

HEALTH SYSTEM PERFORMANCE ASSESSMENT: CARE FOR PEOPLE LIVING WITH CHRONIC CONDITIONS



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COLOPHON

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External validators:	Jon Cylus (European Observatory on Health Systems and Policies), Jean Macq (UCLouvain – Université catholique de Louvain), Michael Van den Berg (OECD – Organisation for Economic Co-operation and Development)
Acknowledgements:	We would like to thank the following experts for their support during this study; El Maâti Allaoui, (AIM – IMA - Agence InterMutualiste – InterMutualistisch Agentschap), Nathalie Bossuyt (Sciensano), Danielle, Croisiaux (AIM – IMA), Marie Dauvrin (KCE), Hyacinthe De Lhoneux (INAMI – RIZIV), Ri De Ridder (Cabinet Frank Vandenbroucke), Stephan Devriese (KCE), Tonio Di Zinno (AIM – IMA), Valérie Fabri (UNMS), Jennifer Hernould (INAMI – RIZIV), Bernard Landtmeters (CM), Sarah Laprasse (Bond Moyson, NVSM), Astrid Lavens (Sciensano), Roos Leroy (KCE), Renaud Louis (CHU de Liège, pneumologie – allergologie), Xavier Rygaert (AIM – IMA), Vinciane Sizaire (Fares asbl), Anne Spranger (Berlin University of Technology), Benjamin Swine (INAMI – RIZIV), Nathalie Terryn (SPF SPSCAE – FOD VVVL), Carine Van de Voorde (KCE), Amelie Van Vyve (Sciensano), Martine Verstreken (IMA – AIM), Lilas Weber (Fares asbl), Karl Martin Wissing (UZ Brussel)
Reported interests:	All experts and stakeholders consulted within this report were selected because of their involvement in the topic of HSPA Chronic care. Therefore, by definition, each of them might have a certain degree of conflict of interest to the main topic of this report’.
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- The external experts were consulted about a (preliminary) version of the scientific report. Their comments were discussed during meetings.
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Publication date:

21 April 2022

Domain:

Health Services Research (HSR)

MeSH:

Chronic disease, health services accessibility, quality of health care, efficiency, Belgium

NLM Classification:

W 84

Language:

English

Format:

Adobe® PDF™ (A4)

Legal depot:

D/2022/10.273/17

ISSN:

2466-6459

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How to refer to this document?

Maertens de Noordhout C, Devos C, Adriaenssens J, Bouckaert N, Ricour C, Gerkens S. Health system performance assessment: care for people living with chronic conditions. Health Services Research (HSR) Brussels: Belgian Health Care Knowledge Centre (KCE). 2022. KCE Reports 352. D/2022/10.273/17.

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

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■ FOREWORD

It is now common practice for the KCE, in collaboration with several partners, to carry out periodic analyses of the performance of the Belgian health system. This exercise is important in order to steer our health policy as good as possible. It highlights certain weaknesses between the various areas studied, such as quality of care, accessibility, equality, etc., in order to naturally guide the actions to be taken. In addition to this cross-sectional analysis of our system, it is also necessary to focus our attention on certain groups of people who, for one reason or another, seem more vulnerable in various aspects. This is the exercise that our research team has undertaken in this report this time looking at the situation of people living with chronic diseases.

Mainly because of the ageing of the population, more and more Belgians are in need of chronic care and suffer the consequences of this reality on a daily basis (decrease of quality of life, increase in health care expenses, etc.). Our government has taken various measures to support those people as good as possible, both in terms of the quality of care provided and its affordability. But is the result of these efforts sufficient? That is the question the KCE has rightly asked itself when studying whether our health system is addressing people with chronic conditions in a way that is at least as effective as for the rest of the population. And the challenge was great. Although there are various ways of identifying people with a chronic illness in Belgium, none of them is perfect. The lack of a clear and unambiguous definition, recognised nationally, also reinforces this difficult identification. After judiciously selecting the 27 most relevant indicators, the KCE researchers had to be creative in their analyses, by adequately linking the available data, in order to fill in this lack of clarity as well as to make current trends visible.

It is now up to you, dear readers, to discover the results of their analyses and, through this KCE report, to delve into some of the reality of the many, often very brave, people who live through a difficult health situation in our country on a daily basis.

Christophe JANSSENS

Deputy general director a.i.

Marijke EYSEN

General director a.i.



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LIST OF ABBREVIATIONS

ABBREVIATION	DEFINITION
AMI	Acute Myocardial Infarction
CDC	Centers for Disease Control and Prevention
CI	Confidence Interval
COPD	Chronic Obstructive Pulmonary Disease
DDD	Defined daily dose
ECDC	European Center for Disease prevention and Control
ECHI	European Community Health Indicator
EPS	The IMA – AIM permanent sample
EU	European Union
EU-SILC	European Union Statistics on Income and Living Conditions
FARES	Fonds des Affections Respiratoires
FOD – SPF	Federal Public Service ("Service Public Fédéral" – "Federale Overheidsdienst")
GDPR	General Data Protection Regulation ("Algemene verordening gegevensbescherming" – "Règlement général sur la protection des données")
GMR	Global medical record ("Globaal medisch dossier" – "Dossier médical global")
GP	General Practitioner
HBS	Household Budget Survey ("Huishoudbudgetonderzoek" – "Enquête sur le budget des ménages")
HIS	Health Interview Survey ("Gezondheidsonderzoeken" – "Enquête de Santé")
HRQoL	Health-related quality of life
HSPA	Health System Performance Assessment
ICD-10	International Classification of Diseases Version 10
IR	Increase reimbursement ("Verhoogde tegemoetkoming" – "Intervention majorée")
IMA – AIM	InterMutualistic Agency ("InterMutualistisch Agentschap" – "Agence InterMutualiste")



KCE	Belgian Healthcare Knowledge Centre ("Federaal Kenniscentrum voor de gezondheidszorg" – "Centre fédéral d'expertise des soins de santé")
MAB	Maximum Billing ("Maximumfactuur" – "Maximum à facturer")
MHI	Mandatory Health Insurance
MRPA – ROB	Home for the elderly ("maison de repos pour personnes âgées" – "rust- en verzorgingstehuis")
MRS – RVT	Nursing home ("maison de repos et de soins" – "rust- en verzorgingstehuis")
MZG – RHM	Minimum hospital data ("Minimale Ziekenhuis Gegevens" – "Résumé Hospitalier Minimum")
NCD	Non-communicable disease
OECD	Organisation for Economic Co-operation and Development
OOP	Out-of-pocket payment
PARIS	Patient-Reported Indicator Survey
PREMS	Patient Reported Experience Measures
PROMS	Patient Reported Outcome Measures
RIZIV – INAMI	National Institute for Health and Disability Insurance ("Rijksinstituut voor ziekte- en invaliditeitsverzekering" – "Institut national d'assurance maladie-invalidité")
SD	Standard Deviation
SHA	System of Health Accounts
SHARE	Survey of Health, Ageing and Retirement in Europe
SMART	Specific, measurable, achievable, realistic and time-bound
TB	Tuberculosis
VHI	Voluntary health insurance
VRGT	Vlaams vereniging voor Respiratoire Gezondheidzorg en Tuberculose bestrijding
WHO	World Health Organization



GLOSSARY

ENG	FR	NL	Comments
Chronic patient	Patient chronique	Chronische patiënt	This term is used as a generic term to refer to any person suffering from at least one chronic disease/illness/condition. This term is mainly used when the text is not describing a chronic state related to a specific indicator (as described below in this table).
Status for persons with a chronic illness*	Statut affection chronique	Statuut chronische aandoening	Abbreviation: "chronic illness status" RIZIV – INAMI indicator for chronic patients
Lump sum for chronically ill persons*	Intervention forfaitaire pour malades chroniques	Forfait voor chronisch zieken	
Persons with a self-reported chronic disease*	Personnes souffrant d'une maladie ou d'une affection chronique auto-déclarée	Personen met een zelfgerapporteerde chronische ziekte of aandoening	HIS indicator for chronic patients
Persons with a self-reported chronic condition*			EU-SILC indicator for chronic patients
Convention	Convention	Overeenkomst	From a legal point of view, the correct translation should be "agreement". Nevertheless, to facilitate the identification of what it means by a Belgian lector, we decided to choose



			the term “convention”, which is more commonly used.
Patients' co-payments	Tickets modérateurs	Remgelden	Patient contribution as described in the national fee schedule (Nomenclature – Nomenclatuur)
Supplements	Suppléments	Supplementen	Extra-billing beyond tariffs of the national fee schedule
Official health expenditures	Dépenses de santé basées sur les tarifs de la nomenclature	Gezondheidsuitgaven op basis van nomenclatuurtarieven	Health expenditure based on the tariffs of the national fee schedule. This includes RIZIV – INAMI expenditure and patients co-payments.
Patients' out-of-pocket payments	Les contributions à charge du patient	De bijdragen ten laste van de patiënt	Abbreviation: Patients' OOPs This include direct payments for non-reimbursed services, co-payments and supplements
Health expenditures	Dépenses de santé	Gezondheidsuitgaven	This includes patients out-of-pocket payments, RIZIV – INAMI and other public expenditure, and voluntary insurance

* To facilitate the comprehension of the reader, different names were used to easily distinguish the various sources used to identify chronic patients (EU-SILC, HIS, ...)



PART 1 – CONTEXT AND METHOD

1 CONTEXT AND OBJECTIVES

1.1 Introduction

Health System Performance Assessment (HSPA) is a process aiming to assess the health system holistically, a ‘health check’ of the system based on measurable indicators. HSPA is specifically mentioned in the Tallinn Charter¹ signed by all countries from the European region of the World Health Organization (WHO) (see Box 1). Each HSPA is developed along the lines of a conceptual framework that is specific to the country. HSPA is an ongoing process, with a repeated monitoring feeding the information needs of health policy. In Belgium, this process started in 2007 and the last and fourth edition of HSPA was published in 2019.² In Belgium, HSPA reports are published every 3-4 years. To make the process more dynamic, it has been decided to use the period prior to the publication of a new HSPA to analyse new areas and revise or deepen existing ones. Two intermediary reports have already been published since the 2019 HSPA: a first one on equity (KCE report 334³) and a second one on the use of projections to assess the sustainability of the health system (KCE rapport 341⁴). This third intermediate HSPA study will focus on care for chronic patients.

The increasing life expectancy coupled with major scientific breakthroughs in medicine, have significantly improved the probability of surviving disease and becoming a chronic patient.⁵ Overall, an increase of population entitled to the RIZIV – INAMI chronic illness status or with self-reported chronic disease is observed between 2014 and 2019 in Belgium (see chapter 3 and Box 2).^{6, 7}

This phenomenon has a profound impact on healthcare systems and on society as a whole. Chronic conditions are not just a health issue – they impact on the workplace, the home environment, social support services and family networks. Vulnerable and socially disadvantaged groups carry a

greater chronic disease burden: dimensions of inequity overlap and reinforce each other.³ Governments are being challenged to integrate policies, inter-departmental budgets and service provision to suit the needs of the chronic patients.

Given the importance of the subject, this study has been initiated by the Observatory of Chronic Diseases, and then supported by institutions involved in the Belgian HSPA study (Sciensano, FPS public health, RIZIV – INAMI, federal and federated representatives of health ministries).

Box 1 – Health System Performance Assessment

The Health System Performance Assessment (HSPA) report for Belgium is a country-owned process to assess holistically the health system ('health check'). It is based on indicators, which provide 'signals', aiming to contribute to the strategic planning of the health system by policymakers. The first HSPA report for Belgium was published in 2010.⁸ The most recent and fourth report, published in 2019, contains 121 indicators² representing five dimensions of the health system: quality, accessibility, efficiency, sustainability and equity, with quality of care further subdivided into five sub-dimensions (effectiveness, appropriateness, safety, patient centeredness, continuity). The evaluation is applied to five domains: preventive care, mother and newborn care, mental healthcare, care for the elderly, and end-of-life care. The value (level and trend) of the indicator at national level is compared to - in order of availability - targets, results from EU-15 countries or standards of care. In the absence of these, the evaluation is based on expert opinion. Also regional differences are analysed.

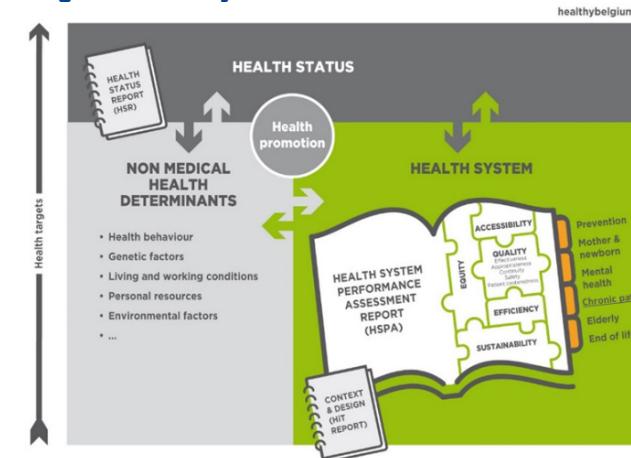
Source: Bouckaert et al. (2020)³

1.2 Conceptual framework

This HSPA on care for chronic patients is built around a conceptual framework that is based on a review of the literature and a broad consultation of Belgian experts and stakeholders. The Dutch and Canadian frameworks^{9, 10} were used as a starting point to develop the Belgian performance assessment framework.⁸ These frameworks were selected because they complemented to each other and, when combined, covered the range of *dimensions* deemed important by the consulted experts and stakeholders for assessing the performance of the Belgian health system. Subsequently, the combined framework was tailored to the Belgian health system context, by defining the scope of the framework as broad as possible (health system instead of healthcare system) and by adding a new dimension relevant to policymakers (the sustainability of the health system).

The resulting framework (Figure 1) is subdivided in three interconnected tiers, i.e. (1) health status^a, (2) non-medical determinants of health and (3) a tier representing the health system, evaluated along four dimensions: **quality**, **accessibility**, **efficiency**, and **sustainability** (not evaluated in this report). Quality of care is further subdivided into five sub-dimensions (effectiveness, appropriateness, safety, patient-centredness and continuity). **Equity**, a fifth dimension, is a transversal dimension which is presented across all tiers. Several *domains* are then analysed separately in the main HSPA reports (five in the 2019 report): preventive care, mother and newborn care, mental healthcare, care for the elderly, and end-of-life care. This report focusses on a sixth *domain*, i.e. the care for chronic patients. In the next Belgian HSPA report (expected in 2023), an update of the Belgian HSPA conceptual framework based on a literature review and expert consultation will be published. Indeed, the current conceptual framework has not been updated since 2010 (except for the graphical representation). New dimensions (e.g. health literacy) will be included in the updated version of the conceptual framework.

Figure 1 – Conceptual framework to evaluate the performance of the Belgian health system



Source : Adapted Belgian HSPA conceptual framework 2019²

1.3 Scope and objective of the report

The objectives of this intermediate HSPA on care for chronic patients are:

- to inform the healthcare actors about the performance of the health system for chronic patients and about the difference in performance of the health system between chronic and non-chronic patients and to inform health policy;
- to provide a transparent and accountable view of the health system performance for chronic patients, in accordance with the commitment made in the Tallinn Charter¹¹ and;
- to monitor the health system performance for chronic patients over time.

^a The health status of the Belgian population is now treated in a dedicated report by Sciensano, available at <http://healthybelgium.be/>.



The scope of this study is the care for chronic patients. We will not develop a national definition of chronic patients/disease (see section 1.4 for definition of chronic disease) and will use existing ways to identify chronic patients (through administrative or self-reported databases, see section 1.1). Indicators on the health of chronic patients and related risk factors such as unhealthy diet, tobacco use or physical inactivity are not part of the main scope of the report. Some contextual indicators are still included in chapter 3 to set the context of the HSPA and allow for an easier and critical reading of the results of the performance indicators in chapters 0 to 7. A detailed analysis of the health status of patients with non-communicable diseases and related risks factors is available in the health status report 2019 (only available in French and Dutch) published by Sciensano¹² and on <https://www.healthybelgium.be/>. The patients suffering from post COVID-19 condition were not considered in this study but the HELICON project is currently evaluating the long-term health effects of the COVID-19 crisis in Belgium; data from this project could probably be used in next Belgian HSPA.¹³ The general limitations of an HSPA report are described in Box 12.

1.4 Definition of the chronic diseases: a preliminary critical note

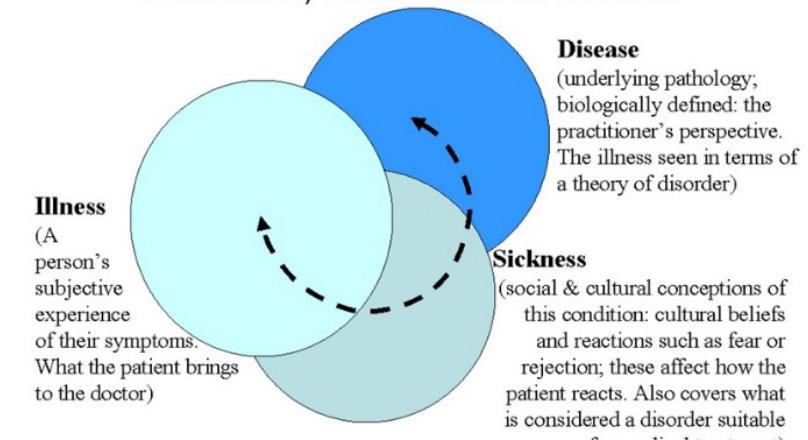
Prior to this scientific report regarding the performance of care for chronic patients, one should first be informed on the current criteria underlining the definition of a 'chronic disease'.

Several English speaking authors argue that a distinction has to be made between a '**chronic disease**' (or 'condition') and a '**chronic illness**'.¹⁴⁻¹⁶ Some also use the word '**chronic sickness**'. Linguistically, this is a more general term when one wants to talk about a suffering of any type of illness, infection or other health issues. This multi-terminology is not the fact in all languages. For instance, the French language only has the term 'maladie' and the Dutch language only has 'ziekte'. However most languages also apply the term 'condition' (FR: affection, NL: aandoening). The distinction seems however to be important as beyond the different wording, these terms describe dimensions and concepts of the 'disease' which belong respectively to the doctor (disease), to the patient (illness), and to the society in which the latter lives (sickness) (see Figure 2).^{17, 18} While the terms are

often used interchangeably in the clinical literature and in health service policy and organisations, they convey different meanings that require some clarification. While 'disease' is a diagnostic biomedical criterion (incidence of a specific health condition), 'illness' might be perhaps more important as it points at the burden of the disease, the lived experience, and the consequences for healthcare expenses. As Eric Cassell stated in the late 70s of the past century, "*Disease, then, is something an organ has, illness is something a man has. Disease is something that needs to be cured, such as infection, injury, toxic exposure, cell degeneration, etc. Illness is something that needs to be managed/cared such as feelings of pain, discomfort, distress, weakness, fatigue, etc.*"¹⁹ Indeed, not every chronic disease has a significant effect on a patient's quality of life and healthcare expenditure.¹⁴

Figure 2 – Three Perspectives for defining chronic patients

Three Perspectives: Disease, Sickness & Illness



Source: McDowell (2015)¹⁷

1.4.1 Definition criteria

There is also heterogeneity between the criteria used to define chronic diseases. Several scientific or health policy organisations have attempted to describe these or have proposed a standardised list of chronic diseases.

Duration

Duration is probably the most common criterion to define a 'chronic disease'. In general, a chronic disease can be defined as a health condition that lasts for a 'long time'. But the definition of a 'long time' differs substantially depending on the source, for example the US National Center for Health Statistics applies a period of 3 months²⁰, while the US Center for Disease Control (CDC) take a period of one year²¹, and other international organisations such as the World Health Organisation (WHO) only talk about 'long duration'.²² In Belgium, the Observatory for Chronic Diseases (RIZIV – INAMI) talks about "*an illness that lasts at least six months*".

Treatment

Another aspect of a chronic disease, mentioned in the literature, is that it cannot be prevented by vaccination, that it cannot be cured by medication and that the disease will not disappear spontaneously (US National Center for Health Statistics; Sciensano).^{5, 15} Nevertheless, one can have doubts regarding this position as, for instance, chronic hepatitis can be prevented by vaccination, certain types of cancer seem to be cured definitively (remission) and diseases, such as diabetes type II, can be reversed with lifestyle change.

Causality

A chronic disease has a complex causality (with multiple factors leading to its onset) and a long development period (for which there may be no symptoms) associated "*to prolonged course of illness that can lead to other health complications or disability*" (Australian Institute for Health and Welfare).²³

Multidisciplinary care

The focus of a treatment for a chronic disease is to keep the health condition as stable as possible. This often – depending on the burden of disease and its comorbidities – needs a complex response of healthcare, coordinated by different health professionals with access to a broad variety of drugs and equipment, and possibly extending to social care.²⁴

Non-communicable

Another ambiguous element of the definition, in addition to the therapy position (see above), is whether a chronic disease is communicable or non-communicable. While in general non-communicable diseases are referred to as "chronic diseases", this is not entirely correct. Indeed, certain infectious processes can result in chronic health problems while other communicable diseases are halted (but not cured) by their treatment and become chronic. A good example of the latter is HIV which has been transformed by advances in medical science from a rapidly progressive fatal condition into a controllable health problem, allowing those affected to live with it for many years.²⁵

In the same sense, the federal web portal Healthy Belgium states²⁶:

"Non-communicable diseases (NCDs) are medical conditions or diseases that are not caused by infectious agents. Chronic diseases are defined by their longstanding nature. Since most NCDs are also chronic diseases, both terms are sometimes used interchangeably. This is however not entirely correct: some NCDs are acute, e.g. myocardial infarction; conversely, some chronic diseases may be caused by infectious agents, e.g. cervix cancer or tuberculosis."

Indeed, the list of non-communicable diseases is broad and is even extended in the last years.^{27, 28} It includes congenital conditions (e.g. Down's syndrome and neural tube defects), degenerative conditions (e.g. prostatic hypertrophy, cataracts, and hearing loss), musculoskeletal problems (e.g. back pain, arthritis, gout), urogenital conditions (e.g. infertility and kidney stones), mental health problems (e.g. depression, schizophrenia), and the



'big four' - cardiovascular disease, cancer, chronic respiratory disease, and type 2 diabetes.

Health expenditures

Chronic diseases have significant health and economic costs, and the assumption is that these will last for a very long time (in contrast to acute health conditions). The economic burden of chronic disease is manifold in all levels of society, imposing costs at the individual, household, community and national levels.²⁹

Patient experience

Some definitions specifically take into account the lived experience of the patient. The European Union Statistics on Income and Living Conditions (EU-SILC), which among other things also asks respondents about their health status, asks for a person's experience of the disease (e.g. "Would you say you have been severely limited, limited but not severely, or not limited at all?").³⁰ The Belgian Health Interview Survey (HIS) states that 'chronic diseases and conditions have specific consequences for the perception of health, daily functioning and the use of healthcare'^(b).³¹ Indeed, living with a chronic disease often means experiencing chronic treatments and regular multidisciplinary monitoring as well as a profound life-changing experience which may impact all aspects of a patient's life. The patient experience of chronic disease is frequently assessed by patient reported measures (Patient Reported Outcome Measures (PROMs) or Patient Reported Experience Measures (PREMs)) which incorporate patient's perspectives to better understand how illness, treatment and care impact the entirety of a patient's life.³²

1.4.2 Existing lists of chronic diseases

A number of organisations have compiled a list of health conditions that can be put under the umbrella of chronic disease.

The World Health Organization (WHO) states that there are four main types of chronic diseases: cardiovascular diseases, cancers, chronic respiratory diseases and diabetes.²² Medicare and Medicaid (United States) have a list of 21 chronic conditions (see Table 1).³³

Table 1 – Medicare & Medicaid list of 21 chronic conditions

Label
Alcohol abuse
Alzheimer's Disease and Related Dementia
Arthritis (Osteoarthritis and Rheumatoid)
Asthma
Atrial Fibrillation
Autism Spectrum Disorders
Cancer (Breast, Colorectal, Lung, and Prostate)
Chronic Kidney Disease
Chronic Obstructive Pulmonary Disease
Depression
Diabetes
Drug Abuse/ Substance Abuse
Heart Failure
Hepatitis (Chronic Viral B & C)
HIV/AIDS
Hyperlipidemia (High cholesterol)
Hypertension (High blood pressure)

^(b) The question used in the HIS survey is "Do you suffer from a chronic disease or affection?"



Ischemic Heart Disease

Osteoporosis

Schizophrenia and Other Psychotic Disorders

Stroke

1.4.3 Conclusion

A broad variety in definitions and criteria of chronic disease/illness exists. The implication of a non-uniform use of the term is that a consensual definition of the concept and a detailed analysis of each data source is necessary to avoid erroneous conclusions regarding interventions necessary to reduce chronic disease burden for the individual and society, or to improve the performance of the healthcare system. Finally it must be stated that at present, in Belgium, there is not an 'official' comprehensive definition for chronic illness.

1.5 Ways used to identify chronic patients in national databases

In Belgium, it exists three ways to identify chronic patients in national databases: (i) the RIZIV – INAMI chronic illness status, (ii) the self-reported chronic disease in the Health Interview Survey (HIS) and (iii) the self-reported chronic condition on the EU-SILC. The three ways are described in Box 2. To facilitate the reading of the results of the report, the terminology used according to the way chronic patients were identified is described in the glossary at the beginning of the report. The overlap between these indicators is analysed in chapter 3.

Box 2 – How to identify chronic patients in existing national databases

People living with a chronic condition can be identified because there are:

1. **Persons entitled to the RIZIV – INAMI chronic illness status:** to protect persons having high healthcare expenses (mainly people suffering from chronic illness), the National Institute for Health and Disability Insurance (RIZIV – INAMI) created a specific status mainly based on the official health expenditure incurred by a patient (see chapter 1.6 for details on the access conditions and the rights related to this status). This status gives access to the maximum billing (MAB) system for the chronically ill people, with a reimbursement of patients' co-payments (tickets modérateurs - remgelden) above specified thresholds and to the third-party payment. In the IMA – AIM database (see section 0 for information about IMA – AIM database), individuals entitled to the RIZIV – INAMI chronic illness status can be easily identified through variables pp3015, pp3016 or pp3017.
2. **Persons self-reported chronic disease in the Health Interview Survey (HIS):** Since 1997, the Health Interview Surveys (HIS) have been undertaken every 4 to 5 years by Sciensano. The main objectives of the HIS are to assess the health status of the population and to identify the main health problems as well as the determinants and behaviours that could influence them (see section 0 for additional information about the HIS). The number of persons (older than 15 years) reporting to suffer from a chronic disease are identified by having answered "yes" to the following question in the HIS (MA_SH02): "*Do you suffer from a chronic disease or affection?*".



3. Persons with a self-reported chronic condition in the EU-SILC:

The EU-SILC microdata are the reference source for measuring socioeconomic disparities in Belgium (and Europe) (see section 0 for additional information about the EU-SILC). The EU-SILC question PH020 identifies people aged 16 and older who report to have a chronic illness or condition. In the EU-SILC, a chronic disease state is defined by a long standing health problem of a duration of at least 6 months. The formulation of the question is the same as in the HIS (see above).

1.6 Specific measures for chronically ill people

In the last years, the Belgian healthcare system has been evolving to cope with an increase of persons with a chronic disease and measures to improve both the quality of their care and their financial accessibility have been developed.

1.6.1 Measures to improve the quality of chronic patients care

In 2009, care trajectories ('zorgtraject / trajet de soins') for patients with diabetes and chronic renal insufficiency were established to organise cooperation between patients, their GP, specialists and other health professionals. These care trajectories were shown to be effective in improving the follow up of care processes and patient satisfaction, but due to a lack of information on the existence of these pathways for both the public and health professionals their use was not optimal.³⁴ It should also be noted that conventions^c ('conventions / overeenkomst') with specialised centres (e.g. for the care of children and adolescents with chronic diseases or for diabetes self-management support of adults) were developed to improve the quality of care for chronic patients. A full description of these conventions

and care trajectories can be found on the RIZIV – INAMI website (see RIZIV – INAMI 2021³⁵).

In 2012, the Chronic Disease Observatory was implemented to identify problems and areas for improvement in chronic disease management. It also monitors the situation and the solutions provided.

Since October 2017, patients with a chronic disease can also ask their pharmacist to become their "reference pharmacist", to accompany them and monitor their medication (see also chapter 4.3).

In 2018, integrated care projects for the management of chronic patients were initiated such that stakeholders (including social care) are incentivised to set up innovative initiatives of care centred around patients across different care settings in their geographical area.³⁴

1.6.2 General description of main financial protection measures

Continuous efforts have been made to improve the accessibility of care for persons with a chronic illness. Main protection measures to financially support chronically ill persons with high medical expenditure are listed in Box 3, in chronological order. The aim of this chapter is not to describe in detail all the financial protection measures but only those that served to identify patients with a chronic illness in IMA – AIM data, i.e. the status for persons with a chronic illness, including the lump sum for chronically ill persons. A complete description of all other measures can be found on the RIZIV – INAMI website (see RIZIV – INAMI 2021³⁶).

^c From a legal point of view, the correct translation should be "agreement". Nevertheless, to facilitate the identification of what it means by a Belgian lector, we decided to choose the term "convention", which is more commonly used.

Box 3 – List of financial protection measures for people living with different types of chronic conditions

- 1985: A mileage allowance in the travel costs for dialysis patients (Ministerial Decree of 24 January 1985, updated on 1 January 2002)³⁷
- 1989: A mileage allowance in the travel costs of patients with cancer (Royal Decree of 3 June 2007,³⁸ see also previously the Ministerial Decree of 6 July 1989,³⁹ modified by the Ministerial Decree of 25 May 2007)⁴⁰.
- 1995: A mileage allowance in the travel costs for the functional rehabilitation of disabled patients living in a cart/wheelchair (without being able to leave it) (*patients en voiturette/rolstoelpatiënten*) (Ministerial Decree of 14 December 1995)⁴¹
- 1998: A lump sum for chronically ill persons (Royal Decree of 2 June 1998, last update in 2014)⁴², i.e. a fixed amount (3 different amounts according to the degree of dependency) is paid to persons with a dependency once their official co-payments ('*tickets modérateurs/remgelden*') reach a specific threshold for two consecutive years (see also section 1.6.3.2).
- 1998: A lump sum for untreatable incontinence (Royal Decree of 2 June 1998, last update in 2021).⁴³
- 1998: A lump sum for dependent incontinent persons (Royal Decree of 2 June 1998, last update in 2021).⁴⁴
- 2007: A partial reimbursement (20% of the listed price) of specific listed painkillers (Royal Decree of 3 June 2007, updated on 1 May 2017).⁴⁵ Beside the Royal Decree of 2007, some painkillers can also be (partially) reimbursed through the chapter IV (reimbursed pharmaceuticals listed in chapter IV, requiring an authorisation of the advisory physicians of sickness funds). From January 1st 2022, such a system has been simplified to medicines in chapter IV only and the reimbursement has been increased to 75%.⁴⁶

- 2009: Introduction of the maximum billing (MAB) system (see Box 5) for chronically ill. It reduces the MAB ceilings with an indexed amount for (a) persons with one household members entitled to the status of person with a chronic illness (see 2014) or (b) persons with one household member having had high co-payments in two previous calendar years.
- 2007: A lump sum and other interventions for patients with primary Sjögren's syndrome (Royal Decree of 3 June 2007 - Royal Decree of 14 June 2007, Royal Decree of 6 July 2007).⁴⁷⁻⁴⁹
- 2011: A mileage allowance in the travel costs for children followed-up in a functional rehabilitation centre that concluded a convention (*Convention / Overeenkomst*) with RIZIV – INAMI (Royal Decree of 28 April 2011, inserted in 2016).⁵⁰
- 2013: A status for persons with a chronic illness (Royal Decree of 15 December 2013)⁵¹, given access to the third-party payment system (optional only, i.e. GPs, medical specialists and dentists are not obliged to apply such system) and to a reduction of €100 (indexed) in the ceiling on the patients' co-payments (*tickets modérateurs/remgelden*) within the maximum billing system (see also section 1.6.3.3) .
- 2019: A partial reimbursement (20% of the listed price) of some listed active dressings for chronic wounds (Royal Decree of 23 March 2019).⁵²



1.6.3 A specific status for persons with a chronic illness

1.6.3.1 Historical background

This section is mainly based on personal communications with the legal and accessibility department of the RIZIV – INAMI health care service.

The status for persons with a chronic illness originated from the "Priority to chronically ill" plan presented in 2008 by the Minister of Social Affairs and Public Health, Laurette Onkelinx.⁵³ In this "Priority to chronically ill" plan, a definition of a chronically ill person was proposed, namely:

- Any person who, within the framework of the compulsory health insurance, receives reimbursements or any other form of intervention related to a chronic illness;
- All persons with a rare or orphan disease;
- All persons with a chronic incurable and degenerative condition.

A survey on 346 patients' associations related to chronic diseases in Belgium served as a basis for the development of this plan. The survey showed that their main concern was the need for an official recognition, i.e. a status for persons with a chronic illness.⁵³

The definition of criteria to obtain such a recognition was a first step of the plan. The objective of this recognition was then the granting of some specific rights that should be developed progressively within or outside the framework of the compulsory health insurance.

To define these criteria, a working group was set up, composed by representatives of patients' associations (i.e. the "Vlaams Patiëntenplatform" (VPP), the "Ligue des Usagers des Services de Santé" (LUSS) and Rare Diseases Belgium (RaDiOrg)), the FOD – SPF Social Security, the FOD – SPF Public Health and various departments of the RIZIV – INAMI (including the Advisory Committee on Chronic Diseases, i.e. the forerunner of the scientific section of the current Observatory for Chronic Diseases).

Various approaches were discussed:

- Using the criteria of the lump sum for chronically ill persons;
- Establishing a list of pathologies;
- Taking into account medical or paramedical criteria;
- Taking into account dependence, work incapacity or disability;
- Taking into account the notion of severity or gravity; and
- Taking into account the patient and not the disease.

It was concluded that a limited list of pathologies posed several problems, including the need for updates; the risk of "forgetting" some conditions, of excluding situations where a diagnosis has not yet been made or of excluding new conditions; the fact that the evolution of diseases is variable or that the notions of "incurable" and "chronic" diseases may change with the development of knowledge and new treatments; but also the administrative complexity, as the status would then be granted on the basis of a diagnosis made by a physician, with possible controls.

A list of medicines or services used by chronically ill persons had the same disadvantages, i.e. the need for updates; the risk of forgetting some medicines or services and the problem of pathologies without treatment or whose treatment is not covered by the compulsory health insurance.

The initial definition proposed in the "Priority to chronically ill" plan was also assessed and the first point of the definition, i.e. "Any person who, within the framework of the compulsory health insurance, receives reimbursements or any other form of intervention related to a chronic condition", was not retained because the criteria for granting these reimbursements or interventions were considered too restrictive.

Finally, after having investigated these various approaches, the solution based on a financial criterion was retained, as in the survey, patient organisations have particularly insisted on the fact that chronically ill persons must bear significant and repeated out-of-pocket payment (OOPs) related to their disease. The advantage of this approach is also the possibility to

grant the status automatically based on objective criteria that are the same for all.

To define such a financial criterion, five possibilities were tested:

1. An overall financial criterion with all health services and medicines expenditures;
2. A criterion that did not take into account health expenditures in nursing homes and homes for the elderly;
3. A criterion that, in addition to exclusion 2, also excluded blood pressure and cholesterol medicines;
4. A criterion that, in addition to exclusions 2 and 3, also excluded glaucoma treatments;
5. A criterion that excluded implants.

Five financial thresholds of expenditures were also tested: €200-€250-€300-€350-€400. The distinction of taking into account all official health expenditures (i.e. RIZIV – INAMI expenditures and patients' co-payments) or only the patients' co-payments was also raised. Non-reimbursed expenditures, as they are not easily identifiable, cannot be taken into account.

The impact of these criteria and thresholds on the access of the entitled persons to other protection mechanisms such as the maximum billing system and the lump sum for chronically ill persons was evaluated as well as the link with the functional rehabilitation nomenclature and nursing home data. An analysis on different groups of expenditures was also performed, including functional and professional rehabilitation; consultations, visits and advices; nursing fees; medicines; clinical biology; etc.

Finally, the "overall" criterion was retained, based on all the official health expenditures, with a threshold of €300 per quarter for at least 8 consecutive quarters (see the next section).

The criterion is based on all official health expenditures rather than patients' co-payments because, among other things, it allows to avoid differentiating

persons entitled to increased reimbursement and those who are not, since the co-payments of the former are lower for the same care.

The quarterly basis was chosen in order to better consider the real costs, such as, for example, 3-monthly packages for medicines or paramedical treatments/sessions invoiced by group. Concerning the duration, the 8 consecutive quarters were chosen, among other things, to avoid selecting "health accidents", i.e. persons who have repeated major expenses over a limited time period without suffering from a chronic illness, such as persons who had an accident requiring surgery, rehabilitation, etc., but who, after that, have no further consequences for the future.

The status is given for a two-year period (except for rare diseases, see below) and the prolongation is then made annually, based on annual expenditures of at least €1200 (indexed, i.e. €1350.76 in 2022) over the year x-2. This annual basis for prolongations (rather than quarterly) allows to better take into account patients who suffer from a chronic pathology that evolves in bouts (Crohn's disease, for example) and whose expenditures follow this evolution.

Other groups targeted by the "Priority to chronically ill" plan were also added, i.e. persons with a rare or orphan disease and persons entitled to the lump sum for chronically ill. Concerning persons with a rare or orphan disease, the financial criterion was also required in order to avoid discriminating between the chronically ill and those with rare diseases, as the latter do not necessarily have high health expenditures.

1.6.3.2 Final eligibility conditions

According to the Royal Decree of December 15, 2013 enforcing the Article 37vicies/1 of the Law of July 1994 on the compulsory health insurance, patients can benefit from a specific chronic illness status (*statut affection chronique / statuut chronische aandoening*) if they are in one of the following situations:

1. Their health expenditures based on tariffs of the nomenclature (i.e. RIZIV – INAMI expenditures and patients' co-payments, but excluding supplements or non-reimbursed services/products) exceed €300 (2013



tariff, indexed to €337.69 in 2022) per quarter for eight consecutive quarters; or

They benefit from the lump sums for chronically ill persons, see below⁵⁴

2. Box 4; or
3. They suffer from a rare or orphan disease (listed on Orphanet^{d)} and their health expenditures based on tariffs of the nomenclature (i.e. RIZIV – INAMI expenditures and patients' co-payments but excluding supplements or non-reimbursed services/products) exceed €300 (2013 tariff, indexed to €337.69 in 2022) per quarter for eight consecutive quarters.

In the first two situations, the status is automatically granted by the sickness fund for a period of two years (and then yearly renewable). For persons with a rare or an orphan disease, an attestation of the medical specialist, mentioning the disease, must be sent to the sickness fund. For these patients with a rare or an orphan disease, the financial criterion is the same as in the first situation, but the status is granted for a longer period (renewable for 5 years).

It should also be noted that specific rules have been defined in 2021 (Royal Decree of 7 November 2021)⁵⁴ to neutralise the negative effects of the COVID pandemic and the postponement of (non-urgent) care imposed in 2020. The objective was to exclude the year 2020 for the calculation of the financial condition of entitlement to the status or its renewal. As a result, in 2021, the status was granted based on health expenditures of each 2019 quarter (i.e. 4 rather than 8 consecutive quarters); and in 2022, the status will be granted based on health expenditures of each 2021 quarter (i.e. 4 rather than 8 consecutive quarters) and the renewal will be based on 2019 expenditures (rather than 2020 expenditures).⁵⁴

Box 4 – The lump sum for chronically ill persons

The conditions to be eligible to a lump sum (i.e a sort of allowance) for chronically ill persons ('*intervention forfaitaire pour malades chroniques / forfait voor chronisch zieken*') are:⁵⁵

4. 1. The co-payments (tickets modérateurs / remgelden) of the person must exceed (\geq) €450 per year during two consecutive years (€365 for persons with an increased reimbursement); and
5. 2. The person must be in a dependency situation, i.e. she/he must meet one of the following criteria:
 - For a yearly lump sum of €323.98 (2022 tariffs):
 - The person has an agreement given by the advisory physician of the sickness fund for a 6-month physiotherapy treatment because of a severe pathology listed in the so-called List E (extensive peripheral paralysis, central neurological conditions of progressive nature with extensive motor deficit, extensive motor sequelae of encephalic or spinal cord origin, etc. – see RIZIV – INAMI 2021⁵⁶ for details); or
 - The person meets the medical conditions to benefit from majored family allowances; or
 - The person was hospitalised for at least 120 days during the latest two consecutive years or was admitted at least 6 times during the same period
 - For a yearly lump sum of €486.00 (2022 tariffs):
 - The person meets the conditions to benefit from the integration allowance or the allowance for the assistance of older persons or for persons with an handicap (whose degree of autonomy has

^d https://www.orpha.net/consor/cgi-bin/Disease_Search.php?lng=EN (last access: 6 January 2022)



- been set to at least 12 points under the terms of the Law of 27 February 1987); or
 - The person benefits for an allowance for the assistance of a third person as defined by the Law of 27 June 1969; or
 - The person benefits for an allowance granted to the holder with family responsibilities because of the need for the assistance of a third person or a flat-rate allowance for the assistance of a third person.
- For a yearly lump sum of €647.98 (2022 tariffs):
 - The person has an agreement given by the advisory physician of the sickness funds for a lump sum for nursing care (type B or C) for at least a 3-month period. A lump sum for nursing care type B corresponds to patients with a dependence score of 3 or 4 in the dimensions “personal hygiene” and “dressing”, a dependence score of 3 or 4 in the dimensions “transfer” or “toileting”, and a dependence score of 3 or 4 in the dimensions “continence” or “eating” on the Katz Scale^e. A lump sum for nursing care type C is granted to patients with a dependence score of 4 in the dimensions “personal hygiene”, “dressing”, “transfer” or “toileting”, and a dependence score of 3 or 4 in the dimensions “continence” or “eating” (at least one of the dimensions should have a value of 4 and the others at least a score of 3). For the patient, it implies a nurse visit twice or three times a day and, at least, a daily grooming.

1.6.3.3 *The benefits linked to the status for persons with a chronic illness*

The benefits granted by such a status are explained in Box 5.

Box 5 – Benefits linked to the chronic illness status

The maximum billing system (MAB) for patients with a chronic illness (maximum à facturer / maximumfactuur):⁵⁷

- The maximum billing is a system of caps on the annual amount of patients' co-payments (i.e. excluding supplements). Beyond the cap, all co-payments are reimbursed by the sickness funds.
- Not all co-payments are taken into account. The patients' per diem amounts for inpatients costs in psychiatric hospitals beyond 1 year are for example not taken into account. Medical costs taken into account in the maximum billing system are:
 - Patients' co-payments for health care provider services;
 - Patients' co-payments for reimbursed pharmaceuticals (with some exceptions, such as most pharmaceuticals of category Cs – Cx) and magistral formulae;
 - Patients' co-payments for technical services (medical imaging, laboratory analyses, technical tests, etc.);
 - The patients' per diem amounts for inpatient pharmaceuticals;
 - The patients' per diem amounts for inpatient costs in general hospitals and in psychiatric hospitals (limited to the first 365 days in psychiatric hospitals);

^e The Katz Scale is an assessment scale of the degree of dependency of a patient in 6 dimensions of the daily activities, see: <https://www.inami.fgov.be/fr/professionnels/sante/infirmiers/soins/Pages/echelle-evaluation-katz.aspx> (last access: 22 October 2021)



- The patients' contribution for enteral nutrition by catheter or stoma of young persons under 19 years old;
- The patients' contribution for endoscopic and viscerosynthesis equipment;
- The extra fee for the delivering of implants (*marge de délivrance/afleveringsmarge*).
- There are four different maximum billing systems:
 - A maximum billing based on household income: in this system, caps on annual co-payments of a household are set according to the net taxable annual income of the household (five caps for five income ranges);
 - A social maximum billing: for persons entitled to increased reimbursement a single cap is set, i.e. €450 (indexed €506.79 in 2022);
 - A maximum billing for children: for children under 19 years old, a single cap is set, i.e. €650 (indexed €732.03 in 2022);
 - A maximum billing for patients with a chronic illness: i.e. for patients with the chronic illness status or for patients with co-payments exceeding €450 per year (indexed €487.08 in 2021 and €477.54 in 2020) during two consecutive years, all caps defined in the other systems (i.e. the maximum billing based on household income, the social maximum billing and the maximum billing for children) described above are reduced by €100 (indexed €112.62 in 2022).

The third party payer system for patients with a chronic illness:⁵⁸

The third party payer system for patients with the chronic illness status: for ambulatory care, patients are in principle required to pay up front the full fee and then claim for reimbursement from their sickness fund based on the reimbursed tariffs described in the nomenclature (i.e. prohibition of the third party payer system for most ambulatory care). Some exceptions are nevertheless defined, i.e. for patients entitled to increased

reimbursement, the application of the third-party payer system is mandatory for consultations at the GP's office and patients only pay co-payments and supplements. This system is also mandatory in some specific situations (such as for the opening of a global medical record (GMR), fully supported by sickness funds). For patients with the chronic illness status, the third party payer system can also be applied by physicians and dentists but on a voluntary basis, i.e. the health care practitioner can refuse it. It should also be noted that for 2022, a broadening of the third-party payer system on a voluntary basis to all patients was agreed during the budget negotiations. As a consequence, since January 1st 2022, the prohibition of the third party payer system was removed for most ambulatory care.^{58, 59}

1.6.3.4 Evaluation of the RIZIV – INAMI chronic illness status

Evaluation performed by the Observatory for Chronic Diseases

An evaluation of the chronic illness status was carried out by the Observatory for Chronic Diseases in 2016 and the first half of 2017.⁶⁰ A quantitative part was based on 2013-2015 data of the IMA – AIM permanent sample (EPS) and a qualitative analysis was carried out based on a questionnaire sent to 4 000 persons entitled to the status, resulting in 1 447 questionnaires completed. In 2015, 9.7% of the persons covered by the compulsory health insurance were entitled to the chronic illness status (9.7% in Flanders, 10.7% in Wallonia and 7.4% in Brussels, own calculation). According to the authors, the relatively less frequent granting of the status in Brussels could be explained by the construction of the status based on eight consecutive quarters of expenditure, as more people reside in Brussels for a short period.⁶⁰

The following characteristics were proportionally higher for persons entitled to the status, compared to persons not entitled to the status:⁶⁰

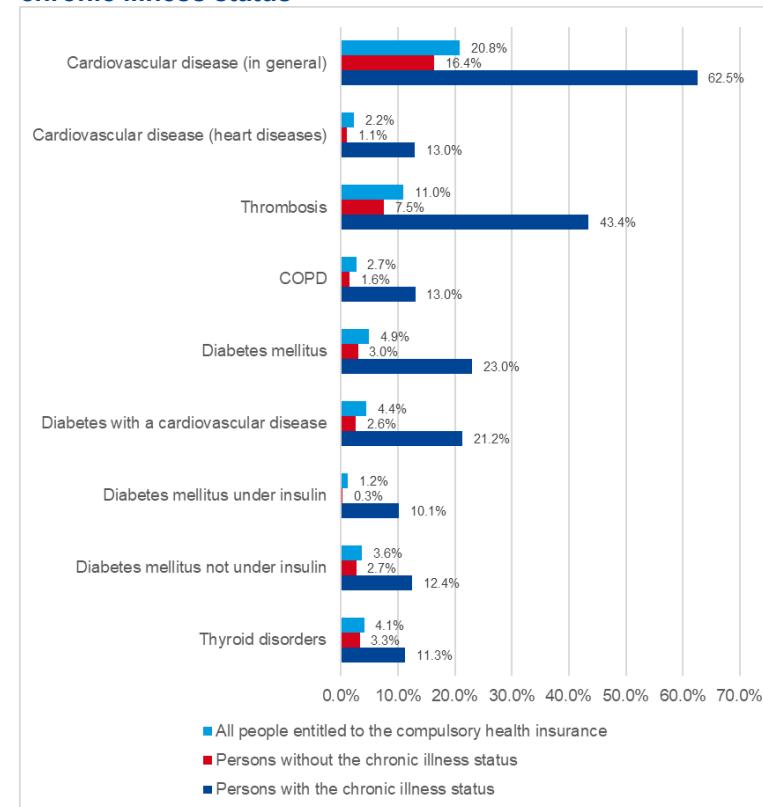
- Entitlement to an increased reimbursement: 40.4% (with status) versus 15.8% (without status);



- Benefiting from lump-sum interventions: 38.0% (with status) versus 2.9% (without status);
- Being disabled: 17.7% (with status) versus 4.8% (without status);
- Being retired: 48.7% (with status) versus 16.1% (without status);
- Being single: 36.9% (with status) versus 15.5% (without status).

The correlation with the presence of some pathologies was also studied. Since 2017, the EPS has added several pseudo-pathologies variables (flags) defined on outpatient medication delivery. The prevalence of the chronic pseudo-pathologies listed in Figure 3 was higher among people with the chronic illness status than among persons without the chronic illness status.⁶⁰

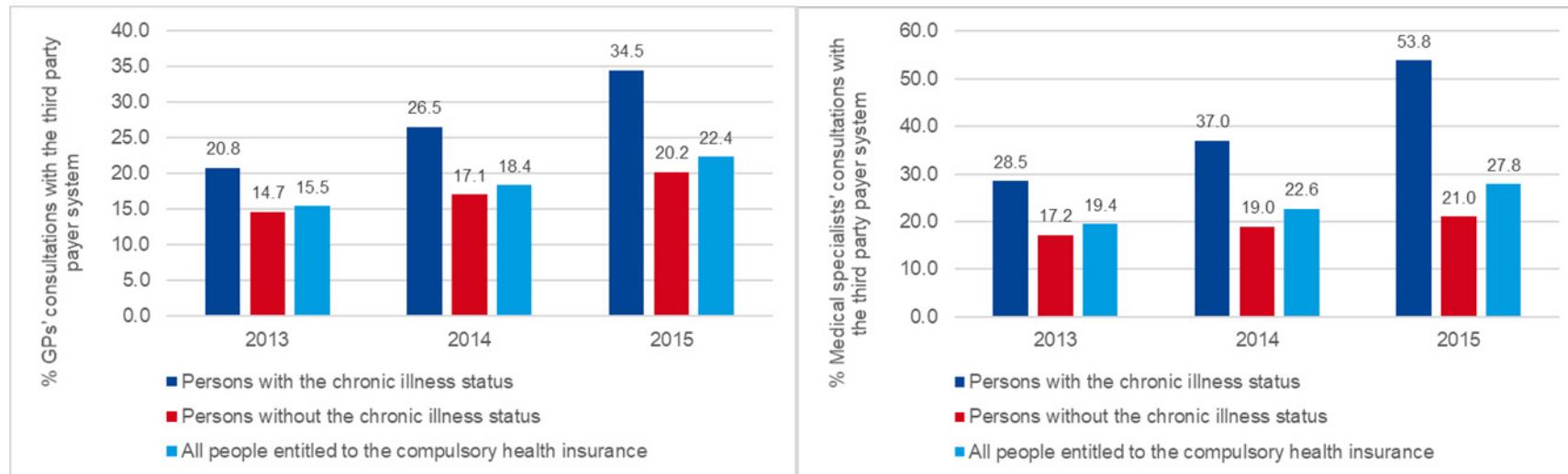
Figure 3 – Proportion of persons suffering from a list of pseudo-pathologies: all beneficiaries, persons with/without the RIZIV – INAMI chronic illness status



Source: *Observatoire des maladies chroniques 2017*⁶⁰

Concerning the application of the third-party payer system, one of the benefits of the chronic illness status, there was a clear overall increase in the application of the system between 2013 and 2015, both for general practitioners and other medical specialists. The analysis also showed a greater increase in the use of this system among people with the chronic illness status than without (see Figure 4). In contrast, such observations were less important for dentists (almost no increase and almost no difference by entitlement to the status). It should nevertheless be noted that for GPs and other medical specialists, the high application of the third-party payment system among persons with the chronic illness status is mainly due to the fact that they were also entitled to the increased reimbursement status (equally giving access to the third-party payer system). Only a modest increase in the application of the system could be attributed to the chronic illness status.⁶⁰

Figure 4 – Percentage of consultations (GPs and other medical specialists) with the third-party payer system



Source: *Observatoire des maladies chroniques 2017*⁶⁰

Regarding the maximum billing system (MAB), more beneficiaries with the chronic illness status received MAB reimbursements and these MAB reimbursements were on average higher, especially for people without increased reimbursement status. However, it was difficult to assess to what extent the reduction of the threshold by €100 played a role, given the complexity of the MAB.⁶⁰

The qualitative analysis also highlighted the population's lack of information about the status and its benefits. For example, 60.3% of the respondents did not know that they benefited from the chronic illness status and only 15% knew the benefits of such a status. Regarding the MAB, the lack of knowledge of this benefit is not a problem since it is granted automatically, but regarding the 'right' to request the application of the third-party payer system, the knowledge of this benefit is necessary, as the application must be requested by the patients.⁶⁰

Evaluation performed by the IMA – AIM

The IMA – AIM also conducted an evaluation of the RIZIV – INAMI chronic illness status, with the aim of determining the reliability of the chronic illness status in identifying patients with chronic disease diagnoses for the year 2015.⁶¹ To assess this, they linked the IMA – AIM data with the INTEGO database, registering General Practitioner (GPs) contacts, including incidence and prevalence rates for reason of visits (based on the International Classification of primary care (ICPC-2)) in a sample of Flemish GPs. For the evaluation, a "chronic disease diagnosis" (yes/no) was assigned to each patient, based on 129 ICPC-2 codes identified as chronic disease diagnoses based on the "ICPC_DuurEpisoden" list (see <https://aim-ima.be/IMG/pdf/fr - intg - statut maladie chronique - publique v2.pdf>), established by INTEGO and corresponding to the category of potentially lifelong acquired pathologies. It should be noted that this list includes some diseases that have little impact on the daily life and/or on health expenditure, such as uncomplicated hypertension. The absence of some chronic diseases diagnoses in the INTEGO database can also not be excluded, i.e. some patients with chronic diseases may be referred almost exclusively to their specialist doctor and are therefore not identified via INTEGO (limited to general practice).⁶¹

A total of 44 819 patients were included in this evaluation (2015 data). The analysis showed that the prevalence of chronic disease diagnoses was very different from that of chronic illness status, although there was a statistical correspondence. In total, 72.4% of these patients had a diagnosis of chronic disease and 17.5% had a chronic illness status (Table 2).⁶¹ The prevalence of a chronic disease diagnosis was in relative terms substantially higher among persons with the chronic illness status.

An analysis by diagnosis also highlighted some pathologies that were particularly present among the beneficiaries of the chronic illness status, i.e. persons with insulin-dependent diabetes, pulmonary heart disease and cardiac decompensation.⁶¹

The expenditures, as expected, were significantly higher in the group of patients benefiting from the chronic illness status (based on a financial criterion). Two types of patients who were not entitled to the chronic illness status despite high expenditures could nevertheless be identified, i.e. patients with high expenditures for less than two years and patients with high expenditures but spread irregularly over the quarters.⁶¹ It was also observed that having a chronic disease diagnosis (based on the "ICPC_DuurEpisoden" list) did not necessarily lead to high health care expenditures.

Table 2 – Frequency of persons with a chronic disease diagnosis according to the RIZIV – INAMI chronic illness status

	No chronic disease diagnosis	Chronic disease diagnosis	Total
No RIZIV – INAMI chronic illness status	24.8%	57.8%	82.5%
RIZIV – INAMI chronic illness status	2.9%	14.6%	17.5%
Total	27.6%	72.4%	100%

Source : IMA – AIM 2019⁶¹



1.6.4 Discussion

As described in the previous section, the conditions to obtain the RIZIV – INAMI “chronic illness” status are primarily based on financial criteria with the objective to improve the financial access of chronically ill persons with high health expenditures. More specifically, the first and third eligibility conditions are based on the amount of total (reimbursed) health expenditures (during 8 consecutive quarters), the second condition (lump sum) is based on patients’ co-payments (during 2 consecutive years). It should also be noted that, beside the financial criterion, patients must be in a “dependency situation” in the second condition and must have a rare or orphan disease in third condition.

Patients with a chronic illness diagnosis but without high medical expenditures are not reached by the RIZIV – INAMI chronic illness status. Additionally, as highlighted in the evaluation section, patients with high expenditure for less than two years and patients with high expenditures that are spread irregularly over the quarters are not entitled to the status. This explains why differences are expected compared to methods that identify patients with a chronic illness based on self-reporting (i.e. such as done in the HIS or EU-SILC (see chapter 3) or based on a list of diagnoses (such as done in IMA – AIM evaluation). The evaluations already carried out nevertheless highlighted that patients with cardiac diseases or diabetes seem well identified by the status.

2 METHODS AND DATA

Three types of indicators were selected to estimate the performance of the health system for chronic patients:

- **Contextual** indicators that bring a contextual view of the chronic patient population in Belgium;
- **Chronic versus non-chronic** indicators (the indicator is evaluated separately for chronic and non-chronic patients) and;
- **Chronic** indicators (the indicator of performance is related to the care of a specific chronic disease).

The results are presented by dimension in different tables according to the indicator type (contextual, chronic versus non-chronic or chronic).

2.1 Selection of indicators

The starting point of the selection of indicators was to list, the most relevant indicators to evaluate the performance of the health system for chronic patients. The list was based on research in the indexed and grey literature, and further refined in collaboration with external experts (conceptual relevance). In a second stage, these indicators were confronted with data availability making maximal use of routine data. There was no intention to set up a new data collection, meaning that all data analysed in this report were extracted from existing data sources (see section 1.1).

The final selection of indicators was a trade-off between conceptual relevance (what would be ideal to measure) and feasibility (availability of data and manageable number of indicators).



2.1.1 Preselection process

In the first stage, a pragmatic literature review was conducted by looking for relevant indicators for HSPA reports on chronic patients. Pubmed, Scopus and Google scholar were used, with a search strategy based on keywords related to health system performance (see Appendix 1). We also assessed the 125 indicators that were included in the last HSPA report for Belgium and in the HSPA on equity.^{2, 3} A call for HSPA reports of other European countries was also launched orally during the 24th meeting of the HSPA Expert Group (18 February 2020) and by email to the international HSPA Expert Group members. The items included in the Patient Reported Indicator Survey (PaRIS) questionnaire (version 1 & 2) were also studied but none of them were evaluated as being relevant to this project (see Box 6). After the review of literature, 941 indicators were retained for the preselection process (see Figure 5).

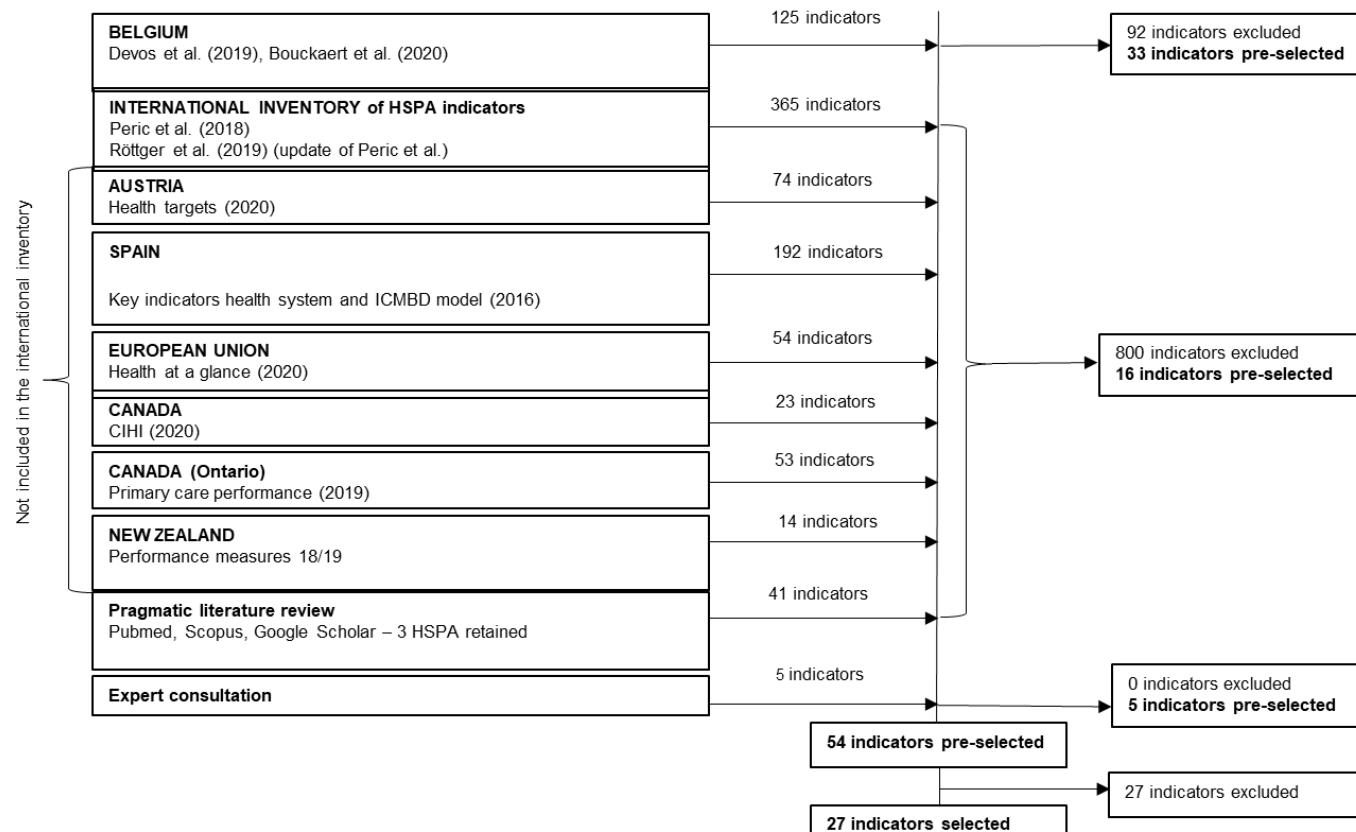
Box 6 – The Patient-Reported Indicator Survey (PaRIS)

PaRIS is an international project initiated by the OECD to develop, standardise and implement new indicators that measure the outcomes and experiences of health care. The **International Survey of People Living with Chronic Conditions** is the first to assess the outcomes and experiences of patients managed in primary care across countries. The PaRIS survey aims to fill a critical gap in primary health care, by asking about aspects like access to healthcare & waiting times, as well as quality of life, pain, physical functioning & psychological well-being.⁶²

In Belgium, PaRIS is managed by Sciensano. The Belgian pilot Survey of People Living with Chronic Conditions has been implemented in summer 2021 (patients) and autumn 2021 (general practitioners).



Figure 5 – Selection process of HSPA indicators for care of chronic patients



Devos (2019)², Bouckaert (2019)³, Peric (2018)⁶³, Röttger (2019)⁶⁴, Key indicators health system⁶⁵, ICMBD model (2016)⁶⁶, Health at a glance (2020)⁶⁷, CIHI (2020)⁶⁸, Primary care performance (2019)⁶⁹, Performance measure 18/19⁷⁰, 3 HSPA retained^{71 72 73}



The preselection stage of the indicators was done by four researchers of the research team independently. In a spreadsheet, the researchers had three possible answers: 1) preselect the indicator; 2) do not preselect the indicator; 3) do not know. A cell was also provided to add useful comments.

The inclusion criteria used for the preselection were:

- Chronic patients are identifiable (self-reported or by administrative status) in the data, or the indicator is related to a chronic disease;
- Other prerequisites inherent to HSPA (should measure Belgian healthcare performance, be valid, reliable, relevant, interpretable and actionable).^{2, 74}

The result was then discussed during two team meetings to reach an agreement on the final preselection. Fifty-four indicators were selected for the final selection process (see Figure 5).

In the preselection, 33 indicators (61%) were included in the last Belgian HSPA report² and 21 indicators (39%) were new indicators. The preselection consisted in 6, 32 and 16 indicators for the contextual, chronic versus non-chronic, and chronic section of the report respectively (see Table 3).

Table 3 – HSPA indicators preselected, by source and report section

	Contextual	Chronic versus non-chronic	Chronic	TOTAL
New	6	5	10	21
Old*	0	27	6	33
Total	6	32	16	54

*Already included in the last Belgian HSPA report, but without distinction between chronic versus non-chronic patients.²

2.1.2 Final selection of indicators

The preselected indicators have been submitted to a panel of 11 experts in HSPA or in care for chronic patients through an online survey (LimeSurvey). Each indicator has been assessed on the basis of five criteria: validity, reliability, relevance/importance, interpretability and actionability. The criteria ranged from 1 (strongly disagree) to 5 (strongly agree). The definition of the preselected indicators and the selection criteria were provided to the experts prior to the assessment.

The average score per indicator was then calculated. Three rankings were performed according to the average preference score and according to the type of indicator (contextual, chronic versus non-chronic or chronic indicator). This allowed a balance between the types of indicators selected for the study.

Finally, the results were discussed during an expert meeting. A target of 25-30 selected indicators was set to keep the study manageable in the time available. After expert consultation, 27 indicators were retained for the report (see Table 3). Among them, 19 (70.4%) were previously included in the Belgian HSPA report² and 8 were new indicators (identified as **NEW** in the report – we keep the original ID for indicators included in last Belgian HSPA). The indicators not selected by the experts are available in appendix.

The final selection consisted in 13 (48.1%) chronic versus non-chronic indicators, 10 chronic indicators (37.0%) and 4 contextual indicators (14.8%). With regard to the representation of the performance dimensions, 2 indicators assessed accessibility (A-2, A-4), 2 equity (EQ-4, EQ-5), 14 quality (continuity (QE-11, QC-7, QC-1, QC-3-QC-5), effectiveness (QE-10, QE-1, QE-2), appropriateness (QA-1, QA-2), patient centredness (QP-1, QP-3, QP-4)), 1 efficiency (E-5). No indicator of sustainability was included in this report. The prevention domain is evaluated by 4 indicators (P-4, P-6, P-7, P-11) (see section 1.2 for information on dimensions and domains included in the Belgian HSPA conceptual framework) (see Figure 4).

**Table 4 – The list of 27 indicators included in the HSPA care for chronic patients**

Indicator ID	Domain	Label	Type
A-2	Accessibility	Out-of-pocket payments (% of current expenditures on health)	Chronic versus NC*
A-4	Accessibility	Self-reported unmet needs for medical examination due to financial reasons in Belgium (% of individuals included in the survey)	Chronic versus NC
E-5	Efficiency	Proportion of low-care dialysis (%)	Chronic
NEW			
EQ-4	Equity	Proportion of households facing impoverishing or further impoverishing out-of-pocket payments	Chronic versus NC
EQ-5	Equity	Proportion of households facing catastrophic out-of-pocket payments	Chronic versus NC
CHR-1 NEW	-	Proportion of people with the chronic illness status according to their official health expenditures (IMA – AIM)	Contextual
CHR-2 NEW	-	Proportion of people reporting chronic disease(% of respondents, 15+) (HIS)	Contextual
CHR-3 NEW	-	Proportion of people reporting multimorbid status in the last 12 months (% of respondents, 15+) (HIS)	Contextual
P-4	Prevention	Influenza vaccination (% pop aged 65+)	Chronic versus NC
P-6	Prevention	Breast cancer screening (% women aged 50-69) - organised screening	Chronic versus NC
P-7	Prevention	Breast cancer screening (% women aged 50-69) - all mammograms	Chronic versus NC
P-11	Prevention	Regular contacts with dentist (% pop aged 3+)	Chronic versus NC
QA-1	Quality - appropriateness	Proportion of adult diabetics under insulin with appropriate follow-up	Chronic
QA-2	Quality - appropriateness	Proportion of adult diabetics receiving glucose lowering drugs other than insulin with appropriate follow-up	Chronic
QOL-1 NEW	-	Self-perceived Quality of life (chronic population versus non-chronic population)	Contextual
QC-1	Quality - continuity	Coverage of global medical record (% of persons who have a global medical record (GMR) with a general practitioner)	Chronic versus NC
QC-3	Quality - continuity	Proportion of hospital discharges that are followed by a contact with a GP within 7 days	Chronic versus NC



QC-4	Quality - continuity	Proportion of adult diabetics (receiving insulin) with a convention/passport/care trajectory	Chronic
QC-5	Quality - continuity	Proportion of adult diabetics (receiving glucose-lowering drugs) with a convention/passport/care trajectory	Chronic
QC-7	Quality-continuity	Number of people with a referral pharmacist (/number of people who should have a referral pharmacist)	Chronic
NEW			
QE-1	Quality- effectiveness	Asthma hospital admissions in adults (/100 000 pop)	Chronic
QE-2	Quality- effectiveness	Complication of diabetes hospital admissions in adults (/100 000 pop)	Chronic
QE-10	Quality-effectiveness	Potentially avoidable hospitalisations: COPD	Chronic
NEW			
QE-11	Quality- effectiveness	Percentage of people with laboratory confirmed pulmonary tuberculosis successfully treated	Chronic
NEW			
QP-1	Quality - patient centredness	Physician spending enough time with patients during the consultation (% of respondents, contact with doctor)	Chronic versus NC
QP-3	Quality - patient centredness	Physician giving opportunity to ask questions or raise concerns (% of respondents, contact with doctor)	Chronic versus NC
QP-4	Quality - patient centredness	Physician involving patients in decisions about care and/or treatments (% of respondents, contact with doctor)	Chronic versus NC

*Chronic versus NC : Chronic versus non-chronic



2.2 Data sources

The KCE Health System Performance Assessment has a tradition of studying indicators making maximal use of routine data. No new data collection was undertaken, but existing data sources were exploited, which are preferably collected in a similar format in the future. This allows for a re-evaluation of the same indicators when an update of the HSPA is undertaken. The data sources used in this HSPA on care for chronic patients are described in Box 7.

Box 7 – Data sources used for HSPA on care for chronic patients

The Health Interview Survey (HIS)

Since 1997, the Health Interview Surveys (HIS) have been undertaken every 4 to 5 years by Sciensano. The main objectives of the HIS are to assess the health status of the population and to identify the main health problems as well as the determinants and behaviours that could influence them. The health indicators included in the HIS allow the competent authorities to develop proactive health policies that are adapted to the needs of the population. The last data collection has been organised in 2018 through a face-to-face (F2F) interview and a paper-and-pencil (P&P) self-administered questionnaire (SAQ) covering more sensitive topics.⁷ The HIS includes eight main health domains (i.e., health and quality of life, life style, preventive knowledge and practices, mental health and well-being, use of health services, health and society and dental health). In 2018, a health examination survey was conducted with 1184 participants of the HIS. Most of the results are freely available through various publications and reports gathered on a website^f and an online interactive analysis tool.

The IMA – AIM data

The InterMutualistic Agency is a partnership of the seven Belgian sickness funds. The IMA – AIM gathers data of the different sickness

funds in a common format. The IMA – AIM micro-level data are the main information source used to calculate indicators in this HSPA report on care for chronic patients. Some data have been provided by the IMA – AIM coordination cell⁷⁵ and others have been directly extracted by the KCE researchers thought the IMA – AIM atlas: <https://aim-ima.be/Atlas-AIM>. An advantage is that the IMA – AIM data are not self-reported or limited to a certain registration period, but are originally continuously collected for administrative use by the sickness funds and hence less prone to recall bias. There is no registration of healthcare that is not covered by the public health insurance or used by residents not insured in the public health insurance. The available information includes detailed individual-level data on the use and expenditures – further subdivided in co-payments, hospital care supplements and expenditures chargeable to the public health insurance – of all care covered by the public health insurance (procedures, services, admissions, delivered medication, etc.). There are also sociodemographic and socioeconomic information e.g. age, sex, place of residence, etc. Although healthcare consumption is registered in detail, diagnostic information is not recorded.

The HISLink - linkage of Health Interview Survey Data with Health Insurance Data

In the HISLink project, Sciensano performed a linkage between Health Interview Survey (HIS) 2013/2018 and IMA – AIM data (2013-14/2018), partly to verify the HIS reporting on the use of care but also to overcome the shortcomings of the health insurance data (e.g. information on non-reimbursed health care use is lacking, no link between health care use and health needs, information on socio-demographic background characteristics is scarce).⁷⁶

The EU-SILC data

The EU-SILC microdata are the reference source for measuring socioeconomic disparities in Belgium (and Europe). The Belgian data are

^f <https://his.wiv-isb.be/SitePages/Home.aspx> (last access 6 January 2022)



collected annually by Statistics Belgium. The survey format is harmonised across the EU with small national differences. The EU-SILC data contain rich individual and household information for a representative sample of the population residing in Belgium (about 11 000 to 12 000 individuals in about 6 000 households). Detailed, self-reported information is recorded amongst others on education level, activity status, various income sources, housing, possession of goods, wealth, age, sex, municipality of residence, family situation, neighbourhood characteristics, and health status. Health status information is only collected for individuals aged 16 or over.⁷³

EU-SILC/IMA – AIM data

Within the scope of the Performance Equity project, individual-level data from the EU-SILC collected in 2008, 2012 and 2016 were coupled with individual-level IMA – AIM data. This allows to have detailed information on socioeconomic status, sociodemographic characteristics, health status.⁷³ In addition, household consumption expenditures were imputed to this data set in broad categories (e.g. food, utilities, rent etc.) using the EUROMOD microsimulation model.⁷⁷

FOD-SPF Public health MZG – RHM

The registration of Hospital Discharge Dataset (MZG – RHM, Minimale Ziekenhuis Gegevens – Résumé Hospitalier Minimum) is mandatory for every hospital in Belgium since 1991. This means that for each hospitalized patient, information such as year of birth, sex, postal code of domicile and other information such as length of hospital stay (LOS), hospital ward and bed type occupation etc. has to be recorded along with ICD-10-CM encoding of relevant diagnoses as well as diagnostic and therapeutic procedures performed. They are collected and disseminated by the FOD – SPF Public Health.⁷⁸

Statistics Belgium

Statistics Belgium is the main statistical authority in Belgium. It collects and disseminates all population and mortality data.⁷⁹

Other national register contains data on surveillance of tuberculosis: the Belgian tuberculosis registry whose data are reported by FARES and VRGT.^{80, 81}

The Organisation for Economic Co-operation and Development (OECD)

The OECD carries out work on health data and indicators to produce international comparisons and economic analyses of health systems. Key statistical publications include among others OECD Health Statistics 2021⁸² (a database containing more than one thousand indicators covering all aspects of health systems for the 38 OECD member countries). The OECD also publishes the Health at a Glance reports (the most recent was published in 2021). They provide the latest comparable data on different aspects of the performance of health systems in OECD countries.⁸³

Other international agencies also published very useful data (for instance the European Centre for Disease Prevention and Control (ECDC) or the World Health Organisation (WHO)⁸⁴) to compare the performance of the Belgian healthcare system with other European countries.



2.3 Outline of report

The results of the 27 indicators are summarised in synoptic tables presented in the results section (Part II of the report). These tables present the most recent reliable results, at a national level and by region, as well as the data sources and the mean of EU-15⁹. The comparison of the indicators by type of chronic status is presented as well (for the contextual and chronic versus not chronic indicators, see above).

Evaluation based on level and trend

A pictogram (see Table 5) shows the evaluation of the indicator, based both on the most recent national results available and the evolution over time (most indicators have at least a 5-year timespan). Contextual indicators, by definition, cannot be evaluated.

The value at the national level is compared to **targets** (national if they exist, international otherwise), to results from EU-15 countries (**benchmarking**), to **standards of care** (mainly for indicators derived from clinical guidelines), in that order. In the absence of targets, benchmarking or standards of care, the evaluation is based on a **consensus** among the authors of this report (expert opinion) (see Box 8).

Regional differences (Flanders, Wallonia and Brussels)

Regions are always compared to the region with the best results, and regions having results that are at least 20% worse (in terms of relative risks and compared to best performing region) are highlighted in bold.

With respect to the regional comparisons, the specific context of Brussels has to be kept in mind: the Brussels region only consists of a single large urban area, while the other two regions consist of a mix of urban, suburban and rural environments.

⁹ The term **EU-15** refers to the 15 Member States of the European Union as of December 31, 2003, before the new Member States joined the EU. These 15 Member States are Austria, Belgium, Denmark, Finland, France, Germany,

Box 8 – How to interpret the results?

The reader has to keep the following in mind to avoid misinterpreting the results presented in this report:

- The aim of the HSPA report is to provide a global evaluation of the health system (with a focus on care for chronic patients), not to monitor the effect of specific programmes; indicators are chosen to illustrate a dimension or domain (especially in the context of care for chronic patients in this report), **not to assess a specific health objective**.
- **Comparisons with other (European) countries have to be interpreted with caution**, as there might be differences in methodology, data collection (survey versus administrative data, sampling scheme, etc.), coding of information, etc.
- **Indicator results are influenced by several other factors than chronic status or self-reported chronic condition**: it is not the aim of this report to identify these factors; many indicators are affected by factors outside the health system, e.g. determinants of health (social and economic environment, physical environment, individual characteristics and behaviours); when an indicator trend changes, it could be due to a new policy, but it could also be due to any other factor: even if a correlation could be established, it is not a proof of causality.

Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and the United Kingdom. Depending on the availability of data, the number of countries included in the benchmark can vary (e.g. EU-13 means that data from 13 of the 15 countries could be gathered for the comparison).

**Table 5 – Pictograms for the evaluation of indicators**

	Good results, and improving
	Good results, and trend not evaluated
	Good results, and globally stable
	Good results, but deteriorating
	Average results, but improving
	Average results, trend not evaluated
	Average results, and globally stable
	Average results, but deteriorating
	Poor results, but improving (warning signals)
	Poor results, and trend not evaluated (warning signals)
	Poor results, and globally stable
	Poor results, and deteriorating (warning signals)
	Contextual indicator: no trend (no evaluation is given)
	Contextual indicator: upwards trend (no evaluation is given)
	Contextual indicator: stable trend (no evaluation is given)
	Contextual indicator: downwards trend (no evaluation is given)
	Worse results for chronically ill persons

For each indicator described below, a **technical sheet** is available on the KCE website in the [supplement](#) of the report. The indicator ID (example: A-2) in the synoptic tables refers to the ID in the document. It details the rationale for choosing the indicator, provides technical information on data sources and computation, gives all results (including subgroup analyses and benchmarking), limitations in interpretation, and bibliographical references. Some technical sheets also present sub-indicators related to the main indicator which help to understand the context. The report is also published on the [healthybelgium.be](#) website to reach a wider audience. This website gathers indicators from several reports (a.o. HSPA, the Health Status Report and medical practice variations) and includes graphics with downloadable data sets.



PART 2 – RESULTS

3 CONTEXTUAL INDICATORS

In the last years, the Belgian health system has evolved to cope with an increase in the number of persons living with a chronic disease (see chapter 1.1). The main characteristics of a chronic condition are that it lasts a long period of time and may be expected to require a long period of supervision, observation or care.⁸⁵ Living with a chronic disease often means a profound life-changing experience which may impact all aspects of a patient's life. Chronic diseases and conditions have specific consequences for the perception of health, daily functioning and the use of healthcare.⁸⁶ As a chronic disease is often difficult to cure, the focus of treatment is to keep the health condition as stable as possible. This section gives the results of the contextual indicators, selected to put into perspective proportions of persons living with chronic conditions and their quality of life (see chapter 2.1 for selection process).

Four indicators are described. The first one (**proportion of people with the RIZIV – INAMI chronic illness status (CHR-1)**) provides information on one of the financial protection measures in the Belgian health system, set up to support people with a chronic illness (see chapter 1.6 for details). The second one (**proportion of people reporting a chronic condition (CHR-2)**) gives a view on how individuals (in the Belgian Health Interview Survey (HIS), i.e. a representative sample of the Belgian population) perceive their health and report their state of chronic patient. The third one (**proportion of people reporting multimorbid state in the last 12 months (CHR-3)**) informs on the reporting of a state of multimorbidity by individuals of the same representative sample of the Belgian population (HIS). Finally, the fourth one (**self-perceived quality of life (QOL-1)**) reports on the self-perceived health-related quality of life of the individuals included in the Belgian HIS. Moreover, the indicator CHR-1 (on the RIZIV – INAMI chronic illness status) is used as a stratification factor in the analysis of the CHR-2, CHR-3 and QOL-1 indicators. And the indicator CHR-2 (pinpointing the self-

reporting of a chronic disease state) is also used as an stratification factor in the analysis of the CHR-3 and QOL-1 indicators.

More broadly, as explained in chapter 2.1 (selection of the indicators), three different types of indicators are described in this HSPA report: the contextual ones which are the purpose of this chapter, the chronic versus non-chronic ones and the indicators focussing on specific chronic diseases. To study the chronic versus non-chronic indicators, two subpopulations have to be defined according to the chronic state of Belgians: chronically ill people and non-chronically ill people. To do so, the contextual indicators CHR-1 and CHR-2 are used to identify the chronically ill from the non-chronically ill people and define as such the two subpopulations to compare. Table 6 shows which contextual indicator was chosen to define the two subpopulations for each of the chronic versus non-chronic indicators. Also an additional variable, not described in the current chapter on contextual indicators, was used to define the chronic versus non-chronic population. This last one is specifically used in the frame of the accessibility and equity domains: the EU-SILC PH020 factor (see Box 9). Table 6 includes the use of this last one too.

Box 9 – EU-SILC, description of the PH020 factor

The European Union Statistics on Income and Living Conditions (EU-SILC) is an instrument collecting data on income, poverty, social exclusion and living conditions in EU. The EU-SILC question PH020 identifies people aged 16 and older who report to have a chronic illness or condition. In the EU-SILC, a chronic disease state is defined by a long standing health problem of a duration of at least 6 months.

The formulation of the question in French and Dutch is identical to the formulation used in the Belgian Health Interview Survey (HIS): “*Souffrez-vous d'une maladie ou d'un problème de santé chronique ?*” “*Hebt u een langdurige ziekte of aandoening (gezondheidsprobleem)?*”

**Table 6 – Use of chronic illness status/self-reported chronic disease indicators as a stratification factor of chronic versus non-chronic indicators**

ID	Chapter	Label	CHR-1	CHR-2	EU-SILC PH020
A-2	0	Out-of-pocket payments (% of current expenditures on health)	X		X
A-4	0	Self-reported unmet needs for medical examination due to financial reasons in Belgium (% of individuals included in the survey)	X		X
EQ-4	0	Proportion of households facing impoverishing or further impoverishing out-of-pocket payments	X		X
EQ-5	0	Proportion of households facing catastrophic out-of-pocket payments	X		X
P-11	7	Regular contacts with dentist (% pop aged 3+)	X	X	
P-4	7	Influenza vaccination (% pop aged 65+)	X		
P-6	7	Breast cancer screening (% women aged 50-69) - organised screening	X		
P-7	7	Breast cancer screening (% women aged 50-69) - all mammograms	X		
QC-1	4.3	Coverage of global medical record (% of persons who have a global medical record (GMR) with a general practitioner)	X		
QC-3	4.3	Proportion of hospital discharges that are followed by a contact with a GP within 7 days	X		
QP-1	4.4	Physician spending enough time with patients during the consultation (% of respondents, contact with doctor)	X	X	
QP-3	4.4	Physician giving opportunity to ask questions or raise concerns (% of respondents, contact with doctor)	X	X	
QP-4	4.4	Physician involving patients in decisions about care and/or treatments (% of respondents, contact with doctor)	X	X	



Additionally, a project of data linkage, named the HISLink project allows to further analyse the contextual indicators based on the presence of both the self-reported chronic disease state and the RIZIV – INAMI chronic illness status (see Box 10 about the HISLink project). Also some other indicators of this report benefit from the comparison offered by the HISLink project : P-11, QP-1, QP-3 and QP-4 (see chapters 0 and 7 for details).

Table 7 gives an overview of the main results of the contextual indicators, which are then described more in detail in the following sections. As all indicators are contextual, no performance score is given.

Box 10 – The HISLink project

The HISLink project consists of the linkage of HIS data (Sciensano) with health insurance data (IMA – AMI). This project is led by Sciensano^h, and financed by the RIZIV – INAMI. Sciensano's experts give the following explanation on this project : "The Health Interview Survey (HIS) and the Mandatory Health Insurance (MHI) are complementary data sources within the Belgian health information system. The HIS collects self-reported information on the health status, life style, health care use and socio-demographic background characteristics of a representative sample of the population in Belgium. The MHI is an administrative database on reimbursed health care expenses of the total population. The HISLink, through an individual linkage of HIS and MHI data, allows to address health policy relevant questions that each of the data sources separately cannot answer."ⁱ (see also chapter 0 on data sources for additional information on HISLink)

^h Sciensano is a public research institution which focuses on a holistic and multidisciplinary approach to health, including interconnection between human and animal health and their environment.

ⁱ <https://www.sciensano.be/en/projects/linkage-health-interview-survey-data-health-insurance-data>, last access: 3 January 2022

**Table 7 – Overview of the results of the contextual indicators**

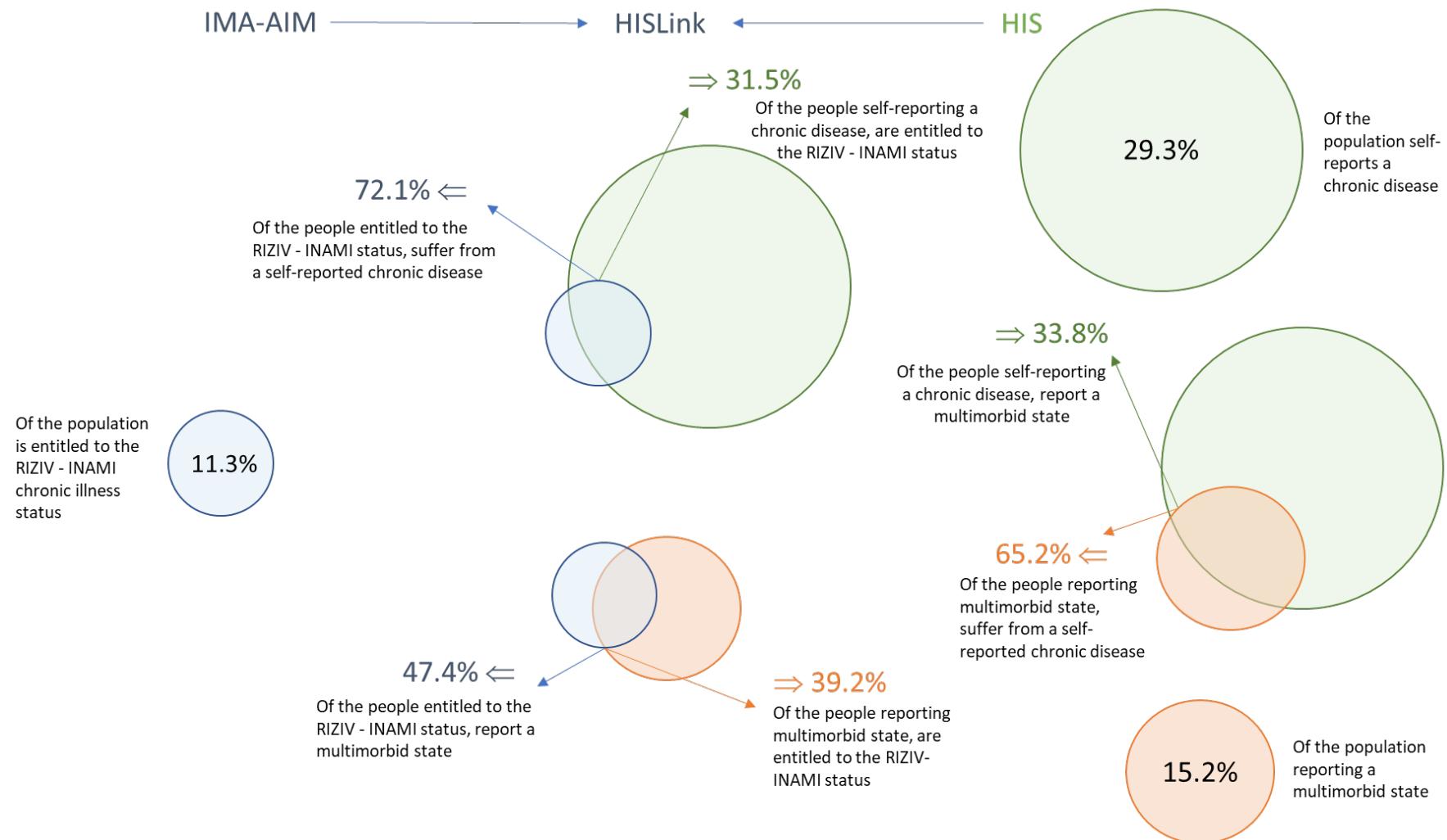
(ID)	Indicator	Population group	SCORE	Year	BE	Flanders	Wallonia	Brussels	Source	EU-15 (mean)
CHR-1 NEW	Proportion of people with the RIZIV – INAMI chronic illness status according to their official health expenditures	In the entire population	C	2018 (2020)	11.3 (12.1)	11.3 (12.1)	12.0 (12.9)	8.7 (9.4)	IMA - AIM	-
		In subpopulation with self-reported chronic disease		2018	31.5	32.9	29.6	31.0	HISLink	
		In subpopulation with self-reported multimorbidity			39.2	42.0	43.5	35.6	HISLink	
CHR-2 NEW	Proportion of people reporting a chronic disease	In the entire population	C	2018	29.3	27.6	32.7	28.7	HIS	36.6
		In subpopulation with RIZIV-INAMI chronic illness status			72.1	71.7	74.8	70.8	HISLink	
		In the entire population		2018	15.2	15.7	16.5	10.8	HIS	-
CHR-3 NEW	Proportion of people reporting multimorbid state in the last 12 months	In subpopulation with RIZIV-INAMI chronic illness status	C		47.4	48.3	48.2	38.3	HISLink	
		In subpopulation with self-reported chronic disease			33.8	34.4	34.1	28.7	HIS	
		In the entire population		2018	0.843	0.868	0.798	0.839	HIS	-
QOL-1 NEW	Self-perceived quality of life*	In subpopulation with RIZIV-INAMI chronic illness status	C		⚠ 0.630	0.671	0.558	0.627	HISLink	
		In the subpopulation with self-reported chronic disease			⚠ 0.696	0.739	0.632	0.687	HIS	

Legend: C=contextual, ⚠ = Worse results for chronically ill persons

, * calculated using EQ-5D-5L tool and scored using Belgian values set (Bouckaert et al. (2021)). See technical sheet for additional methodological aspects.



Figure 6 – Overlap between population self-reporting chronic disease, multimorbid state and entitled to the RIZIV – INAMI chronic illness status

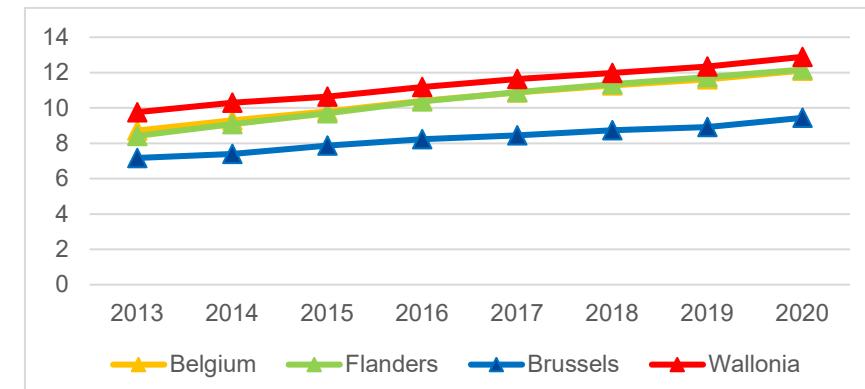


3.1 Proportion of people with the RIZIV – INAMI chronic illness status according to their official health expenditure

Health is a key aspect of people's well-being and has an important impact on opportunities to participate in social life, the labour market and the ability to benefit from economic and employment growth. People with poor physical or mental health are less likely to work and more likely to be unemployed than people in better health.^{3, 87} This might result in a higher risk for financial problems, lower level of general well-being, and social inequality. People suffering from a chronic condition potentially face high out-of-pocket healthcare expenses. To overcome this problem, the National Institute for Health and Disability Insurance (RIZIV – INAMI) has created, in 2013, a specific status mainly based on the official health expenditure incurred by a patient (see chapter 1.6) for details on the access conditions and the rights related to this status). This status gives access to the maximum billing (MAB) system for the chronically ill people, with a reimbursement of patients' co-payments (tickets modérateurs - remgelden) above specified thresholds and to the third-party payment (applied by the doctor and dentist on a voluntary basis).⁸⁸ The chronic illness status was developed in a vision of "social protection" for patients who have high official health expenditures and have regularly access to care, and not in a vision to identify all chronically ill patients administratively. Patients suffering from chronic illness but with little official health expenditures are not covered by this financial protection mechanism.

The proportion of Belgians entitled to the chronic illness status increased from 8.7% (2013) to 12.1% (2020) (Figure 7). This growth was quite similar in the three Belgian regions. In 2020 Wallonia had the highest prevalence (12.9%), followed by Flanders (12.2%) and the Brussels region (9.4%). This can be partly explained by the different age-distribution in the Brussels region. Women are overrepresented in all three regions (Men/Women: Flanders 10.4% versus 13.9 %, Brussels region 7.8% versus 11.1 %, and Wallonia 10.9% versus 15.8%).

Figure 7 – Percentage of the population entitled to the chronic illness status (years 2013 to 2020), by region.



Data: IMA – AIM, Figure: KCE

Exploration by means of stratification based on age and gender of the chronic illness status for the Belgian population reveals that people who have a chronic illness status are substantially older and are more likely to be female. More than 37% of the persons entitled to chronic illness status are already entitled to another financial protection system, naming the increased reimbursement (IR - Verhoogde tegemoetkoming/bénéficiaire de l'intervention majorée). In the general Belgian population 18.8% have access to the IR. (Table 8).



Table 8 – Stratification of chronic illness status for the Belgian population (age, gender & increased reimbursement (IR) and comparison of IR in Belgian population and in chronic illness status population, 2020

% with chronic illness status	No IR		IR	
	Men	Women	Men	Women
0-24 y	1.9	1.6	4.4	3.8
25-44 y	2.2	4.5	13.0	13.4
45-64 y	8.1	11.2	26.9	30.9
65-74 y	21.4	20.6	36.3	37.2
75+ y	37.2	40.5	51.1	58.7

% with/without IR	No IR	IR
Belgian population	80.6	18.8
Chronic illness status	62.5	37.4

Source: IMA – AI% atlas, IR= Increased Reimbursement

The coupled data in the HISLink project makes it possible to calculate the proportion of people with the chronic illness status among the people with a self-reported chronic disease and among people with self-reported multimorbidity. Among persons self-reporting a chronic disease in 2018, 31.5% have the chronic illness status (see Table 7). And among people self-reporting multimorbidity in 2018, 39.2% are entitled to the chronic illness status (see Table 7 and Figure 6).

3.2 Proportion of people reporting a chronic disease

Self-reported chronic disease is used in the European Community Health Indicators (ECHI) projects. It is a widely used indicator to measure the population health and to provide estimates of health care needs.⁸⁹

The proportion of Belgians reporting a chronic disease grew from 25.1% in 2001 to 29.3% in 2018 (Figure 8). Rates are highest in Wallonia, followed by Brussels and Flanders. As expected, the proportion of Belgians reporting at least one chronic disease increases with age from 14.1% (age group 15-24) to 44.1% (age group 75+) (data of 2018).

The difference between the proportion of people with a self-reported chronic disease and the proportion of people with the RIZIV – INAMI chronic illness status is important. In 2013, the proportion amounted to 28.6% for the former group and 10.5% for the latter group, or a difference of 18.1%. In 2018 the same order of magnitude was observed , i.e. 29.5% for the former group and versus 12.9% for the latter group, or a difference of 16.6%.

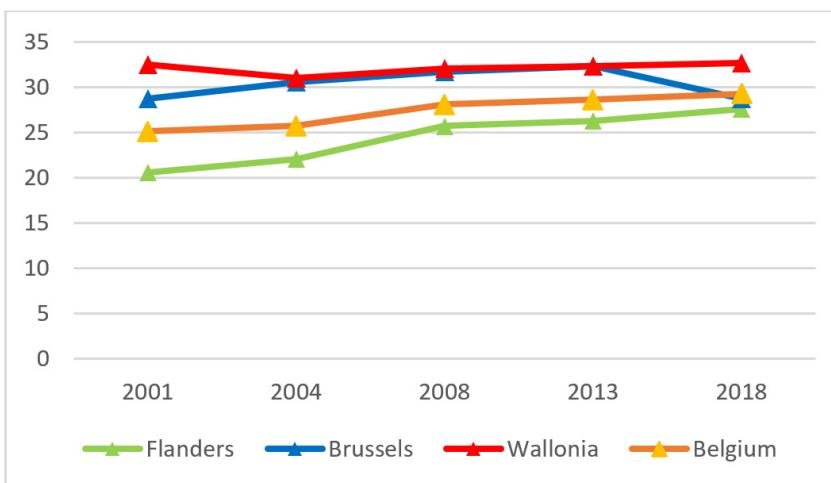
A first explanation is that the RIZIV – INAMI chronic illness status is mainly based on healthcare expenses and not on having a chronic disease. People suffering from a chronic disease, but whose official health expenditures are lower than 300€/ quarter (not indexed) or who do not benefit from the lump sum for chronically ill people, are not entitled to the chronic illness status. Another explanation is that people need to have a healthcare cost of 300€/quarter for 8 consecutive quarters to be entitled to the status. This implies that people who do not have a ‘continuous’ high cost, for example suffer a deterioration of their health due to a chronic condition for one year, leading to increased but short-term expenses, will not get the RIZIV – INAMI chronic illness status. The analysis of the HISLink data (Table 7 and Figure 6) shows that, among the people with the RIZIV – INAMI chronic illness status, only 72.1% report to have at least one chronic disease. So 27.9% of the people entitled the RIZIV – INAMI chronic illness status do not report having a chronic disease. One explanation could be that some participants to the Belgian HIS misunderstood the question or were not aware about their condition. Another explanation could be that some people who benefit from the RIZIV – INAMI chronic illness status do not live with a chronic condition.



In short, the RIZIV – INAMI status seems more capable to identify people with high spending in care but seems not necessarily a good proxy to identify people with chronic disease.

A European study (EU-SILC) allows to compare data between European countries and shows that the proportion of people with a self-reported chronic condition in Belgium is relatively low compared to the majority of the European countries. The Belgian prevalence in 2020 amounted to 24.8%, below the EU-15 mean of 34.1% (Table 9).

Figure 8 – Percentage of the people aged 15 years and over who report at least one chronic disease (years 2001, 2004, 2008, 2013, 2018), by region



Data: HIS, Figure: KCE

Table 9 – Proportion of people reporting a chronic illness in EU-15 in 2020

	% People reporting a chronic illness
Finland	50.3
Portugal	43.2
Sweden	37.4
France	37.4
Spain	37.3
Austria	35.4
Denmark	34.6
EU-15 (mean for 12 countries*)	34.1
Netherlands	32.5
Ireland	27.2
Belgium	24.8
Luxembourg	24.6
Greece	23.9

Source: Eurostat ; data not available for UK, Italy and Germany



3.3 Proportion of people reporting multimorbid state in the last 12 months

Belgians selected for face-to-face interviews of the HIS can report if they suffer from more than one chronic disease or disease group. Ten diseases out of a list of 38 were considered (asthma, chronic obstructive pulmonary disease (COPD), acute myocardial infarction (AMI) and consequences, coronary heart disease, other serious heart disease, hypertension, osteoarthritis, arthritis, cancer and diabetes). In the construction of the indicator, asthma and COPD were taken together as 'chronic lung disease'; AMI and consequences, coronary heart disease and other serious heart disease were grouped as 'serious heart disease'; and osteoarthritis and arthritis (2 different questions) were also combined. This resulted in 6 diseases or disease groups (chronic lung disease, serious heart disease, diabetes, osteoarthritis/arthritis, hypertension and cancer).{Van der Heyden, 2021 #542}

Multimorbidity was defined as having at least two from those six diseases or disease groups. This implies that people reporting two diseases from the same 'disease group' were not considered as multimorbid.

The proportion of Belgians reporting multimorbid state increased from 11.4% in 2001 to 15.2% in 2018. This increase is largely explained by the ageing of the population. In 2018, the proportion of Belgians with at least two chronic diseases increased with age, going from 0.8% (age group 15-24) to 41.8% (age group 75+) and is stable over time. The rate is highest in Wallonia (16.5%), followed by Flanders (15.1%) and Brussels (10.8%).

The analysis of the HISLink data (Table 7) shows that, in the Belgian population with a self-reported chronic disease in 2018 (HIS), 33.8% also report to have multimorbidity (Table 10). Among the patients who have the RIZIV – INAMI chronic illness status, this figure rises to 47.4%.

Although people with a multimorbid state seems to benefit more frequently from the chronic illness status than those with a self-reported chronic disease, this does not still imply that the status is a good proxy to determine the chronically ill state of people. People can for example have other healthcare expenses that are not related to a chronic disease. Moreover, 10.6% of the respondents without the RIZIV – INAMI chronic illness status report multimorbidity. This could be explained by low statutory health expenditures related to their specific diseases. Certain diseases that are not included in the HIS questionnaire (such as mental problems) can lead to high healthcare expenses for a long time. This could imply that if these diseases were included in the HIS, the correspondence would be better (higher proportion of multimorbid among entitled individuals), and the status would thus appear to be a better proxy.

Nonetheless, it is likely that patients with multimorbidity have higher health expenditures than patients who have only one chronic disease. The RIZIV – INAMI status might therefore better identify people with comorbidity, probably because they have more spending in reimbursed care. In 2018, 39.2% of multimorbid people benefited from the RIZIV – INAMI chronic illness status while 31.5 % of the self-reported chronic disease patients benefited from it (see Table 7 and Figure 6)

Table 10 – Proportion of people self-reporting multimorbid status in the last 12 months

	2013						2018					
	Self-reported chronic disease (HIS)		Chronic illness status (HISLink)		NO chronic illness status (HISLink)		Self-reported chronic disease (HIS)		Chronic illness status (HISLink)		NO chronic illness status (HISLink)	
	%	95% CI	%	95% CI	%	95% CI		%	95% CI	%	95% CI	
Belgium	33.7	30.7,36.7	45.4	41.1,49.6	9.7	8.7,10.6	33.8	31.2,36.3	47.4	43.6,51.2	10.6	9.7,11.4
Brussels	34.6	28.7,40.5	49.5	40.5,58.6	8.9	7.4,10.3	28.7	24.4,32.9	38.3	32.4,44.1	7.7	6.4,9.0
Flanders	34.5	29.9,39.0	47.3	41.1,53.6	9.4	8.2,11.1	34.4	30.8,38.0	48.3	43.0,53.7	10.2	9.0,11.4
Wallonia	32.2	27.9,36.6	41.0	34.7,47.4	10.0	8.6,11.5	34.1	29.8,38.4	48.2	41.8,54.6	12.0	10.3,13.7

Source: HISLink

3.4 Self-perceived quality of life

With technological progress and increasing life expectancy of the population (related to an increasing number of patients suffering from chronic conditions), the impact of health interventions on the quality of life of the population is becoming an important concern in public health policies and patient management decisions. The aim is no longer to just extend people's lives but also to improve or try to maintain their health-related quality of life.⁹⁰ While quality of life is a very broad concept that can be influenced by all aspects of a person's existence, health-related quality of life (HRQoL) focuses on the way health affects the quality of life, i.e. on the impact of health status on quality of life.⁹⁰ HRQoL in the population or a patient group can be estimated using a HRQoL instrument in combination with a pre-existing value set with quality weights (also called utility values). The value set contains a fixed utility value for each of the possible health states that can be described with the HRQoL instrument and can be used to attribute HRQoL-values to the health states of any study population.

Since 2013, the Belgian HIS measures health and HRQoL of the population using the EQ-5D-5L. The EQ-5D-5L developed by the EuroQol Group is a generic multidimensional HRQoL instrument widely used in clinical research and in health economic evaluations.⁹⁰ It is a descriptive system for health

states, encompassing five dimensions of health (mobility, self-care, usual activities, pain/discomfort and anxiety/depression). Each EQ-5D-5L health state is labelled by a code, e.g. 21531, where each digit represents the severity level of a dimension.⁹⁰ Recently the KCE has developed a value set for the EQ-5D-5L.⁹⁰ The EQ-5D-5L instrument is used to measure HRQoL in this indicator⁹⁰

In 2018, the average EQ-5D-5L utility score for the Belgian population (HIS cohort, 15+ years old) is 0.843 which corresponds to a decrease of 0.018 in HRQoL compared to 2013. The decrease is observed in all Belgian regions and is more pronounced in Wallonia (-0.030) than in Flanders (-0.010) and the Brussels region (-0.010). Participants with a self-reported chronic disease have a lower quality of life than participants not reporting a chronic disease (difference -0.211 and -0.207 in 2013 and 2018, respectively). The difference in self-reported HRQoL was higher in Wallonia than in the other regions. The patients entitled to the RIZIV – INAMI chronic illness status have a lower quality of life than the rest of the population (HISlink) (difference -0.231 and -0.242, in 2013 and 2018 respectively (Table 11)). The HRQoL was also lower in patients entitled to the RIZIV – INAMI chronic illness status compared to patients in the entire HIS with a self-reported chronic disease (difference -0.053 and -0.066 in 2013 and 2018, respectively).

**Table 11 – Quality of life scores*, by year, region and entitlement to the chronic illness**

2013					2018					
Entitled to the chronic illness status		Not entitled to the chronic illness status		Difference	Entitled to the chronic illness status		Not entitled to the chronic illness status		Difference	
Mean	95% CI	Mean	95% CI	Mean	Mean	95% CI	Mean	95% CI	Mean	
Belgium	0.656	0.625,0.688	0.887	0.881,0.893	-0.231	0.630	0.601,0.659	0.872	0.866,0.878	-0.242
Brussels	0.655	0.589,0.722	0.870	0.858,0.882	-0.215	0.627	0.574,0.680	0.864	0.853,0.875	-0.193
Flanders	0.674	0.630,0.719	0.906	0.899,0.913	-0.232	0.671	0.632,0.711	0.895	0.888,0.903	-0.224
Wallonia	0.619	0.571,0.668	0.851	0.839,0.863	-0.232	0.558	0.508,0.608	0.831	0.817,0.844	-0.273

* calculated using EQ-5D-5L tool and scored using Belgian values set (Bouckaert et al. (2021)). See technical sheet for additional methodological aspects.

3.5 Conclusion

The proportion of Belgians entitled to the chronic illness status (IMA – AMI data) increased from 8.7% (2013) to 12.1% (2020), and the proportion of Belgians reporting a chronic disease also grew from 25.1% in 2001 to 29.3% in 2018 (HIS data). There was also an increase in the proportion of Belgians reporting multimorbid state (from 11.4% in 2001 to 15.2% in 2018) (HIS data).

A combination of HIS data and IMA – AIM data reveals that only 31.5% of the people self-reporting a chronic disease and 39.2% of the people with a multimorbid state benefit from the RIZIV – INAMI chronic illness status. The most important reason for this finding is that the chronic illness status is a financial protection system and, as a consequence, being entitled to this status depends on the long lasting cost of a chronic disease and therefore not on living with a chronic disease in itself.

Persons suffering from chronic disease/illness reported have a lower quality of life than persons without chronic disease/illness.



4 QUALITY OF CARE

Quality is defined as "the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge".⁹¹ In the performance report, the concept has been further subdivided into 5 sub-dimensions: effectiveness, appropriateness, safety, continuity of care and patient centeredness (see section 1.2).

4.1 Effectiveness of care

Effectiveness is defined as the "degree of achieving desirable outcomes, given the correct provision of evidence-based healthcare services to all who could benefit but not those who would not benefit".⁹² Effectiveness indicators

can be outcome (results) indicators: patient-reported outcomes (PROMs), adverse events (such as mortality, avoidable admission, and incidence of bacterial resistance) and sentinel events (e.g. wrong-site surgery).

For this report, 3 indicators were chosen to assess effectiveness of primary care for chronic patients, i.e. **avoidable hospital admissions for three chronic conditions** (asthma (QE-1), complications of diabetes (QE-2), and chronic obstructive pulmonary disease (COPD) (QE-10)) and one indicator was chosen to assess effectiveness of care for patients with a curable disease provided that there is full compliance, i.e. **successful treatment of pulmonary tuberculosis cases** (QE-11) (Table 12).

Table 12 – Results of the indicators related to the effectiveness of care for chronic patients

(ID) indicator	SCORE	Belgium	Year	Flanders	Wallonia	Brusse ls	Source	EU-15 (mean) [Belgium]	Target
Effectiveness of primary care – avoidable hospital admissions									
QE-1 Hospital admissions for asthma (per 100 000 population aged 15+)	+	27.9	2019	28.7	26.8	26.3	MZG-RHM OECD	30.3* [BE: 27.1]*	
QE-2 Hospital admissions for uncontrolled diabetes or complication of diabetes (per 100 000 population aged 15+)	⊕	146.7	2019	149.9	140.3	148.1	MZG-RHM OECD	105.2* [BE: 134.6]*	
QE-10 Hospital admissions for chronic obstructive pulmonary disease (per 100 000 population aged 15+)	-!	330.9	2019	314.7	393.8	228.3	MZG-RHM OECD	190.4* [BE 278.9]*	
Effectiveness of care – adhesion to a long and difficult treatment									
QE-11 Successful treatment of pulmonary NEW tuberculosis (TB) cases (% of people with pulmonary TB successfully treated)	ST	81.2	2018	80.8	84.2	79.3	Belgian TB Register	75.5 [§] [BE: 80.9] [#]	85% (WHO-EU, ECDC)

*Age-sex standardized rates; ! Comparison with EU-15 average should be taken with caution because differences in ICD; [#]All incident TB cases (not only pulmonary TB cases),

[§]EU-7 mean, to be used with caution as it only concerns countries which have reported follow-up data for at least 80% of their respective TB cohort



4.1.1 *Effectiveness of primary care for chronic patients with asthma, diabetes or COPD*

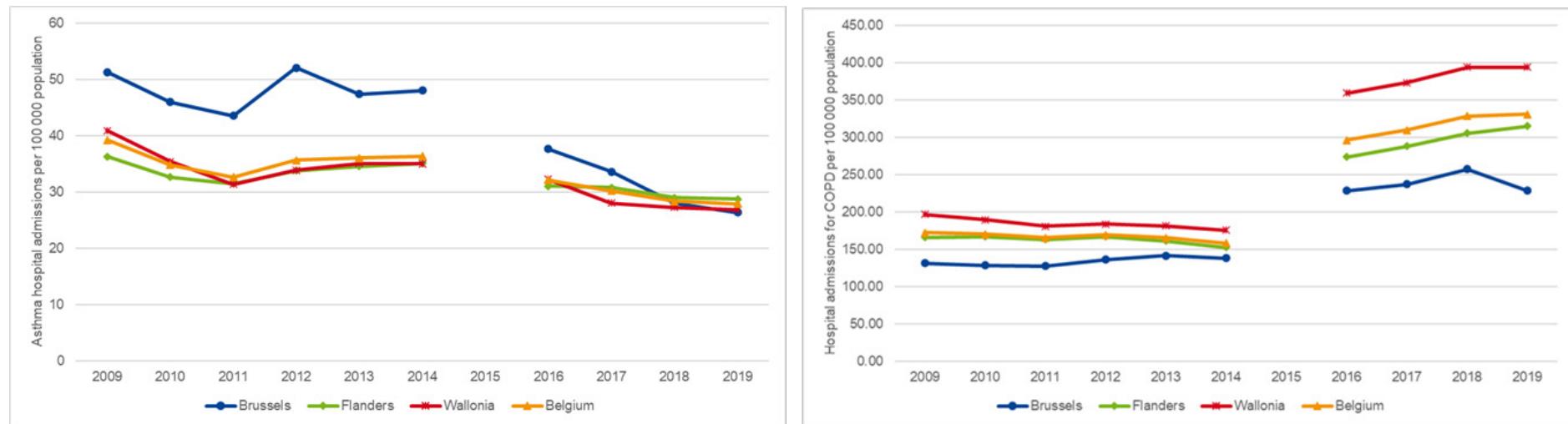
High hospital admission rates for asthma and complications of diabetes in adults can be interpreted as pointing to poor effectiveness of first-line care, as well as to poor coordination or continuity of care.⁹³ Hospital admissions for chronic obstructive pulmonary disease (COPD) in adults are also used as an indicator to measure the performance of first-line care.⁹³ It should nevertheless be noted that these patients are extremely frail and the pathology is very serious. A large number of COPD hospitalisations is therefore to a lesser extent a reflection of poor primary care than for patients with asthma or diabetes.

To improve the quality of first-line care, it should also be noted that care trajectories have been developed from 2009 to improve care for patients with diabetes. Care trajectories were not developed for patients with asthma and COPD but rehabilitation conventions for the care of these patients in specialised centres have been concluded, as for patients with diabetes (see chapter 1.6 for further information).

For these three indicators, a break in data series is observed in 2016, due to the transition to the ICD-10 coding in Belgium. Moreover, in 2016, a drop, and conversely an increase in hospital admissions can be observed compared to 2014 for asthma and COPD respectively (see Figure 9), in part due to the fact that when moving from ICD-9 to ICD-10 coding, there was a shift from asthma admission to COPD admission for some mixed conditions. Comparison between the two different ICD coding periods (2009-2014; 2016-2019) should be used with caution.

During the 2016-2019 period, a reduction in admission rates for asthma is observed (32.1 and 27.9 per 100 000 population respectively), which may reflect an improvement in the quality of first-line care. For COPD admission rates, the trend is increasing (e.g. from 296.1 per 100 000 population in 2016 to 330.9 in 2019), except in Brussels (see Figure 9 and Table 12). The lower COPD admission rates in Brussels could be partly explained by the younger population.

Figure 9 – Hospital admissions for asthma (Left) and COPD (Right) per 100 000 population aged 15 years and older, per region (2009-2019)



Sources: SPF-FOD Public Health and statistics Belgium 2021, no standardisation for age and sex.

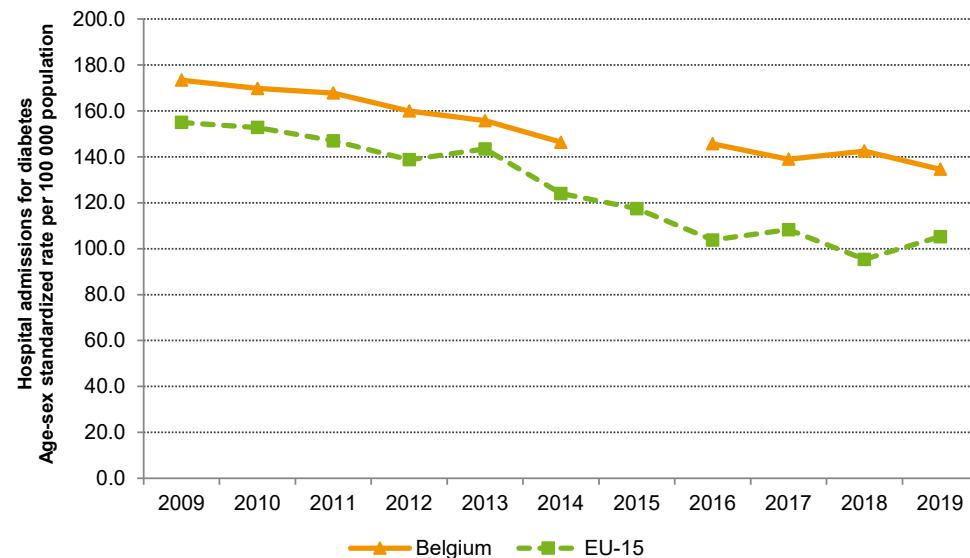
Concerning hospital admissions for diabetes (for uncontrolled diabetes or for complication of diabetes), rates are very similar between the three regions (see [the technical sheet in supplement](#)) and a slow decrease in the latest years can be observed, from 185.4 to 146.7 per 100 000 population in Belgium in 2009 and 2019 respectively (no standardisation for age and sex). The decreasing admission rates for diabetes is also observed in other European countries (see Figure 10, age-sex standardised rates).

Belgium ranked above the EU-15 average for hospital admissions for diabetes (134.6 versus 105.2 per 100 000 population in 2019) and COPD

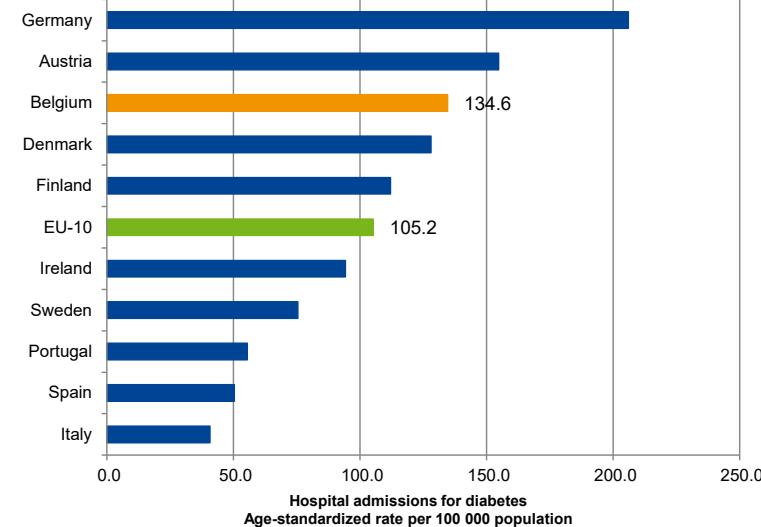
(278.9 versus 190.4 in 2019) and below the EU-15 average for hospital admission for asthma (27.1 versus 30.3 per 100 000 population in 2019, see also [the technical sheet in supplement](#)), but this is not very informative, as differences between countries can be due to many other factors than quality of care. Time differences in the transition to the ICD-10 coding between countries also impact the validity of the international comparison, especially for COPD and asthma because such a transition induces a shift from asthma to COPD admissions.



Figure 10 – Age-sex standardised hospital admissions for diabetes (for population aged 15 years and older): international comparison (2009-2019)



Source: OECD health data 2021



4.1.2 Effectiveness of care for chronic patients with tuberculosis

To manage an effective treatment of patients with tuberculosis (TB), compliance is essential. Indeed, keeping the patient's adherence to the TB treatment is challenging as it is a long treatment of minimum six months but which can last sometimes for several years. Moreover, the treatment consists of a polytherapy with many potential side effects.⁹⁴

In Belgium, TB registration is mandatory in the three regions. The Belgian tuberculosis register therefore accurately represent the Belgian situation. The FARES asbl (Fonds des affections respiratoires) and VRGT vzw (Vlaamse vereniging voor respiratoire gezondheidzorg en tuberculosebestrijding), two Belgian institutes dedicated to tuberculosis control, smoking prevention and management, and information on other chronic respiratory conditions, publish every year a report on the TB register epidemiological analyse at the Belgian level.^{80, 81}

The calculation of the indicator on successful treatment of pulmonary tuberculosis cases allows to assess the effectiveness and the compliance of the patients to their treatment. This indicator reflects notably the capacity of the health system to ensure the adhesion to this long and difficult treatment, especially as it affects a public that is often in a precarious situation.^{95, 96}

The successful treatment rate of tuberculosis is an indicator composed of two subcomponents which are summed before being reported: people having completed their treatment with a bacteriological proof of negativity, and people who completed their treatment but without any bacteriological proof of negativity. The successful treatment rate of tuberculosis is an indicator for which the World Health Organisation European Region has set the target of 85%.⁹⁷

The last report on the Belgian TB register (2019) shows that 81.2% of the people with proven pulmonary tuberculosis in 2018 were successfully treated at one year.^{95, 98} This proportion of favourable treatment outcomes corresponds to an increase of 3.5 percentage points from 2017 (77.7%) but to a decrease of 3 percentage points from 2014 (84.2%). This rate has been quite stable for several years and over the different regions (Figure 11).

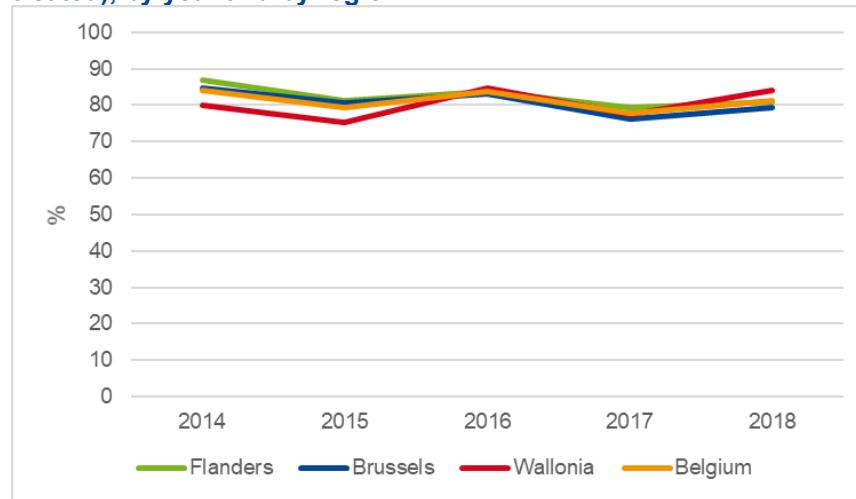
Compared to seven European countries^j, Belgium shows a good successful treatment rate of tuberculosis (81.7% versus 75.5% for the EU-7 mean) and ranked second just after the Netherlands (85.1%) among the 7 selected countries⁸⁴. But the comparison between European countries is limited as many countries report only a small part of TB treatment follow-up data.

In conclusion and according to FARES asbl, the systematic reporting of TB and follow-up of treatment outcomes, operational in Belgium since 2002, represents an important advantage to Belgian authorities to reach the 85 % successful treatment rate of tuberculosis target set by WHO European Region. Also, the systematic use of polytherapy, over a long period and the adherence to treatment till completion are of the up most importance to improve the successful treatment rate of TB in Belgium. It is necessary for the health care system to be able to support patients to complete this long and difficult treatment. This is why FARES asbl and VRGT vzw have implemented many projects to support this objective over the last few years.

^j Only the 7 countries which have reported follow-up data for at least 80% of their respective TB cohort



Figure 11 – Successful TB treatment rate (% of people successfully treated), by year and by region



Data source: FARES and VRGT; Figure: KCE

4.1.3 Conclusion

The subset of indicators was chosen among internationally published indicators. While these indicators were chosen to analyse the effectiveness of primary and specialized care, the effectiveness of integrated care is also important (see the section on continuity of care for more details on integrated care). Belgium is situated above the EU-15 average for effectiveness indicators on avoidable hospital admission for complications of diabetes or for COPD and below the EU-15 average for asthma. However, international comparisons on these indicators should be interpreted with caution because of methodological issues. Trends over time are more reliable and more

informative for policymaking (from 2016 only because of a break in data series in Belgium). Indicators on avoidable hospital admissions for asthma and diabetes show a decreasing trend which might be due to an improvement in the quality of primary care, while for COPD admissions, the trend is increasing, except in Brussels.

The successful treatment rate of pulmonary TB is quite stable for several years and over the different regions in Belgium. This rate, fluctuating between 78%-84%, stays close to the target set by WHO-Europe (85%). The systematic use of polytherapy and the systematic reporting of TB cases and follow-up of treatment outcomes in Belgium are key stones of those good results.

4.2 Appropriateness of care

Appropriateness of care can be defined as “the degree to which provided healthcare is relevant to the clinical needs, given the current best evidence”.⁹² Appropriateness can be assessed through several methods. The strongest method is to measure to what extent medical practice follows recommendations from clinical guidelines. Another method often used is the analysis of geographical variation.

In this report on care for chronic patients, the following indicators were retained:

- The proportion of adult diabetics under insulin with appropriate follow-up (QA-1);
- The proportion of adult diabetics receiving glucose lowering drugs other than insulin with appropriate follow-up (QA-2) (see Table 13);

**Table 13 – Results of the indicators related to the appropriateness of care for chronic patients**

(ID)	indicator	SCORE	Belgium	Year	Flanders	Wallonia	Brussels	Source	EU-15 (mean)
QA-1	Proportion of adult diabetics (aged 18+) under insulin with appropriate follow-up	ST	43.2	2019	46.7	36.8	45.7	IMA-AIM	-
QA-2	Proportion of adult diabetics (aged 50+) receiving glucose lowering drugs other than insulin with appropriate follow-up	+	15.9	2019	16.4	13.4	22.9	IMA-AIM	-

4.2.1 Appropriateness of follow-up for patients with diabetes

Five tests were selected to assess the quality of diabetes follow-up, i.e. glycated haemoglobin at least twice over a 15 month period, lipid profile, albumin (microalbuminuria or total protein measurement), and serum creatinine measurements at least once over a 15 month period, and at least once ophthalmologist consultation over a 15 month period.

The proportion of adult diabetics (18 years and over) under insulin with these five tests combined was 43.2% in 2019; which is an improvement compared Figure 12).

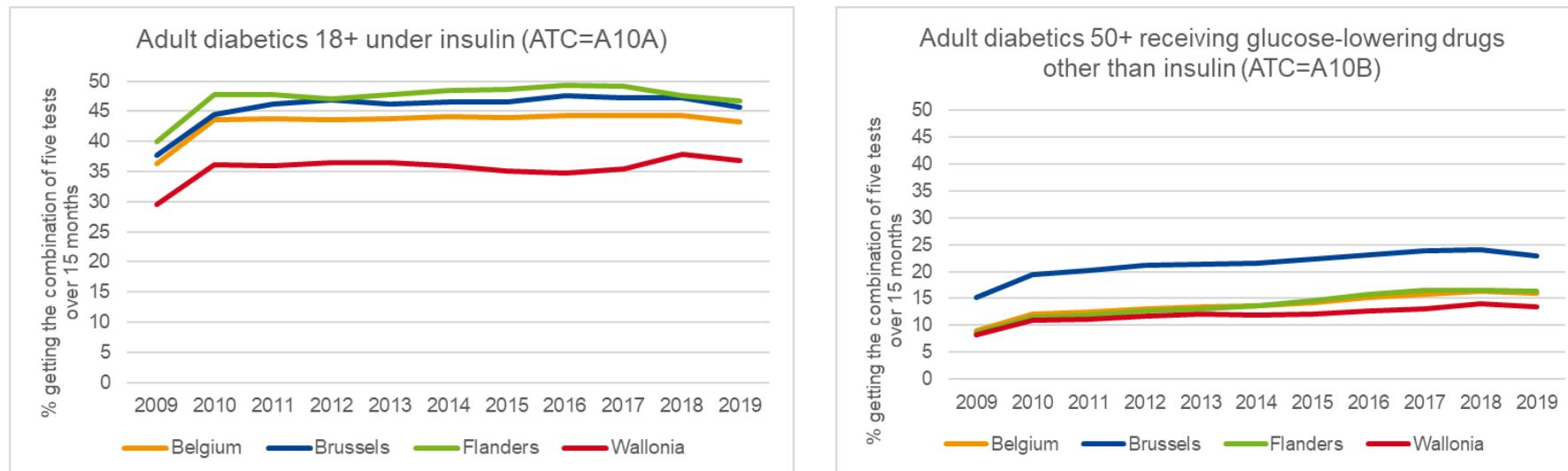
to 2009 data (36.3%). For adult diabetics receiving glucose-lowering drugs other than insulin (50 years and over)^k, the coverage of the five tests combined is much lower, i.e. 15.9%. An improvement compared to 2009 (with 9.1%) is nevertheless also observed (see Table 13).

Concerning regional differences, for adult diabetics under insulin, results are slightly worse in Wallonia (36.8%, compared to 46.7% in Flanders, and 45.7% in Brussels) and for adult diabetics receiving glucose-lowering drugs other than insulin, a better follow-up is observed in Brussels (22.9%, compared to 16.4% in Flanders, and 13.4% in Wallonia) (

^k For this group of patients, an inferior age limitation was set at 50 years to be sure to discard people taking e.g. metformin to lose weight instead of stabilizing a diabetes



Figure 12 – Proportion of diabetic patients getting the combination of five tests over 15 months, details per region and per year (2009-2019)



Source: IMA-AIM data 2021, Figure: KCE

The low rates for the five tests combined can in part be explained by the fact that not all these five tests are recommended for every diabetics patients in some recent guidelines. In the 2018 ADA guidelines,⁹⁹ yearly microalbuminuria and serum creatinine measurements in patients with type 1 diabetes are for example only recommended from diabetes duration over 5 years and consultations to an ophthalmologist could be considered every 2 years for some patients. Results per test must therefore also be considered.

For adult diabetics under insulin the serum creatinine (97.4%), cholesterol measures (92.4%) and the glycated haemoglobin (84.1%) are very well covered while the annual consultations with an ophthalmologist (66.7%) and albumin measurements (microalbuminuria (62.5%) or proteinuria (31.2%)) are less frequent (see Figure 13). Nevertheless, as stated above, some

guidelines do not recommend these 3 latest tests yearly for some diabetic patients (especially type 1 diabetics with a diabetes duration inferior to 5 years).

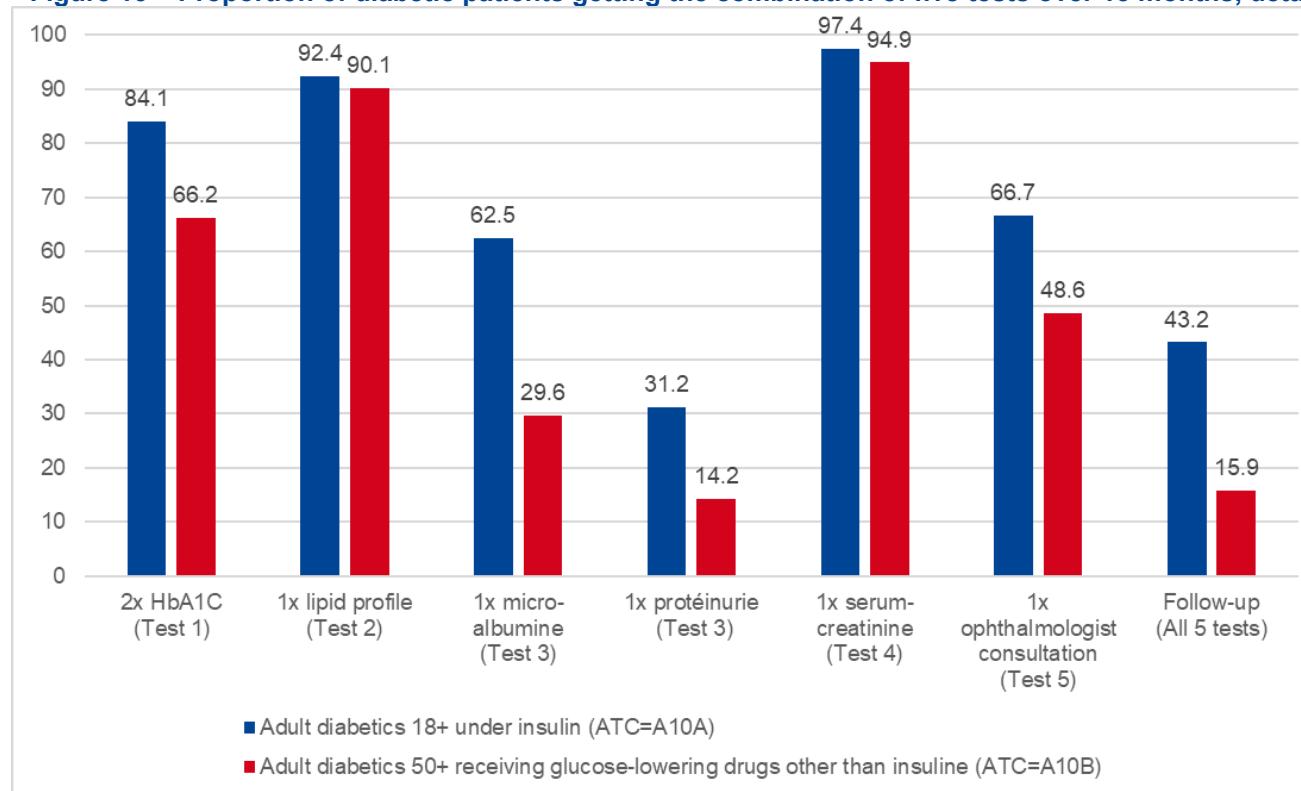
For adult diabetics receiving glucose-lowering drugs other than insulin, the serum creatinine (94.9%) and cholesterol measures (90.1%) are well covered, glycated haemoglobin are less frequent (twice yearly in 66.2% only) and albumin measurements and ophthalmological consultations are performed yearly in less than half of the patient population (see Figure 13).

Additional analyses would be needed to determine the reasons of these low rates. Especially concerning the consultations with an ophthalmologist, i.e. could these low results in part be explained by the new guidelines or do they reflect a potential problem of care coordination (between medical specialists) or of accessibility of care (such as long waiting time)?

4.2.2 Conclusion

Those indicators illustrate that appropriateness of follow-up is not optimal in patients with diabetes. Inappropriate care (over-, under- and misuse of resources) has consequences in several dimensions (safety, continuity, effectiveness, efficiency). Tackling inappropriate care to improve the performance of the health system is therefore an important challenge in Belgium.

Figure 13 – Proportion of diabetic patients getting the combination of five tests over 15 months, details per test in 2019 in Belgium



4.3 Continuity of care

Continuity of care addresses “*the extent to which healthcare for specified users, over time, is smoothly organised within and across providers, institutions and regions, and to which extent the entire disease trajectory is covered*”.⁹²

In the previous Belgian HSPA reports, four aspects of continuity have been distinguished: informational continuity (the availability and use of data from prior events during current patient encounters), relational continuity (an ongoing relationship between patients and one or more providers), management continuity (the coherent delivery of care from different providers

across different care settings) and coordination of care (the connection between different health providers over time to achieve a common objective).

In this report, five indicators (two indicators comparing patient with and without chronic illness status (QC-1, QC-3, see Table 14) and three chronic care indicators as such (QC-4, QC-5, QC-7, see Table 14)) have been selected to encompass three continuity aspects: **informational continuity (in general practice and in medication)**, **management continuity and coordination of care**. Initiatives on integrated care in various settings are also related to the continuity and coordination of care. Although no indicators are currently available, a KCE project is working to assess the current maturity of integrated care in Belgium.¹⁰⁰

Table 14 – Indicators on continuity of care, by chronic illness status

Indicator	Status	Score	Belgium	Year	Flanders	Wallonia	Brussels	Source	EU-15 (mean)
Informational continuity in general practice									
QC-1	Coverage of global medical record (% of persons who have a global medical record (GMR) with a general practitioner)	Total	ST	77.9	2019	83.9	72.6	60.8	IMA-AIM
		RIZIV-INAMI chronic illness status	ST	88.3	2019	92.5	83.5	75.7	IMA-AIM
		No chronic illness status	NA	77.3	2019	83.3	71.8	60.0	IMA-AIM
Informational continuity in medication									
QC-7	Proportion of individuals with a reference pharmacist (%)	Total	NA	7.3	2019	8.9	5.6	4.1	IMA-AIM
<i>NEW</i>		RIZIV-INAMI chronic illness status	+	28.5	2019	33.6	21.4	20.8	IMA-AIM
		No chronic illness status	NA	4.6	2019	5.6	3.3	2.5	IMA-AIM
Management continuity between hospital and GP									
QC-3		Total	-	53.2	2019	54.2	53.2	42.9	IMA-AIM



GP encounter within 7 days after hospital discharge (% patients 65+)	RIZIV-INAMI chronic illness status	-	58.1	2019	59.4	57.8	46.5	IMA-AIM
	No chronic illness status	-	46.9	2019	47.7	47.0	38.3	IMA-AIM

NA= Not appropriate

Table 15 – Indicators on continuity of care for chronic patients

(ID)	Indicator	Score	Belgium	Year	Flanders	Wallonia	Brussels	Source	EU-15 (mean)
Coordination in ambulatory care for chronic patients									
QC-4	Proportion of adult diabetics under insulin (aged 18+) within a pass/pre-care trajectory, a care trajectory, or a convention (%)	ST	91.0	2019	92.6	89.6	86.8	IMA-AIM	-
QC-5	Proportion of adult diabetics receiving other glucose-lowering drugs than insulin (aged 50+) within a pass/pre-care trajectory, a care trajectory, or a convention (%)	+	26.2	2019	32.9	16.9	23.0	IMA-AIM	-

4.3.1 Assessing informational continuity in general practice, with a distinction between persons with and without chronic illness status

Since 2001, the global medical record (GMR) and in 2016 the electronic GMR are implemented in Belgium. Each patient can ask a (unique) general practitioner to manage his/her medical information (except in nursing homes where GP are designated). By leaving the coordination of medical care to one central person, the quality of care increase because referral to and Figure 14).

The GMR coverage is higher in the patients entitled to the chronic illness status than in the patients not entitled to the status, except for the oldest and the 24-44 years. Indeed, the persons 75 years and older without chronic

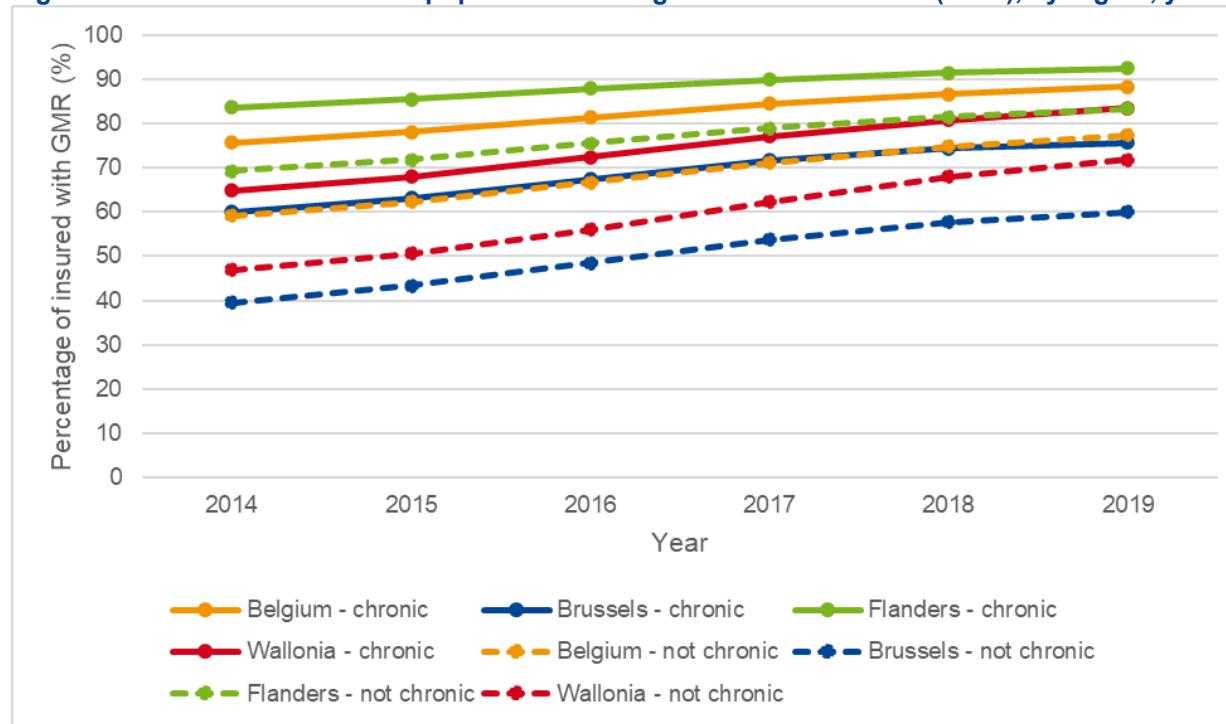
communication with other care providers is more efficient, and double investigations or contrasting treatments can be avoided.

The percentage of insured population with a global medical record (GMR) in general practitioner is growing over the years from 60.1% in 2014 to 77.9% in 2019 and even if differences can be observed between regions and provinces, they tend to decrease over time. In Flanders, more than three quarters of the insured persons are covered whereas 73% in Wallonia and 60% in Brussels region in 2019 (see

illness status are better covered by GMR than the patients with chronic illness status.

The increase of GMR coverage is lower in the persons entitled to the chronic illness status (+ 12.6 points of percentage) than in the non-chronic persons (+ 18.2 points of percentage).

Figure 14 – Evolution of insured population with a global medical record (GMR), by region, year (2014-2019) and chronic illness status



Data source: IMA-AIM, figure: KCE



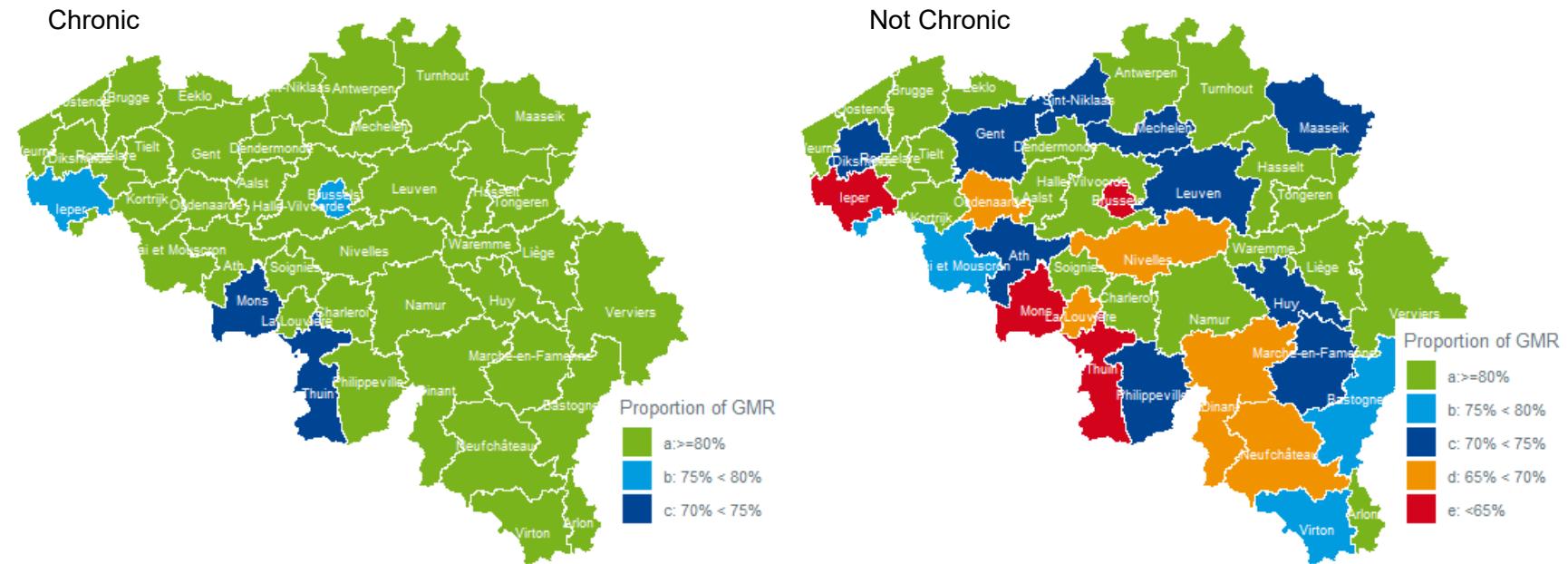
Table 16 – Percentage of insured population with a Global Medical Record (GMR), by chronic illness status, gender, age category and entitlement to increased reimbursement (2019)

		Chronic illness status	Not chronic illness status	Diff chronic – not chronic	Total
Belgium		88.3	77.3	10.9	77.9
Gender	Female	89.9	80.0	9.9	80.6
	Male	86.2	74.6	11.6	75.1
Age category	0-4	72.7	60.8	11.9	60.9
	5-14	69.8	69.8	0.0	70.1
	15-24	79.4	73.7	5.7	73.9
	25-44	73.7	74.4	-0.7	74.4
	45-64	82.1	81.2	1.0	81.4
	65-74	74.4	87.0	-12.6	87.3
	75 and older	83.6	89.9	-6.3	90.4
	Increased reimbursement	87.9	79.3	8.6	81.1
	No	89.0	77.3	11.7	77.5

Data source: IMA-IMA



Figure 15 – Percentage of insured population with GMR, by district, by chronic illness status (2019)



Data source: IMA-AIM, figure: KCE



4.3.2 *Assessing informational continuity in medication, with a distinction between persons with and without chronic illness status*

Patients with a reference pharmacist

Since 1 October 2017, a “reference pharmacist” service was introduced by RIZIV – INAMI for individuals going to a public pharmacy with a chronic disease¹ (excluding persons in nursing homes or in homes for the elderly). This service consists of registering pharmaceutical delivered in the pharmaceutical (electronic) file; delivering a medication scheme for the patient and making sure other care practitioners have access to the patients’ medication scheme.

The reference pharmacist receives a unique fee when the person subscribes to the service, as well as an annual fee; the subscription does not need to be renewed by the patient.

Results by region show a higher uptake in Flanders for individuals entitled to the status for persons with a chronic illness (Figure 16) as well as for the rest of the population (Table 14).

This indicator measures the uptake of the service among individuals entitled to the status for persons with a chronic illness and individuals not entitled to this status.

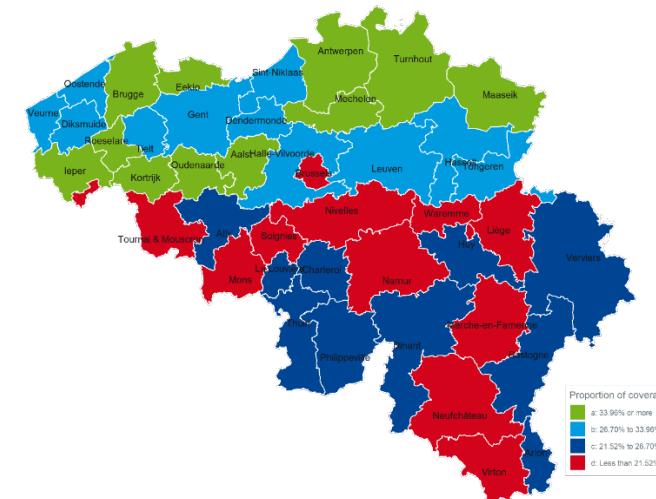
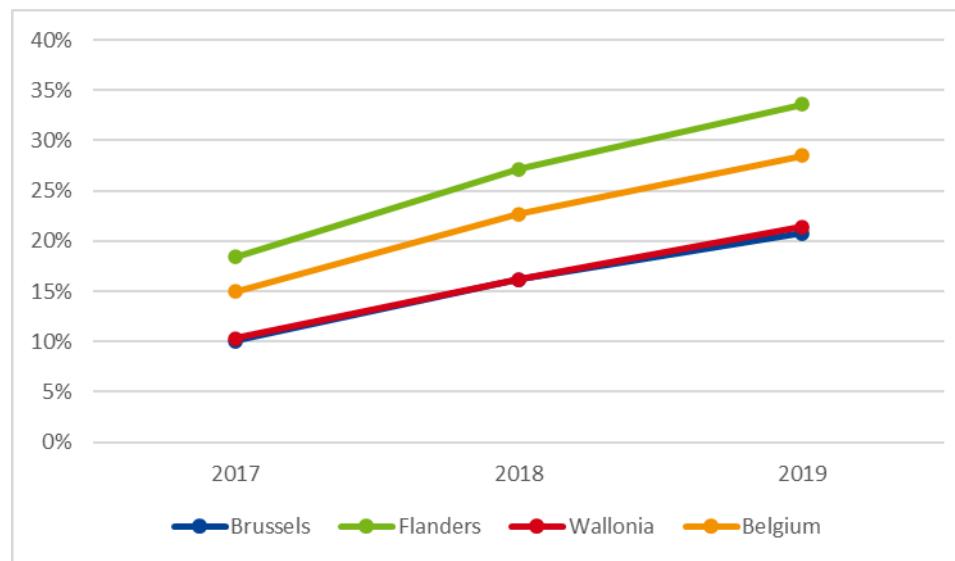
The mean age at initiation is 68 years old ($SD=14$) for the whole population and individuals entitled to the status chronic illness are older at the time of initiation (mean=70; $SD=14$) than other individuals (mean=67; $SD=14$). There are more women (57%) than men that subscribe to the service.

Because such service is dedicated to chronic patients, as expected, the uptake is higher among individuals entitled to the status for persons with a chronic illness: in 2019, 28.5% of them has a reference pharmacist while 4.6% of the rest of the population has a reference pharmacist (Table 14). A low proportion is expected among persons without chronic illness status since few of them are expected to satisfy the criteria for the need of a reference pharmacist. Even if an improvement is observed between 2017 and 2019, the uptake is slow among patients with the chronic illness status.

¹ The definition of the target population is as follows: patients who have been delivered at least 5 different active substances in a year, with 160 DDDs or more within the last 12 months for at least one of them.



Figure 16 – Proportion of persons with the chronic illness status with a reference pharmacist by region (2017-2019) and by district (2019)



A sample of patients from the seven sickness funds with a reference pharmacist was conducted in 2020, results show that 51.3% of the surveyed persons received a medication scheme, 80.1% received a good explanation of the added value of the service when applying, 84.2% have not changed the way they take their medication after receiving their medication scheme, 32.7% know that their GP is aware of them having a reference pharmacist and 66.2% think that there is good communication between all their healthcare practitioners concerning their medication management.

4.3.3 Assessing management continuity between hospital and general practice, with a distinction between persons with and without chronic illness status

Patients, and in particular patients with multiple complex chronic conditions, can benefit from a follow-up contact with a GP in the first week(s) after hospital discharge. Collaboration between healthcare providers may facilitate care transitions and reduce the risk of adverse events or hospital readmissions. This indicator assesses the proportion of hospital discharges with a GP contact within one week. It is not possible to determine whether the GP contact was scheduled by the hospital (e.g. in a discharge plan proposed by the hospital) or made on the patient's initiative.



Despite the potential advantage of having a follow-up contact with a GP within the week after hospital discharge, the proportion of hospitalisations of elderly patients (65+) with follow-up amounted to 53.2% in 2019, or only slightly more than half of the hospitalisations. There was, however a substantial difference in the follow-up rate between individuals with the chronic illness status (58.1% in 2019) and without the status (46.9% in 2019).

Moreover, we find that the follow-up rate was higher for older patients (in 2019: 40.8% in the age group 65-69 versus 69.0% in the age group 90+), for patients with increased reimbursement (IR) (in 2019: 63.4% in group with IR versus 52.4% in group without IR), and for patients receiving long-term care (about 68% for elderly in institution or with home care versus 50.2% for elderly without long term care). This suggest that follow-up is being targeted to those with the highest need.

The follow-up rate is deteriorating over time. There is a gradually declining trend, with a decrease from 65.2% in 2013 to 58.1% in 2019 among patients with the chronic illness status, while the rate has fallen from 55.9% in 2013 to 46.9% in 2019 among patients without the status. The decline can indicate a reduction in early follow-up of the patient or result from a switch to other modes of follow-up, for example teleconsultation or by other healthcare providers such as a specialist or a (home) nurse.

Finally, we observe important geographic variation in the follow-up rate (see Figure 17), with structurally lower rates in Brussels, the districts around Brussels and the south of the province Luxembourg and higher in the south of the province West-Flanders. In most districts, the rate of follow-up GP consultations is higher for persons entitled to the chronic illness status than for persons without such entitlement.

4.3.4 Assessing coordination in ambulatory care for chronic patients

Patients with diabetes

To optimize care provided to diabetic patients, diabetes care models have been implemented by RIZIV – INAMI, i.e. diabetes pass/pre-care trajectories, care trajectories and conventions for diabetes self-management (see [the technical sheet in the supplement](#) for a definition of these care models).

The proportion of diabetic adults with at least one registration in a diabetes care trajectory, a diabetes convention or a diabetes pass/pre-care trajectory is relatively high among patient under insulin (91.0%), with the majority registered within a convention (82.7%). The proportion of patients under insulin within one of these diabetes care models is quite stable since 2014 but the share of care trajectories increase (see Figure 18).

Results are nevertheless more disappointing for patients receiving other glucose lowering drugs than insulin, with only 26.2% registered in a diabetes care model, a little more than half having a care trajectory and almost another half a pass/pre-care trajectory. A positive trends can nevertheless be observed, especially concerning the registering in a care trajectory (see Figure 18).

The proportion of diabetic patients with at least one registration in a diabetes care model decreases with age both for patients under insulin and those receiving other glucose-lowering drugs than insulin but remain superior to 80% for patients under insulin up to 94 years old (and then decrease to 58.7% for the 95+). It should also be noted that among people aged 65 years old and over, a lower proportion is observed for those in the residential sector (e.g. in nursing homes) for both patients subgroups. Finally, for patients under insulin the proportion is similar between regions but for patients under other glucose-lowering drugs than insulin, higher proportions are observed in Flanders than in other regions (32.9% compared to 16.9% for Wallonia and 23.0% for Brussels).



Figure 17 – Proportion of hospital stays of elderly patients (65+) followed by a GP consultation within 1 week after discharge, by district, by chronic illness status (2019)

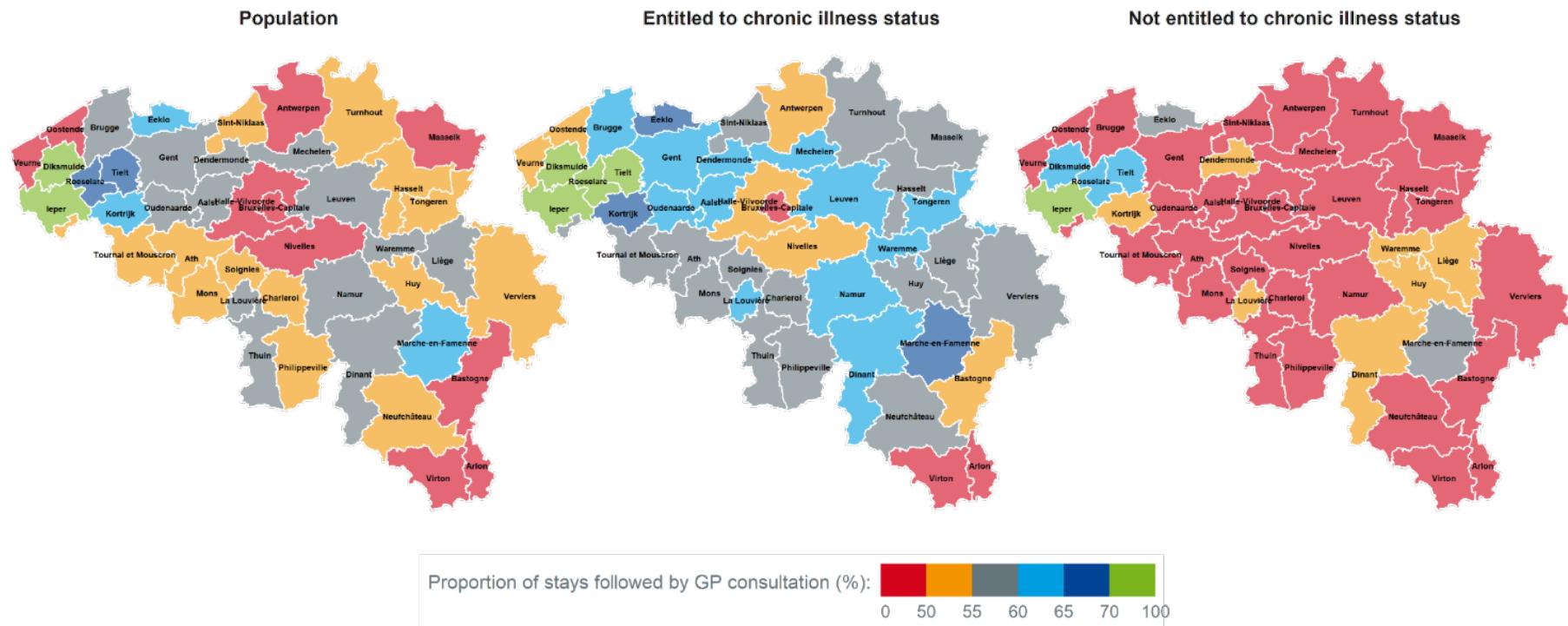
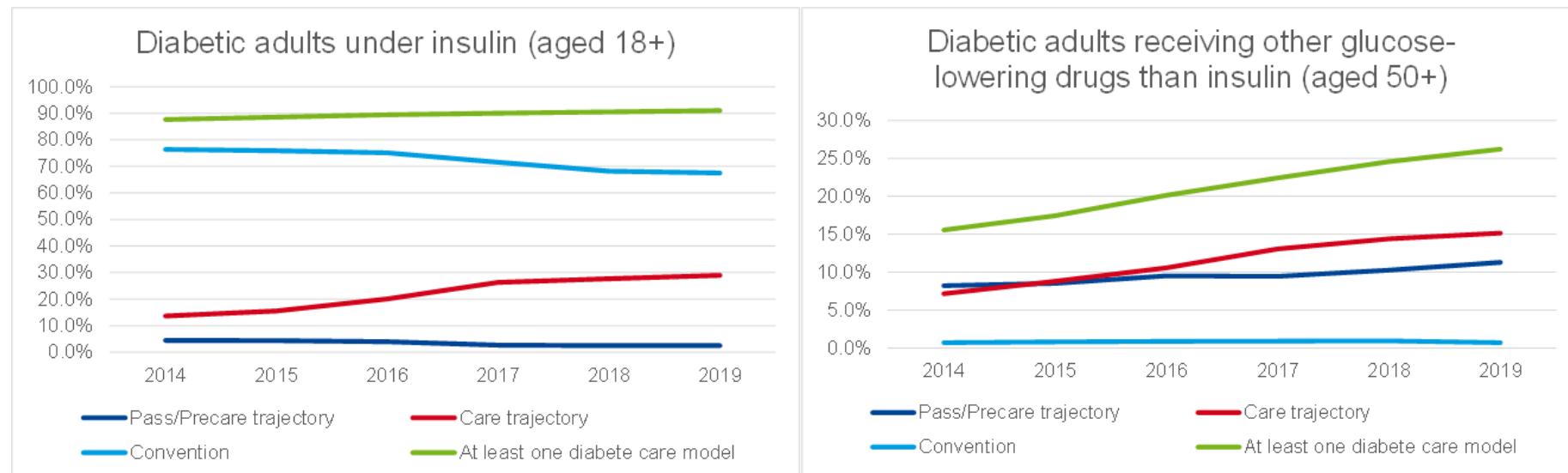




Figure 18 – Evolution in the proportion of patients in a diabetes care model, per care model (2014-2019)



Source: IMA data, KCE calculation

4.3.5 Conclusion

Continuity of care indicators for chronic patients show contrasting results. Coordination of care shows good results in primary care for diabetic patients under insulin (measured as being registered in a diabetes care model) but results are disappointing for diabetic patients who are not under insulin. It looks as if, for this patient population, the structure exists to promote coordination of care, but is hardly used. Follow-up of elderly patients by a GP within one week after hospital discharge happened in only slightly more than half of the hospitalisations, although the rate is higher for chronic

patients (58.1% in 2019). The follow-up rate is, however, gradually declining over time and thus not evolving in the desired direction. The other indicator related to GMR is good and remains stable in the last years; with slightly better result in patients entitled to the chronic illness status than persons without the status. Three chronic patients out of ten have a reference pharmacist in 2019: while the service has been available for a relatively short time (analysis of the first two years after launch), the uptake is rather slow. This evaluation is hampered by two limitations: these few indicators give only a partial view of the multi-faceted concept of continuity of care, and a comparison with results from other countries is very difficult, due to the lack of international indicators, and hence data, in this dimension.



4.4 Patient centred care

Patient-centredness is an approach in health care that consciously works around patients' needs, responding to individual preferences of patients and trying to ensure that patient values guide clinical decisions.¹⁰¹ The assessment of patient-centeredness typically concerns the acknowledgment of patient's needs, wants, preferences, the quality of the provider-patient communication and the patients' and carers' involvement. Patient-centeredness improves patient experience and counters the problems associated with fragmented care, such as contradictory medical advice, overprescribing, over hospitalisation and unresponsiveness.¹⁰² Evaluation of patient-centred care can be challenging because it is influenced by the health status and/or the socio-demographic characteristics of the patient. However, capturing the patients' perspective of health care is becoming increasingly important as health systems try to be more

responsive to the needs of the people using their services. In the early 2000's, the Organisation for Economic Cooperation and Development (OECD) developed a standardized instrument (through the Health Care Quality Indicators (HCQI) project) to estimate patients' experience in the ambulatory care. This tool, updated in 2015, and used in the Belgian health interview survey (HIS) 2013 and 2018, allows to report common indicators for international comparisons of health care quality.^{74, 103}

Three indicators based on the health interview survey and measuring patient-experience in ambulatory care, with a distinction between chronic patients and non-chronic patients, were selected for this report: i.e. **physicians spending enough time with patients during the consultation (QP-1)**, **physician giving opportunity to ask questions or raise concerns (QP-3)** and **physicians involving patients in decisions about care and/or treatments (QP-4)**.

Table 17 – Results of the indicators related to the patient-centeredness of care, chronic versus non-chronic indicators

(ID)	Indicator	Status	SCORE	Belgium	Year	Flanders	Wallonia	Brussels	Source	EU-15 (mean)
QP-1	Physician spending enough time with patients during the consultation (% of respondents, contact with GP/SP)	Total	ST	97.5		97.8	97.2	95.9		81.7*
		RIZIV-INAMI chronic illness status	Yes	97.6		98.3	96.7	96.7		-
			No	97.4	2018	97.7	97.2	95.9		
		Self-reported chronic disease	Yes	97.4		98.0	96.9	96.5	HISLink	
			No	97.6		98.0	97.4	95.4		
		Chronic illness status & Self-reported chronic disease	Yes	98.2		98.6	98.3	95.6		
QP-3	Physician giving opportunity to ask questions or raise concerns (% of	Total	ST	97.5		98.0	97.0	95.9		-
			Yes	96.6	2018	98.3	96.6	96.7	HISLink	-



respondents, contact with GP/SP)	RIZIV-INAMI chronic illness status	No		97.7	98.1	97.2	96.0	
	Self-reported chronic disease	Yes		97.1	97.8	96.6	94.3	
		No		97.7	98.0	97.5	96.2	
	Chronic illness status & Self-reported chronic disease	Yes		97.3	97.5	97.8	94.4	
	Total			95.4	96.0	94.8	93.8	82.8**
	RIZIV-INAMI chronic illness status	Yes		95.8	96.9	94.6	93.5	

QP-4 Physician involving patients in decisions about care and/or treatments (% of respondents, contact with GP/SP)		2018	HISLink	-				
	RIZIV-INAMI chronic illness status		Yes	95.8	96.9	94.6	93.5	
			No	95.4	95.8	94.8	94.1	
	Self-reported chronic disease		Yes	94.3	95.1	93.6	91.8	
			No	96.1	96.6	95.8	94.1	
	Chronic illness status & Self-reported chronic disease		Yes	96.2	97.3	95.6	91.4	

*OECD19, source= Health at a glance 2021⁸³, **OECD11, source=Health at a glance 2021⁸³.

4.4.1 Physician spending enough time with patients during the consultation

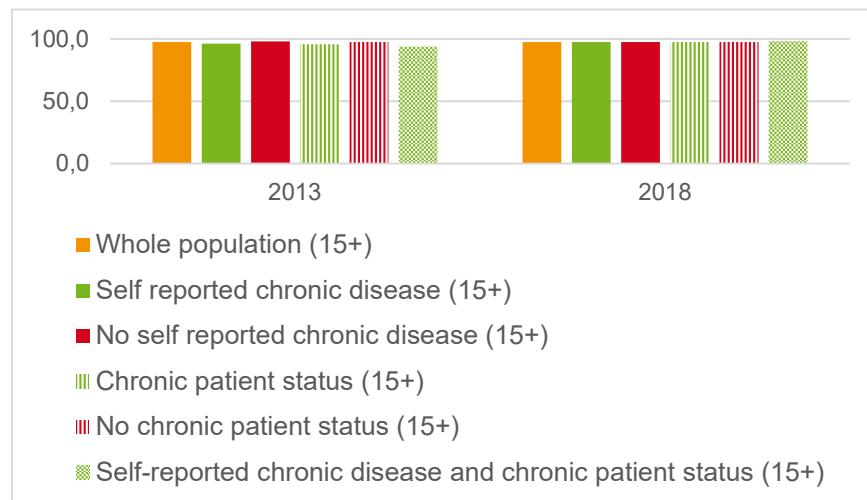
Among patients without chronic disease (self-reported or no entitlement), experience with the time spent by the doctor slightly deteriorated between 2013 and 2018. Whereas among chronic patients (self-reported, entitled or both), experience improved between 2013 and 2018, this is particularly the case among patients with both chronic disease statuses (+4.4 percentage points between 2013 and 2018). As a result, in 2018, the experience was similar between chronic and non-chronic patients (both based on the entitlement to the chronic illness status or based on self-reported chronic disease) (see Figure 19). The patients with both chronic status (HIS and RIZIV – INAMI) are even more satisfied (2018: 98.2%) than the patients with

only one chronic status (2018: HIS: 97.4% or RIZIV – INAMI: 97.6%) (see Table 17).

The differences observed between age-groups (see [technical sheet in supplement](#)) and regions are very small – every regions performed well for this indicator. On the other hand, at the international level, it is important to highlight that Belgium is the best ranked among 19 OECD countries with an average positive experience rate significantly higher than the OECD (BE: 97.5% - OECD19: 81.7%) (see Table 17). No specific analysis is nevertheless performed for chronic patients (compared to non-chronic patients) internationally.



Figure 19 – Proportion of patients (15 years old and plus) with positive experience about the time spent by their physician during consultation, by chronic status, by year



Data: Sciensano (HISLink); Figure: KCE

4.4.2 The doctor gives an opportunity to the patients to ask questions or raise concerns about recommended treatment

The experience with the opportunity to ask questions or raise concerns about treatment to the doctor stays good and does not vary much between 2013 and 2018, by region and by chronic status (see Table 17). As for the indicator on time spending by the doctor, the patients with both chronic status (HIS and RIZIV – INAMI) have even better experience (2018: 97.3%) than the patients with only one chronic status (2018: HIS: 97.1% or RIZIV – INAMI: 96.6%). The same observation is made in Wallonia. Whereas in Brussels and Flanders, the percentage of patients reporting positive experience is the highest for persons entitled to the RIZIV – INAMI chronic illness status (see Table 17).

4.4.3 The doctor involves the patient as much as he wants in decisions about care and treatment

Although in 2018, 95.4% of Belgians reported positive experience with their involvement in decisions about their treatment and care, this result is slightly lower than the other two patient-based quality of care indicators (see above and Table 17). Overall experience in Flanders is slightly better than in Wallonia and Brussels but the differences are quite small. There is also no obvious difference in experience between chronic patients, although it would seem that patients living in Wallonia and with both chronic statuses (HIS self-reported and chronic illness status) report less frequently positive experience(91.4%) than patients without chronic disease or with only one chronic status (entitled or self-reported) (see Table 17).

Compared with 11 OECD countries in 2020, Belgium ranks second (after the Netherlands) for the patients perception of their involvement in the decision about their care or treatment.

4.4.4 Conclusion

On the basis of three indicators self-reported by the patients, we observe that the quality of care with regard to patient-centredness is very good in Belgium, regardless of the chronic status of the patient. Very little difference in quality is observed depending on the chronic status but patients with both chronic statuses (self-reported in HIS and entitled to the RIZIV – INAMI chronic illness status) tend to report the best experience, regarding their contact with doctors.

5 EQUITY AND ACCESSIBILITY OF CARE

5.1 Financial accessibility and equity in healthcare financing

Accessibility can be defined as the ease with which health services can be reached by a patient and relates to, amongst others, physical access (geographical distribution of services), healthcare costs, and waiting time.⁹² Accessibility is a prerequisite for a high-quality and efficient healthcare system. Equity in healthcare relates to the fair distribution of healthcare access/use (according to need) and of healthcare financing (according to ability to pay).³ An equitable access to and delivery of effective and affordable healthcare are fundamental in Belgian health policy and have shaped policies aimed to guarantee (financial) accessibility of healthcare.^{104, 105}

In its striving for universal health coverage, the World Health Organisation (WHO) states that everyone should be able to obtain the health services that they need, of high quality, without risk of financial hardship in doing so (resolution 58.33 of the World Health Assembly from 2005).¹⁰⁶⁻¹⁰⁸

To make healthcare financially accessible and avoid financial hardship, there is agreement that the financial burden of healthcare payments should not disproportionately rest on those who seek healthcare. Therefore healthcare payments have been to a large extent decoupled from health risks or the receipt of healthcare. Instead, equity principles state that payments should be determined by ability or capacity to pay. One argument to relate healthcare payments to capacity to pay is that one does not want that such payments hinder people's ability to seek healthcare when ill. Another rationale is that one wants to avoid that healthcare payments

reduce households' potential to consume other necessary goods and services such as food, housing and utilities.³

Nonetheless, an important share of healthcare payments, the out-of-pocket payments (OOPs), are still borne by the patient and are directly related to healthcare consumption. **Out-of-pocket payments** include co-payments (and co-insurance) and supplements for healthcare services and products covered (in part) by the public health insurance, e.g. doctor consultations, as well as direct payments for non-covered services and products, e.g. over-the-counter drugs or glasses. Out-of-pocket payments made at the point of consuming healthcare can potentially create a financial barrier, in particular for individuals with high care needs or limited resources. Financial access is a basic condition for a functional healthcare system and financial barriers in access to care may have adverse consequences. First, individuals can delay or forgo necessary care to temporarily reduce out-of-pocket payments (unmet needs for medical care), which can be detrimental to a person's health. Second, one can experience financial hardship when using care and be forced to relinquish other basic necessities.³

In this HSPA report, we have selected four indicators to measure financial accessibility and equity in healthcare financing: **out-of-pocket payments (OOPs) as a share of total healthcare expenses (A-2)**, **unmet needs for medical examination due to financial reasons (A-4)**, **impoverishing or further impoverishing OOPs (EQ-4)**, and **catastrophic OOPs (EQ-5)**. For all four indicators, a subdivision was made between persons with and without entitlement to the chronic illness status as a proxy for increased health risks and need for care. In addition, a subdivision was also made between individuals with and without a self-reported chronic condition (EU-SILC).



Table 18 – Results of the indicators of financial accessibility and equity, by chronic illness status and self-reported chronic condition

(ID)	Indicator	Status	SCORE	Belgium	Year	Flanders	Wallonia	Brussels	Source	EU-15 (mean)
A-2	Out-of-pocket payments (OOPs) as a share of total healthcare expenses* (%)	Total	→	17.9	2016	18.7	17.1	15.9	EU-SILC/ IMA-AIM	/
		RIZIV-INAMI chronic illness status	Yes	C		12.9	12.8	10.8		
			No	C		20.4	18.5	16.9		
		Self-reported chronic condition	Yes	C		15.7	14.7	13.6		
A-4	Self-reported unmet needs for medical examination due to financial reasons (% population aged 16+)		No	C		20.6	18.8	17.4		
		Total	+	2.2 (1.4)	2016 (2020)	0.8	4.0	4.9	EU-SILC/ IMA-AIM	1.7 (0.9)
		RIZIV-INAMI chronic illness status	Yes	●	2016	2.2	8.6	9.4		/
			No	●		0.4	2.2	3.2		
EQ-4	Proportion of households with impoverishing or further impoverishing OOPs (%)	Self-reported chronic condition	Yes	●	2016	1.6	6.0	9.5		
			No	●		0.7	3.7	4.5		
		Total	●	1.3	2016	0.7	1.4	4.3	EU-SILC/ IMA-AIM	/
		RIZIV-INAMI chronic illness status	Yes	●		0.5	1.6	5.9		
	Proportion of households with catastrophic OOPs (%)		No	●		0.8	1.5	4.2		
		Self-reported chronic condition	Yes	●		1.0	1.3	6.6		
			No	●		0.5	1.6	2.7		
		Total	●	2.0	2016	1.2	2.3	5.2		/
	Proportion of households with catastrophic OOPs (%)	RIZIV-INAMI chronic illness status	Yes	●		2.1	3.8	9.4	EU-SILC/ IMA-AIM	
			No	●		1.0	1.9	4.8		



Self-reported chronic condition	Yes	●	⚠	2.9	1.9	2.7	8.5
	No	●		1.4	0.8	2.0	3.2

Note: * indicator A-2 is calculated using EU-SILC/IMA-AIM microdata and therefore differs from the results in the KCE Performance report 313 that were calculated using macro data from the System of Health Accounts (SHA).² EU-SILC/IMA-AIM microdata were used to make a distinction between persons requiring chronic care. Such subdivision is not possible in the SHA data. Unfortunately, the EU-SILC/IMA-AIM microdata do not account for healthcare expenses that are not covered by the public health insurance, while such information is included in the SHA data. That is why a slightly different terminology was used in this report “share of total healthcare expenses” instead of “share of current expenditures on health”. ⚠ = Worse results for chronically ill persons

5.2 Unmet needs for medical examination due to financial reasons

In 2016, about 2.2% of the population aged 16 or over reported to postpone or forgo medical care due to financial reasons. This includes curative, rehabilitative, preventive, mental and long-term medical examination or treatment in an inpatient, day, ambulatory or home setting. The overall incidence increased between 2011 (1.4%) and 2016 (2.2%) and has decreased since to 1.4% in 2020. The incidence of unmet needs is higher than the EU-15 average, in particular among socioeconomically disadvantaged groups.³

There are important differences in unmet needs between subgroups in the population. While differences by age and sex are small, there is substantial regional variation with an incidence above the average in Brussels (4.9% in 2016) and Wallonia (4.0% in 2016) and below the average in Flanders (0.8% in 2016). Moreover, unmet needs for financial reasons prevail among individuals in a financially precarious situation, i.e. individuals with low income, on welfare support, with severe material deprivation, in unemployment or inactivity. For example, the incidence among individuals in households at risk of poverty is 3 to 4 times higher than the population average.³

Protective financial measures in the public health insurance, such as the system of maximum billing (MAB) and increased reimbursements (IR) status do not fully prevent renunciation or postponement of care.³ Above average

incidence rates are found among individuals entitled to IR and among individuals living in household benefitting from the MAB. Chronic patients are more likely to benefit from such protective measures (see section 1.6.3.4 and Table 8).

Higher incidence of unmet needs among chronic patients

An important difference in incidence was also found between chronic patients, typically having higher medical needs, and other persons. A higher rate of unmet needs was found among persons who report to suffer from a chronic illness (EU-SILC) and among persons entitled to the chronic illness status (RIZIV – INAMI). The incidence of unmet needs due to financial reasons increased from 1.1% in 2008 to 3.5% in 2012 and 5.2% in 2016 among those with a self-reported chronic condition. The incidence is about four times higher than among individuals without self-reported chronic condition (0.3% in 2008, 1.1% in 2012 and 1.2% in 2016), who additionally did not experience a surge in unmet needs between 2012 and 2016. In 2016, 3.9% of the persons entitled to the chronic illness status reported to have unmet needs for medical examination due to financial reasons, or nearly double the incidence observed in persons without entitlement in 2016 (2.0%). The same regional variation as found in the overall rate is also present in the subgroup results for chronic patients with lower self-reported unmet needs in Flanders compared with Wallonia and Brussels.



5.3 Out-of-pocket payments as a share of total healthcare expenses

The share of out-of-pocket payments (OOP) in total healthcare expenses was computed at the household level. Direct payments for non-reimbursed services (e.g. glasses, certain dental care, over-the-counter drugs) are not recorded in the IMA – AIM data, and information on supplements in ambulatory care is limited, leading to an underestimation of OOPs. On the other hand, reimbursements from voluntary health insurance (VHI) are not accounted for, leading to an overestimation of OOPs. Total healthcare expenses were equally computed at the household level and consist in OOPs and expenses covered by the public health insurance, which are recorded in detail in the IMA – AIM data.

The overall share shows a stable trend over time, amounting to 17.8% in 2008, 16.9% in 2012 and 17.9% in 2016. Figure 20 presents a subdivision of OOPs in co-payments, supplements as well as information on the share of MAB reimbursements. The underlying composition has changed profoundly over time with a decreasing share of co-payments (from 15.3% in 2008 to 13.5% in 2016) and an increasing share of supplements (from 2.5% in 2008 to 4.3% in 2016) (see Box 11 for more information on supplements).

Box 11 – Supplements in Belgian healthcare

After negotiations, healthcare providers and health insurers (Sickness funds and RIZIV-INAMI) establish official fees, which can be further divided into official reimbursed tariffs and official patient's co-payments. Under some conditions, healthcare providers are allowed to charge supplementary payments to patients (supplements or extra-billing) over

and above official tariffs.^{3, 34} There is substantial variation by medical profession in the proportion of providers that charge supplements. Financial protection measures in the public health insurance (maximum billing, increased reimbursement) are aimed at limiting co-payments, but offer little protection against supplements.³

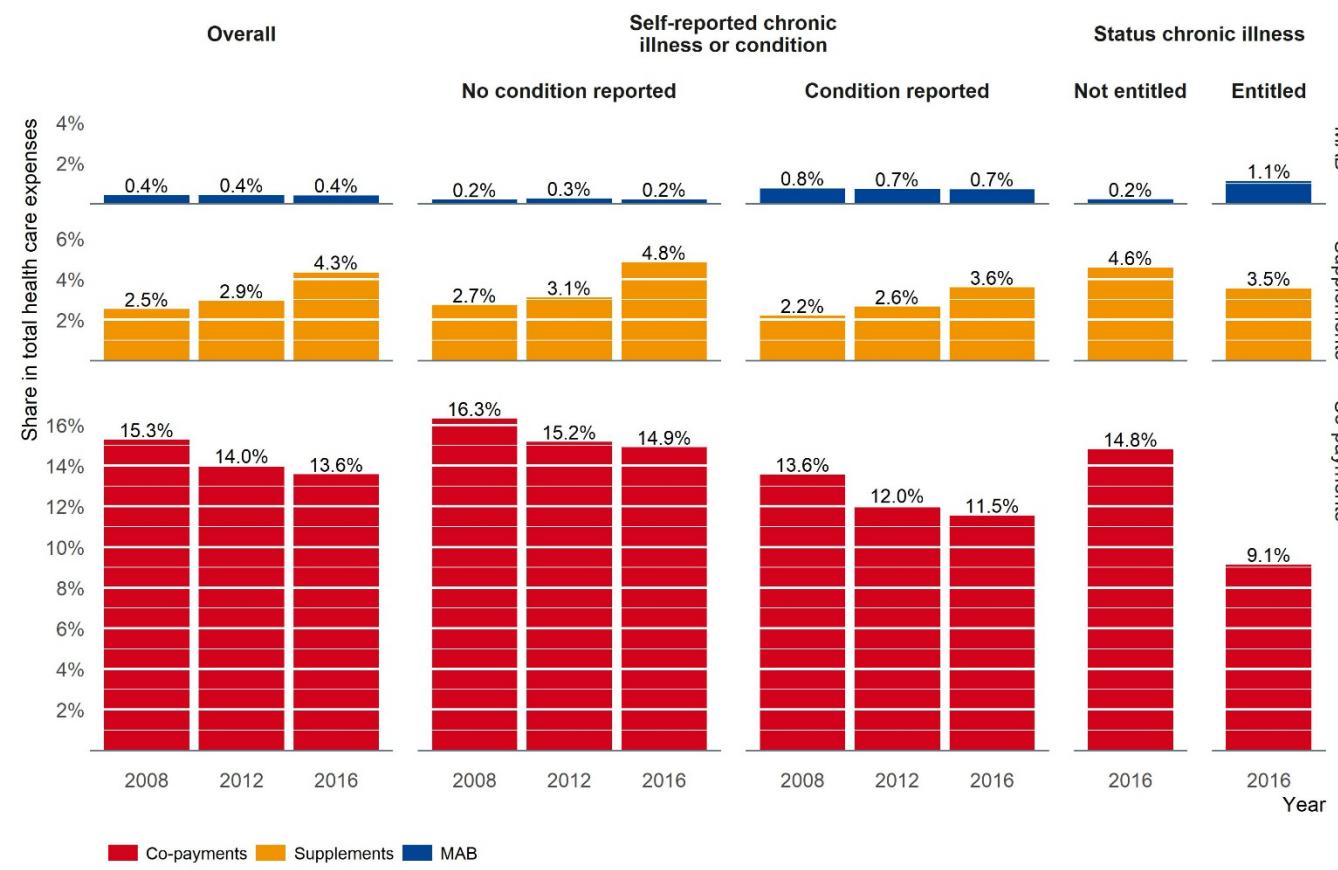
Supplements (fee, material and room) in hospital care are extensively recorded in administrative data. Their use has been increasingly regulated, and particularly affects people requesting a single-bed room. Since 1 January 2010, room supplements can only be charged in a single room. Since 1 January 2013, fee supplements are no longer allowed for inpatient care in common or two-person rooms. Since 2015 the same rules apply for an inpatient and day-care stay.

Despite the increasing legal restrictions, the use of supplements is widespread and constitutes a substantial share of hospital costs, with the share of private spending on hospital care amounting to 19.0% in 2018, out of which 6.2% were co-payments and 12.8% were supplements.¹⁰⁹ Bouckaert et al. (2020) showed that supplements not only affect high income households, but also households at risk of poverty and in the lower middle class.³ Although detailed data are lacking, a significant part of supplements in hospitals is covered by the voluntary supplementary insurance. However, take up of VHI is much more prevalent in the richest income quartile (88%) than among households at risk of poverty (42%).¹¹⁰

Contrary to supplements charged for a hospital stay, there is little regulation for supplements charged for outpatient care.³ They are only to a limited extent recorded in administrative data, so that a comprehensive evaluation on the burden of ambulatory supplements is not possible.



Figure 20 – Share of co-payments, supplements and MAB reimbursements in total healthcare expenses, subdivided by chronic condition (years 2008, 2012, 2016)



Source: Data EU-SILC/IMA-AIM; Figure KCE



Although the regional variation in the share of OOPs in total healthcare expenses is limited, it has increased over time, with in particular a lower share in Brussels. Variation is more pronounced in function of the financial means of the households, with a lower share for financially vulnerable households, e.g. OOPs represented a share in total healthcare expenses of more than 22% in the upper middle class and top incomes compared to 11% among households at risk of poverty.

Lower share of OOPs in total healthcare expenses for households with a chronic patient

A lower share of OOPs in total healthcare expenses was found for households with at least one chronic patient as household member. Households with a member reporting to suffer from a chronic condition (EU-SILC) have a lower share in OOPs (15.1% in 2016) compared to households without such a member (19.7% in 2016). The difference in OOP shares is even more pronounced when using entitlement to the chronic illness status as discriminatory factor. Households with a member entitled to the chronic illness status have a share of OOPs equal to 12.7% in 2016 compared to 19.4% for households without a member with entitlement.

Figure 20 indicates that the difference is in particular driven by a lower share of co-payments. This was expected as households with a chronic patient are more likely to benefit from protective measures (e.g. the MAB and IR, see also section 1.6.3.4 and Table 8) that aim to lower co-payments. In 2016, the fraction of households benefitting from increased reimbursement amounted to 37.6% and 16.3% for households with and without a member with a self-reported chronic condition, respectively, and to 40.3% and 20.4% for households with and without a member entitled to the chronic illness status, respectively. Moreover, the share of households receiving a MAB reimbursement amounted to 21.4% and 6.1% in 2016 for households with and without a member with a self-reported chronic condition, respectively and to 35.2% and 5.6% for households with and without a member entitled to the chronic illness status, respectively.

Protection against financial hardship or postponement of care with high out-of-pocket spending?

Are lower OOPs for chronic patients either an accomplishment of well-functioning protective measures aiming to avoid financial hardship for high-need individuals or a symptom of foregone or delayed care, in particular of care with a high fraction of OOPs (e.g. specialist or dental care)? Most likely both effects have an impact.³ In Figure 20, it is made clear that households with a chronically ill member are more likely to benefit from the MAB. It was also stated above that they are more likely benefit from IR. This effectively reduces co-payments for various kinds of care. On the other hand, indicator A-4 indicates that individuals who self-report a chronic condition or are entitled to the chronic illness status have a substantially higher incidence of unmet needs for medical care (see section 5.2). In this respect, we examined the share of OOPs related to different care types and found that the share of OOPs for GP, specialist and dental care is substantially lower in 2016 for households with a member with a self-reported chronic condition and for households with a member entitled to the chronic illness status relative to households without such members. This can – in particular for GP and specialist care and dental care, the lower share can equally be related to postponement of care due to financial reasons

5.4 Catastrophic and impoverishing or further impoverishing OOPs

Following the methodology proposed by the WHO European Region in its series on financial protection, two indicators were computed to measure the extent to which households are exposed to financial hardship: the incidence of catastrophic and (further) impoverishing out-of-pocket payments.³ Out-of-pocket payments are calculated in the same way as in section 5.3.

The WHO methodology assumes that households need to spend part of their resources to meet basic needs, such as food, housing and utilities. Only after meeting basic needs, resources are available to spend on healthcare. For this reason, the household's capacity-to-pay (for healthcare) is defined as the total household financial resources minus an amount to cover basic

needs, adjusted to the composition of the household. Such correction is important given that poor households devote relatively more of their resources to meeting basic needs and may face a trade-off between consuming basic needs and healthcare.

A household is said to be poor in case its financial resources are insufficient to meet basic needs. Any OOP of a poor household is considered to deepen poverty and is defined **further impoverishing**. Out-of-pocket payments are labelled **impoverishing** when the household is not poor, but has out-of-pocket payments that exceed the household's capacity-to-pay. Out-of-pocket payments are considered **catastrophic** when they exceed 40% of the household's capacity-to-pay. This implies that out-of-pocket payments by poor households are considered catastrophic. Hence impoverishing or further impoverishing OOPs are always catastrophic, but catastrophic OOPs are not necessarily (further) impoverishing.

In 2016, 1.3% of the households had to cope with impoverishing or further impoverishing out-of-pocket payments, of which 1.1% were further impoverishing and 0.2% were impoverishing, and 2.0% of the households experienced catastrophic out-of-pocket payments (see Table 18 and Figure 21). There is substantial regional variation with the highest incidence for both catastrophic and impoverishing or further impoverishing OOPs recorded in Brussels and the lowest incidence in Flanders.

Higher incidence of catastrophic OOPs among households with a chronic patient, little impact on impoverishing or further impoverishing OOPs

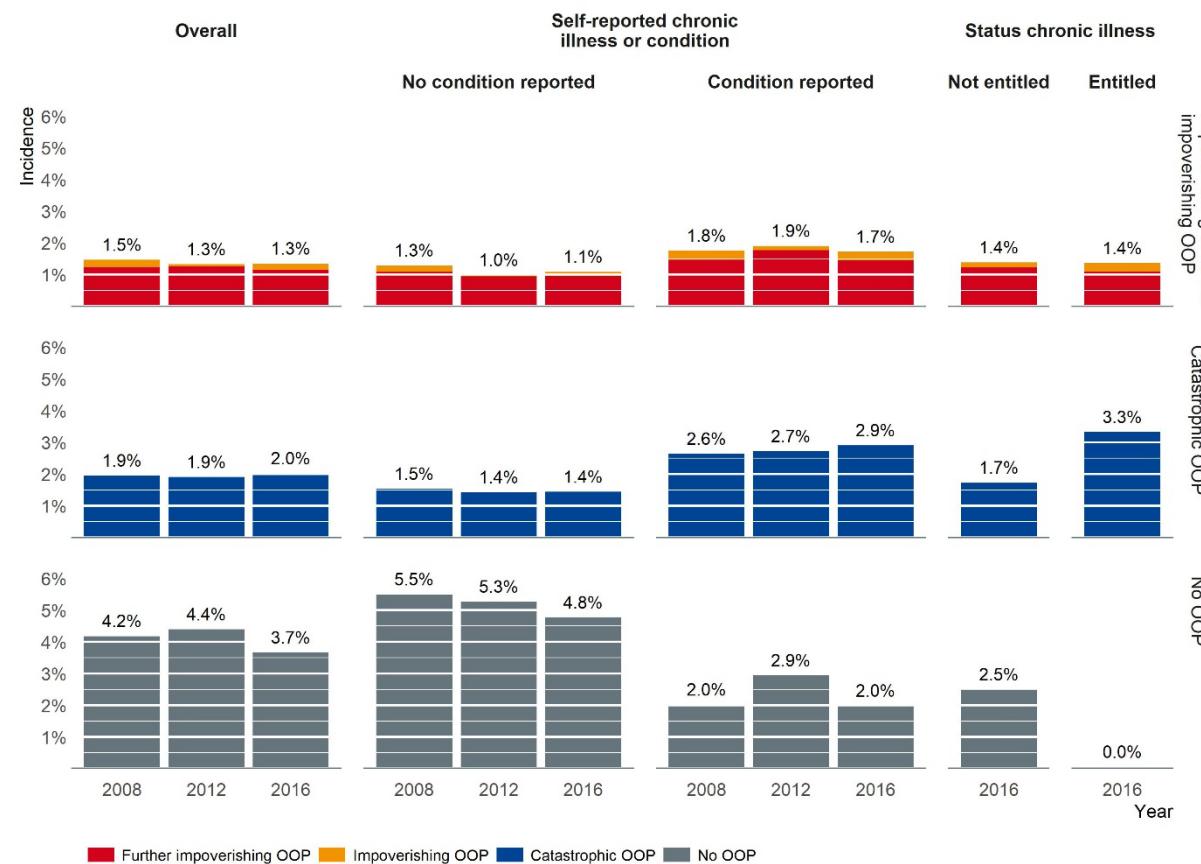
There are significant differences between households with and without a member with a self-reported chronic condition (EU-SILC). In the former group there is a higher proportion of households that are further impoverished and, as expected, a lower proportion of households without out-of-pocket payments. The incidence of households experiencing catastrophic out-of-pocket payments in 2016 is twice as high among households with a member reporting a chronic condition.

There are also significant differences between households with and without a member entitled to the chronic illness status. All households with at least one member entitled to the chronic illness status have out-of-pocket payments. This was expected as the criteria for entitlement are based on total reimbursed health expenditures (see section 1.6.3.2). Similarly to the results based on the subdivision by self-reported chronic condition, we find that the incidence of households experiencing catastrophic out-of-pocket payments in 2016 is twice as high among households with a member entitled to the chronic illness status.

Regional variation in the incidence of catastrophic and impoverishing or further impoverishing OOPs by self-reported chronic condition and chronic illness status is similar to the variation observed for the overall rate.



Figure 21 – Proportion of households with impoverishing or further impoverishing OOPs, catastrophic OOPs and without OOPs (2008-2016), by chronic illness status and self-reported chronic condition



Source: Data EU-SILC/IMA-AIM; Figure KCE

Note: OOP = out-of-pocket payments



5.5 Conclusion

Accessibility to and delivery of effective, high quality and affordable healthcare are fundamental objectives that have shaped health policy and the universal healthcare coverage in Belgium. A lack of financial accessibility may have adverse consequences, such as postponement of care or financial hardship when using care.

Out-of-pocket payments borne by patients and directly related to their healthcare consumption, can create such financial barriers, in particular for individuals with high care needs or limited resources. Chronic patients are vulnerable in both senses as they are more likely to have high care needs – indicated for example by higher prevalence of multimorbidity and entitlement to the chronic illness status based on healthcare expenses – and limited financial resources indicated for example by a higher fraction of households benefitting from increased reimbursement. The association between low socioeconomic status and the presence of a (self-reported) chronic disorder is well documented.³

In Belgium, out-of-pocket payments as a share of healthcare expenditures are relatively high compared to the level in neighbouring countries.³ However, to reduce financial barriers, protection mechanisms in the public health insurance aim at reducing OOPs – in particular co-payments – for vulnerable groups.

We found that the share of OOPs in the total household healthcare expenses was lower for households with a member that was chronically ill. It remains, however, unclear whether this lower share reflects well-functioning protection mechanisms or is a symptom of foregone or delayed care, in particular of care with a high fraction of OOPs (e.g. specialist or dental care). Most likely both effects play a role, given that a higher rate of unmet needs for medical examination due to financial reasons was observed among chronic patients in 2016, i.e. 5.2% among those with a self-reported chronic condition (fourfold of those without self-reported chronic condition) and 3.9% of the persons entitled to the chronic illness status (double of those without the status).

Households with a member that was chronically ill were also more likely to experience financial hardship, as indicated by the incidence of catastrophic OOPs which was in 2016 on average 2.0%, but as high as 3.3% in households with a member entitled to the chronic illness status, and 2.9% in households with a member with a self-reported chronic condition.

We conclude that there is room to improve the financial accessibility to care for chronic patients. Note that for the calculation of OOPs for the indicators in this chapter, we were limited to what is registered in the IMA – AIM data, hence direct payments for non-reimbursed services were not included, ambulatory supplements only to a limited extent, and reimbursement from VHI were not accounted for.



6 EFFICIENCY

Efficiency in healthcare is concerned with the relation between inputs (e.g. money, time, labour, capital) and intermediate outputs (e.g. numbers treated, waiting times) or ultimate health outcomes (e.g. life years gained). Efficiency in healthcare is usually measured at three levels: healthcare system level, subsector level and disease-based level. Indicators at the subsector level have the advantage that they more easily lead to sector-specific (e.g. hospital sector) recommendations and actions. However, outcome measures at hospital level are not widely available yet. Outcome measures related to specific diseases are available, but relating disease-specific outcomes to inputs remains a challenge.

In this intermediate HSPA, one indicator has been selected to evaluate the efficiency of the healthcare system with a focus on care for chronic patients, i.e. **the proportion of low-care dialysis (E-5)**. This indicator is being evaluated for the first time in an HSPA in Belgium. It has been proposed and selected because a Belgian target exists (see below), and is therefore a good opportunity to evaluate the efficiency of healthcare system in care for chronic patients.

6.1 Low-care dialysis

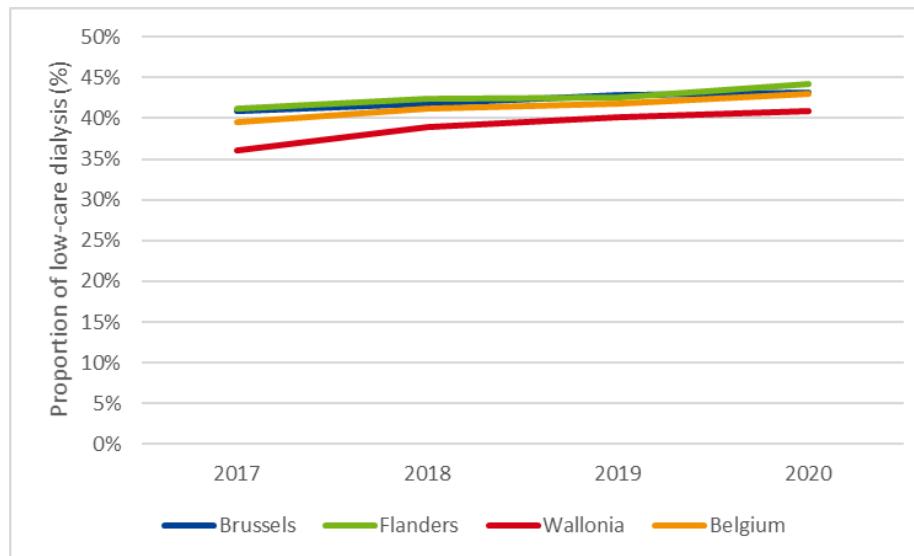
Patients suffering from a chronic renal disease may need renal replacement therapy if the residual kidney function is insufficient. The preferred treatment is kidney transplant when available. The alternative is dialysis, for which there are several types: haemodialysis (at the hospital site, in a satellite centre, or even at home in some cases) or peritoneal dialysis. Haemodialysis in hospital setting is expensive ("high-care dialysis"), while alternatives such as haemodialysis in a satellite centre or at home, nocturnal or peritoneal dialysis are less costly ("low-care dialysis"). The interested reader is referred to KCE report 124 for a description of these modalities. Since most patients can be treated with low-care dialysis at least initially, RIZIV – INAMI is encouraging hospitals to promote it in order to reduce the costs (the 2022 budget for dialysis fees -hospital, satellite centre or at home- amounts to 488 million EUR). In the dialysis financing agreement between RIZIV – INAMI and individual hospitals, the latter are expected to reach a proportion of low-care dialysis of 40%. This proportion is reached at the national and regional levels (Table 19 and Figure 22), but this is not always the case at the hospital level; in 2020, among the 52 hospitals having signed the dialysis financing agreement, 45 (86.5%) have reached the required rate (8 in Brussels, 18 in Flanders and 19 in Wallonia): 28 general hospitals (out of 33), 11 non-academic general hospitals with academic character (out of 12) and 6 academic hospitals (out of 7) versus 7 (13.5%) that have not reached the 40% rate of low-care dialysis (1 in Brussels, 6 in Flanders and 0 in Wallonia).

Table 19 – Results of the indicators of efficiency of the healthcare system

(ID) indicator	SCORE	Belgium	Year	Flanders	Wallonia	Brussels	Source	EU-15 (mean)
E-5 Proportion of low-care dialysis (%) <i>NEW</i>		43.0	2020	44.3	41.0	43.2	RIZIV – INAMI	-



Figure 22 – Proportion of low-care dialysis by region per year



Source : RIZIV – INAMI



6.2 Conclusion

Efficiency of the healthcare system is difficult to measure; at the subsector level, variations between hospitals are observed, e.g. for the proportion of low-care dialysis. For dialysis, a deeper analysis is needed at the billing code level to better understand the different treatments used as low-care dialysis. Recent improvements in the home dialysis equipment may also have increased the uptake in home dialysis.

7 DOMAIN OF PERFORMANCE

7.1 Prevention

Preventive care includes two types of interventions: "primary prevention", which aims to reduce or eliminate the occurrence of a disease (e.g. vaccination), and "secondary prevention", which aims to detect the occurrence of a disease at an early stage to initiate treatment as early as possible to limit the consequences in terms of mortality and morbidity/disability (e.g. cancer screening or dental check-ups). In this HSPA report, we have selected indicators measuring influenza **vaccination coverage among the elderly** (P-4) to illustrate primary prevention. To illustrate secondary prevention, we have selected indicators on **breast cancer screening** (P-6 and P-7) and **preventive dental care** (P-11). All indicators are shown in Table 20. The organisation of preventive care is primarily a competence of the federated entities, with the involvement of the federal authorities limited to reimbursements for some types of preventive care. An analysis of the results of the prevention indicators by region is therefore particularly important. Health promotion, i.e. the control of risk factors related to chronic diseases (mainly tobacco use, physical inactivity, harmful use of alcohol and unhealthy diets¹¹¹) is studied by Sciensano¹¹² and is not evaluated in this report. Some keys results of determinants of chronic diseases are presented in Table 21.

**Table 20 – Results of the indicators of prevention, by chronic illness status**

(ID)	Indicator	Status	SCORE	BE	Year	Flanders	Wallonia	Brussels	Source	EU-15 (mean)	Target
P-4	Influenza vaccination (% of population aged 65+)	Total	ST	55.1		60.8	46.1	44.7		53.7	75% (WHO)
		Chronic illness status	ST	72.3	2019	77.7	64.3	63.6	IMA-AIM ;OECD		
		Not chronic illness status	ST	48.1		54.2	38.0	37.0			
P-6	Breast cancer screening (% women aged 50-69 years), organised screening	Total	ST	32.2		50.2	4.7	10.4		-	-
		Chronic illness status	ST	28.2	2019	45.6	4.7	12.0	IMA-AIM		
		Not chronic illness status	ST	33.0		50.9	4.7	10.0			
P-7	Breast cancer screening (% women aged 50-69 years), all mammograms	Total	ST	59.7		65.3	51.5	51.0		73.5	75% (EU)
		Chronic illness status	ST	58.8	2019	63.0	53.2	55.5	IMA-AIM		
		Not chronic illness status	ST	59.9		65.7	51.1	50.0			
P-11	Regular contacts with dentist (% pop aged 3+)	Total	+	55.3		60.0	51.0	50.1		-	
		Chronic illness status	+	53.1	2019	54.7	49.7	56.5	IMA-AIM		
		Not chronic illness status	+	55.6		60.7	51.2	49.3			

**Table 21 – Key determinants of chronic disease in Belgium, 2018**

Determinants of health	BE	Flanders	Wallonia	Brussels
Tobacco use				
Prevalence of daily smokers in men aged 15 and over (%)	18.3	15.8	22.1	21.1
Prevalence of daily smokers in women aged 15 and over (%)	11.9	10.4	14.9	11.0
Physical inactivity				
Proportion of the men population aged 18 years and over who do at least 150 minutes per week of at least moderate-intensity aerobic physical activity (%)	36.7	43.4	27.0	28.9
Proportion of the women population aged 18 years and over who do at least 150 minutes per week of at least moderate-intensity aerobic physical activity (%)	25.8	34.3	14.7	18.2
Harmful use of alcohol				
Age-adjusted prevalence of hazardous alcohol consumption*, men (%)	7.4	7.7	8.3	9.9
Age-adjusted prevalence of hazardous alcohol consumption*, women (%)	4.3	3.7	4.7	5.9
Unhealthy diets				
Proportion of the men population aged 6 years and over that eats daily the recommended amount of fruits and vegetables (at least 5 portions)	10.4	8.7	12.5	13.3
Proportion of the women population aged 6 years and over that eats daily the recommended amount of fruits and vegetables (at least 5 portions)	16.3	14.7	18.0	19.2

Source: <https://www.healthybelgium.be/en/health-status> (last access: 9 February 2022), *weekly consumption exceeding 21 drinks containing the equivalent of 10 g of pure alcohol in men and 14 drinks in women.



7.1.1 Influenza vaccination among the elderly

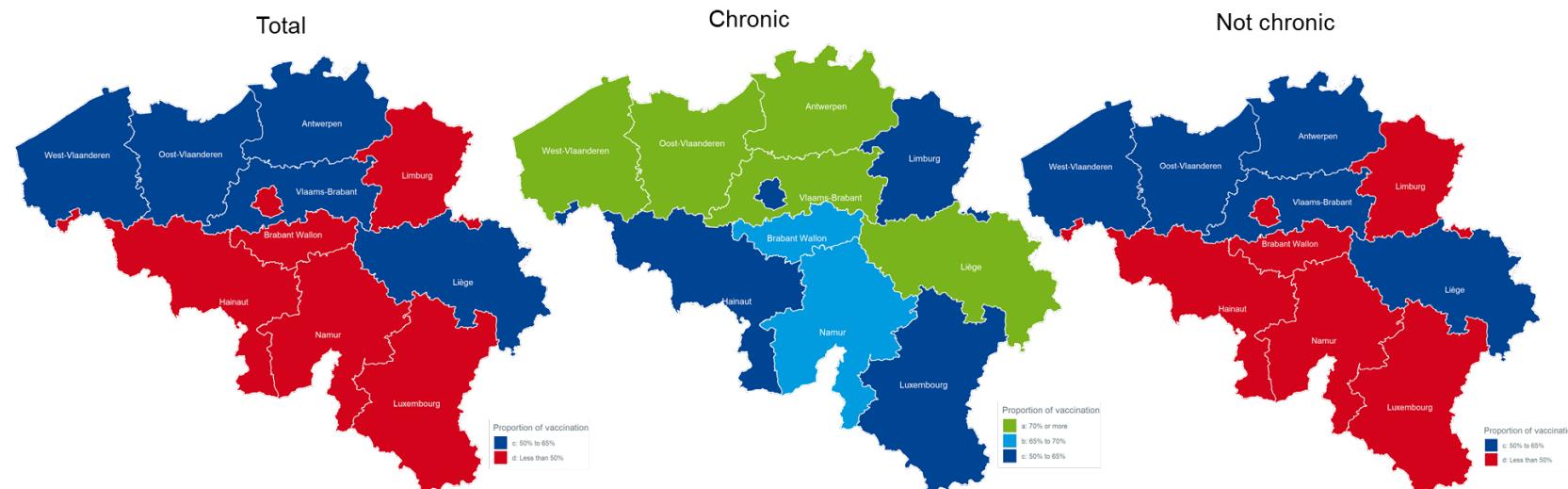
Vaccination rates against influenza for persons aged 65 years old remained stable between 2013 and 2019 and Belgium has a slightly higher influenza vaccination coverage than average EU-15 countries (Table 20). There was a higher coverage rate in Flanders (60.8%) than in Wallonia (46.1%) and Brussels (44.7%), and even more outspoken differences between provinces. Indeed, Liège (79.4%) has a higher vaccination rate than other Walloon provinces, and on the Flemish side, Limburg (45.3%) has a lower vaccination rate than other Flemish provinces (Figure 23, Figure 22).

The vaccination rate is 24.2 percentage points higher in persons entitled to the chronic illness status than in persons not entitled to the status (2019: chronic 72.3% versus not chronic 48.1%) and this difference in vaccination

coverage has increased since 2013 (22.5 percentage points). For all examined socio-economic characteristics, individuals entitled to the chronic illness status have a higher vaccination coverage than those without chronic status. Persons with chronic status living in Flanders are more frequently vaccinated (77.7%) than those living in Brussels (63.6%) or Wallonia (64.3%). However, Liège has the highest vaccination rate among persons with the status (79.4%), followed by Antwerpen (78.5%) and Vlaams-Brabant (78.3%). The average vaccination rate in Wallonia is lowered in particular by the low rate in Hainaut (63.0%) (Figure 23, Table 20).

Persons with the chronic illness status living in nursing homes (65+ in Wallonia and Brussels) are more frequently vaccinated (84.2%) than persons not entitled to chronic illness status living in nursing homes (73.9%).

Figure 23 – Influenza vaccination coverage among the elderly by province, by chronic illness status (2019)



Data IMA – AIM; Figure KCE



7.1.2 Breast cancer screening

Mammographic screening is considered an efficient mean for the detection of breast cancer and early treatment with higher probability of recovery. Therefore, since 2001 in Flanders and 2002 in Brussels and Wallonia, a population breast cancer screening programme exists for women aged 50-69 years. Each woman aged 50 to 69 years receives every two years an invitation to participate in the screening programme. The examination is free of charge for the women. In addition to the organised programme, all mammograms (preventive or diagnosis) are studied as well to estimate the full coverage of mammographic screening in Belgium. The programme aims to have a screening in 75% (or more) of the targeted women.¹¹³

The total coverage of breast cancer screening was 59.7% in 2019. The coverage has increased between 2003 and 2016 (2003: 43%; 2016: 62%) and then slightly decreased until 2019. In 2019, the highest rate at 65.3% was observed in Flanders while lower participation rates were achieved in Brussels (51.0%) and Wallonia (51.5%). The breast cancer screening coverage in Belgium fails to reach the recommended target of 75%, which is achieved in France, Italy, the Netherlands, Luxembourg, Portugal and Sweden in 2019. The Belgian rate is also lower than the EU average (73.5%).

Persons with RIZIV – INAMI chronic illness status are less likely to have a mammogram than persons without the status (organised). However, this result varies according to age group, entitlement to increased reimbursement (IR) and region of residence. Younger women (50-54 years) with chronic illness status are more likely to have breast cancer screening (total mammograms) than women of the same age without chronic illness status. A possible explanation could be the higher rate of diagnostic mammography in younger women with the status. In Brussels and Wallonia, the women entitled to the chronic illness status are more likely to have mammograms in every age group. In Flanders, results are the opposite, women entitled to the chronic illness status are less likely to have mammography than women without chronic illness status. Among women with entitlement to increased reimbursement, those with chronic illness

status are more likely to have mammography than those without (IR and chronic illness status: 47.8% versus no IR and chronic illness status: 44.4%).

7.1.3 Regular contact with dentists

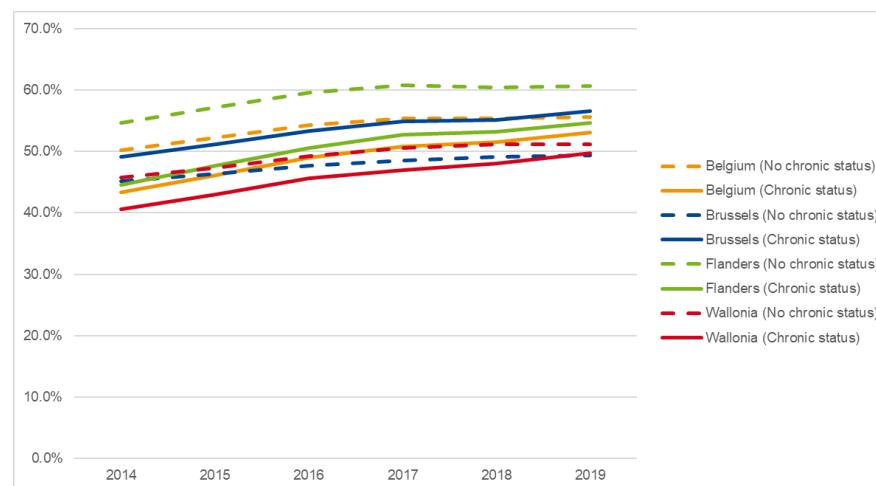
Around half of the Belgian population had a regular dental contact (defined as having at least one dental contact in two different years over the last three years), with 55.3% in 2019. The population seeing a dentist on a regular basis has increased in the period 2014-2019, especially for people with a chronic illness status (+9.7 percentage points with the status, compared to +5.5 percentage points without the status) (see Figure 24). The difference between people with and without the chronic illness status was therefore more pronounced in 2014 (43.4% versus 50.1%, -6.7 percentage points) than in 2019 (53.1% versus 55.6%, -2.5 percentage points).

The highest regular attendance rate is seen in children and adolescents (5-17 year old) and this result can be partly explained by the absence of co-payments for children dental care in Belgium. The regular dental attendance rate was higher for people with the chronic illness status than without chronic illness status for all age categories, except for people aged 75 year old and over. The overall lower dental attendance rate for people with the chronic illness status than for people without the chronic illness status is therefore mostly due to the elderly. Indeed, there is a higher fraction of elderly among persons with chronic illness status.

The regular dental attendance rate was higher in Flanders (60.0% in 2019) than in Wallonia (51.0% in 2019) and Brussels (50.1% in 2019). Nevertheless, when a distinction is made based on the chronic illness status, differences between regions, and in particular between Flanders and Brussels, were reduced (with 56.5% in Brussels, 54.7% in Flanders and 49.7% in Wallonia for people with the chronic illness status). It should also be noted that in Brussels, the proportion of people with regular dental attendance is slightly higher for people with a chronic illness status than for people without such a status, while in Flanders and Wallonia, it is the opposite. As said above, this result is also related to an age effect, with much lower attendance rates among the elderly and a higher fraction of older people in the group with chronic illness status.

Moreover, based on the linkage between the health interview survey and IMA-AIM data, it can be observed that the difference in the proportion of people (15+) that never consulted a dental care specialist in the last 12 months was only highlighted based on the chronic illness status (chronic illness status: 3.7% versus no chronic illness status: 1.6%; - 2.1 percentage points), that identify people with high health expenditures. Based on self-reported chronic disease, no difference was observed (1.6% both for people with a self-reported chronic disease and for people without a self-reported chronic disease).

Figure 24 – Regular contact with a dentist, by chronic illness status and region (2014-2019)



Source: Data IMA-AIM; Figure KCE

Note: Regular contact is defined as two contacts in two different years in the last three years

7.1.4 Conclusion

The primary prevention (measured by the rate of influenza vaccination among the elderly in this report), although it could be improved with regards to the European target, shows a stable trend in the last years. Although the generalisation should be treated with caution as only one indicator was included, the primary prevention seems to be more focused on people at risk of developing certain complications (i.e. patients with chronic illness status), which is a good result.

For secondary prevention (breast cancer screening and regular contact with dentist), the results are less conclusive, less clear-cut and influenced by many different factors (region, age, IR status, chronic status). However, breast cancer screening coverage is still too low in both chronic and non-chronic patients compared to the European average. Participation in the organised breast cancer screening is very low in Brussels and Wallonia. Preventive dental care is decreasing with age and is overall higher in persons without chronic illness status. In every age group (except the oldest) preventive dental care is higher in persons with the chronic illness status.

7.2 Other domains

No other domains were investigated in this report. In the 2019 HSPA report, the following domains were also investigated: mother and newborn care, mental health care, care for the elderly, and end of life care.



8 DISCUSSION AND CONCLUSION

8.1 Strengths and weaknesses of the Belgian health system for the care of chronic patients

Based on the evaluation of the 27 indicators presented in this report, numerous positive developments can be highlighted, as well as some warning signals for consideration in care for chronic patients.

Difficult context to set but clear trend

- It is difficult to get an accurate picture of the number of chronic patients in Belgium because of the impossibility to identify them optimally in the existing databases (see below for limitations). However, it is clear that the number of people with a chronic disease (self-declared or entitled) is continuously increasing in Belgium and that the quality of life of these persons is poorer than that of those without chronic diseases (see chapter 3).

With regard to the quality of care, there is room for improvement for several indicators

- Some positive signals can still be highlighted concerning the quality of care for chronic patients, such as the avoidable hospital admission rate for asthma that is lower than the EU-15 average and decreased in the last years, pointing out relatively good effectiveness of the first-line care for these chronic patients. Also, the proportion of people successfully treated for pulmonary tuberculosis remains higher than the available European means, although stable for the last years. Small efforts nevertheless remain to be done to reach the European target (see chapter 4.1).
- From a patient's perspective (patient-centred care), the assessment was also positive, with both chronic and non-chronic patients reporting to be satisfied with their contacts with the health system (see chapter 4.4). However this is only based on three indicators.

- Some warning signals were nevertheless highlighted such as the avoidable admissions for COPD patients. Even though the high number of COPD hospitalisations is less indicative of poor primary care than the indicators on asthma and diabetes because these patients are extremely fragile, the upward trends still require increased attention (see chapter 4.1).
- The indicators illustrating the appropriateness of follow-up for chronic patients are also not satisfactory. In particular, the proportion of adult diabetics with appropriate follow-up is insufficient, due to a.o. lower than recommended ophthalmologist consultations (see chapter 4.2). This may also point to problems in accessibility for some specialities or poor care coordination.
- Continuity of care indicators showed contrasting results, with an issue regarding diabetics patients under other glucose lowering drugs than insulin (not enough registered in a diabetes care model) and the insufficient use of reference pharmacists to ensure information continuity in medication. The informational continuity in general practice for chronic patients is also not optimal as not all of them have a global medical file. The follow-up of elderly patients by a GP within one week after hospital discharge is also gradually declining over time. More than four out of ten hospitalisations of chronic patients were not followed by a GP contact within one week after discharge (see chapter 4.3).
- Care trajectories and other (integrated) care models have been developed to improve the coordination of care for some chronic diseases such as diabetes. As stated in the previous point, the current analysis nevertheless showed an insufficient proportion of patients registered in these care models (for diabetics patients under other glucose lowering drugs than insulin), which has an impact on the quality of their care (including the effectiveness and appropriateness of their care). Efforts should be continued to increase the number of patients enrolled in these care models. Consideration could also be given to the development of additional care models, for example for COPD patients who have shown poor results in terms of avoidable hospitalisations.

A reduction of out-of-pocket payments as share of total household healthcare expenses but delayed contacts for financial reasons and impoverishing/catastrophic Out-Of-Pockets expenses (OOPs)

- Accessibility of the system is guaranteed by a near-universal insurance coverage and the existence of financial protection measures (maximum billing, increased reimbursement of medical expenses), with specific measures dedicated to chronic patients. As a consequence, out-of-pocket payments as a share of total household healthcare expenses has declined for chronic patients. However, it is not clear whether this lower share reflects well-functioning protection mechanisms or is a symptom of postponement of care due to financial reasons, especially care with higher share of OOPs, such as dental or specialist care. The rate of unmet needs was indeed found to be higher in chronic patients. Households with a chronic patient were also more likely to experience financial hardship such as catastrophic OOPs (see chapter **Error! Reference source not found.**).

An improved efficiency concerning dialysis care, but there is still room for improvement

- To improve the efficiency of care for dialysis patients, RIZIV – INAMI promotes the use of low-care dialysis (haemodialysis in a satellite centre or at home, nocturnal or peritoneal dialysis). However, although the proportion of low-care dialysis increased over time, there are variations between hospitals and not all have reached the target rate of 40% of low-care dialysis (see chapter 0).

In terms of prevention, there is room for improvements concerning the breast cancer screening program and preventive dental care

- Although improvements should be realised to reach the European target, the rate of influenza vaccination in the elderly seems to be more focused on people at risk of developing certain complications (i.e. patients with chronic illness status), which is a good result.
- Breast cancer screening coverage is still too low in both chronic and non-chronic patients compared to the European average.

- In every age group (except the oldest) preventive dental care is higher in persons with the chronic illness status. Overall, preventive dental care is decreasing with age irrespective of the chronic status (explained by the decrease of the reimbursed part of dental care after 18 years, living in nursing home...). Actions should be taken to improve preventive dental care in the elderly with and without chronic illness status (see chapter 7).

Regional disparities are documented

For some indicators in this report, minor to very large regional differences are observed, and deserve to be further explored. Regional differences (superior to 20% compared to the best performer) were highlighted for the following indicators:

- Organised breast cancer screening is better in Flanders than in Wallonia and Brussels, regardless of the chronic illness status;
- Hospital admissions rate for chronic obstructive pulmonary disease is lower in Brussels than in Flanders and Wallonia;
- Proportion of adult diabetics under insulin with appropriate follow-up is lower in Wallonia than in Flanders and Brussels;
- Proportion of adult diabetics (aged 50+) receiving glucose lowering drugs other than insulin with appropriate follow-up is lower in Flanders and Wallonia than in Brussels;
- Coverage of global medical record is higher in Flanders than in Brussels and Wallonia; regardless of the chronic status.



8.2 Limitations

Limitations of this report mainly concern the way chronic patients were identified in the analysis, the limited list of indicators, and the general limitations common to all Belgian HSPA report.

Identification of chronic patients in Belgian databases

There is no official definition of a chronically ill person in Belgium and only three flags are available to identify potential “chronic patients” in the Belgian databases, i.e. the entitlement to the RIZIV – INAMI chronic illness status, which identifies people with continuous high official health expenditures and two self-reported statuses which identify people who self-reported a chronic disease/illness/condition in the Belgian health interview survey or in the EU-SILC survey. As shown in chapter 3, different people could be identified based on these three flags.

None of these flags are ideal. The RIZIV – INAMI chronic illness status for example does not allow to identify “chronic patients” with low official health expenditures or high official health expenditures not continuously spread over time (i.e. not > €300 during 8 consecutive quarters). Moreover, supplements, direct payments for health services not covered by the compulsory health insurance, and health expenditures for services transferred to the Federated entities are not taken into account. Coverage by voluntary health insurance cannot be taken into account either. The status also covers people with continuous high official health expenditure but who are not affected by a chronic illness.

The identification of chronic patients based on self-reporting is also not optimal, as some “chronic patients” will not consider themselves as such and vice versa. Furthermore, in the health interview survey, respondents under 15 years of age are excluded and recall bias and/or misinterpretation of the question cannot be excluded. Similarly in the EU-SILC survey, information on health status is only collected in respondents aged 16 or more. Such limitations must therefore be kept in mind when interpreting the results. It should also be noted that an analysis based on both the entitlement to the chronic illness status and the self-reported condition gives a better view than based on only one type of “chronic” identification. Nevertheless, such an

analysis was only possible for a selection of indicators (for which a linkage between IMA – AIM and HIS data or IMA – AIM and SILC data was available).

It should also be noted that rare diseases are often difficult to identify as chronic diseases in existing databases. The identification by the CHR-1 indicator (RIZI – INAMI chronic illness status) can be prevented because many rare diseases have no treatment and therefore do not induce high and regular health expenditure. Also the way the CHR-3 indicator (self-reported multimorbidity status) is calculated, i.e. by selecting only 6 very frequent groups of diseases, does not allow the identification of people with a rare disease as multimorbid. Furthermore, given that rare diseases are by definition “rare”, these patients may be under-represented in the HIS and EU-SILC. The results presented in this report are therefore not necessarily generalisable to this specific patient population.

No international comparison by chronic status is available which means that for chronic versus non-chronic indicators, it was not possible to put the performance of the Belgian health system for chronic care in perspective with that of other European countries.

A parsimonious set of indicators

It should also be noted that in this report, the assessment of the health system performance for the care of people living with a chronic condition is based on a parsimonious set of indicators.

Firstly, to keep the study manageable, the number of indicators was limited to a maximum of 30. Secondly, there is a gap between the desired indicators and the indicators that can actually be measured. For example, continuity and coordination of care between the different care settings (hospitals, rehabilitation centres, home care, nursing homes care) are crucial for people living with a chronic condition. However, in Belgium, the links between the existing databases to be able to assess the entire care pathway of a patient are not automated: an ad-hoc procedure has to be followed for each linkage, which is resource-consuming. Few indicators were also available on patients' self-reported experiences and outcomes. However, thanks to the PaRIS study, a larger number of indicators will be available in the future and

a review of the dimension on patients centred care is planned for the next HSPA report. Thirdly, the health status of people living with a chronic condition and in particular the analysis and monitoring of their risk factors are key elements in the management of these people. In Belgium, however, it was decided not to include these elements in the HSPA report and to rather include (some of) them in the health status report performed by Sciensano.¹² A list of the excluded indicators can be found in the appendices of this report. Such a parsimonious set of indicators therefore prevents a comprehensive and complete view of the performance of the health system for the care of these people but warning signals can nevertheless be highlighted, as described in section 8.1.

Limitations common to all our HSPA report

Limitation common to all our HSPA report are described in Box 12.

Box 12 – Limitation of HSPA reports: be cautious when drawing conclusions

- Effects due to policy changes are difficult to monitor, especially in a report such as the HSPA, whose scope is not to provide a detailed analysis on a specific issue. The HSPA should not be seen as a tool to evaluate policies, its aim is 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 inside or outside the health system. Results depend on the quality of the collected data (availability, bias, completeness...).
- Because they concern health and healthcare, the indicators we present in this report are intrinsically complex. They are never the result of a single action but reflect the interaction of a full set of variables and parameters. The results are probably linked to past political or administrative measures but the reality is characterised by a certain inertia and it is necessary to wait for a certain lapse of time in order to observe the resulting effects in the field. Caution is therefore required when we observe the results.

- The frequency of data collection and the quality of these data also determine what we can learn from the indicators.
- While we have a large amount of data from hospitals, data from the ambulatory sector are rather limited. Nevertheless, a complete picture of the health system and the need for healthcare requires data of both settings. A better knowledge of the ambulatory sector is necessary to better assess the health system. More data should be collected and/or made available for analysis and the coupling of data should be made easier to allow to track patients from one setting to another, all while respecting the General Data Protection Regulation (GDPR): a balance is required between privacy and availability of rich individual data. Data on ambulatory healthcare in Belgium is still underdeveloped and insufficient to build adequate indicators, e.g. diagnostic information and information on supplements would allow a better view of the health system and its changes (e.g. reforms to de-institutionalise mental healthcare, impact of protective measures on OOPs in GP, specialist and dental care).
- Setting targets is a difficult task, as there are many indicators where science and even ethics cannot define an exact target to be reached from a public health perspective. The setting of SMART (specific, measurable, achievable, realistic and time-bound) targets requires collaboration between political, administrative, scientific and operational actors. The collaboration should span the different policy levels (federal/regional) and be backed by all relevant policy domains.



8.3 Conclusion

This report is the third intermediate HSPA; two previous intermediate HSPA have been published on equity and sustainability of the Belgian health system in 2020³ and 2021⁴ respectively. This HSPA, by means of 27 indicators, provides, for the first time, a diverse perspective on the performance of the health system for chronic patients.

To compare the performance of the health system between chronic and non-chronic patients, it is first necessary to define precisely what a chronic patient is. Currently, there is no official definition of people living with chronic conditions in Belgium but there are three ways to identify them in national databases. The three ways to identify patients suffering from chronic conditions do not have the same objectives, the first two aiming at an epidemiological objective, thus monitoring the chronic diseases and their associated determinants, and the third aiming at providing financial protection to patients with recurrent and important healthcare expenses. The three have also serious limitations (see chapter 8.2 limitations above). It would therefore be essential to think about a linkage of financial (IMA – AIM), diagnostic (MZG – RHM and PMG – RPM, etc.) and epidemiological (HIS, cancer register, etc.) databases. New linkages could also be envisaged; for example with the GMR as it was done in the context of vaccination against COVID-19.

Given these limitations, the results of the indicators comparing chronic and non-chronic patients should be considered with caution pending the development of a formal conceptual and operational definition in Belgium.

To provide a transparent and accountable view of the health system performance for chronic patients, the strengths and weaknesses of the system are described by means of pictograms in terms of accessibility, quality, efficiency and equity. The sustainability dimension was not evaluated in this HSPA. It should also be noted that, given the limitations of the current health information systems and in particular, the difficulties of linkage between databases, not all the desired indicators could be effectively measured, which prevents a global and complete view of the performance of health system for the care of people living with a chronic condition. Some signals were already known to the Belgian policymakers because they had already been identified in the last performance report.² But some are completely new and require further analysis.

For instance, it is striking that unmet medical needs for financial reasons and catastrophic out-of-pocket payments are higher in chronic patients than in the non-chronic patients or that a large number of people are not aware of the existence of the RIZIV – INAMI chronic illness status and are not aware of the rights and protective measures available for chronic patients. Several signals highlighted the under-use of these rights (reference pharmacist, care trajectory, etc.).

Giving the limited time and resources, the signals facilitate the prioritisation of necessary actions and/or further studies. As with all HSAs, the ultimate goal is to improve the health of the population, and, with this report, by improving care for people living with chronic conditions.



9 RECOMMENDATIONS

RECOMMENDATION 1

To the responsible for health policy at the federal and federated levels, and their related administrations, we recommend:

To set up a working group including but not be limited to: patients representatives, the observatory of chronic disease and other RIZIV – INAMI representatives, IMA – AIM representatives, Sciensano and sickness funds:

1. To develop an official Belgian comprehensive definition of people living with chronic conditions.
2. Based on this definition, to develop an approach to better identify people living with chronic conditions in the existing national databases allowing a better analysis of the performance of health system for them.
3. Based on the developed definition, to think about a linkage of financial (IMA – AIM), diagnostic (MZG – RHM and PMG – RPM) and epidemiological (HIS, cancer registry...) databases and a potential new data collection. The HISLink project is a source of inspiration, but currently the linkage shows shortcomings as described in the report.
4. Study whether the new definition can be used to harmonise the policy measures for people living with chronic conditions.

RECOMMENDATION 2

To health care policymakers, we recommend:

1. To continue to tackle the problems stressed by the warning signals as highlighted in the report. 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 into account for their agenda setting.
2. In particular, continue the important efforts made to improve the financial accessibility of people living with chronic conditions.

RECOMMENDATION 3

To the sickness funds, health care providers, social services and stakeholders included in multidisciplinary health initiatives such as the Integreo projects and the local multidisciplinary Networks, we recommend:

1. To proactively inform people living with chronic conditions about their status and about their rights.

**RECOMMENDATION 4**

To the health administrations, we recommend: To continue the improvement of the integration of health information systems. The quality of the data and their timely availability are essential for the relevance of the indicators. Their completeness is also important, in particular by providing for the systematic collection of new data on fee supplements and non-reimbursed medical expenses.



■ APPENDICES

APPENDIX 1. SEARCH STRATEGIES HSPA

Pubmed					Date	Results
Search number	Query	Sort By	Filters	Search Details		
2	Health system performance[Title/Abstract]		from 2017 - 2021	("health system performance" [Title/Abstract]) AND (2017:2021[pdat])	15-Mar-21	270
1	Health system performance[Title/Abstract]			"health system performance" [Title/Abstract]	15-Mar-21	703
Google scholar						
"Performance health system"						15-Mar-21
						147
Scopus						
TITLE (health AND system AND performance) AND PUBYEAR > 2016 AND PUBYEAR < 2022						15-Mar-21
						280
TITLE (performance AND health AND system) AND PUBYEAR > 2009 AND PUBYEAR < 2016						15-Mar-21
						249

APPENDIX 2. INDICATORS NOT RETAINED

Label
Prescription of anticholinergic drugs >80 DDD in elderly (% of pop 65+)
Prescription of antipsychotics in residential/nursing facility for elderly (% of residents 75+)
Prescription of antipsychotics outside residential/nursing facility for elderly (% of pop 75+)
Breast cancer screening outside age target group (% women aged 41-49)
Percentage of patients with short-term duration (< 3 months) of antidepressants treatment (% of pop under antidepressant)
Repeated toxoplasmosis screening during pregnancy (% of women screened at least twice)
Usual Provider Continuity index ≥ 0.75
Physician providing easy-to-understand explanation (% of respondents, contact with GP/SP)
Waiting time of more than two weeks to get an appointment with a specialist (% of population asking an appointment)



Out-of-pocket medical spending (% of final household consumption)

Percentage of the billed fee supplements to the billed official health insurance fees (MAF)

Low care-dependent persons in residential/nursing facility for elderly (% of residents)

Use of low-cost medication (% of total ambulatory DDDs)

Biosimilar treatments (%)

Overall volume of opioids prescribed in primary care, DDDs per 1 000 population per day

Benzodiazepine use, DDDs per 1 000 population, per day

Potentially avoidable hospitalizations: congestive heart failure

Ambulatory surgery rate

Number of small bowel transplants

Number of pancreas transplants

Patient 3 year survival after lung transplantation (%)

Major lower extremity amputation in adults with diabetes

Number of informal carers reported over time

Chronic diseases mortality rate

Waiting time of more than two weeks to get an appointment with a GP (% of population asking an appointment)

Population aged 50 and over who reported they had a fecal occult blood test (FOBT) in past two years or colonoscopy or sigmoidoscopy in past five years.

Proportion of adult renal failure with a care trajectory (% of patients)

■ REFERENCES

1. WHO Regional Office for Europe. The Tallin 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
2. 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
3. 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
4. Lefèvre M, Gerkens S. Assessing the sustainability of the Belgian health system using projections. Health Services Research (HSR). Brussel: Belgium Health Care Knowledge Centre (KCE); 2021 06/2021. KCE Reports 341 Available from: https://kce.fgov.be/sites/default/files/atoms/files/KCE_341C_Sustainability_Belgian_health_system_projections_Report_0.pdf
5. Sciensano. Chronic disease [Web page]. Brussels: Sciensano;2021 [cited 09/11/2021]. Available from: <https://www.sciensano.be/en/health-topics/chronic-disease>
6. IMA-AIM. Atlas AIM [Web page].Brussels;2020 [cited 29 March 2021]. Available from: <http://atlas.aim-ima.be/base-de-donnees>
7. Charafeddine R, Van der Heyden J, Demarest S, Drieskens S, Nguyen D, Tafforeau J, et al. Enquête de santé 2018: Santé et qualité de vie. Résumé des résultats. Bruxelles, Belgique:



- Sceinsano; 2018. D/2019/14.440/24 Available from: <https://his.wivisp.be/fr/SitePages/Accueil.aspx>
8. Vluyen 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. Brussels: Belgian Health Care Knowledge Centre (KCE); 2010. KCE Reports 128
9. CIHI. Health Indicators 2011. [Web page].Ottawa: Canadian Institute for Health Information;2011 [cited 2015, 20 september]. Available from: https://secure.cihi.ca/free_products/health_indicators_2011_en.pdf
10. Westert G, van den Berg M, Koolman X, Verkleij H. Dutch Health Care Performance Report 2008. National Institute for Public Health and the Environment (RIVM); 2008.
11. WHO Regional Office for Europe. The Tallinn Charter: Health Systems for Health and Wealth. WHO Regional Office for Europe Copenhagen; 2008.
12. Renard F, Devleeschauwer B. Health Status Report 2019 - de gezondheidstoestand in België. Brussels: Sciensano; 2019. Health Status Report D/2019/14.440/4 Available from: https://www.healthybelgium.be/images/hsr/HSRReport2019_NL.pdf
13. Sciensano. HELICON: a Belspo BRAIN-be project [Web page].Brussels;2021 [cited 16 December 2021]. Available from: <https://www.brain-helicon.be/>
14. Martin CM. Chronic disease and illness care: adding principles of family medicine to address ongoing health system redesign. Can Fam Physician. 2007;53(12):2086-91.
15. Bernell S, Howard S. Use Your Words Carefully: What Is a Chronic Disease? Front Public Health. 2016;4:1.
16. Boyd K. Disease, illness, sickness, health, healing and wholeness: exploring some elusive concepts. *J Med Ethics: Medical Humanities*. 2000;26:8.
17. McDowell I. Population Health, Health determinants, prevention & health promotion (course). [Web page].Ottawa: University of Ottawa;2015 [cited January 7]. Available from: <https://slideplayer.com/slide/6277407/>
18. Cordier J. Disease, illness, sickness : 3 sens pour "maladie" ? La Lettre du Pneumologue. 2014;17(6):2.
19. Sadar Psychological and sports center. Illness vs. disease [Web page].2019 [cited 2021/11/23]. Available from: <https://sadarpsych.com/illness-vs-disease/>
20. Adams PF, Kirzinger WK, Martinez ME. Summary health statistics for the U.S. population: National Health Interview Survey, 2012. Hyattsville (USA): National Center for Health Statistics. Vital Health Stat; 2013. 10259 Available from: https://www.cdc.gov/nchs/data/series/sr_10/sr10_259.pdf
21. National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP). About Chronic Diseases [Web page].Washington: Centers for Disease Control and Prevention;2021 [cited 11/09/2021]. Available from: <https://www.cdc.gov/chronicdisease/about/index.htm>
22. WHO. Noncommunicable diseases [Web page].Manila: World Health Organization. Western Pacific Region.;2021 [cited 11/09/2021]. Available from: <https://www.who.int/westernpacific/health-topics/noncommunicable-diseases>
23. AIHW. Chronic disease [Web page].Canberra: Australian Institute of Health and Welfare;2021 [cited 09/11/2021]. Available from: <https://www.aihw.gov.au/reports-data/health-conditions-disability-deaths/chronic-disease/about>

24. Busse R, Blümel M, Scheller-Kreinsen D, Zentner A. Tackling chronic disease in Europe: Strategies, interventions and challenges Copenhagen: The European Observatory on Health Systems and Policies; 2010. Available from: https://www.euro.who.int/_data/assets/pdf_file/0008/96632/E93736.pdf
25. Nolte E, McKee M. Caring for People with Chronic Conditions: A Health System Perspective. Berkshire: McGraw-Hill Education; 2008.
26. Healthy Belgium. For a Healthy Belgium: Non-communicable Diseases [Web page]. Brussels: Sciensano;2021 [cited 09/11/2021]. Available from: <https://www.healthybelgium.be/en/health-status/non-communicable-diseases/overview>
27. Allen LN, Feigi AB. Reframing non-communicable diseases as socially transmitted conditions. Lancet Global Health 2017;5:e644-e64.
28. Pais S, Menzes I. How do we live with chronic disease? A rights-based approach promoting the wellbeing of children with chronic disease. Ciênc. saúde coletiva 2019;24(10):10.
29. Suhrcke M, Nugent RA, Stuckler D, Rocco L. Chronic disease: an economic perspective. London: He Oxford Health Alliance; 2006. Available from: <https://www.who.int/management/programme/ncd/Chronic-disease-an-economic-perspective.pdf?ua=1>
30. OECD. Self-reported health and disability. In: Health at a Glance: Europe 2018: State of Health in the EU Cycle. Paris: OECD Publishing; 2018.
31. Sciensano. Health Interview Survey 2018, Belgium [Web page]. Brussels: Sciensano;2018 [cited 09/11/2021]. Available from: <https://his.wiv-isb.be/SitePages/Home.aspx>
32. Forestier B, Anthoine E, Reguiai Z, Et al. A systematic review of dimensions evaluating patient experience in chronic illness. . Health Qual Life Outcomes 2019;17(1).
33. CMS.gov. Chronic Conditions [Web page].Baltimore: Centers for Medicare & Medicaid Services;2021 [cited 09/11/2021]. Available from: <https://www.cms.gov/about-cms/agency-information/contactcms>
34. Gerkens S, Merkur S. Belgium: health system review. Health Systems in Transition. 2020;22(5).
35. RIZIV - INAMI. Interventions dans le coût des soins de certaines maladies et affections [Web page].Brussels: National Institute For Health and Disability Insurance;2021. Available from: <https://www.inami.fgov.be/FR/THEMES/COUT-REMBOURSEMENT/MALADIES/Pages/default.aspx>
36. RIZIV - INAMI. Maladies chroniques [Web page].Brussels: National Institute For Health and Disability Insurance;2021. Available from: <https://www.inami.fgov.be/fr/themes/cout-reboursement/maladies/chroniques/Pages/default.aspx>
37. Arrêté ministériel du 24 janvier 1985 fixant l'intervention de l'assurance obligatoire soins de santé et indemnités dans les frais de voyage des bénéficiaires dialysés, Moniteur Belge 29 Janvier 1985. Available from: <https://www.inami.fgov.be/webprd/docleg/sp/1995586-374?14&OIDN=500047>
38. Arrêté royal du 3 juin 2007 portant exécution de l'article 34, alinéa 1er, 27°, de la loi relative à l'assurance obligatoire soins de santé et indemnités, coordonnée le 14 juillet 1994.
- (NOTE : Consultation des versions antérieures à partir du 22-06-2007 et mise à jour au 14-07-2008), Moniteur Belge 22 Juin 2007. Available from: http://www.ejustice.just.fgov.be/cgi_loi/change_lg.pl?language=fr&l=a=F&cn=2007060359&table_name=loi



39. [Arrêté ministériel du 6 juillet 1989 portant exécution de l'article 37, § 11, de la loi relative à l'assurance obligatoire soins de santé et indemnités, coordonnée le 14 juillet 1994.] <Intitulé remplacé par AM 2007-05-25/37, art. 1; 002; En vigueur : 01-07-2007), Moniteur Belge 29 Juillet 1989. Available from: http://www.ejustice.just.fgov.be/cgi_loi/change_lg.pl?language=fr&a=F&cn=1989070632&table_name=loi
40. Arrêté ministériel du 25 mai 2007 modifiant l'arrêté ministériel du 6 juillet 1989 fixant l'intervention de l'assurance obligatoire contre la maladie et l'invalidité et les conditions d'octroi de cette intervention dans les frais de voyage des patients traités ambulatoirement atteints de pathologies nécessitant soit un traitement chimiothérapique au moyen d'une médication de la catégorie A, soit un traitement par radiations., Moniteur Belge 8 Juin 2007. Available from: http://www.ejustice.just.fgov.be/cgi_loi/change_lg.pl?language=fr&a=F&table_name=loi&cn=2007052537
41. Arrêté ministériel du 14 décembre 1995 fixant l'intervention de l'assurance obligatoire soins de santé et indemnités dans les frais de déplacement exposés dans le cadre de la rééducation fonctionnelle, Moniteur Belge 30 Décembre 1995. Available from: https://www.inami.fgov.be/SiteCollectionDocuments/transport_patients_voiturette_AM_19951214.pdf
42. Arrêté royal du 2 juin 1998 portant exécution de l'article 37, § 16bis, de la loi relative à l'assurance obligatoire soins de santé et indemnités, coordonnée le 14 juillet 1994, Moniteur Belge 17 Juin 2014. Available from: <https://www.riziv.fgov.be/webprd/docleg/sp/268738-379?1&tmpl=kdoc&OIDN=500300&-CLAN=FR>
43. Arrêté royal du 2 juin 1998 déterminant l'intervention de l'assurance soins de santé obligatoire pour le matériel d'incontinence visé à l'article 34, 14° de la loi relative à l'assurance obligatoire soins de santé et indemnités, coordonnée le 14 juillet 1994, Moniteur Belge 13 Janvier 2021. Available from: <https://www.riziv.fgov.be/webprd/docleg/sp/268491-300?1&tmpl=kdoc&OIDN=500298&-DTRF=07/12/2021&-VIEW=1&-EXPA=24296>
44. Arrêté royal du 2 juin 1998 portant exécution de l'article 37, § 16bis, de la loi relative à l'assurance obligatoire soins de santé et indemnités, coordonnée le 14 juillet 1994, Moniteur Belge 13 Janvier 2021. Available from: <https://www.riziv.fgov.be/webprd/docleg/sp/?1&tmpl=kdoc&OIDN=500298&-VIEW=1&ulang=fr>
45. Arrêté royal du 3 juin 2007 portant exécution de l'article 37, § 16bis, alinéa 1er, 3°, et alinéa 4, de la loi relative à l'assurance obligatoire soins de santé et indemnités, coordonnée le 14 juillet 1994n en ce qui concerne les analgésiques, Moniteur Belge 20 Avril 2017. Available from: <https://www.riziv.fgov.be/webprd/docleg/sp/47084-893?1&tmpl=kdoc&OIDN=500477&-CLAN=FR>
46. RIZIV - INAMI. Remboursement de certains antidouleurs pour les patients souffrant de douleurs chroniques : autorisation annuelle [Web page]. Brussels: National Institute For Health and Disability Insurance;2021. Available from: <https://www.inami.fgov.be/fr/themes/cout-reboursement/par-mutualite/medicament-produits-sante/remboursement/Pages/intervention-prix-antidouleurs.aspx>
47. Arrêté royal du 6 juillet 2007 modifiant les annexes I et II de l'arrêté royal du 12 octobre 2004 fixant les conditions dans lesquelles l'assurance obligatoire soins de santé et indemnités intervient dans le coût des préparations magistrales et des produits assimilés, Moniteur Belge 19 Juillet 2007. Available from: http://www.ejustice.just.fgov.be/mopdf/2007/07/19_1.pdf#page=14
48. Arrêté royal du 3 juin 2007 portant exécution de l'article 37, § 16bis, alinéa 1er, 3°, et alinéa 4, de la loi relative à l'assurance obligatoire soins de santé et indemnités, coordonnée le 14 juillet 1994n en ce qui concerne les patients atteints du syndrome de Sjögren, Moniteur Belge 25 Juin 2007. Available from:

- <https://www.riziv.fgov.be/webprd/docleg/cgi-bin/cgint.exe?1&tmpl=kdoc&OIDN=500476&-VIEW=1&-EXPA=30966&ulang=fr>
49. Arrêté royal du 14 juin 2007 modifiant l'arrêté royal du 23 mars 1982 portant fixation de l'intervention personnelle des bénéficiaires ou de l'intervention de l'assurance soins de santé dans les honoraires de certaines prestations, Moniteur Belge 29 Juin 2007. Available from: https://etaamb.openjustice.be/fr/arrete-royal-du-14-juin-2007_n2007023093.html
50. Arrêté royal du 28 avril 2011 fixant l'intervention de l'assurance obligatoire soins de santé et indemnités dans les frais de voyage, des patients de moins de 18 ans, suivis dans un centre de rééducation fonctionnelle avec lequel le Comité de l'assurance soins de santé a conclu une convention de rééducation fonctionnelle type, Moniteur Belge 15 Juin 2016. Available from: <https://www.inami.fgov.be/webprd/docleg/sp/272546-279?1&tmpl=kdoc&OIDN=500688&-DTRF=19/08/2021&-VIEW=1&-EXPA=43904>
51. Arrêté royal du 15 décembre 2013 portant exécution de l'article 37vicies/1 de la loi relative à l'assurance obligatoire soins de santé et indemnités, coordonnée le 14 juillet 1994, Moniteur Belge 23 Décembre 2013. Available from: <https://www.riziv.fgov.be/webprd/docleg/sp/?1&tmpl=kdoc&OIDN=500787&-VIEW=1&ulang=fr>
52. Arrêté royal du 23 mars 2019 portant exécution de l'article 37, § 16bis, alinéa 1er, 3^e, et alinéa 4, de la loi relative à l'assurance obligatoire soins de santé et indemnités, coordonnée le 14 juillet 1994, en ce qui concerne les pansements actifs, Moniteur Belge 15 Avril 2019. Available from: http://www.ejustice.just.fgov.be/cgi_loi/change_lg.pl?language=fr&a=F&cn=2019032315&table_name=loi
53. Onkelinx L. Priorité aux malades chroniques ! Programme pour l'amélioration de la qualité de vie des personnes atteintes d'affections chroniques 2009-2010. Bruxelles: Cabinet de la Vice-Première Ministre et Ministre des Affaires sociales et de la Santé publique; 2008. Available from: https://www.belgiqueacouphenes.be/contenu_site/13_actualites/2008/ministre/ministre_2.pdf
54. Arrêté royal du 7 novembre 2021 dérogeant aux dispositions de l'arrêté royal du 15 décembre 2013 portant exécution de l'article 37vicies/1 de la loi relative à l'assurance obligatoire soins de santé et indemnités, coordonnée le 14 juillet 1994, en ce qui concerne l'octroi du statut de personne atteinte d'une affection chronique en 2021 et 2022 suite à la pandémie COVID-19, Moniteur Belge 22 novembre 2021. Available from: <https://www.absym-bvas.be/images/dossier/AR%202021%2011%2007%20Affection%20chronique.pdf>
55. RIZIV - INAMI. Intervention forfaitaire pour malades chroniques [Web page]. Brussels: National Institute For Health and Disability Insurance;2021. Available from: <https://www.riziv.fgov.be/fr/themes/cout-remboursement/maladies/chroniques/Pages/intervention-forfaitaire-maladie-chronique.aspx>
56. RIZIV - INAMI. Pour quelles pathologies lourdes votre patient peut-il bénéficier d'un remboursement plus élevé de sa kinésithérapie ? [Web page].Brussels: National Institute For Health and Disability Insurance;2021. Available from: https://www.inami.fgov.be/fr/professionnels/sante/kinesitherapeute_s/Pages/pathologies-lourdes-liste-payer-moins-cher.aspx
57. RIZIV - INAMI. Le maximum à facturer (MàF) limite vos dépenses de soins de santé [Web page].Brussels: National Institute For Health and Disability Insurance;2021. Available from: [https://www.inami.fgov.be/fr/themes/cout-remboursement/facilite-financiere/Pages/maximum-facturer-\(maf\)-limite-depenses-soins-sante.aspx](https://www.inami.fgov.be/fr/themes/cout-remboursement/facilite-financiere/Pages/maximum-facturer-(maf)-limite-depenses-soins-sante.aspx)



58. RIZIV - INAMI. Statuut persoon chronische aandoening toegang zorgen [Web page].Brussel: Rijksinstituut voor ziekte- en invaliditeitsverzekering;2021 [cited December 2021]. Available from: <https://www.riziv.fgov.be/nl/themas/kostterugbetaling/ziekten/chronische-ziekten/Paginas/statuut-persoon-chronische-aandoening-toegang-zorgen.aspx>
59. RIZIV - INAMI. En 2022, le budget de l'assurance soins de santé s'élèvera à 36 milliards d'euros [Web page].Brussels: National Institute For Health and Disability Insurance;2021. Available from: <https://www.riziv.fgov.be/fr/nouvelles/Pages/budget-assurance-soins-sante-2022.aspx>
60. Observatoire des maladies chroniques. Evaluation du statut de personne atteinte d'une affection chronique. Bruxelles: Institut national d'assurance maladie-invalidité; 2017.
61. IMA-AIM. Maladies chroniques chez les personnes avec le statut affection chronique : leçons d'un couplage entre les données d'Intego et l'Agence Intermutualiste. Bruxelles: InterMutualistisch Agentschap - Agence InterMutualiste; 2019.
62. OECD. Patient-Reported Indicator Surveys (PaRIS) [Web page].Paris, France;2021 [cited 8 December 2021]. Available from: <https://www.oecd.org/health/paris/>
63. Perić N, Hofmarcher MM, Simon J. Headline indicators for monitoring the performance of health systems: findings from the european Health Systems_Indicator (euHS_I) survey. Archives of Public Health. 2018;76(1):1-17.
64. Röttger J, Spranger A, H. E, Achstetter K, Busse R. Machbarkeitsstudie zur Messung der Leistungsfähigkeit ("Health System Performance Assessment") des deutschen Gesundheitssystems. Berlin: Fachgebiet Management im Gesundheitswesen & Gesundheitsökonomisches Zentrum Berlin Technische Universität Berlin; 2019. Available from: https://www.bundesgesundheitsministerium.de/fileadmin/Dateien/5_Publikationen/Gesundheit/Berichte/HSPA-Abschlussbericht.pdf
65. Subdirectorate general for Health Information and Evaluation. Key indicators - national health system [Web page].Spain;2016 [cited 8 December 2021]. Available from: <http://inclasns.mssi.es/?lang=EN>
66. Ministerio de sanidad - consumo y bienestar social. ICMBD: indicadores y ejes de análisis del CMD [Web page].Spain;2016 [updated 2016; cited 8 December 2021]. Available from: <https://icmbd.sanidad.gob.es/icmbd/login-success.do>
67. OCDE and European Union. Health at a Glance: Europe 2020. State of Health in the EU Cycle. Paris: 2020.
68. Canadian Institute for Health Information. Health Indicators e-Publication [Web page].Canada;2020 [cited 8 December 2021]. Available from: <https://www.cihi.ca/en/health-indicators-e-publication>
69. Measuring System Performance - Health Quality Ontario [Web page].Ontario (Canada) [cited 8 December 2021]. Available from: <https://www.hqontario.ca/system-performance>
70. Nationwide Service Framework Library. Performance Measures for 2018/19 [Web page].New Zealand: New Zealand Government and Ministry of Health [cited 8 December 2021]. Available from: <https://nsfl.health.govt.nz/accountability/performance-and-monitoring/performance-measures/performance-measures-201819>
71. Rosenberg S, Hickie I. No gold medals: assessing Australia's international mental health performance. Australasian Psychiatry. 2019;27(1):36-40.
72. Chiu M, Guttmann A, Kurdyak P. Mental Health and Addictions System Performance in Ontario: An Updated Scorecard, 2009-2017. Healthcare Quarterly (Toronto, Ont.). 2020;23(3):7-11.
73. Kogan MD, Dykton C, Hirai AH, Strickland BB, Bethell CD, Naqvi I, et al. A new performance measurement system for maternal and child health in the United States. Maternal and child health journal. 2015;19(5):945-57.

74. Carinci F, Van Gool K, Mainz J, Veillard J, Pichora E, Januel J, et al. Towards actionable international comparisons of health system performance: expert revision of the OECD framework and quality indicators. International Journal for Quality in Health Care. 2015;27(2):137-46.
75. IMA - AIM. Structure [Web page]. Brussels, Belgium;2022 [cited 6 January 2022]. Available from: <https://ima-aim.be/Structure>
76. Sciensano. HISLink - Linkage of Health Interview Survey Data with Health Insurance Data [Web page]. Brussels, Belgium;2017 [cited 6 January 2022]. Available from: <https://www.sciensano.be/en/projects/linkage-health-interview-survey-data-health-insurance-data>
77. Decoster A, Ochmann R, Spiritus K. Integrating VAT into EUROMOD. Leuven: KU Leuven; 2014. Flemosi Discussion Paper DP32
78. Christiaens W, Van de Walle E, Devresse S, Van Halewyck D, Dubois C, Benahmed N, et al. Organisation of aftercare for patients with severe burn injuries Health Services Research (HSR). Brussels: Belgian Health Care Knowledge Centre (KCE); 2013. KCE Reports 209 (D/2013/10.273/72) Available from: https://kce.fgov.be/sites/default/files/page_documents/KCE_209_Burn_injuries.pdf
79. Statbel. A propos de Statbel [Web page]. Brussels, Belgium;2022 [cited 6 January 2022]. Available from: <https://statbel.fgov.be/fr/propos-de-statbel>
80. FARES - Fonds des affections respiratoires asbl. Rapports épidémiologiques [Web page]. Bruxelles: FARES asbl;2021 [cited 21-10-2021]. Available from: <https://www.fares.be/tuberculose/publications/rapports-epidemiologiques>
81. Vlaamse vereniging voor respiratoire gezondheidzorg en tuberculosebestrijding VZW – VRGT. Informatiebank [Web page].Leuven: VRGT vzw;2021 [cited 21-10-2021]. Available from: <https://tuberculose.vrgt.be/informatiebank?term=&cid%5B23%5D=23>
82. OECD. OECD Health Statistics 2021 [Web page].Paris, France: OECD;2021 [cited 6 January 2021]. Available from: <https://www.oecd.org/health/health-data.htm>
83. OECD. Health at a glance 2021 - OECD indicators. Paris, France: OECD; 2021. 6 January 2022 Available from: <https://www.oecd.org/health/health-at-a-glance/>
84. European Centre for Disease Prevention and Control - ECDC. Tuberculosis surveillance and monitoring in Europe 2021 : 2019 data. Copenhagen: WHO Regional Office for Europe; 2021. Available from: <https://www.ecdc.europa.eu/sites/default/files/documents/tuberculosis-surveillance-monitoring-Europe-2021.pdf>
85. EUROSTAT. Methodological guidelines and description of EU-SILC target variables. 2019. Available from: https://circabc.europa.eu/sd/a/b862932f-2209-450f-a76d-9cf842936b4/DOCSILC065%20operation%202019_V9.pdf
86. Sciensano. Health Interview Survey 2018, Belgium [Web page].2018 [cited December 20]. Available from: <https://his.wivisp.be/SitePages/Home.aspx>
87. OECD. Health Inequalities [Web page].2018 [cited December 20]. Available from: <https://www.oecd.org/health/inequalities-in-health.htm>
88. INAMI R-. Het statuut van persoon met een chronische aandoening verbetert de toegang tot de zorgen [Web page].2019 [cited December 20]. Available from: <https://www.riziv.fgov.be/nl/themas/kostterugbetaling/ziekten/chronische-ziekten/Paginas/statuut-persoon-chronische-aandoening-toegang-zorgen.aspx>



89. Healthy Belgium. Metadata – Non-communicable diseases: overview [Web page].2019 [cited December 20]. Available from: https://www.healthybelgium.be/metadata/hsr/03_Metadata_Overview_20190725.pdf
90. Bouckaert N, Gerkens S, Devriese S, Cleemput I. An EQ-5D-5L value set for Belgium – How to value health-related quality of life? Health Services Research (HSR). Brussel: Belgian Health Care Knowledge Centre (KCE); 2021 07/2021. KCE Reports 342 Available from: https://kce.fgov.be/sites/default/files/atoms/files/KCE_342_EQ-5D-5L_value_set_for_Belgium_Report_1.pdf
91. Institute of Medicine. Medicare: A Strategy for Quality Assurance. Washington D.C.: National Academy Press; 1990.
92. Arah OA, Westert GP, Hurst J, Klazinga NS. A conceptual framework for the OECD Health Care Quality Indicators Project. Int. J. Qual. Health Care. 2006;18(SUPPL. 1):5-13.
93. OECD. Health at a Glance: Europe 2014. OECD Publishing; 2014.
94. Koo HK, Min J, Kim HW, Lee J, Kim JS, Park JS, et al. Prediction of treatment failure and compliance in patients with tuberculosis. BMC Infect Dis. 2020;20(1):622.
95. FARES - Fonds des affections respiratoires asbl. Registre Belge de la Tuberculose 2019. Bruxelles: FARES asbl; 2021 Mars 2021. Available from: https://www.fares.be/tuberculose/journee-mondiale-de-la-tuberculose/fares-registretbc2019_vd_version-web.pdf
96. Agentschap Zorg en Gezondheid, VRGT. Tuberculose in Vlaanderen in 2019 : analyse van de in 2019 gemelde tuberculosepatiënten. Website Agentschap Zorg en Gezondheid. Available from: <https://www.zorg-en-gezondheid.be/sites/default/files/atoms/files/2019%20Tuberculoseregister%20Vlaanderen.pdf>
97. World Health Organization. An Expanded Framework for Effective Tuberculosis Control. Geneva: WHO; 2002.
- WHO/CDS/TB/2002.297 Available from: <https://apps.who.int/iris/handle/10665/67232?locale-attribute=en&>
98. Vlaams vereniging voor Respiratoire Gezondheidzorg en Tuberculosebestrijding vzw. Tuberculoseregister België 2019. Brussel. Available from: https://tuberculose.vrgt.be/sites/default/files/Tuberculoseregister%20Belgi%C3%A9%202019_0.pdf
99. American Diabetes Association. Standards of Medical Care in Diabetes-2018 Abridged for Primary Care Providers. Clin Diabetes. 2018;36(1):14-37.
100. KCE. Study 2021-54 (HSR) Integrated care [Web page].Brussels: Belgian Health Care Knowledge Centre;2022. Available from: <https://kce.fgov.be/en/study-2021-54-hsr-integrated-care>
101. van der Heide I, Snoeijs SP, Boerma WG, Schellevis FG, Rijken M. How to strengthen patient-centredness in caring for people with multimorbidity in Europe? : European Observatory on Health Systems and Policies; 2017.
102. Corrigan JM. Crossing the quality chasm. 2005.
103. Van der Heyden J, Tafforeau J, Gisle I, Drieskens S, Demarest S, Charafeddine R. Enquête de santé 2013. Rapport 3: Utilisation des services de santé et des services sociaux. Résumé des principaux résultats. Brussels: Institut de santé publique; 2015.
104. Allin S, Hernández-Quevedo C, Masseria C. Measuring equity of access to health care. In: Smith Pc, Mossialos E, Papanicolas I, Leatherman S, editors. Performance Measurement for Health System Improvement: Experiences, Challenges and Prospects: Cambridge University Press; 2009.
105. Hernández-Quevedo C, Papanicolas I. Conceptualizing and comparing equity across nations. In: Papanicolas I, Smith PC, editors. Health System Performance Comparison: an Agenda for Policy, Information and Research. Buckingham, UK: Open



- University Press; 2013. Available from: <http://eprints.lse.ac.uk/id/eprint/44095>
106. Kutzin J, Witter S, Jowett M, Bayarsaikhan D. Developing a national health financing strategy: a reference guide. Geneva: World Health Organization; 2017. Health Financing Guidance Available from: <https://apps.who.int/iris/bitstream/handle/10665/254757/9789241512107-eng.pdf?sequence=1&ua=1>
107. Evans DB, Elovinio R, Humphreys G. The world health report: health systems financing: the path to universal coverage. Geneva: World Health Organization 2010. Available from: https://apps.who.int/iris/bitstream/handle/10665/44371/9789241564021_eng.pdf?sequence=1
108. Sustainable health financing, universal coverage and social health insurance 2005. Available from: https://apps.who.int/iris/bitstream/handle/10665/20383/WHA58_33-en.pdf?sequence=1
109. De Wolf F, Ackaert K, Di Zinno T, Dolphens M, Lona M. Ziekenhuiskosten ten laste van de patiënt: een stand van zaken. Brussels: IMA-AIM; 2020. Available from: https://ima-aim.be/IMG/pdf/ima-ziekenhuisbarometer_globale_patienten_factuur_2018_200616-nl.pdf
110. Capéau B, Cherchye L, Decancq K, Decoster A, De Rock B, Maniquet F, et al. Wat heet dan gelukkig zijn? Geluk, welvaart en welzijn van de Belgen. Antwerpen – Apeldoorn: Garant; 2018.
111. WHO. Noncommunicable diseases [Web page]. WHO;2021 [cited 9 February 2022]. Available from: <https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases>
112. Sciensano. Sciensano & Lifestyle risk factors [Web page]. Brussels;2021 [cited 9 February 2022]. Available from: <https://www.sciensano.be/fr/sujets-sante/facteurs-de-risque-lies-au-mode-de-vie/role>
113. Programme EAC, Actions ECRP, Health ECD-Gf, Protection C. European guidelines for quality assurance in mammography screening. Office for Official Publications of the European Communities; 2006.