KCE REPORT 341C

Federaal Kenniscentrum voor de Gezondheidszorg
Centre Fédéral d'Expertise des Soins de Santé
Belgian Health Care Knowledge Centre

ASSESSING THE SUSTAINABILITY OF THE BELGIAN HEALTH SYSTEM USING PROJECTIONS

ADD-ON TO "PERFORMANCE OF THE BELGIAN HEALTH SYSTEM – REPORT 2019"

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HEALTH SERVICES RESEARCH

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MÉLANIE LEFÈVRE, SOPHIE GERKENS

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COLOPHON

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- **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.**
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LIST OF ABBREVIATIONS

ABBREVIATION	DEFINITION
AWG	Ageing Working Group
ECOFIN	Economic and Financial Affairs Council
EPC	Economic Policy Committee
EPS	Permanent Sample (*Échantillon Permantent(e) Steekproef*)
EU	European Union
FAMHP	Federal Agency for Medicines and Health Products
FTE	Full-Time Equivalent
FPS	Federal Public Service
GDP	Gross Domestic Product
GP	General Practitioner
HSPA	Health System Performance Assessment
MEA	Managed Entry Agreement
MORSE	Monitoring Of Reimbursement Significant Expenses
OECD	Organisation for Economic Cooperation and Development
PPP	Purchasing Power Parity
PROMES	PROjecting Medical Spending
RIZIV – INAMI	National Institute for Health and Disability Insurance (Rijksinstituut voor Ziekte- en Invaliditeitsverzekering – Institut National d'Assurance Maladie-Invalidité)
WHO	World Health Organization

SCIENTIFIC REPORT

1 INTRODUCTION

Aim of the report

The present report is an add-on to a previous KCE report published in 2019 that assessed the performance of the Belgian health system.[1] Although many conclusions of this previous report were future oriented, no projection model was used to assess performance. The purpose of this add-on is therefore to explore whether and how one can make use of projections models in the context of Health System Performance Assessment.

The aim of the current report is twofold. First we develop a conceptual framework that can be used to identify and select relevant projection-based indicators. Second we apply this framework to the Belgian situation in order to select, within existing projection models performed by various institutions, those that can provide relevant indicators for assessing the performance of the Belgian health system. Following the procedure of the previous report, data exploited here are extracted from existing data sources and no new data collection is undertaken.

The report is constructed as follows. The introduction provides general background on Health System Performance Assessment in Belgium and how projection-based indicators fit within this framework. Chapter 2 develops a conceptual framework to identify relevant projection-based indicators. Then only indicators that are also available in existing models developed in Belgium are included in the performance assessment of the Belgian health system. For these selected indicators, results are presented in chapter 3. Chapter 4 discusses some limitations of the exercise and finally chapter 5 concludes.

Health System Performance Assessment in Belgium

Health System Performance Assessment (HSPA) is a process aiming to assess the health system holistically, a “health check” based on measurable indicators. HSPA is specifically mentioned in the Tallinn Charter[2] signed by all countries from the European region of the World Health Organization (WHO). Each HSPA is developed along the lines of a conceptual framework

that is specific to the country. HSPA is an ongoing process, with repeated updates feeding the information needs of health policy.

The strategic objectives of the Belgian HSPA process are[3]:

1. to inform the health authorities about the performance of the health system and to offer a support for policy planning;
2. to provide a transparent and accountable view of the health system performance, in accordance with the commitment made in the Tallinn Charter;
3. to monitor the health system performance over time.

In Belgium, four comprehensive HSPA reports – also called "Performance reports" – have been published so far (2009, 2012, 2015 and 2019)[1, 3-5], the last one coming with a companion website with downloadable data sets for selected indicators (www.healthybelgium.be). The initial conceptual framework for the Belgian HSPA grouped indicators into four dimensions: quality, accessibility, efficiency, and sustainability. Quality of care is further subdivided into five sub-dimensions (effectiveness, appropriateness, safety, patient-centeredness, and continuity). Equity, a fifth dimension that is transversal, has been evaluated since the 2012 Report. A recent report (2020)[6] focuses on this last dimension and analyses more in detail equity in healthcare access, use and financing.

Including projection-based indicators as a part of HSPA

Although many conclusions of the HSPA reports are future oriented, all the measurable indicators used are based on the most recent national results available and the past evolution over time. The value at the national level is compared to targets, to results from EU-15 countries and/or to standards of care. In the absence of these, the evaluation is based on a consensus among the authors of the report. From this, warning signals are identified to inform policymakers on areas that require attention.

In what follows we embrace an additional vision that has never been carried out in previous Belgian HSPA reports: we assess the sustainability of the health system using statistical projections for the future evolution of a limited set of indicators. Such projection models and data exist in several Belgian institutions, but have never been analysed jointly in the HSPA report. The rationale for including performance indicators based on projection models (hereafter called "projection-based indicators") as a part of HSPA is to identify a future expected imbalance between supply and demand.

This vision is consistent with the HSPA framework as the considered indicators are measurable and can contribute to the three objectives mentioned above. In addition, as stated by the European Commission Expert Group on Health System Performance Assessment (2018)[7], "*HSPA has the potential to be both predictive and prescriptive*" and "*more could be done to promote a more strategic role for HSPA to effectively inform system improvement (…) explore the possibility of incorporating more strategically predictive or modelling approaches to help identify policy options*". Although projection-based indicators have never been used in the Belgian HSPA context, such indicators (projections of health expenditure) have been used in the OECD health system performance assessment reports (Health at a glance, 2018[8] and 2019[9]).

Projection-based indicators to assess the sustainability of the health system

Sustainability can be defined as the ability of the system to[3, 10]:

- stay durably financed by public sources;
- provide and maintain infrastructure, workforce, facilities and equipment;
- be innovative;
- be responsive to emerging needs.

In the last Belgian HSPA report (2019), 16 specific indicators were selected to represent the four elements of the definition. This panel of indicators combines a variety of sub-dimensions (financial sustainability, workforce, facilities, and innovation) that reflect the heterogeneity of the concept.

Projections fit in this framework by providing insight into the future evolution of relevant indicators, in order to assess the sustainability of the health system in the near or distant future. It assesses whether expected chronic

shocks will disrupt the balance between supply and demand, threatening sustainability. This is also informative for assessing preparedness to acute shocks: a health system that is already expected to experience an imbalance between supply and demand in the absence of acute shocks is, a fortiori, not protected against a sudden profound resource imbalance that can be caused by a sudden shock (for more details on the distinction between acute and chronic shocks, see Box 1).

Box 1 – Typology of health system shocks

"Shocks (…) can be categorized in many ways, including their nature, severity, duration and frequency. Against the backdrop of the complexity of health systems, these dimensions are to be considered as continua, with (i) acute, sudden shocks that happen occasionally and (ii) chronic, structural stresses that systematically affect the functioning of health systems as the two opposite ends of the classification spectrum. As per their nature, a typology should classify, at a minimum, whether shocks and stresses predominantly affect the supply or the demand side of health systems. A more granular typology could classify shocks and stresses based on their main nature – epidemiological, economic, technological, environmental, societal and geo-political."[11]

Source: EU Expert Group on Health Systems Performance Assessment (2020)[11]

2 CONCEPTUAL FRAMEWORK AND CHOICE OF INDICATORS

The method of the HSPA report series aims to compose the conceptual framework with the most useful indicators.[1] Relevant indicators are first identified, then are confronted with data availability. All data exploited are extracted from existing data sources, so that no new data collection is undertaken. The final selection of indicators is a compromise between the conceptual relevance and the feasibility (availability of data and manageable number of indicators).

2.1 Conceptual framework

Building blocks

The selection of projection-based indicators that can be relevant to assess the sustainability of the health system is structured around the WHO framework that describes health systems in terms of six core components or "building blocks": (1) service delivery, (2) health workforce, (3) health information system, (4) medical products, vaccines and technologies, (5) financing, and (6) leadership/governance (see Box 2).

These building blocks have been developed to clearly articulate the objectives of the WHO to help strengthen health systems. In the WHO health system framework, all six building blocks are required to improve outcomes.[12] Obviously, any type of division of a complex system is imperfect. Notably, it does not take into account the substantial and dynamic interactions that exist across each component. Nevertheless, focusing on these separate components helps put boundaries around the complex system and allows to identify indicators for monitoring progress.[13]

Box 2 – Building blocks from the WHO health system framework

*"Good **health services** are those which **deliver** effective, safe, quality personal and non-personal health interventions to those that need them, when and where needed, with minimum waste of resources.*

*A well-performing **health workforce** is one that works in ways that are responsive, fair and efficient to achieve the best health outcomes possible, given available resources and circumstances (i.e. there are sufficient staff, fairly distributed; they are competent, responsive and productive).*

*A well-functioning **health information system** is one that ensures the production, analysis, dissemination and use of reliable and timely information on health determinants, health system performance and health status.*

*A well-functioning health system ensures equitable access to essential **medical products, vaccines and technologies** of assured quality, safety, efficacy and cost-effectiveness, and their scientifically sound and cost-effective use.*

*A good **health financing** system raises adequate funds for health, in ways that ensure people can use needed services, and are protected from financial catastrophe or impoverishment associated with having to pay for them. It provides incentives for providers and users to be efficient.*

***Leadership and governance** involves ensuring strategic policy frameworks exist and are combined with effective oversight, coalition building, regulation, attention to system-design and accountability."*

Source: WHO (2007)[12]

Balancing supply and demand

To assess the sustainability of the health system in the near or distant future, one should anticipate the impact of structural changes that affect the health system (e.g. population ageing, growing burden of chronic diseases). Typically, these changes tend to imbalance demand and supply of health services, through an increase in the need for healthcare, a reduction of resources, or both. The purpose of the current report is therefore to analyse, in a consistent way, existing data on future projections/scenarios for both supply and demand, in order to identify red flags (i.e. risks of future imbalance).

A matrix of potential indicators

Combining the building blocks from the WHO health system framework with the need to assess future changes in both supply and demand, one may construct the matrix shown in Table 1. In that table, examples of assessment areas related to supply and demand are provided for four of the six building blocks. This should not be considered as an exhaustive list, rather as an illustrative one. The building blocks "health information system" and "leadership and governance" are not included in this matrix because, as opposed to the others, they are not characterised by a dichotomy between demand and supply. In addition, the evaluation of "leadership and governance" would be based on qualitative methods rather than on quantitative (measurable) indicators.

Table 1 – Matrix of potential projection-based indicators

Building blocks	Demand side projection	Supply side projection
Service delivery*	Projected required number of hospital beds	Future number of hospital beds according to various policy scenarios
	Projected need for residential care for older persons	Future number of residential care beds according to various policy scenarios
	Projected need for labs capacities	Future number of labs according to various policy scenarios
	Etc.	Etc.
Health workforce*	Projected use/consumption of GP services	Medical workforce projections (on GPs)
	Projected use/consumption of medical specialists services	Medical workforce projections (on medical specialists)
	Projected use/consumption of nurses services	Nurses workforce projections
	Projected use/consumption of hospital nurses services	Workforce projections on hospital nurses
	Etc.	Etc.
Medical products, vaccines and technologies	Projected consumption of medicines	Future number of medicines according to various policy scenarios
	Projected expenditure for medicines	Public spending projections on medicines
	Etc.	Etc.
Financing	Projected expenditure on health	Gross Domestic Product projections
	Projected public expenditure on health	Public spending projections
	Etc.	Etc.

** Although the required number of healthcare professionals could be categorised as demand for service delivery, a distinction is made between indicators concerning workforce and those concerning other aspects of service delivery.*

2.2 Selection of indicators

2.2.1 Service delivery

Service delivery covers a broad range of topics such as hospital capacity and equipment availability, but also residential care facilities, mental health services or labs and diagnostic capacities. Hospitals in particular face challenges that are predicted to intensify in the future: the development of new diagnostic and treatment technologies, an ageing population, a rise in chronic diseases associated with multi-morbidity and changes in attitudes with increasing public expectations.[14] This changing context will have an impact on the future number and type of hospitals and hospital infrastructures that will be needed. In a previous KCE report (2017)[14], forecasts for the required **hospital capacity** up to 2025 were generated. The projection model took three evolutions into account: the evolution in population size and composition; the evolution of average length of stays, estimated by pathology group; and the evolution of the admission rate computed by age group and pathology group. The analysis showed an overall decrease in required acute-care hospital beds, except for chronic care and geriatric care beds.

One may want to compare this future required capacity with the evolution of supply. Internationally, hospitals face two major trends: care is becoming more specialised and concentrated, but is also delivered closer to home. In addition, services are increasingly integrated, with community, primary, secondary and specialist/tertiary services becoming more interlinked. During the last decades the number of hospitals and hospital beds in acute structures have steadily decreased in a lot of countries, resulting from political willingness to reduce excess capacity and to reorganise the supply of care towards alternatives to inpatient stays.[14] In Belgium, a moratorium set in 1982 still applies today: the number of licensed hospital beds for general hospitals is set at the number of licensed beds on 1 July 1982 and any new bed created must result in the closure of another bed somewhere else in the hospital system. Belgium has not faced yet a large decrease in the number of beds comparable to those observed for instance in England, France or in the Nordic European countries. Nevertheless, it would be relevant to monitor hospital capacity to keep it in line with required capacity.

Unfortunately, the 2017 report on the required hospital capacity up to 2025 is based on outdated data (the last year in the historic data being 2014) which decreases its relevance for the present HSPA study. Still, if the results of this report were updated with more recent data, it would be indicated to include the projected required number of hospital beds as an indicator of sustainability in the next HSPA report. However, unless this entire report is subsequently updated on a regular basis, it is unlikely that this indicator could be part of the *core* indicators of the HSPA report, that are assessed in each of the editions.

Regarding **residential care for older persons** in Belgium, a previous KCE report (2011)[15] projected the number of older persons in homes for older people and nursing homes to increase from 125 500 in 2010 to 166 000 in 2025, which corresponds to an increase of 32%. In alternative scenarios, this projected number of beds needed in 2025 ranged from 149 000 to 177 000 (from +19% to +41%). The projection model incorporated the most important variables determining long-term care use: the projected future distribution of the population by age and sex; the living situation (availability of informal carers) of older persons; and their level of disability.

Given that the number of residential care beds in Belgium in 2011 was 129 732, the report concluded that the supply had to be expanded considerably. In order to monitor the evolution in number of beds a new indicator (ELD-4) has been introduced in the last HSPA report (2019). According to the last data available, in 2018 there were in total 144 399 residential care beds, still indicating a need for further growth.[1] Monitoring the possibility to create such beds according to various policy scenarios might therefore be relevant to anticipate a potential future imbalance between demand and supply.

Unfortunately, the report on the projected number of older persons in residential care is based on outdated data (the last year in the historic data used is 2009) and no further update is foreseen in the near future. While these results were discussed in the 2019 HSPA report, these projections cannot be used as a relevant *core* indicator for future HSPA reports (the next one being foreseen for 2024).

No other existing projection models related to the service delivery were identified at the Belgian level. In conclusion, as long as no update of the above-mentioned analyses is foreseen, no projection-based indicators related to service delivery can be included in the HSPA report series.

2.2.2 *Workforce*

A sufficient (in number and skills), robust, flexible and well-motivated workforce is key for the performance of the health system, as it has again been illustrated by the recent COVID-19 crisis (see for instance Van de Voorde et al., 2020[16]). A recent report of the European Commission Expert Group on HSPA[11] indicates that only a small number of countries reported indicators aimed at assessing the adequacy of the health workforce, both in terms of supply and skill composition. In Belgium, the last HSPA report[1] includes several measures related to the workforce to assess both accessibility and sustainability (see Box 3). In particular, in the assessment of sustainability, ten indicators related to workforce are measured. However, all the indicators on medical workforce focus only on the supply side and are based on historic data; projection-based indicators have not been considered yet.

Box 3 – Workforce related indicators in the Belgian HSPA report 2019

Medical workforce:

Medical graduates (/100 000 population) (S-4)

Foreign-trained physicians (% of those licensed to practice) (S-14)

Medical graduates becoming GP (% of those with medical specialisation) (S-5)

Mean age of practising GPs (in FTE, years) (S-6)

Physicians aged 55+ (% of those practising) (S-7)

GP aged 55+ (% of those practising) (S-15)

Practising physicians (/1000 population) (A-5)

Nursing workforce:

Nursing graduates (/100 000 population) (S-8)

Nursing students following the bachelor route (% of new graduates) (S-9)

Nurses aged 50+ (% of those professionally active) (S-10)

Foreign-trained nurse (% of those licensed to practice) (S-16)

Practising nurses (/1000 population) (A-6)

Number of nurse vacancies (A-7)

Patient-to-nurse ratio (A-8)

Source: Devos et al. (2019)[1]

Regarding the **supply of healthcare workforce**, projections for the short and long term are available in Belgium. Indeed, the Planning Commission of medical supply supported by the Planning Unit for the Supply of the Healthcare Professions, depending on the FPS Public Health, Food Chain Safety and Environment quantifies the workforce of healthcare professionals, as well as their future developments. This Commission, established in 1996, examines the evolution of the supply for physicians, dentists, physiotherapists, nurses, midwives and speech therapists. Projections are generally composed of a baseline scenario and one or several alternative scenario(s). The baseline scenario provides a starting point that is discussed in a working group with representatives of the profession. In the alternative scenario(s), other hypotheses and/or approaches are developed in order to address challenges highlighted by the baseline scenario. Projections are made at the horizon of 5, 10, 15 and 20 years.

The Planning Unit uses a stock-and-flow model to quantify the evolution of healthcare professionals' workforce (for more details, see appendix). For physicians, the projected number of students starting a specialisation training (number of interns) is calculated for all medical specialists (including GPs) together, but are separated by linguistic community based on the language in which the diploma is delivered (or the chosen contact language

for foreign diplomas). As there is no medical school in the German-speaking Community, only French and Flemish Communities are presented.

From there, specific calculations are made for each medical specialty. The number of persons starting each specialty training is obtained by applying a "specialty rate" to the number of interns. The proportion of interns choosing to specialise in general medicine has increased in recent years and was 35.9% in the Flemish Community and 41.9% in the French Community in 2019.[17] Access to specialisation for physicians (including GPs) in Belgium is limited by a quota system, with global quotas defining the maximum number of physicians as well as minimum quotas for some specialties where a possible shortage has been identified (such as for GPs). Before the sixth state reform, both quotas were determined by the federal Minister of Social Affairs and Public Health (Royal decree of 12 June 2008[18]). Since the sixth state reform, the responsibility of defining the minimum quotas has been transferred to the federated entities. While the Royal decree of 16 August 2020[19], updating the Royal decree of 12 June 2008, defines the global quotas, federated entities are now responsible for setting sub-quotas per specialty (respecting global quotas). In response, both communities are creating their own planning commission.[20, 21] Minimum access quotas to the GP specialisation have been increased in the French community in 2018[22] and 2019[23] and there is a political will to increase them in the Flemish Community from 2021.[24] Based on the recent observed evolutions and the decisions made in both linguistic communities, the Planning Unit set in the projection model, the "specialty rate" for general medicine (the proportions of interns choosing to specialise as GP) for the future at 42% in the French Community and 40% in the Flemish Community.[17] "Specialty rates" for other specialties are reduced accordingly.

From this model, the projected number of practising physicians (the number of individual physicians active in the healthcare sector) are calculated for each medical specialty. Applying an "activity rate" also allows to calculate the projected number of FTEs active in the healthcare sector for each medical specialty.

Demand for healthcare workforce is not projected per se in Belgium, but a microsimulation model (PROMES) developed by the Federal Planning Bureau in collaboration with RIZIV – INAMI provides projections up to 2025 for medical care consumption (for more details see appendix). The projected consumption is modelled using a two-step model in which the probability of use (first step) and the average volume (second step) are explained in function of individual demographic and socio-economic characteristics, indicators of morbidity, previous consumption and environmental factors.[25, 26] The model consists of about 25 modules corresponding to different expenditure groups, sometimes divided in sub-modules. Projections from four of these sub-modules (GP consultations, GP visits, medical specialist contacts and emergency specialist contacts) can be used to determine the projected number of contacts with physicians, which can serve as a proxy for the demand for these medical professionals. For nurses, only projections for home care services exist, which is a small and not representative subset of nurses' activities. The other available projections concern physiotherapists, dentists and speech therapists (no projections are available for the care consumption for midwifes).

To limit the total number of indicators, we restrict the analysis of healthcare workforce to physicians and nurses only, following the choice made in the HSPA report 2019 (see Box 3). However, as only partial information is available regarding the demand for nurses, only indicators related to **supply and demand for physicians** are finally selected for the current report.

In particular, we use the baseline scenario of the projections from the Planning Commission of medical supply for the supply of **GPs** up to 2036 as the indicator of supply.[17] For the demand, we use the projected number of contacts (consultations and visits) with **GPs** from the PROMES model. As the purpose of this analysis is to compare projections of future demand with projections of future supply, one should make sure that both indicators are independent from each other. To ensure this, results presented here slightly differ from the original models (see Box 4).

Box 4 – Adjustments made to separate demand and supply

Demand

In the PROMES model consumption of care at the individual level is linked to relevant individual characteristics such as age category, gender, health status, employment status and insured status. It allows to estimate, from specific characteristics of an individual, the probability of using care and the volume of this care. In particular, the probability of contact with a physician (modelled using logistic regressions) depends on several individual characteristics. One of these characteristic is medical density, measured for each individual as the number of physicians per 10 000 inhabitants in the district where he lives. One may expect the probability of using care to be higher where medical density is higher, due to the so-called "induced demand" effect.

Results from this model are then reweighted so that they can be applied to future populations. Adjustments are made using a separate dynamic microsimulation model or using external data when available. In particular medical density is projected using projections for the supply of healthcare professionals from the Planning Commission of medical supply.

Projections of future demand from the original PROMES model depends on projections of future supply, the two indicators are therefore not independent from each other. To neutralise this effect, we present in section 3.1 the results from an alternative scenario where medical density projections are maintained artificially constant from 2020 onwards. In the appendix, results from the original model are also presented, highlighting that the difference between results from both scenarios is small.

Supply

The Planning Commission of medical supply usually presents its results in different forms: the projected number of individuals (or FTEs) in the workforce, the "crude" density of individuals (or FTEs) defined as the number of individuals (of FTEs) active in the healthcare sector per 10 000 inhabitants, and the "weighted" density of individuals (or FTEs) that indicate the number of individuals (or FTEs) active in the healthcare sector per 10 000 inhabitants, using population weights that reflect the composition of a population group in terms of its consumption for care. For the latter, consumption is measured by expenditure and is supposed to be unchanged in each segment of the population, although the evolution of the population is taken into account. In this way of presenting projections of medical supply, a component of demand is therefore included. To ensure the indicators of supply analysed in the present report are independent from the demand, we present in section 3.1 results only in terms of individuals and FTEs in the workforce, but not in terms of (weighted) densities. The reader interested in more detailed results can find them in the report from the Planning Unit (2020).[17]

In addition to the calculation for GPs, we carried out the same analysis for **all physicians** (including GPs). However, these results must be interpreted with caution. Firstly, the aggregation of all physicians may hide important differences between specialties. Even if the demand and supply for all medical specialists were balanced, it would be possible that the demand exceeds the supply (or the opposite) for particular specialties. Secondly, for medical specialists, not all contacts are comparable, in terms of workload (time) involved. Therefore, the total number of contacts is a less good proxy of expressed demand. Thirdly, for physicians who are self-employed, the calculation of FTEs is based on the amount of reimbursements by the sickness funds to providers for the acts they have performed. However, especially for medical specialists, the amount associated with the acts is not proportional to the time taken to perform them.

2.2.3 Medical products, vaccines and technologies

Pharmaceutical products play an important role in the health system and are constantly evolving. An increasing number of new drugs enter the market every year, with a cost that can be high, having significant implications for the health insurance budget. Public policy makers need to strike the right balance between access to new drugs and incentives for pharmaceutical companies, while recognising the limits of healthcare budgets.[27] In Europe, the growth of pharmaceutical expenditure has been reduced for some years following the 2008 crisis, due in part to a combination of cost-containment policies and market dynamics, including generic and biosimilar competition.[28] However, growth rates have returned to higher levels more

recently, that can be explained by new high-cost treatments such as for Hepatitis C and some cancer drugs.[29]

On the supply side, a first indicator of sustainability could be the system's capacity to **attract innovative pharmaceuticals**. In that sense, the delay between EU marketing authorisation and national accessibility of innovative medicines (S-12) was selected in the Belgian HSPA report (but was temporarily excluded in the 2019 report for a methodological reason, see the first appendix of the 2019 report).[1] No projections are however available for this indicator.

A second indicator could be the assessment of **pharmaceutical shortage**. Any shortage ("temporary suspension", which means no delivery possible within three working days) or definitive cessation must be communicated to the Federal Agency for Medicines and Health Products (FAMHP, art.6 of the law of 25 March 1964 on pharmaceuticals) and information is available on a public website (www.pharmastatus.be).[30] While no long-term projection model on potential shortages is available, such an indicator would yet be interesting to investigate in the next (2024) HSPA report.

The development of a **horizon scanning** system is also in progress, among others to identify new and emerging pharmaceuticals that could enter the market within a pre-defined period of time, but no long-term projection model is available.[31]

On the demand side, a monitoring of **expenditure on reimbursed pharmaceuticals** is done by RIZIV – INAMI, called the "Monitoring Of Reimbursement Significant Expenses" (MORSE) report.[32] The aim of the report is to comment on evolutions observed in the main drug classes, assess the financial impact of government measures and attempt to make forecasts on future expenditure. These latter are, however, limited to approximately two quarters.

Long-term projections of reimbursed pharmaceuticals are not included in the MORSE report but are available via the microsimulation model (PROMES) developed by the Federal Planning Bureau in collaboration with RIZIV – INAMI (see above). Based on these projections, total pharmaceutical expenditure is expected to increase by 5-6% every year, with an increase of 35.6% for the 2020-2025 period. Large differences are observed in the expected growth path according to the type of product. The annual growth rate of retail pharmaceutical expenditure as well as of hospital inpatient pharmaceutical expenditure are expected to stay below 2% up to 2025. On the contrary, hospital outpatient pharmaceutical expenditure is expected to increase by more than 10% every year, leading total hospital pharmaceutical expenditure to increase by about 6% per year (KCE calculations based on PROMES model estimates of June 2020). This outstanding difference of growth rate between hospital and retail pharmaceutical expenditure is also observed in other European countries (see for instance OECD/EU, 2020).[29]

However, hospital outpatient pharmaceutical expenditure is likely to be overestimated. Indeed, since 2010, managed entry agreements (MEAs) can be concluded at the applicant request. These MEAs include most of the time financial compensation mechanisms that are confidential. The use of these MEAs is rising, especially for new innovative and expensive pharmaceuticals.[33] Because the compensation mechanisms are confidential, the actual expenditure is unknown. In the MORSE report[32], RIZIV – INAMI publishes the firms' turnover for pharmaceuticals under MEAs as well as the amounts paid by the firms within the framework of these MEAs. An estimation of the average compensation rate can therefore be calculated. For the period 2014-2019, this average compensation rate was around 23%. An increase in the compensation rate can also be observed over the years (from 18.4% in 2014 to 38.5% in 2019). The report also highlights that while the increase in public expenditures for pharmaceuticals during the 2014-2019 period was 30.5%, after having deduced the receipts perceived from MEAs, the increase would be reduced to 16.7%. MEAs' compensations are separately included in the PROMES model, so that the projections of pharmaceutical expenditure can be reduced accordingly. Nevertheless, from 2020 onwards these compensations are assumed to follow the same growth rate as the total expenditure on pharmaceuticals. This assumption implies that compensations are proportional to the total expenditure on pharmaceuticals and therefore does not reflect the increase in the compensation rate observed in the MORSE report. Under this assumption, the 2020-2025 growth rate of pharmaceutical expenditure remains equal to 35.6%. For that reason, projections of

pharmaceutical expenditure were not selected as a relevant indicator for this report. In the next release (1.14) of the PROMES model, the Federal Planning Bureau has decided to change the assumption and will suppose confidential compensations to be proportional to the expenditure for specialities delivered in hospitals rather than to total pharmaceutical expenditure. Indeed, pharmaceuticals under MEA are mainly delivered in hospitals. For the next comprehensive HSPA report, it will be important to investigate if such an assumption better reflects the reality and consider the inclusion of the indicator in the report.

To our knowledge, there is no specific projection model in Belgium regarding vaccines, medical devices and other health technologies.

2.2.4 *Financing*

One particular aspect of sustainability of a health system is its financial sustainability which includes both economic and fiscal sustainability. Economic sustainability refers to the growth in health expenditure as a proportion of GDP, while fiscal sustainability refers to the capacity to collect public revenues (taxes and social contributions) to meet public expenditure. Indicators of total health expenditure and of public health expenditure are therefore complementary to assess the financial sustainability of the health system. In the last Belgian HSPA report[1], three indicators of financial sustainability were measured, reflecting both economic and fiscal sustainability (see Box 5).

Box 5 – Financial sustainability indicators in the Belgian HSPA report 2019

Economic sustainability:

Current expenditure on health (% GDP) (S-1)

Current expenditure on health per capita (in PPP US$) (S-2)

Fiscal sustainability:

Current expenditure on health (% financed by public sector) (S-3)

Source: Devos et al. (2019)[1]

Population ageing and technological progress are expected to add pressures on public expenditure on health in the coming decades.[34] At the same time, the size of the working-age population that contributes to finance such expenditure is expected to remain relatively stable, or even to decrease, raising concerns about the fiscal sustainability of health and long-term care systems.[35, 36] Therefore, long-term projections can help policy makers to consider the possible evolution of public expenditure and the impact of the main underlying drivers of healthcare costs.[37]

In what follows, we assess long-term financial sustainability using projections of public expenditure on health (acute and long-term care) as a proportion of GDP, from two different but related sources: on the one hand, at the Belgian level, the Study Committee on Ageing that is established within the High Council of Finance and supported by the Federal Planning Bureau, and on the other hand, at the European level, the Ageing Working Group (AWG) of the Economic Policy Committee (EPC) of the Economic and Financial Affairs Council (ECOFIN). Both provide projections of public expenditure on health but with slight differences in the modelling, the underlying assumptions as well as the data used (see appendix for more details).

Measuring public expenditure on health as a proportion of GDP combines both economic and fiscal sustainability. The higher the indicator, the more pressure is put on the system, either because the health sector is taking a larger importance in the overall economy, or because it is increasingly financed by the public sector, or both.

3 RESULTS

3.1 Workforce

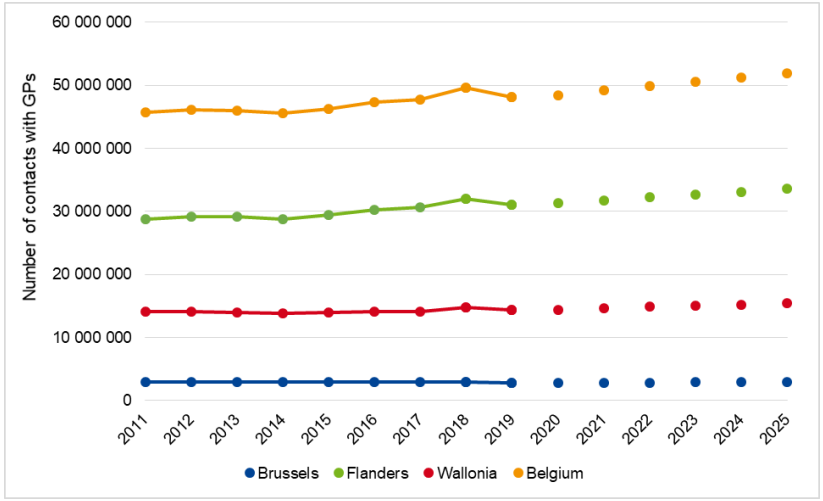
Indicators related to GP workforce

The capacity to provide and maintain a sufficient health workforce is an important component for the sustainability of the health system. To assess the evolution of this capacity in the future, we use two projection-based indicators. The projected number of contacts (consultations and visits) with GPs is used to assess the evolution of the demand, based on a microsimulation model (PROMES) developed by the Federal Planning Bureau in collaboration with RIZIV – INAMI. The projected number of GPs active in the healthcare sector measures the evolution of the supply. It is retrieved from the medical workforce baseline scenario from the Planning Commission of medical supply.

Demand

Results from the microsimulation model PROMES show an expected increase in the number of contacts with GPs in Belgium: from around 47.7 million contacts in 2017 up to 51.9 million in 2025, that is an average annual increase of 1.1% (see Figure 1). Between 2020 and 2025, an increase of 7.1% is foreseen in Belgium (5.5% in Brussels, 7.0% in Wallonia and 7.4% in Flanders).

Figure 1 – Number of contacts (consultations and visits) with GPs in Belgium (2011-2025)



Source: Federal Planning Bureau, PROMES model estimates June 2020 based on EPS 13. In the presented scenario, medical density projections are maintained artificially constant. Region is determined by the patient's place of residence. The peak in 2018 may be due to different factors such as the introduction of eAttest for GP consultations (GPs submit financial statements directly to the sickness fund rather than on paper to the patient) which accelerated the reimbursement and booking; a longer influenza peak in 2018; the projected values of other exogenous variables.

Supply

Regarding supply, projections from the Planning Commission of medical supply indicate that the number of practising GPs (i.e. active in the healthcare sector) in Belgium is expected to increase from 12 099 in 2016 to 12 525 in 2021, that is an increase of 3.5%. This number is expected to further increase to 12 844 in 2026, 13 269 in 2031 and 13 999 in 2036, which corresponds to five-year increases of respectively 2.6%, 3.3% and 5.5%. It should be noted that these projections, at least in the short-term, are likely

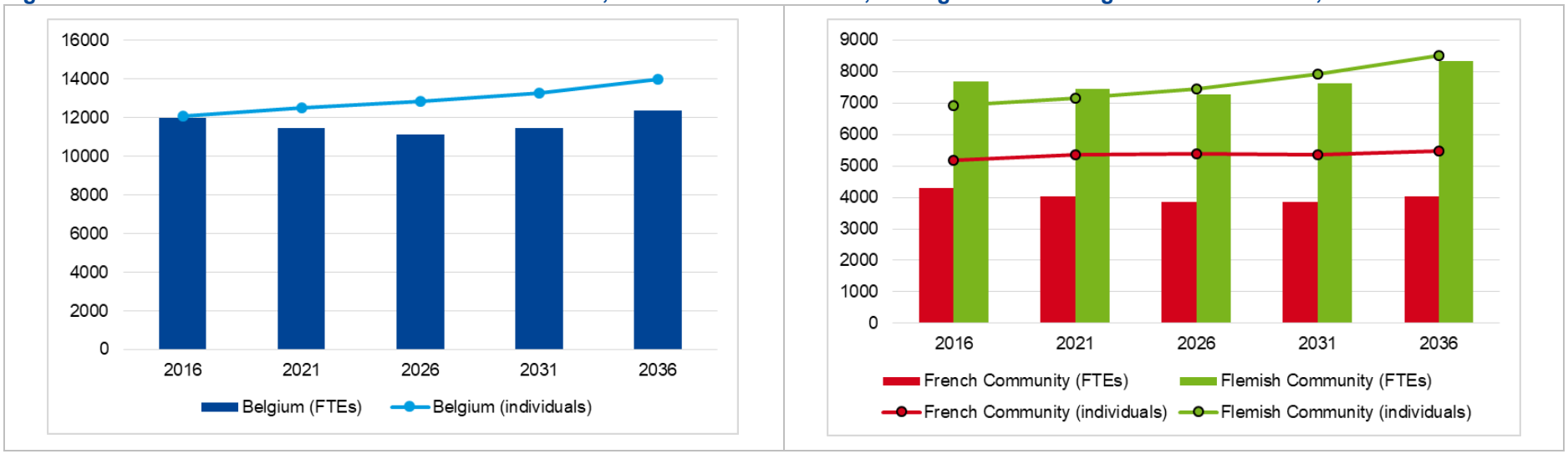
to be an underestimation. Indeed, most recent available data[38, 39], although based on different but related calculations, provide indications of that the actual increase in the number of practising GPs between 2016 and 2021 will be larger than predicted.

On Figure 2, the (projected) number of practising GPs in Belgium is depicted by a line for Belgium (left panel) and for both linguistic communities (right panel). On the same figure, the bars indicate the number of FTEs. In 2016, the equivalent of 11 977 FTEs were active as GPs in the healthcare sector in Belgium (4 284 in the French Community and 7 693 in the Flemish Community). These numbers are expected to decrease in 2021 and 2026 before increasing in 2031 and 2036.

Overall, in the French Community, the model predicts that the number of practising GPs will slightly increase between 2016 and 2036 (from 5 192 to 5 489 i.e. an increase of 297 individuals). This increase in the number of active GPs (+5.7%) does not translate into an increase in the number of FTEs for which a drop of 5.7% is expected between 2016 and 2036. Between 2021 and 2026, the number of practising GPs is only expected to increase by 0.4%, while the number of FTEs is expected to decrease by 4.0%.

In the Flemish Community, the expected increase of the number of GPs is higher: from 6 907 to 8 510 between 2016 and 2036, that is an increase of 1 603 individuals. This important increase (+23.2%) only partially translates into an increase in the number of FTEs (+8.5%). In the short run however, the number of FTEs is expected to decrease (by 3.0% between 2016 and 2021 and by 2.4% between 2021 and 2026) although the number of practising GPs will increase (by respectively 3.7% and 4.1%).

Figure 2 – Number of GPs active in the healthcare sector, in individuals and FTEs, in Belgium and its linguistic communities, 2016-2036



Source: Planning Unit for the Supply of the Healthcare Professions (FPS Public Health, Food Chain Safety and Environment), July 2020.

The previous HSPA report highlighted an increasing average age of GPs in Belgium, due to the difficulty to orientate new graduates as GPs, that *"may very quickly lead to problems for the functioning of primary care"*.[1] In 2015, 54.5% of the practicing GPs where aged 55 or over (51.1% in the Flemish Community, 58.6% in the French speaking one). Projections from the Planning Commission of medical supply show that these proportions will be reduced in the future. According to these projections, the proportion of practising GPs older than 50 years old (in 2016, 57.9% in the Flemish Community and 67.1% in the French Community) are expected to be reduced to respectively 53.1% and 60.2% in 2021, 42.8% and 49.3% in 2026, 30.7% and 37.7% in 2031, and to 23.2% and 29.4% in 2036[17] thanks to an increased number of young graduates who choose to specialise as GPs (see also section 2.2.2, in particular the assumptions made on quotas for GPs).

Comparing supply and demand evolutions

The above results show an expected increase in the demand for GPs in the short-run (5 years) that is larger than the expected increase in supply (see also Table 2). This is especially true in the French speaking side of the country, where the supply is expected to stay almost constant while the demand is increasing. The important efforts made to increase the supply of GPs seem to be insufficient to satisfy the expected increase in demand. Measuring supply of GPs in terms of full time equivalents brings even more worrying results, as the number of FTEs is expected to decrease in both linguistic communities.

Nevertheless, in the long-run, supply will increase more strongly. Indeed, supply is expected to increase more from 2026 onward, with an increase in the number of FTEs of almost 8% between 2031 and 2036. This expected change in the evolution of supply is reassuring. It seems to indicate that the recent efforts made to increase the number of interns who specialise as GPs (see section 2.2.2) will eventually have a non-negligible impact on the supply. However, whether it will be enough to compensate the increased demand is unknown as we have no long-term projections for the demand side. It is possible that demand also strongly increase in the long-run, following notably an important increase in the elder population.

Table 2 – Projection-based indicators related to GP workforce

Indicator		Score	Period (5 years)	Belgium	Flanders	Brussels	Wallonia	Source
S-18	**Demand**: projected number of contacts with GPs	↗↗	2020-2025	+7.1%	+7.4%	+5.5%	+7.0%	Federal Planning Bureau
S-19	**Supply**: projected number of GPs active in the healthcare sector	↗	2016*-2021	+3.5%	+3.7%**	+3.3%**		Planning Commission of medical supply
		↗	2021-2026	+2.6%	+4.1%**	+0.4%**		Planning Commission of medical supply
	Projected number of FTE GPs active in the healthcare sector	↘	2016*-2021	-4.1%	-3.0%**	-6.0%**		Planning Commission of medical supply
		↘	2021-2026	-3.0%	-2.4%**	-4.0%**		Planning Commission of medical supply
	Assessment	🟠						

** Last year of historic data **Based on linguistic communities, not regions.*

Other physicians

In addition to the calculation for GPs, we carried out the same analysis for all physicians (including GPs). These results are available in appendix. However, as explained in section 2.2.2, these results must be interpreted with caution.

The number of physicians is expected to increase in Belgium during the entire period 2016-2036, mainly driven by a large increase in the Flemish Community. The increase in the French Community is expected to be much smaller, especially for the periods 2026-2031 and 2031-2036. Regarding FTEs, an increase is expected in the Flemish Community during all considered periods. In the French Community however, a drop is expected for the period 2016-2021, followed by small increases.

On the demand side, the number of contacts is expected to continuously increase between 2020 and 2025, although a bit less in Brussels than in the two other regions.

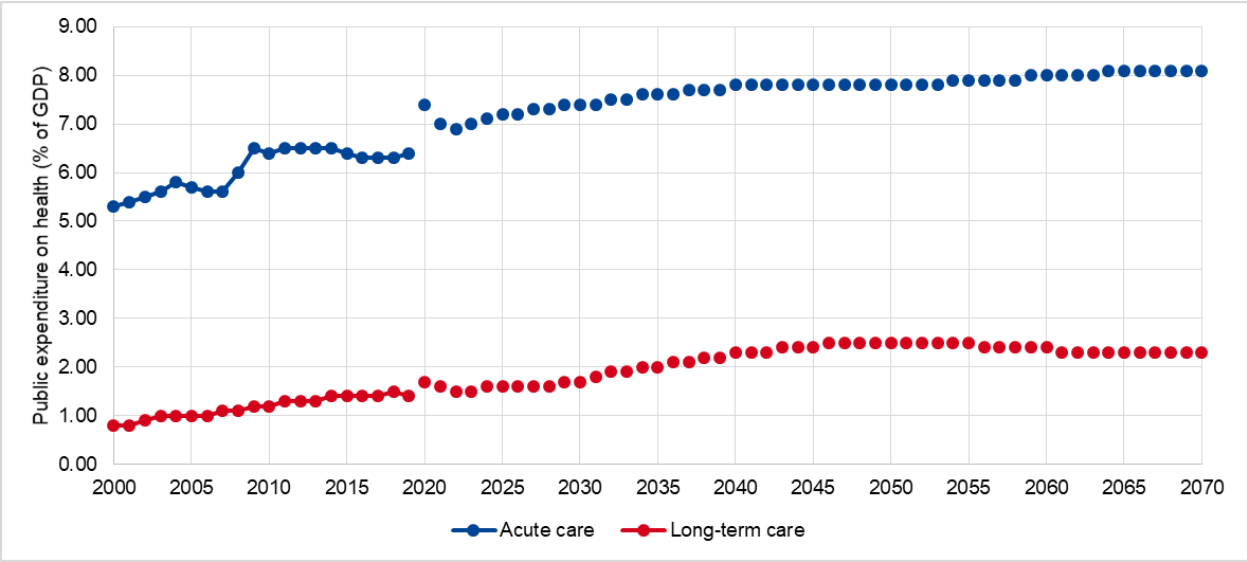
3.2 Financing

Public expenditure on health

In most OECD countries, including Belgium, expenditure on health grows faster than GDP.[35] Main reasons for the pressures on health expenditure are the development of new technologies (that extend the scope, range and quality of healthcare services); increasing incomes (that create rising expectations on the quality and scope of care); and, to a lesser extent, population ageing.[35] This is of particular concern for fiscal sustainability, as public funding accounts for a large part of total expenditure on health (78.8% in 2016[1]).

In Belgium, the Study Committee on Ageing (that is established within the High Council of Finance and supported by the Federal Planning Bureau) makes long-term projections of social expenditure (retirement, healthcare, work incapacity, unemployment, child allowances, and other social expenditure), up to 2070. In what follows we focus on projections for health expenditure, i.e. public expenditure on health with a distinction between acute and long-term care, and we detail results for the projections of public expenditure on health as a proportion of GDP.

Figure 3 – Public expenditure on acute and long-term care (% of GDP) in Belgium (2000-2019 and projections 2020-2070)



Source: Study Committee on Ageing (2020)[40]

In 2019, public expenditure on health amounted to 37.2 billion € which represented 7.9% of GDP. A major part of this expenditure (30.3 billion €, 6.4% of the GDP) was related to acute care, compared to 6.8 billion € (1.4% of GDP) to long-term care. Projections show that, in the absence of effective cost containment policies, public expenditure on health is expected to reach 9.1% of the GDP in 2030 and 10% in 2040 (see Figure 3). Public expenditure for acute care (as a share of GDP) is projected to increase by 22% between 2019 and 2040 (from 6.4% to 7.8% of GDP), while public expenditure related to long-term care would increase by 64% (from 1.4% of GDP in 2019 to 2.3% of GDP in 2040). At a more distant horizon, public expenditure on health is expected to reach 10.4% of the GDP in 2070. Therefore, it may be concluded that rising public expenditure on health will likely exert a continuous pressure on public finances in the long run.

Although projections made by the Study Committee on Ageing are presented as a share of GDP, it is possible to disentangle growth of public expenditure from GDP growth, as it is done in Table 3. As public expenditure for health is expected to grow much faster than GDP, public expenditure for health is projected to account for an increasing part of the GDP. Indeed, within 5 years, public expenditure on health is expected to grow by more than 13% (constant price of 2019), while GDP growth will be around 3%, resulting in an increase of 0.79 percentage points (+10%) of the public expenditure on health as a share of GDP. This increase (representing an imbalance between financing and spending) could result from political willingness to spend more on health. It is yet unclear how the recent COVID-19 crisis will contribute to reinforce this political willingness.[41]

Table 3 – Projection-based indicators related to financing

Indicator		Score	Period (5 years)	Belgium*	Source
S-20	**Demand*****: Projections of public spending on health	↗↗	2019**-2024	+13.3% (+2.5%)	Study Committee on Ageing
	Supply***: GDP projections	↗	2019**-2024	+2.9% (+0.8%)	Study Committee on Ageing
	Assessment: Projections of public spending on health as % of GDP	●	2019**-2024	+0.79 percentage points	Study Committee on Ageing

**Average annual growth rates are shown within brackets. ** Last year of historic data. ***Although the evaluated (im)balance is between financing and spending, the terminology supply/demand is kept to ensure consistency with the other parts of the report.*

Impact of the COVID-19 crisis

One must note that the COVID-19 pandemic had a considerable impact on this indicator. The expected level of GDP in five years for instance is lower than what was expected before the crisis: GDP is expected to increase by 2.9% between 2019 and 2024, while previous estimations (carried out in July 2019) projected an increase of 6.6%.[42] As the expected GDP growth is reduced, public expenditure on health, presented as a share of the GDP, is expected to increase. Indeed, in the previous estimations[42], public expenditure on health was expected to account for 8.3% of GDP in 2020 whereas they would account for 9.1% according to the last estimations. This effect should however not last long: in 2025, public expenditure is expected to account for 8.8% of the GDP both in the last estimations and in the one realised before the COVID-19 crisis. Nevertheless, due to the important uncertainty linked to the COVID-19 crisis, these results must be interpreted with caution. In particular, the direct effect of COVID-19 on the amount publicly spent for healthcare is yet unknown and not taken into account in the above results, the expected increase resulting mainly from a drop in GDP.

International comparison

International comparison is based on projections from the Aging Working Group (AWG) of the Economic Policy Committee (EPC) of the Economic and Financial Affairs Council (ECOFIN) that are not directly comparable to the projections of the Study Committee on Ageing, although they show a similar pattern. They were made before the COVID-19 crisis (in 2018), and therefore do not account for the impact of the pandemics. In 2016, public expenditure on health in Belgium, as a percentage of GDP, was very close to the EU-28 average. Also, public expenditure on health in Belgium are projected to follow a trend in the short and long term that is similar to the EU-28 average one. Nevertheless, public expenditure on long-term care (as a share of GDP) in Belgium is above the EU-28 average, compensated by lower public expenditure on acute care than the EU-28 average. These differences are expected to be slightly exacerbated in the future.

4 LIMITATIONS

All the indicators described in the report present inevitably some limitations. The interested reader will find a detailed discussion of these limits in appendix. In addition, hereafter, we draw the attention on several more general limitations related to the methods and analyses carried-out in this report.

First, in the current report, each of the building blocks is analysed separately from one another, hiding potential interactions between them. For instance demand for health service delivery and health workforce are intrinsically related, the latter being at least partly derived from the former. Therefore treating demand for nurses for example as independent from demand for hospital beds is fundamentally artificial. Another example is the interaction between workforce supply and health expenditure. As workforce accounts for a large part of spending, one cannot in theory consider them as independent from each other. However, only very few projections models in OECD countries have tried to build these links.[43] Even within the same building block, indicators are not independent from each other. For instance, projections for the workforce of a given type of professionals are not independent of other professional groups, as those groups can be substitute or complement to each other. The emergence of new models of healthcare delivery might amplify these interactions. As recommended in a previous KCE report, the Belgian planning of the health professions should evolve towards a more transversal approach and consider a simultaneous planning of the health professions that are likely to benefit from delegation of tasks.[44] The present report reflects the state of development of projection exercises in Belgium and does not include a deep analysis of these potential interactions.

Second, this study is built on existing data and models of projections in the Belgian health system context. It was not the purpose of this report to validate the models, neither to seek for improvement in these models. However, one must keep in mind that results from projections are inevitably based on assumptions. Given the degree of uncertainty of some hypotheses, analyses of sensitivity of the results to certain key parameters are needed. Therefore, when available, we present alternative scenarios for the selected indicators in appendix. In addition, projections models should be updated regularly, not only to include more recent data, but also to take into account possible disruptive elements that may affect the model. In the same way, projections should be validated a posteriori with observed data, and potential differences should be explained with the objective to improve future models.

Third, as the present analysis is built on existing projections results, the time period analysed is not consistent across indicators. While we essentially present evolution at 5 years, the last year of observed data is not the same for all the indicators. In addition, some models provide long-term projections while others are limited to short to medium-term projections. Also, most models provide yearly estimates, but workforce supply projections are only available for every 5 years. Although it might be useful for policy purpose to encourage the responsible agencies to build models on a common periodicity, one must keep in mind that the primary objective of these projections is generally not to assess the sustainability of the health system. As these models are developed for other purposes, other aspects may be of importance for the choice of the periodicity.

Fourth, it is advised in HSPA reports to compare the national values for an indicator to international results (traditionally EU-15 countries) when available. However, projection-based indicators are so dependent of the construction of the models that international comparison is difficult. In the current report, the international context is usually described, but for most of the indicators, it has not been possible to compare the Belgian estimated value with an international one.

5 CONCLUSIONS

This report is an add-on to the fourth evaluation of the performance of the Belgian health system.[1] This add-on discusses the opportunity to include projection-based indicators, in addition to those based on historic data, to better assess the sustainability of the health system. A conceptual framework is used to select relevant indicators in this context. Then projection-based indicators related to workforce and financing are analysed to complement the assessment of the performance of the health system. These indicators are aimed to provide warning signals of a future imbalance between demand and supply within the Belgian health system (see Box 6).

However, one must be cautious when drawing conclusions from these indicators. The analysis should not be seen as a tool to evaluate policies, but to give a broad view (helicopter) of the health system. Results do not depend on a single factor, but have several causes, which can come from outside the health system. The indicators related to healthcare are intrinsically complex, they never result from a single action but reflect the interaction of a full set of variables and parameters. One must also keep in mind that projections are based on assumptions that encompass a certain degree of uncertainty and can always be challenged. Therefore, projections do not provide exact figures for the future, but constitute a decision-making aid tool and allow to frame the policy debate.

Box 6 – Warning signals from the add-on to the 2019 performance report

Workforce

In the short run, the increase in the demand for GPs is expected to be larger than the expected increase in supply expressed by the number of GPs active in the healthcare sector. When the supply is measured in full time equivalents, a decrease is even expected. In the long run (10 years) however, a larger increase in supply is expected, thanks to the important efforts made to increase the number of interns who specialise as GPs.

Financing

Rising public expenditure on health is expected to exert increasing budgetary pressure. Although spending more on health could result from justified political choices, measures will be needed (among the large range of policy options that can be explored on both the expenditure and revenue sides) to reduce the pressure and ensure the sustainability of the health system.

RECOMMENDATIONS[a]

To policymakers we recommend to:

- Continue to tackle the problems stressed by the warning signals. One objective of the performance report is to inform policymakers on areas that require attention. The concerned institutions and bodies are advised to carry on taking the warning signals (described in Box 6) into account for their agenda setting;
- In particular, continue the important efforts made to increase the number of interns who specialise as GPs.

To the research team involved in the next Belgian Health System Performance Assessment (HSPA) report(s) we recommend to:

- Integrate the indicators selected in this add-on in the assessment of the sustainability of the health system and to update them on the basis of more recent data;
- Evaluate whether projection-based indicators that were excluded from this add-on (due to a lack of recent data or to perfectible assumptions) can be integrated into the next comprehensive HSPA report.

To the Planning Commission of medical supply in concertation with the Federal Planning Bureau and RIZIV – INAMI we recommend to:

- Consider using the projected number of contacts with GPs from the PROMES microsimulation model as a proxy for future care demand in an alternative scenario for the evolution of medical (GP) supply.

To the Federal Planning Bureau in concertation with RIZIV – INAMI we recommend to:

- Further investigate the possible options to take the evolution of confidential financial compensations from Managed Entry Agreements into account in the projections of pharmaceutical expenditure.

[a] The KCE has sole responsibility for the recommendations.

To the research community we recommend to:

- Update the trend analysis related to required hospital capacity performed in KCE report 289 with the most recent data available;
- Update the trend analysis related to the number of older persons in residential care performed in KCE report 167 with the most recent data available;
- Explore deeper the possibility to make projections in areas that are currently poorly documented (in particular, projections of demand for nursing care workforce including hospital nurses).

REFERENCES

1. Devos C, Cordon A, Lefèvre M, Obyn C, Renard F, Bouckaert N, et al. Performance of the Belgian health system – Report 2019. Health Services Research (HSR). Brussels: Belgian Health Care Knowledge Centre (KCE); 2019 04/2019. KCE Reports 313 Available from: https://kce.fgov.be/sites/default/files/atoms/files/KCE_313C_Performance_Belgian_health_system_Report.pdf
2. WHO Regional Office for Europe. The Tallinn Charter: Health Systems for Health and Wealth. Copenhagen: World Health Organization; 2008. Available from: http://www.euro.who.int/__data/assets/pdf_file/0008/88613/E91438.pdf
3. Vrijens F, Renard F, Jonckheer P, Van den Heede K, Desomer A, Van de Voorde C, et al. Performance of the Belgian Health System. Report 2012. Health Services Research (HSR). Brussels: Belgian Health Care Knowledge Centre (KCE); 2012. KCE Reports 196C (D/2012/10.273/112) Available from: https://kce.fgov.be/sites/default/files/page_documents/KCE_196C_Health_system_performance.pdf
4. Vlayen J, Vanthomme K, Camberlin C, Piérart J, Walckiers D, Kohn L, et al. A first step towards measuring the performance of the Belgian healthcare system. Health Services Research (HSR). Brussels: Belgian Health Care Knowledge Centre (KCE); 2010 05/07/2010. KCE Reports 128 Available from: https://kce.fgov.be/publication/report/a-first-step-towards-measuring-the-performance-of-the-belgian-healthcare-system
5. Vrijens F, Renard F, Camberlin C, Desomer A, Dubois C, Jonckheer P, et al. Performance of the Belgian Health System - Report 2015. Health Services Research (HSR). Brussels: Belgian Health Care Knowledge Centre (KCE); 2016 12/1/2016. KCE Reports 259 Available from: http://kce.fgov.be/sites/default/files/page_documents/KCE_259C_performancereport2015.pdf

6. Bouckaert N, Maertens de Noordhout C, Van de Voorde C. Health System Performance Assessment: how equitable is the Belgian health system? Health Services Research (HSR). Brussel: Belgian Health Care Knowledge Centre (KCE); 2020 12/2020. KCE Reports 334 Available from: https://kce.fgov.be/sites/default/files/atoms/files/KCE_334_Equity_Belgian_health_system_Report.pdf

7. European Commission. A new drive for primary care in Europe: Rethinking the assessment tools and methodologies. Report of the Expert Group on Health Systems Performance Assessment. Luxembourg: European Union 2018.

8. OECD/EU. Health at a Glance: Europe 2018. State of Health in the EU Cycle. Paris: Organisation for Economic Co-operation and Development; 2018.

9. OECD. Health at a Glance: OECD indicators. Paris: Organisation for Economic Co-operation and Development; 2019.

10. National Health Performance Committee (NHPC). National Health Performance Framework Report. Brisbane: Queensland Health; 2001.

11. EU Expert Group on Health Systems Performance Assessment (HSPA). Assessing the resilience of health systems in Europe: an overview of the theory, current practice and strategies for improvement. Luxembourg: Publications Office of the European Union; 2020. Available from: https://ec.europa.eu/health/sites/health/files/systems_performance_assessment/docs/2020_resilience_en.pdf

12. World Health Organization. Everybody's business. Strengthening health systems to improve health outcomes. WHO's framework for action. Geneva, Switzerland: World Health Organization; 2007. Available from: https://www.who.int/healthsystems/strategy/everybodys_business.pdf

13. World Health Organization. Monitoring the building blocks of health systems: a handbook of indicators and their measurement strategies. Geneva, Switzerland: World Health Organization; 2010. Available from: https://www.who.int/healthinfo/systems/WHO_MBHSS_2010_full_web.pdf?ua=1

14. Van de Voorde C, Van den Heede K, Beguin C, Bouckaert N, Camberlin C, de Bekker P, et al. Required hospital capacity in 2025 and criteria for rationalisation of complex cancer surgery, radiotherapy and maternity services. Health Services Research (HSR). Brussels: Belgian Health Care Knowledge Centre (KCE); 2017 06/2017. KCE Reports 289 (D/2017/10.273/45) Available from: https://kce.fgov.be/sites/default/files/atoms/files/Download%20the%20report%20in%20English%20%28550%20p.%29.pdf

15. Van den Bosch K, Willemé P, Geerts J, Breda J, Peeters S, Van De Sande S, et al. Residential care for older persons in Belgium : Projections 2011 – 2025. Good Clinical Practice (GCP). Brussels: Belgian Health Care Knowledge Centre (KCE); 2011. KCE Reports 167 Available from: https://kce.fgov.be/publication/report/residential-care-for-older-persons-in-belgium-projections-2011-%E2%80%93-2025

16. Van de Voorde C, Lefèvre M, Mistiaen P, Detollenaere J, Kohn L, Van den Heede K. Assessing the management of hospital surge capacity in the first wave of the COVID-19 pandemic in Belgium. Brussel: Belgian Health Care Knowledge Centre (KCE); 2020 12/2020. KCE Reports 335 Available from: https://kce.fgov.be/sites/default/files/atoms/files/KCE_335_Surge_capacity_during_COVID-19_Belgium_Report.pdf

17. Cellule Planification des professions de soins de santé, Service Professions des soins de santé et pratique professionnelle. Scénario de base de l'évolution de la force de travail Médecins 2016-2036. Bruxelles: DG Soins de santé, SPF Santé publique, Sécurité de la chaîne alimentaire et Environnement; 2020.

18. Arrêté royal du 12 juin 2008 relatif à la planification de l'offre médicale, M.B. 18 June 2008.

19. Arrêté royal du 16 août 2020 portant modification de l'arrêté royal du 12 juin 2008 relatif à la planification de l'offre médicale, M.B. 21 August 2020.

20. Vlaamse planningscommissie dit voorjaar van start [Web page].14 January 2021 [cited 26 March 2021]. Available from: https://www.domusmedica.be/actueel/vlaamse-planningscommissie-dit-voorjaar-van-start

21. Soins de santé : le Gouvernement de la Fédération Wallonie-Bruxelles approuve la création d'une Commission de planification de l'offre médicale. [Web page].17 December 2020 [cited 26 March 2021]. Available from: https://glatigny.cfwb.be/home/presse--actualites/publications/soins-de-sante--le-gouvernement-de-la-federation-wallonie-bruxelles-approuve-la-creation-dune-commission-de-planification-de-loffre-medicale.publicationfull.html

22. Arrêté du Gouvernement de la Communauté française du 2 mai 2018 modifiant l'arrêté royal du 12 juin 2008 relatif à la programmation de l'offre médicale, M.B. 28 May 2018.

23. Arrêté du Gouvernement de la Communauté française du 5 juin 2019 modifiant l'arrêté royal du 12 juin 2008 relatif à la planification de l'offre médicale, M.B. 2 August 2019.

24. Beroepsverenigingen van Artsen-Specialisten begrijpt niet dat regering quota verhoogt [Web page].25 December 2019 [cited 26 March 2021]. Available from: https://www.demorgen.be/nieuws/beroepsverenigingen-van-artsen-specialisten-begrijpt-niet-dat-regering-quota-verhoogt~b835eb42/

25. Geerts J, Van den Bosch K, Willemé P. PROMES – Un nouvel instrument de projection des dépenses de l'AMI pour les soins de santé. Brussels: Bureau Fédéral du Plan; 2018.

26. Geerts J, Van den Bosch K, Willemé P. Description et utilisation du modèle PROMES (WP 4 DC2019). Brussels: Bureau Fédéral du Plan; 2018.

27. OECD. Health at a Glance: OECD indicators. Paris: Organisation for Economic Co-operation and Development; 2017.

28. Belloni A, Morgan D, Paris V. Pharmaceutical Expenditure And Policies: Past Trends And Future Challenges. Paris: Organisation for Economic Co-operation and Development; 2016. OECD Health Working Papers 87

29. OECD/EU. Health at a Glance: Europe 2020. State of Health in the EU Cycle. Paris: Organisation for Economic Co-operation and Development; 2020.

30. FAMHP. Unavailable medicines [Web page].Brussels: Federal Agency for Medicines and Health Products;2021 [cited 2 February 2021]. Available from: https://www.famhp.be/en/items-HOME/unavailability_of_medicinal_products

31. Lepage-Nefkens I, Douw K, Mantjes G, de Graaf G, Leroy R, Cleemput I. Horizon scanning for pharmaceuticals: proposal for the BeNeLuxA collaboration. Health Services Research (HSR). Brussels: Belgian Health Care Knowledge Centre (KCE); 2017. KCE Reports 283 (D/2017/10.273/15) Available from: https://kce.fgov.be/sites/default/files/atoms/files/Horizon%20scanning_ScientificReport_.pdf

32. RIZIV-INAMI. Monitoring Of Reimbursement Significant Expenses (MORSE): report 2020 (2019 data). Brussels: Rijksinstituut voor ziekte- en invaliditeitsverzekering - Institut national d'assurance maladie-invalidité; 2020. Available from: https://www.inami.fgov.be/SiteCollectionDocuments/Rapport_MORSE_%20donnees%20jusque_2019.pdf

33. Gerkens S, Neyt M, San Miguel L, Vinck I, Thiry N, Cleemput I. How to improve the Belgian process for Managed Entry Agreements? An analysis of the Belgian and international experience. Health

Services Research (HSR). Brussels: Belgian Health Care Knowledge Centre (KCE); 2017 05/2017. KCE Reports 288 (D/2017/10.273/41) Available from: https://kce.fgov.be/sites/default/files/page_documents/KCE_288_Improve_Belgian_process_managed_entry_agreements_Report.pdf

34. OECD, European Observatory on Health Systems and Policies. Belgium: Country Health Profile 2019, State of Health in the EU. Paris, Brussels: Organisation for Economic Co-operation and Development. European Observatory on Health Systems and Policies; 2019.

35. OECD. Fiscal Sustainability of Health Systems. Bridging Health and Finance Perspectives. Paris: Organisation for Economic Co-operation and Development; 2015.

36. Federal Planning Bureau. 2020 Annual Report of the Study Committee on Ageing [Web page].Brussels: Federal Planning Bureau;2020 [cited 21 December 2020]. Available from: https://www.plan.be/databases/data-33-en-2020_annual_report_of_the_study_committee_on_ageing

37. European Commission. The 2018 Ageing Report: Economic and Budgetary Projections for the EU Member States (2016-2070). Brussels: European Commission; 2018.

38. RIZIV-INAMI. Nombre de dispensateurs de soins individuels. 2021. Available from: https://www.inami.fgov.be/fr/statistiques/soinsdesante/2020/Pages/nombre-dispensateurs-soins-individuels.aspx

39. Service public fédéral (SPF) Santé publique, Sécurité de la Chaîne alimentaire et Environnement. Statistiques annuelles des professionnels des soins de santé en Belgique. 2021 https://organesdeconcertation.sante.belgique.be/sites/default/files/documents/statan_2020_-_fr.pdf.

40. Conseil Supérieur des Finances. Comité d'Étude sur le Vieillissement. Rapport annuel. Bruxelles: Conseil Supérieur des Finances; 2020.

41. Cylus J. Covid-19 Health System Response Monitor - Cross-country analysis: How does the covid-19 economic crisis affect health financing and what are the implications for future health budgets? [Web page].Geneva - Brussels: World Health Organization, European Commission, European Observatory on Health Systems and Policies;24 February 2021 [cited 26 February 2021]. Available from: https://analysis.covid19healthsystem.org/index.php/2021/02/24/how-does-the-covid-19-economic-crisis-affect-health-financing-and-what-are-the-implications-for-future-health-budgets/

42. Conseil Supérieur des Finances. Comité d'Étude sur le Vieillissement. Rapport annuel. Bruxelles: Conseil Supérieur des Finances; 2019.

43. Ono T, Lafortune G, Schoenstein M. Health workforce planning in OECD countries: a review of 26 projection models from 18 countries. 2013. Available from: https://www.oecd-ilibrary.org/social-issues-migration-health/health-workforce-planning-in-oecd-countries_5k44t787zcwb-en

44. Vandenbroeck P, Ooms K, Benahmed N, Wickert R, Christiaens W, Stordeur S. Strategies for improving the medical workforce projection model: a stakeholder consultation. Health Services Research (HSR). Brussels: Belgian Health Care Knowledge Centre (KCE); 2017 07/2017. KCE Reports 290 (D/2017/10.273/49) Available from: https://kce.fgov.be/sites/default/files/atoms/files/Download%20the%20synthesis%20in%20English%20%2828%20p.%29.pdf