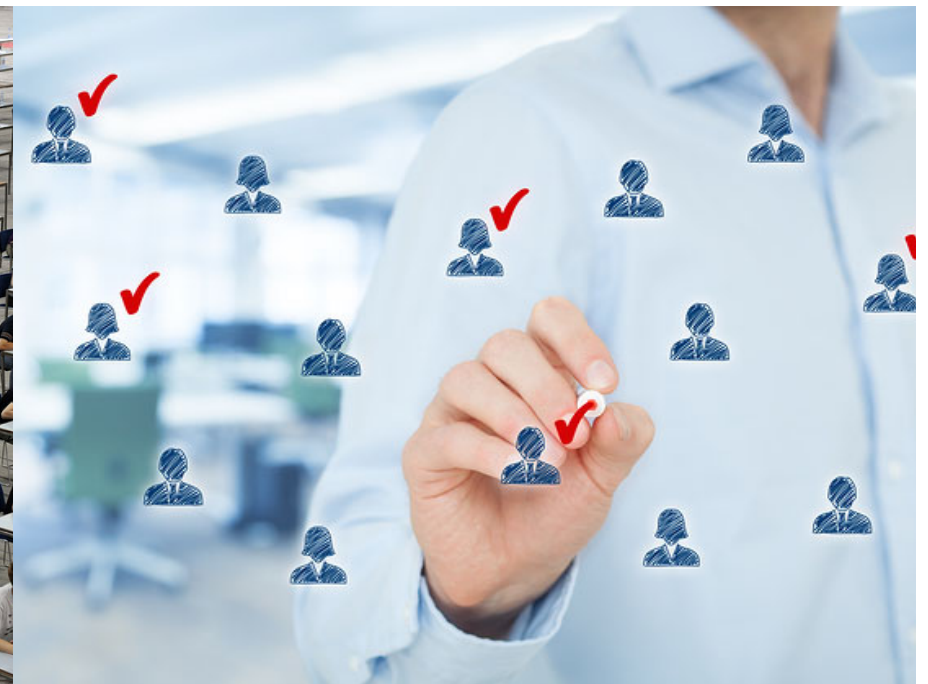


SUMMARY

STRATEGIES FOR IMPROVING THE MEDICAL WORKFORCE PROJECTION MODEL: A STAKEHOLDER CONSULTATION



SUMMARY

STRATEGIES FOR IMPROVING THE MEDICAL WORKFORCE PROJECTION MODEL: A STAKEHOLDER CONSULTATION

PHILIPPE VANDENBROECK, KRIS OOMS, NADIA BENAHMED, RACHEL WICKERT, WENDY CHRISTIAENS, SABINE STORDEUR



■ FOREWORD

There are few topics in healthcare that seem to arouse as much debate as planning the future number of physicians. Far outside the boundaries of the department of public health, furthermore. Because it also involves university education, set numbers and entrance examinations, unfilled quotas, and the influx of foreign candidates, and all of this on a bed of community squabbling. In the meantime we have learned that sooner or later we are served such a hot potato.

This was already the case the first time in 2008, when we examined modelling strategies in the field of medical workforce planning (KCE Report 72 of 2008), and again recently we conducted a study on planning of midwives (KCE Report 278 of 2016). In this study we also looked more broadly at the planning process for healthcare professions in general. The aim of this current research project, which arose at the request of the Planning Unit of the FPS Public Health, was to formulate recommendations for updating the 'Medical Workforce Projection Model' used by the Planning Commission. The model is used to predict and plan the supply of (specialist) physicians for the coming 25 years.

We were able to further build on our earlier work for this, but also on the results of a recently completed European project that compared planning systems of seven EU member states with each other. We compared this with an analysis of the viewpoints of the relevant Belgian stakeholders. A fairly simple study thus, but useful for ensuring, at least with regard to the calculation model, a certain support base.

We have been expertly assisted in this by the researchers of shiftN, and we thank them for this short but intense collaboration.

Christian LÉONARD
Deputy General Manager

Raf MERTENS
General Manager



■ SUMMARY

TABLE OF CONTENTS

■	FOREWORD	1
■	SUMMARY	2
1.	INTRODUCTION: ESTABLISHMENT OF QUOTAS FOR PHYSICIANS - COMPETENCES OF THE FEDERAL GOVERNMENT AND THE COMMUNITIES	4
2.	OBJECTIVES OF THE RESEARCH	7
2.1.	PURPOSE OF THE RESEARCH	7
2.2.	THE ORGANISATION OF THE PLANNING SYSTEM IN BELGIUM	9
2.3.	THE BELGIAN PROJECTION MODEL FOR MEDICAL WORKFORCE PLANNING	9
2.4.	DATA SOURCES FOR THE PROJECTION MODEL	11
3.	RESEARCH QUESTION AND METHODOLOGICAL APPROACH	14
3.1.	METHODOLOGICAL APPROACH	14
3.2.	CONSULTATION	14
3.3.	SOME REFERENCES FROM THE LITERATURE	14
3.4.	THE SURVEY	15
3.5.	FINDINGS FROM THE SURVEY	15
3.6.	STAKEHOLDER WORKSHOP	15
4.	CONCLUSION	16
5.	POLICY RECOMMENDATIONS	16
5.1.	REFLECTIONS OF STAKEHOLDERS	16
5.2.	LINK WITH KCE REPORT 278	20
■	REFERENCES	21



LIST OF ABBREVIATIONS

ABBREVIATION	DEFINITION
EU	European Union
FPS	Federal Public Service
FTE	Fulltime equivalent
JAHWPF	Joint Action Health Workforce Programming & Forecasting
KCE	Federal Healthcare Knowledge Centre
NSSO	National Social Security Office
NSSO-PLP	National Social Security Office for Provincial and Local Public Services
RD	Royal Decree
RIZIV – INAMI	Rijksinstituut voor Ziekte- en Invaliditeitsverzekering – Institut National d'Assurance Maladie-Invalidité
SWOT	Strengths, Weaknesses, Opportunities, Threats



1. INTRODUCTION: ESTABLISHMENT OF QUOTAS FOR PHYSICIANS - COMPETENCES OF THE FEDERAL GOVERNMENT AND THE COMMUNITIES

This section is quoted literally from the following sources:

*Cel Planning van het aanbod van de gezondheidszorgberoepen, DG Gezondheidszorg FOD Volksgezondheid Veiligheid van de Voedselketen en Leefmilieu. Jaarverslag 2015 van de Planningscommissie - medisch aanbod. Opvolging van de planning van het medisch aanbod in België 2016.*¹

*Cel Planning van de gezondheidszorgberoepen, DG Gezondheidszorg FOD Volksgezondheid Veiligheid van de Voedselketen en Leefmilieu. Jaarverslag 2016 van de Planningscommissie - medisch aanbod. Opvolging van de planning van het medisch aanbod in België 2017 (in voorbereiding).*²

The 6th State Reform transfers competence concerning planning for the healthcare professions to the communities.

Article 6 of the special law of 6 January 2014 on the sixth State Reform amended in particular Article 5 §1 I 7° of the special law of 8 August 1980 on institutional reform. In the amended Article 5 §1 I 7° it is specified that the communities are authorised to allocate quotas in the healthcare professions, taking account when applicable of the overall number that the federal government can establish annually per community for access to each of the healthcare professions.

The federal government remains authorised to establish the overall quota, divided by community, but the communities are responsible for their respective subquotas.

There are two types of quotas:

- a maximum quota for all specialties that may not be exceeded;
- minimum quotas or threshold values that must be reached for new specialties or for specialties that deserve special attention: general medicine, specialist physicians in child and youth psychiatry, emergency medicine, acute medicine and geriatrics.

The quota allocation that affects manpower in medicine is strictly speaking not a limitation in the number of RIZIV – INAMI numbers, nor of the number of graduates. It involves a more flexible limitation of the number of training plans that are allowed for an education that leads to a so-called ‘curative’ professional title in medicine. A number of physicians are exempt, others can be substituted.

Which graduates are not counted in the annual quota allocation?

- physicians who hold a basic diploma that was obtained abroad;
- physicians who obtained their basic diploma before 2004;
- physicians who were selected in a previous year and who submit a new training plan to change specialisation;
- physicians who have been selected for a specialisation in health data management, forensic medicine, occupational medicine, and in insurance medicine and medical appraisal;
- physicians who are hired by the Ministry of Defence;
- physicians with a diploma in secondary studies issued by a member state of the European Economic Area without complete training in medicine, surgery and obstetrics (Grand Duchy of Luxemburg, Malta and Liechtenstein).



In which cases can graduates who have held a place in the annual quotas be replaced?

Places in the quotas are considered to be released when a physician who is counted in the quotas is in one of the following situations:

- death of a physician;
- termination by the physician of his training plan, without starting new training;
- ministerial decision to eliminate the training plan;
- interruption of the practical training to undertake a scientific activity covered by a research fellowship.

The communities are authorised to specify subquotas for bearing a special professional title (36 specialties) or a special professional qualification (12 professional qualifications). In this way the communities can plan a medical workforce that meets their own needs themselves and adapt their policy to those needs.

The subquotas that have been established until 2020 remain applicable. By virtue of the transfer of powers by the 6th State Reform the communities can establish the subquotas as of 2021.

The federal government remains authorised however to specify whether the services of those caregivers are eligible for reimbursement from health and disability insurance. The federal government and the communities can conclude a Cooperation Agreement on this in accordance with Article 92bis of the special law of 8 August 1980.

Table 1 – Global overview of the current situation of the quotas with "access to training" (RD of 12 June 2008 amended by the RD of 7 May 2010 and 1 September 2012): the applicable minima and maxima for Belgium

Belgium		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018*	2019	2020	2021	2022**
Maxima (Art. 3)		757	757	757	757	890	975	1025	1230	1230	1230	2460	1230	1230	1230	1320
Minima (Art. 4)	General practitioners	300	300	300	300	300	300	300	360	400	400	800	400	400	-	-
	Child and youth psychiatrists	20	20	20	20	20	20	20	20	20	20	40	20	20	-	-
	Acute medicine	10	10	20	20	20	20	20	20	20	20	40	20	20	-	-
	Emergency medicine	5	5	10	10	10	10	10	10	10	10	20	10	10	-	-
	Geriatrics			20	20	20	20	20	20	20	20	40	20	20	-	-

*Note: *This double cohort is a consequence of the shortening of medical training from 7 to 6 years. Because of this, two different years will graduate simultaneously in 2018 and start subsequent training (specialisation or general practitioner). **No RD publication*



Table 2 – Global overview of the current situation of the quotas with "access to training" (RD of 12 June 2008 amended by the RD of 7 May 2010 and 1 September 2012): the applicable minima and maxima for the Flemish Community

Flemish Community		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018*	2019	2020	2021	2022**
Maxima (Art. 3)		454	454	454	454	534	585	615	738	738	738	1476	738	738	738	745
Minima (Art. 4)	General practitioners	180	180	180	180	180	180	180	216	240	240	480	240	240	-	-
	Child and youth psychiatrists	12	12	12	12	12	12	12	12	12	12	24	12	12	-	-
	Acute medicine	6	6	12	12	12	12	12	12	12	12	24	12	12	-	-
	Emergency medicine	3	3	6	6	6	6	6	6	6	6	12	6	6	-	-
	Geriatrics			12	12	12	12	12	12	12	12	24	12	12	-	-

Note: *This double cohort is a consequence of the shortening of medical training from 7 to 6 years. Because of this, two different years will graduate simultaneously in 2018 and start subsequent training (specialisation or general practitioner). **No RD publication

Table 3 – Global overview of the current situation of the quotas with "access to training" (RD of 12 June 2008 amended by the RD of 7 May 2010 and 1 September 2012): the applicable minima and maxima for the French Community

French Community		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018*	2019	2020	2021	2022**
Maxima (Art. 3)		303	303	303	303	356	390	410	492	492	492	984	492	492	492	575
Minima (Art. 4)	General practitioners	120	120	120	120	120	120	120	144	160	160	320	160	160	-	-
	Child and youth psychiatrists	8	8	8	8	8	8	8	8	8	8	16	8	8	-	-
	Acute medicine	4	4	8	8	8	8	8	8	8	8	16	8	8	-	-
	Emergency medicine	2	2	4	4	4	4	4	4	4	4	8	4	4	-	-
	Geriatrics			8	8	8	8	8	8	8	8	16	8	8	-	-

Note: *This double cohort is a consequence of the shortening of medical training from 7 to 6 years. Because of this, two different years will graduate simultaneously in 2018 and start subsequent training (specialisation or general practitioner). **No RD publication



These federal quotas are established six years in advance so that candidates know them before they begin their study (the duration of studies in medicine is 6 years. Before 2012 studies lasted 7 years). At the time that the candidate submits his training plan he is entered in the quota of the number of candidates who have access to every special professional title.

Only Belgian diplomas are counted in that quota. That quota does not apply to students who hold a foreign basic diploma and wish to specialise in Belgium.

The deans of the universities manage application of the quotas. The Planning Commission provides follow-up.

2. OBJECTIVES OF THE RESEARCH

2.1. Purpose of the research

For several years the Planning commission and the Planning Unit for the health professions have been engaged in improving the data, instruments and processes to optimise planning of the health professionals in Belgium.

The linking of the PlanCAD data (that is, anonymous data from the cadastre of the FPS Public Health, the RIZIV – INAMI and the Data Warehouse Labour Market and Social Protection (*Datawarehouse Arbeidsmarkt en Sociale Bescherming / Datawarehouse marché du travail et protection sociale*)) permits working with an abundance of pertinent data.

Rewriting the projection model in SAS furthermore offers more flexibility and not only allows new parameters and dimensions to be added, but also makes new methods of calculation possible. Thus the projection of the medical workforce can be refined; for example, the “nationality” aspect can be incorporated, as well as specification of specific scenarios for each specialty separately.

Ten years after the KCE publication on this issue (KCE Report 72, 2008),³ the Planning Unit wants a critical external look to be taken at the instrument used so that the projection model for the medical workforce can also evolve further in the future.

This report contains the findings from a research project that was initiated by the *Planning Unit* of the *Federal Public Service Public Health, Food Chain Safety and Environment* (hereinafter FPS) in collaboration with the *Federal Healthcare Knowledge Centre (KCE)*. The purpose of the study was to formulate recommendations for updating the ‘Medical Workforce Projection Model’ used by the Planning Commission. The model is used to forecast and plan the workforce of (specialist) physicians for the coming 25 years.

Planning the workforce of medical professionals

Ensuring an adequate workforce of medical professionals is a crucial factor in healthcare policy. Both oversupply and undersupply are connected with undesirable economic and ethical consequences.³



An undersupply of medical professionals leads to:

- Undesirable limitations in the accessibility of the healthcare system;
- Excessive demands on the workforce, with a possible lower quality of care for patients and a lower quality of life for the professionals as a consequence;
- Possible higher costs for attracting an alternative supply;
- Undesirable long-term effects on the international labour market for medical professionals ('brain drain', undersupply of medical workforce in source countries, underinvestment in training of the medical workforce in source countries).⁴

An oversupply can lead to:

- Unnecessary costs in training professionals;
- The provision of undesirable services (supply-driven consumption) and the related costs;
- A lower quality of care due to a too-low level of consultation.

In general, the purpose of prospective planning of the medical workforce is to determine what an adequate number and an appropriate mix and distribution of practitioners will be to meet future care needs.

Planning is complicated by the fact that training of medical professionals is a long-term process (that can take 3 to 12 years for occupational therapists and fully-trained clinical professionals respectively). The planning horizon varies depending on the duration of the training, but for specialist physicians can be two to three decades.⁴

Moreover the healthcare system is constantly evolving under the influence of a combination of exogenous and endogenous factors. Technological, epidemiological and demographic developments and changing regulations (at various governmental levels, including European) require continuous adjustment of the care system.

All of this makes medical workforce planning a complex challenge. However, there exists no internationally accepted standard approach to medical manpower planning.³ National (and regional) governments implement their planning methodology in various ways.⁴ Nonetheless development and use of a mathematical projection model play a central role without exception.

A recent comparative study by the EU Joint Action Health Workforce Planning and Forecasting distinguishes however five basic activities that are a part of any advanced medical manpower planning system:

- activity 1: specification of the aims of the planning system;
- activity 2: development and use of a projection model;
- activity 3: collection and use of a database of information;
- activity 4: provision of a link between planning and policy initiatives;
- activity 5: organisation of the planning system.



2.2. The organisation of the planning system in Belgium

In Belgium the Planning Commission, an advisory body for the Minister of Public Health established in 1996, has the task of examining the medical workforce needs with regard to the professions of physician, dentist, physical therapist, nurse, midwife and speech therapist^a. The Planning Commission also evaluates the impact of determination of these needs on an important policy instrument for control of the supply, namely access to studies for the professions concerned.

The Commission consists of representatives of the universities, the health insurance funds, the healthcare professions, the competent ministers, the Communities, the RIZIV – INAMI and the FPS Public Health. The Commission operates with a plenary meeting and working groups for the separate healthcare professions. Administrative and technical support is provided by the Planning Unit for Healthcare Professions Workforce within the FPS Public Health.

The planning process for health professions is described in a previous KCE report on planning of midwives (KCE Report 278).⁵ In the context of this previous report the variables of the projection model for professionals and the implementation of the model in the context of health worker planning were specified and compared with those used in foreign models (SWOT analysis [Strengths, Weaknesses, Opportunities, and Threats]).

2.3. The Belgian projection model for Medical Workforce Planning

In general three modelling strategies can be distinguished in the field of medical workforce planning (KCE Report 72, 2008):³

- A supply-driven projection that starts from the influx needed to produce a given service supply;
- A demand-driven projection that starts from a future care consumption;
- A need-driven projection that tries to coordinate the supply of medical professionals with future care requirements.

In practice projection models incorporate several of these aspects.

The Belgian ‘stock-and-flow’ model supports in essence a supply-driven projection. This means that the future stock is projected starting from the present stock of professionals, taking account of changes in influx and outflow. The model also incorporates a demand component based on the evolution of the Belgian population and the associated care consumption. The results of the model are presented as raw or weighted densities of numbers of individual professionals and the corresponding Fulltime Equivalent professionals (FTEs).

^a RD 78 on practice of the healthcare professions



Calculation of the Fulltime Equivalents (FTEs)

FTEs in the NSSO-PLP system

The Data Warehouse Labour Market and Social Protection calculated the FTE performed on an annual basis for every person in our analysis population by request of the Planning Unit. This FTE indicator thus involves a sum of the actual work volume performed over the four quarters.

FTEs in the RIZIV – INAMI system

In contrast to the situation for employees, the Planning Commission does not have an unambiguous indicator of the work volume performed.

The RIZIV – INAMI takes as a basis the median amount of annual reimbursements made by the RIZIV – INAMI as observed in a reference group, namely active physicians in the age group from 45 to 54 for the medical specialty in question. This median is used in what follows as an estimate of the activity corresponding to one fulltime equivalent (=1 FTE) and is calculated per individual medical specialty.

Thus the median activity of this age group is put forward as an ‘optimum’ activity level.

Let us take the following example: the observed median in a reference group is € 100,000 in a calendar year. A person who performed services for this amount of reimbursement is allocated a FTE of 1. However, a person who performed services over a calendar year that led to a reimbursement of 50,000 euro is considered a halftime equivalent, namely 0.5 FTE. We stress that in the framework of PlanCAD the FTEs are not limited to a maximum value of 1. Consequently a professional in the framework of the aforementioned example who performs services with a reimbursement of 150,000 euro will be allocated a FTE of 1.5.

In other words, the Fulltime Equivalents are calculated on the basis of the amount of RIZIV – INAMI reimbursements (the only available activity indicator) and not on the basis of the working time of the professionals (as is the case for employees).

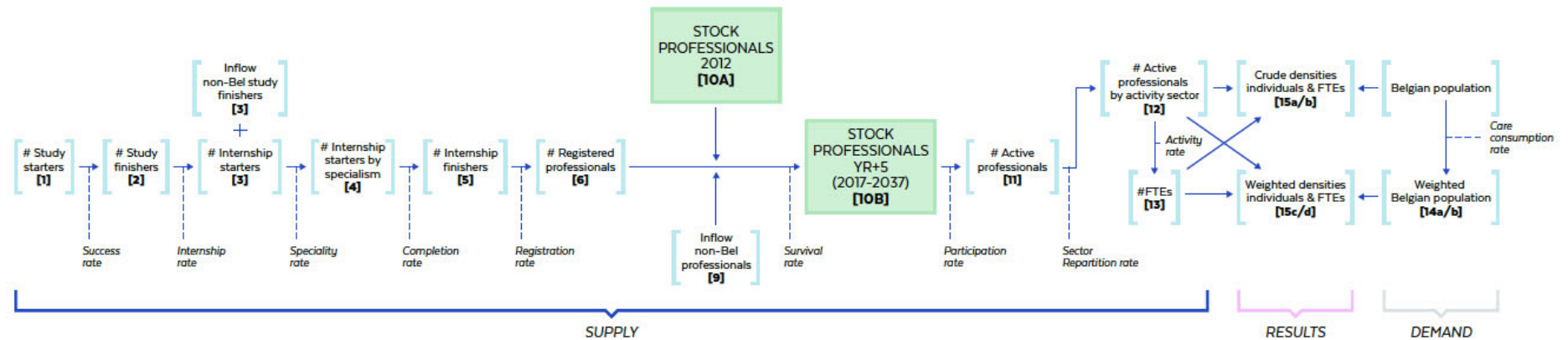
The interested reader can find a more detailed description of the methodological limitations of these calculation methods in the document ‘Summary Report PlanCAD Physicians 2004-2012’.⁶

The model is capable of producing projections in a uniform way for all healthcare professions considered over a period of 50 years, in 5-year intervals. In recent years projection periods of 25 years have also been used. The model is functionally divided by language community and contains the aspects of age, gender, nationality and activity sector. A separate scenario can be entered and carried out by specialty.

The Planning Commission uses the model to generate both ‘basic scenarios’ and ‘alternative scenarios’. A basic scenario extrapolates on the basis of historic trends and consistent policy. Alternative scenarios allow hypotheses with regard to trend breaks (related to e.g. influx, work time reduction, feminisation of the profession and others) to be formulated.



Figure 1 – Simplified representation of the architecture of the present Medical Workforce Projection model



2.4. Data sources for the projection model

The Planning Commission has made use of the PlanCAD project in recent years to improve the quality of the data with which the projection model is supplied. This project links the data from the Federal Databank of Practitioners of the Health Professions - the so-called 'Cadastre' – to the Data Warehouse Labour Market and Social Protection and to data available from the RIZIV – INAMI. This allows insight to be gained into the actual position in the labour market of recognised practitioners of a healthcare profession. On the basis of the linked workforce data the projection model then calculates planning scenarios by professional group. Data linking has been generalised for all the recognised healthcare professions listed in the Cadastre since 2016.



Statistics on physicians who are authorised to practise their profession (on 31/12/2016)⁷

The federal databank of practitioners of the healthcare professions, also called the 'Cadastre', is responsible for registration of all persons who have the right to practise a recognised healthcare profession in Belgium. The cadastre gives an overview of the persons who may practise a healthcare profession, but does not indicate which of these persons actually practise the profession in question.

- **Physicians who are authorised to practise their profession: 61,899 physicians residing in and outside of Belgium (including 52,694 physicians residing in Belgium)**

- Recognised general practitioners: 16,682
- General practitioners in training: 1152
- Recognised specialist physicians: 31,877
- Specialist physicians in training: 5068
- Physicians without special professional title: 7736

- **Recognised general practitioners and specialists: 46,781**

- Residence in Flanders: 25,343
- Residence in Wallonia: 15,333
- Residence in Brussels Capital Region: 6105

- **Number of physicians (excl. physicians in training) in Belgium on the basis of their nationality**

- Belgium: 43,442 (92.9%)
- EU (without Belgium): 3069 (6.6%)
- Outside EU: 269 (0.6%)

Use of PlanCAD to develop planning scenarios⁶

To estimate the future supply of practitioners in a healthcare profession, exact knowledge of the current state of affairs is required. Only from an accurate picture of the current 'stock' of healthcare providers in a specific profession and insight into the annual influx and outflow can meaningful statements be made on the future of the healthcare professions, thus enabling the experts to formulate well-considered opinions.

In the autumn of 2013 a request was submitted to link data for the professional group of physicians. The data were received in the summer of 2014 and cover a 9-year period (2004-2012).

On 31/12/2012 we counted **51,420 recognised physicians** with permission to practise their profession in the federal cadastre of healthcare practitioners in Belgium.

A practitioner is regarded to be active in Belgium (RIZIV – INAMI and/or NSSO) if he or she fulfils at least one of the following conditions: provision of at least two RIZIV – INAMI services for a specialist physician or 500 RIZIV – INAMI services for a general practitioner, or service provision of at least 0.1 FTE in the framework of the NSSO or the NSSO-PLP, in the course of the analysis year.

These limiting values for defining those active in the RIZIV – INAMI system were chosen under the guidance of the Physicians working group of the Planning Commission.

Among these physicians with permission to practise their profession, 68.3% are active physicians in Belgium; 60.8% of physicians had a RIZIV – INAMI activity.



For general practitioners

- **The number of general practitioners authorised to practise in Belgium was 16,144**
 - 8383 residing in the Flemish Region,
 - 5360 residing in the Walloon Region,
 - 1561 residing in the Brussels Capital Region,
 - 840 general practitioners not residing in Belgium.
- **76.1% of the general practitioners authorised to practise in Belgium are also active there**
 - 66.5% are active in the context of health and disability insurance.
- **The average FTE worked in the framework of the RIZIV – INAMI is 0.72 FTE.**
 - 0.90 FTE in the Flemish Region,
 - 0.64 FTE in the Walloon Region,
 - 0.38 FTE in the Brussels Capital Region.

For specialist physicians

- **The number of specialist physicians authorised to practise whose services are eligible for reimbursement from health and disability insurance (all RIZIV – INAMI specialties taken together except for general medicine) was 27,472 in Belgium**
 - 12,851 residing in the Flemish Region
 - 8160 residing in the Walloon Region
 - 3570 residing in the Brussels Region.
 - 2891 not residing in Belgium.

- **75.3% of these specialists authorised to practise in Belgium are also active there**
 - 73.4% are active in the context of health and disability insurance.
- **The average FTE worked in the framework of the RIZIV – INAMI is 0.73 FTE. This is a weighted average of the FTEs for each specialty**
 - 0.93 FTE in the Flemish Region
 - 0.75 FTE in the Walloon Region
 - 0.57 FTE in the Brussels Capital Region.



3. RESEARCH QUESTION AND METHODOLOGICAL APPROACH

The research question was formulated as follows:

“How can we adapt the present medical workforce projection model to enable us to contribute to the most appropriate response in connection with planning the medical workforce for a relevant time period?”

This short research project (lead time of four months, from February to May 2017) was not intended to lay the basis for an entirely new projection model. It did offer an opportunity for those involved in the healthcare system to critically reflect on very specific aspects of the existing model: the variables included in it, the projection method used and the data sources used. The focus of the research therefore lay first of all on the technical component of the Belgian planning system (cf. activities 2 and 3 identified by the JAHWPF: development and use of a projection model, data management). Nevertheless there is an unavoidable link with the more strategic aspects of the planning system (namely activities 1 and 4: specification of aims, link to policy).

3.1. Methodological approach

The methodology applied relied primarily on a process of stakeholder consultation. The aim of the consultation was to collect stakeholders' perceptions with regard to the operation of the model and combine the suggestions for improvement in a set of recommendations for the Planning Unit, the Planning Commission and policy. The recommendations were also assessed against findings from key documents from the (international) literature that have critically evaluated the Belgian planning system.

The stakeholders were identified in collaboration with the clients. They are a group of spokespeople who represent policy institutions (at various levels of government, both federal and from the Communities), the sector (professional organisations, unions, health insurance funds, patient associations) and higher education. In all approximately 40 different stakeholders were involved in the consultation (a complete list is included in the colophon).

3.2. Consultation

The consultation proceeded in three phases:

- Stakeholders were invited to familiarise themselves with the structure and operation of the model during a briefing session organised by the Planning Unit. The presentation used is included in a separate appendix of this report. The intention of this session was to share a knowledge base deemed necessary as a basis for the consideration.
- The stakeholders were then invited to fill in a comprehensive electronic questionnaire (survey) that gauged their concerns with regard to the operation of the present model.
- The findings of this survey were combined as a set of provisional recommendations for improving the model. These were then discussed in a specially organised stakeholder workshop (08/05/2017). The insights from the workshop were then incorporated in formulating the recommendations that are included in this summary.

3.3. Some references from the literature

The results of the stakeholder consultation were assessed against findings from two studies that had already previously critically examined the Belgian medical manpower planning system: a study we conducted ourselves on challenges in ensuring an adequate supply of physicians in Belgium (KCE Report 72, 2008)³ and a recent European study that compares planning systems from seven EU member states with each other (Joint Action Health Workforce Planning and Forecasting, 2016).⁴



3.4. The survey

About twenty stakeholders participated in a preliminary information session on the projection model (27 January 2017). A long list with individual representatives of stakeholders was then consolidated into a shortlist with 41 representatives who were prepared to participate in the research. Of these, 37 people filled in the questionnaire. The response rate was therefore 90%.

The questionnaire was structured in four parts (inspired by the previously cited five key activities of a planning system identified by the comparative study of the EU Joint Action Health Workforce Planning and Forecasting). Three of the four parts were always linked to an open question. These questions dealt with respectively:

- The respondent's perception of the purpose of the projection model (open question: "What do you believe is the purpose of the 'medical workforce' projection model?").
- Suggestions for more suitable use of the model by the Planning Commission (open question: "Do you have comments on the way in which the Planning Commission makes use of the projection model?").
- Suggestions for better linkage between recommendations of the Planning Commission and policy (open question: "Do you have comments on the way in which the recommendations of the Planning Commission are transposed into policy?").

The second, technical portion of the survey was the most comprehensive and dealt with every individual parameter of the projection model and the data that supply the model. This portion consisted of a combination of a large number of evaluative questions and open questions. The respondent could indicate for every model parameter how adequate he/she assessed the calculation method and the data source to be. It was also always possible to formulate suggestions for improvement. A question-by-question summary of the answers of the stakeholders is given in an appendix to this report.

3.5. Findings from the survey

The survey suggests that the Belgian Medical Manpower Planning projection model - within the modelling strategy chosen and taking account of the resources available - is technically adequately performing; 68% of those questioned indicated that they were somewhat familiar with the model. Approximately one third of the respondents had more in-depth experience with the projection model as a member of the Planning Commission.

Nonetheless there is room for improvement. Suggestions were aggregated into three improvement strategies:

- Improvement strategy 1: increasing the granularity of the model.
- Improvement strategy 2: clarifying the limitations of extrapolation on the basis of historic data.
- Improvement strategy 3: reinforcing the link to healthcare policy.

3.6. Stakeholder workshop

The stakeholders debated these three improvement strategies in a workshop (8 May 2017; list of attendees in appendix). The participants largely confirmed the relevance of these recommendations. Many of the aspects that emerged during the workshop repeated, reinforced or refined points that had already been indicated in the survey.

Inevitably, suggestions were also formulated for policy interventions that should lead to higher-quality and more accessible care via a more adequate supply of medical professionals (such as reinforcement of the first line, adjustment of the nomenclature to create incentives for bottleneck specialties, more investment in prevention). These suggestions however fall outside the scope of this research.



4. CONCLUSION

The Joint Action Health Workforce Programming & Forecasting states that the effectiveness of a medical manpower planning model can be evaluated on various aspects:

- Does it contribute to the decision-making process?
- Is it mathematically sound?
- Does it contain all the relevant parameters?
- Is it borne by the stakeholders in the care system?

This stakeholder consultation gives insight into the perceptions of key participants in Belgian healthcare on Belgian planning practice. The projection model is seen as technically adequately efficient, within the modelling strategy chosen and taking account of the resources available. Nonetheless there is room for improvement. Three sets of recommendations to improve the technical performance of the model have been deduced from the questionnaire:

- The data sources used should be supplemented and updated.
- The analyses based on the projection model should be conducted on a finer scale.
- The uncertainties related to the extrapolation of historic data should be better indicated and communicated.

A fourth set of recommendations focuses on the way in which the model contributes to the decision-making process:

- The link between the recommendations based on the model and healthcare policy should be streamlined.

^b Such as people who postpone care, the care needs of the uninsured, and care that is provided in the context of flat-rate payment

5. POLICY RECOMMENDATIONS

5.1. Reflections of stakeholders

The suggestions of the stakeholders have been summarised in four sets of recommendations to increase the performance of medical manpower planning in Belgium.

Recommendation 1 – The data sources used should be supplemented and updated.

1. Although the quality of the data sources used is in general assessed as good, stakeholders do see quite a few opportunities for supplementing data to better understand the actual supply and demand (namely, unregistered sources of actual and desired care consumption^b, demographic and disease-specific data). It is also argued that data should be made available faster by the data managers and/or registration bodies. The source data for PlanCAD should be of more recent date and the PlanCAD data linking should be conducted more frequently (preferably annually).
2. In the data sources used, more attention should be devoted to filtering out localisation effects. These are inaccuracies due to unrecorded differences between place of administration of care on the one hand and residence and/or place of employment of the provider on the other hand. Likewise the place of residence of the care recipient does not always correspond to that of the provider. This results in inaccuracies of unknown size in determining the current and future stock of professionals.
3. The care demand is relatively poorly articulated in the projection model. The conceptualisation of 'demand' as 'care consumption' is necessarily also partially correlated with the care supply. This probably involves a significant inaccuracy. Under/overconsumption is also perpetuated in



this way. Stakeholders recommend more expressly integrating in the care demand an estimation of needs related with the epidemiological evolution. Available data sources such as the Health Interview Survey repeated regularly by the Scientific Institute of Public Health (WIV/ISP), among others, can be relied upon for this purpose.

4. Active registration (by regular, direct survey of the population of professionals) instead of generic extrapolation should give better insight into the existing and evolving stock of professionals.

Assessment against the literature: The JAHWPF⁴ considers data management in the Belgian planning system, in particular as a result of the data linking within PlanCAD, to be exemplary. It sees a challenge however in the large volume of available data that poses special challenges for analysts in use of these data. A variable that is however usually not included in manpower projections and can nevertheless exert a significant influence on the supply is the compensation of professionals. In Belgium too this is not included. KCE Report 72³ dates from before the data linking within PlanCAD. Nevertheless the observation is still pertinent that in the Belgian practice of manpower planning no account is taken of a number of variables that are essential for an in-depth analysis of the medical workforce, such as practical arrangements, skill mix, technological progress, and changes in accessibility of healthcare.

Recommendation 2 – The analyses on the basis of the projection model should be conducted on a finer scale.

1. Given regional differences in supply and demand it is recommended that the model be further disaggregated to an adequate subregional level^c. In this it is recommended that there be differentiation between general practitioners and specialists, given that the tension between supply and demand manifests itself at a different geographical level for the two groups. The German-speaking Community advocates an appropriate differentiation of input and output in the model^d.
2. The calculation of a FTE for independent practitioners on the basis of an average practice registered by the RIZIV – INAMI within the cohort with reference age of 45-54 years does not offer a reliable reflection of the actual working time of practitioners and therefore takes inadequate account on the one hand of the phenomenon of over-surveying often cited by the stakeholders or of the changing professional practice of practitioners (such as joining a group practice, or faster reduction of workload in a search for a better balance between profession and private life). The approach also obscures important distinctions (between average and actual practice, practice in an urban vs. a rural environment, the care intensity of different population groups).

Assessment against the literature: The report of the European working group acknowledges the limits of the Belgian approach to calculating the FTE of independent professionals but still considers the methodology as 'good practice'. The Planning Commission is also fully aware of the methodological limitations of the RIZIV – INAMI FTE and notes that the value may not be used normatively; it only serves to represent a relative value of magnitude of a service provided (Planning Unit 2015 Annual Report).¹

^c The model is at any rate directed toward establishment of federal quotas that are then adjusted by and for the two communities (Flemish Community and Wallonia-Brussels Federation), as specified in the legal mandate of the Planning Commission.

^d In doing so, account must be taken of the fact that no German-language medical training exists in Belgium, which makes it difficult to include a physician influx in the model for this community.



Recommendation 3 – The uncertainties connected with extrapolation of historic data should be better indicated and communicated, and plausible developments should be investigated on the basis of horizon scanning.

1. The Planning Commission applies static extrapolation methods for all the parameters in the model. For example, the calculation of the number of students enrolled is based on an average of the last three years of observation. These choices should be better justified throughout the entire model. It is also recommended that the sensitivity of the projections to other assumptions be analysed (sensitivity analysis) and communicated.
2. Results of the model are now generated as a point estimate. This gives no information on the margin of error that should be taken into account in interpretation of the results. The stakeholders believe that an estimate should ideally be accompanied by a corresponding confidence interval.
3. Extrapolation on the basis of historic data (that are sometimes up to five years old) is inadequate in the light of rapidly evolving trends, in particular influx of foreign professionals, modernisation of professional practice, the organisation of care and the evolution of the care demand. The model should be made more dynamic by incorporating these developments more holistically and systematically. The calculation of alternative scenarios is not now supplemented by a process of rigorous horizon scanning. The operation by consensus of the Planning Commission hinders exploratory treatment of uncertainties in the care landscape.

Assessment against the literature: These recommendations are also reflected in previous publications on the Belgian planning system. Our own report of 2008³ puts forward the fact that the uncertainties connected with the modelling process are not known as one of the important points for attention. The report argues that a projective model should be used cautiously to predict numbers. Three sets of factors influence the validity of the model: uncertainty with regard to parameters in the reference population, that is, the quality of the data for the starting situation; the plausibility of the scenarios, that is, the plausibility of the underlying assumptions with regard to estimates; and the goodness of fit of the model, that is, correction for confounders. Uncertainty in the estimates can be assessed via deterministic sensitivity analysis or stochastic simulation.

Various planning models have been described and compared in the framework of Joint Action Health Workforce Programming & Forecasting. The Belgian model has been compared with models used in Denmark, Finland, Spain, England, Norway and the Netherlands. The Belgian model is recognised as one of the most complete projection models. Nevertheless the experiences of other countries such as England and the Netherlands can serve as a source of inspiration for extension of the prospective analysis methods (or horizon scanning). These methods are used to assess the most probable evolution of the care demand and the distribution of competences between professionals, but also to do sensitivity analyses in order to evaluate the projection model and correct it if needed.



Recommendation 4 – The link between the recommendations based on the model and healthcare policy should be streamlined.

1. Stakeholders report undesirable imbalances between supply and demand in the current care landscape. Reference is made to epidemic proportions of overwork by professionals, current and future geographic gaps in the supply, imbalances between the communities, imbalances between opportunities for foreign students and professionals on the one hand and Belgian students and professionals on the other hand.^e This can, according to the stakeholders, have unfavourable implications for the future accessibility and quality of Belgian healthcare. These imbalances could not be documented and empirically validated within the scope of this study. That validation is however necessary to also incorporate the existing imbalances into the ongoing manpower planning.
2. Effective manpower planning should be based on explicit and clearly defined health objectives. The existing planning is however directed toward maintaining a basic supply for which no incontrovertible rationale exists. Development of that vision and establishment of those objectives are not part of the mandate of the Planning Commission, but it should be involved in an active dialog on this. On the one hand expected effects as to supply ('what-if scenarios') can be calculated via the projection model for planned policy interventions. On the other hand the scenarios proposed by the Planning Commission point out to policymakers the adverse effects of calculated trends. Clear health objectives also allow the limits of manpower planning to be made explicit. In many cases solutions for care bottlenecks will surely be located outside interventions in the training system (for example by intervening in the

area of geographic distribution of professionals or in the area of care organisation).

3. The institutional complexity of the Belgian healthcare system complicates effective manpower planning. There is a lack of coordination between policy at the various governmental levels, the healthcare sector and higher education. The recommendations of the Planning Commission are not transposed into practice by decision-making bodies that have a real impact on the supply. The mandate of the Planning Commission should be reaffirmed and strengthened.
4. The present model has an open, modular and chronological architecture. Nevertheless the way in which the projection model is used today implicitly reflects a vision of the care system as a closed system (at the Belgian level). Only the influx of students is used as a policy instrument for steering the supply^f. Therefore other influxes and outflows get *de facto* the status of effects that are difficult to influence. Those involved should consider whether this approach fully realises the steering potential of a model-based approach to manpower planning.

Assessment against the literature: The comparative study of the EU JAHWPF⁴ regrets that policy instruments for achieving the aims of workforce planning are often limited to regulating the influx of students. That is thus not a phenomenon that is limited to the Belgian situation. Nevertheless, due to this the steering potential of medical workforce planning is underutilised. The study also establishes that planning objectives are seldom formulated from future-oriented operational objectives. Too often, as in the Belgian case, it stops with the desire to maintain a status quo under changing circumstances. Moreover the models used usually assume a notional balance between supply and demand and take no account of existing imbalances. In our report 72³ we already established that there is no explicit general framework that allows manpower planning to be aligned with other policy initiatives that have an impact on the medical workforce and the way

^e Foreign entrants are not subject to a selection process on the grounds of European regulations on free movement of persons. Belgian entrants are subject to a double selection: in entering the specialisations and in entering the labour market.

^f Technically the model also provides an entry possibility for professionals. That is currently used to replicate a historic influx but can possibly also model other developments.



in which the profession is practised (such as new financing agreements). There is no unambiguous “right” number and no “right” mix of caregivers. The need for caregivers is determined by societal decisions on the level of commitment of resources for healthcare and the organisation and financing mechanisms of healthcare. The value of estimates thus lies not so much in their capacity to assess the numbers exactly, but in their use in determining or predicting current and emerging trends on which policymakers can then take action. The need for caregivers is endogenously determined via political and societal choices that lie at the basis of the healthcare system itself. Only when those societal and political choices about access to and provision of care are explicit can scientific methods be systematically used to deduce the need for care providers for a specific population.

5.2. Link with KCE Report 278

In the framework of KCE Report 278 on planning of midwives,⁵ a set of recommendations was formulated that are applicable to all healthcare professions for which human resources planning falls under the Consolidated Law of 10 May 2015 on practice of the healthcare professions. These recommendations are thus also applicable here; they are briefly repeated in the following text box.

We refer the reader to the summary of this report via the following link: (https://kce.fgov.be/sites/default/files/page_documents/KCE278As_planning_gezondheidspersoneel_vroedvrouwen_Synthese.pdf).

Change in emphasis from modelling to more planning of health workers:

- To anticipate the developments in care supply and demand the development of scenarios for planning healthcare personnel should be methodologically enhanced, e.g. by introduction of a prospective analysis (or 'horizon scanning') and analysis of the policy measures that can influence demand for and supply of caregivers.

Measurement of the supply:

- In collecting data for planning health professions there is a need for more coordination between the different levels of competences so that continuity between earlier and future data is ensured.
- Improvements are needed with regard to data collection for describing the projection of the number of graduates and the conversion of the number of professionals to FTEs for independent professional activities.

Measurement of the demand:

- The data collection with regard to the demand should be improved.

Transversal planning of the health professions:

- There should be a transition to simultaneous planning of the health professions between which task delegation is possible or desirable.

Post-hoc analysis of the projection models and evaluation of policy measures with regard to quota allocation:

- An annual post-hoc analysis of the projection model should be conducted to enable deviations from expectations to be analysed;
- When policy measures are taken with regard to planning, their impact on care organisation and expenditures should be evaluated.



■ REFERENCES

1. Cel Planning van het Aanbod van de gezondheidszorgberoepen, DG Gezondheidszorg FOD Volksgezondheid Veiligheid van de Voedselketen en Leefmilieu. Jaarverslag 2015 van de Planningscommissie - medisch aanbod. Opvolging van de planning van het medisch aanbod in België. 2016.
2. Cel Planning van het Aanbod van de gezondheidszorgberoepen, DG Gezondheidszorg FOD Volksgezondheid Veiligheid van de Voedselketen en Leefmilieu. Jaarverslag 2016 van de Planningscommissie - medisch aanbod. Opvolging van de planning van het medisch aanbod in België. 2017 (in voorbereiding).
3. Roberfroid D, Stordeur S, Camberlin C, Van de Voorde C, Vrijens F, Léonard C. Het aanbod van artsen in België. Huidige toestand en uitdagingen. Brussels: Federaal Kenniscentrum voor de Gezondheidszorg (KCE); 2008. Health Services Research (HSR) KCE reports 72A (D/2008/10.273/07)
4. Malgieri A, Michelutti P, Van Hoegaerden M. Handbook on Health Workforce Planning methodologies across EU countries. 2016. Joint Action Health Workforce Programming & Forecasting Funded By the Health Programme of the European Union. Deliverable D052 (ISBN 978-80-89825-00-4)
5. Benahmed N, Hendrickx E, Adriaenssens J, Stordeur S. Planning van gezondheidszorgpersoneel en gegevens over vroedvrouwen. Brussels: Belgian Health Care Knowledge Centre (KCE); 2016. Health Services Research (HSR) KCE Reports 278A (D/2016/10.273/95)
6. Cel Planning van het Aanbod van de Gezondheidszorgberoepen - Dienst Gezondheidszorgberoepen en Beroepsuitoefening - DG Gezondheidszorg FOD Volksgezondheid Veiligheid van de Voedselketen en Leefmilieu. PlanCad Artsen 2004-2012. 2015.
7. Cel Planning van het Aanbod van de gezondheidszorgberoepen, DG Gezondheidszorg FOD Volksgezondheid Veiligheid van de Voedselketen en Leefmilieu. Jaarstatistieken met betrekking tot de beoefenaars van gezondheidszorgberoepen in België - Aantal beoefenaars met het recht om het beroep uit te oefenen op 31/12/2016 en instroom 2016. 2017.



COLOPHON

Title:	Strategies for improving the medical workforce projection model: a stakeholder consultation – Synthesis
Authors:	Philippe Vandebroeck (shiftN), Kris Ooms (shiftN), Nadia Benahmed (KCE), Rachel Wickert (shiftN), Wendy Christiaens (KCE), Sabine Stordeur (KCE)
Project coordinator en senior supervisor:	Sabine Stordeur (KCE)
Redaction synthesis:	Philippe Vandebroeck (shiftN), Sabine Stordeur (KCE)
Reviewers:	Pieter-Jan Miermans (CelPlan, FOD Volksgezondheid, Veiligheid van de voedselketen en Leefmilieu), Raf Mertens (KCE), Pascale Steinberg (CelPlan, SPF Santé Publique, Sécurité de la Chaîne Alimentaire et Environnement), Veerle Vivet (CelPlan, FOD Volksgezondheid, Veiligheid van de voedselketen en Leefmilieu)
Stakeholders:	Dirk Bernard (AZ St Lucas Brugge), Goele Bossaert (Agentschap voor Hoger Onderwijs, Volwassenenonderwijs, Kwalificaties en Studietoelagen [AHOVOKS]), Jacques Brotchi (Parlement de la Région de Bruxelles-Capitale), Matthias Claeys (Vlaams Geneeskundig StudentenOverleg [VGSO]), Christophe Cocu (Fédération des Maisons Médicales), Karin Cormann (Département "Santé et Personnes âgées" du Ministère de la communauté germanophone), Rita Cuypers (Algemeen Syndicaat van Geneeskundigen van België [ASGB]), Chantal De Boevere (Raad van Universitaire Ziekenhuizen – Conférence des Hôpitaux Académiques de Belgique [RUZB – CHAB]), Jan De Maeseneer (Universiteit Gent), Jacques de Toeuf (Association Belge des Syndicats Médicaux – Belgische Vereniging van ArtsenSyndicaten [AbSyM – BVAS]), Alain De Wever (Université Libre de Bruxelles [ULB]), Pierre Drielsma (Cartel Groupement Belge des Omnipraticiens – Algemeen Syndicaat der Geneeskundigen van België [GBO-ASGB]), Gretel Dumont (Agence pour une Vie de Qualité [AviQ]), Joanna Geerts (Federaal Planbureau), Jan Goffin (UZ Leuven), David Hercot (Commission communautaire commune de Bruxelles-Capitale [COCOM]), Cédric Hermans (Université Catholique de Louvain ; Réseau Santé Louvain), Lon Holtzer (Vlaams Ministerie van Welzijn, Volksgezondheid en Gezin, Jo Vandeurzen), Yolande Husden (Cabinet du Ministre Demotte, Fédération Wallonie-Bruxelles), Stella Matterazzo (Service d'Appui à la Direction générale, Ministère de la Fédération Wallonie-Bruxelles), Koen Matton (Orde der artsen), Dominique Maun (Commission communautaire française [COCOF]), Pascal Meeus (Institut National d'Assurance Maladie-Invalidité – Rijksinstituut voor ziekte- en invaliditeitsverzekering [INAMI – RIZIV]), Marc Moens (AbSyM – BVAS), Maxime Mori (Fédération des étudiant-e-s francophones), Renaat Peleman (Universiteit Gent), Alex Peltier (Mutualités Chrétiennes – Christelijke Mutualiteiten), Jean-Yves Pirenne (Cabinet du Ministre de l'enseignement supérieur, Jean-Claude Marcourt), Fabienne Pringels (Forum des Associations de Généralistes [FAG]), Jérémie Rafalowicz (Fédération des maisons médicales), Jean-Pierre Schenkelaars (Collège Intermutualiste National – Nationaal Intermutualistisch College [CIN – NIC]), Marco Schetgen (ULB), Wim Tambeur (Vlaams Ministerie van Welzijn, Volksgezondheid en Gezin, Jo Vandeurzen), Robert van den Oever (Christelijke Mutualiteiten – Mutualités Chrétiennes), Michel Van Hoegaerden (European Joint Action on Health Workforce Planning & Forecasting), Guy Vanderstraeten (Universiteit Gent),



Danny Vandewalle (Agentschap Zorg en Gezondheid), Brigitte Velkeniers (PlanningsCommissie – Medisch aanbod, FOD Volksgezondheid, Veiligheid van de voedselketen en Leefmilieu), Mieke Walraevens (Beleidsceel Federaal Minister van Volksgezondheid Maggie De Block), Patrick Waterbley (Hoge Raad van Geneesheren-specialisten en huisartsen), Ilse Weeghmans (Vlaams Patiëntenplatform)

External validators: An Jacobs (VUB), Olivier Schmitz (UCL)

Acknowledgements: Merel Claes (shiftN), Henk Akkermans (Supplynetworkdynamics)

Reported interests: All experts and stakeholders consulted within this report were selected because of their involvement in the topic of the medical workforce planning. Therefore, by definition, each of them might have a certain degree of conflict of interest to the main topic of this report'

Layout: Ine Verhulst, Joyce Grijseels

Disclaimer:

- **The external experts were consulted about a (preliminary) version of the scientific report. Their comments were discussed during meetings. They did not co-author the scientific report and did not necessarily agree with its content.**
- **Subsequently, a (final) version was submitted to the validators. The validation of the report results from a consensus or a voting process between the validators. The validators did not co-author the scientific report and did not necessarily all three agree with its content.**
- **Finally, this report has been approved by common assent by the Executive Board (see <http://kce.fgov.be/content/the-board>).**
- **Only the KCE is responsible for errors or omissions that could persist. The policy recommendations are also under the full responsibility of the KCE.**

Publication date: 6 July 2017

Domain: Health Services Research (HSR)

MeSH: Health Manpower ; Health Planning ; Forecasting ; Health Services Needs and Demand

NLM Classification: W76

Language: English

Format: Adobe® PDF™ (A4)

Legal depot: D/2017/10.273/49

ISSN: 2466-6459



Copyright:

KCE reports are published under a “by/nc/nd” Creative Commons Licence
<http://kce.fgov.be/content/about-copyrights-for-kce-publications>.



How to refer to this document?

Vandenbroeck P, Ooms K, Benahmed N, Wickert R, Christiaens W, Stordeur S. Strategies for improving the medical workforce projection model: a stakeholder consultation – Synthesis. Health Services Research (HSR). Brussels: Belgian Health Care Knowledge Centre (KCE). 2017. KCE Reports 290Cs. D/2017/10.273/49.

This document is available on the website of the Belgian Health Care Knowledge Centre.