT a prerequisite for the execution of the job
- Pharmacists licensed to practice but who are not economically active (e.g. unemployed or retired)
- Pharmacists working abroad.

Note: The number should be at the end of the calendar year.

Practising physiotherapists

(ISCO-08 code: 2264)

Physiotherapists assess, plan and implement rehabilitative programs that improve or restore human motor functions, maximize movement ability, relieve pain syndromes, and treat or prevent physical challenges associated with injuries, diseases and other impairments. They apply a broad range of physical therapies and techniques such as movement, ultrasound, heating, laser and other techniques.

Inclusion

- Geriatric physical therapist
- Paediatric physical therapist
- Orthopaedic physical therapist
- Physiotherapist

Exclusion

- Podiatrist
- Occupational therapist
- Acupressure therapist
- Hydrotherapist
- Massage therapist
- Physiotherapy technician
- Shiatsu therapist
- Chiropractor
- Osteopath

Note: The number should be at the end of the calendar year.

HOSPITAL EMPLOYMENT

Total hospital employment

Number of persons employed (**head counts**), and number of full-time equivalent (**FTE**) persons employed in **general and specialised hospitals**. Self-employed are included.

Inclusion

- Service contracts with non-employed health professionals on treatment of hospital patients (head counts).

- Physicians employed in hospital

Number of **physicians** (see definition of physicians above) directly employed in a hospital.

- Professional nurses and midwives employed in hospital

Number of **professional nurses** and **midwives** (see definition of professional nurses and midwives above) directly employed in a hospital.

- Associate professional nurses employed in hospital

Number of **associate professional nurses** (see definition of associate professional nurses above) directly employed in a hospital.

- Health care assistants employed in hospital

Number of **health care assistants** (see definition of health care assistants above) directly employed in a hospital.
(ISCO-08 code: 5321)

- Other health service providers employed in hospital

Inclusion

- Dentists
- Pharmacists
- Physiotherapists
- Psychologists
- Dieteticians
- Audiologists and speech therapists
- Laboratory assistants
- Other health professionals and associate professionals.

- Other staff employed in hospital

Other employees not elsewhere classified.

GRADUATES



Medical graduates

Number of students who have graduated in **medicine** from medical faculties or similar institutions, i.e., who have completed basic medical education in a given year.

Exclusion

- Graduates in pharmacy, dentistry / stomatology, public health and epidemiology
- Individuals who have completed post-graduate studies or training in medicine.

Note: In the European Union, a Directive has defined basic medical training as comprising a total of at least six years of study or 5,500 hours of theoretical and practical training provided by, or under the supervision of, a university (article 24, Directive 2005/36/EC of the European Parliament and of the Council).

Dentists graduates

Number of students who have obtained a recognised qualification in **dentistry** in a given year.

Pharmacists graduates

Number of students who have obtained a recognised qualification in **pharmacy** in a given year.

Midwives graduates

Number of students who have obtained a recognised qualification in **midwifery** in a given year.

Nursing graduates

Number of students who have obtained a recognised qualification in **nursing** in a given year.

Inclusion

- Graduates from an education programme required to become a professional or associate professional nurse

Exclusion

- Graduates from other fields of studies which do not provide a recognised foundation for the practice of nursing
- Graduates from a midwifery programme.

- Professional nursing graduates

Number of students who have obtained a recognised qualification as a **professional nurse** in a given year (see definition for "practising professional nurses").

Exclusion

- Graduates from a midwifery programme
- Graduates from an associate professional nurse programme.

Note: In the European Union, a Directive has defined the training of nurses responsible for general care as comprising at least three years of study or 4600 hours of theoretical and clinical training, the duration of the theoretical training representing at least one-third and the duration of the clinical training at least one half of the minimum duration of the training. Member States may grant partial exemptions to persons who have received part of their training on courses which are of at least an equivalent level (article 31, Directive 2005/36/EC of the European Parliament and of the Council).

- Associate professional nursing graduates

Number of students who have obtained a recognised qualification as an **associate professional nurse** in a given year (see definition for "practising associate professional nurses").

Exclusion

- Graduates from a professional nurse programme.