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KCE REPORT 259S

PERFORMANCE OF THE BELGIAN HEALTH SYSTEM - REPORT 2015

SUPPLEMENT: TECHNICAL FICHES FOR INDICATORS

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HEALTH SERVICES RESEARCH

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FRANCE VRIJENS, FRANÇOISE RENARD, CÉCILE CAMBERLIN, ANJA DESOMER, CÉCILE DUBOIS, PASCALE JONCKHEER, KOEN VAN DEN HEEDE, CARINE VAN DE VOORDE, DENISE WALCKIERS, CHRISTIAN LÉONARD, PASCAL MEEUS

2015 www.kce.fgov.be

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External Validators:	Hans Kluge (WHO), Gaetan Lafortune (OECD), Ellen Nolte (European Observatory of Health Systems and Policies)
Acknowledgements:	Marc De Falleur (INAMI – RIZIV), Chantal Houtman (IMA – IAM), Vikki Schillemans (Kankerregister – Registre du Cancer), Terryn Nathalie (SPF Santé Publique – FOD Volksgezondheid), Sarah Thomson (WHO)
Other reported interests:	None declared
Infographic	Julien Ligot (Fedopress)
Layout :	Ine Verhulst, Joyce Grijseels
Disclaimer :	• **The external experts were consulted about a (preliminary) version of the scientific report. Their comments were discussed during meetings. They did not co-author the scientific report and did not necessarily agree with its content.** • **Subsequently, a (final) version was submitted to the validators. The validation of the report results from a consensus or a voting process between the validators. The validators did not co-author the scientific report and did not necessarily all three agree with its content.** • **Finally, this report has been approved by common assent by the Executive Board.** • **Only the KCE is responsible for errors or omissions that could persist. The policy recommendations are also under the full responsibility of the KCE**
Publication date	12 januari 2016
Domain:	Health Services Research (HSR)
MeSH :	Delivery of Health Care; Health Services Accessibility; Quality of Health Care; Efficiency; Health Promotion; Healthcare Disparities; Benchmarking, Belgium
NLM Classification :	W84
Language :	English
Format :	Adobe® PDF™ (A4)

Legal depot : D/2016/10.273/04

How to refer to this document? Vrijens F, Renard F, Camberlin C, Desomer A, Dubois C, Jonckheer P, Van den Heede K, Van de Voorde C, Walckiers D, Léonard C, Meeus P. Performance of the Belgian Health System - Report 2015 – Supplement. Health Services Research (HSR) Brussels: Belgian Health Care Knowledge Centre (KCE). 2016. KCE Reports 259S. D/2016/10.273/04.

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

LIST OF ABBREVIATIONS

ABBREVIATION	DEFINITION
ADL	Activities of daily living
AMI	Acute myocardial infarction
BAPCOC	Belgian Antibiotic Policy Coordination Committee
BMI	Body Mass Index
CII	Concentration Index of Inequality
CT	Computed Tomography
DDD	Defined Daily Dose
DTP	Diphteria - Tetanus - Pertussis
EC	European Commission
ECDC	European Centre for Disease Control and Prevention
ECHI	European Community Health Indicators
ECHIM	European Community Health Indicators Monitoring
ECL	European Cancer League
EFPIA	European Federation of Pharmaceutical Industries and Associations
EL	Educational Level
EPS	Permanent Sample
ER	Emergency Room
EU	European Union
EU – SILC	European Union Statistics on Income and Living Conditions
FOBT	Faecal Occult Blood Test
FOD – SPF	Federal Public Service
FRKVA – CFQAI	Federal council for quality of nursing activities
FTE	Full Time Equivalent
GDP	Gross Domestic Product
GMR	Global Medical Record
GP	General Practitioner
HAI	Hospital-acquired infections
HBSC	Health Behaviour in School-aged Children

HCQI	Health Care Quality Indicators
HFA-DB	Health for All Database
HIS	Health Interview Survey
HIV	Human Immunodeficiency Virus
HLY	Healthy Life Years
HSPA	Health System Performance Assessment
IADL	Instrumental activities of daily living
IMA – AIM	Intermutualistic Agency
IMC	Inter-ministerial conference
ISCED	International Standard Classification of Education
KCE	Belgian Health Care Knowledge Centre
MDT	Multidisciplinary team
MPG – RPM	Hospital psychiatric data
MRSA	Methicillin-resistant *Staphylococcus Aureus*
MZG – RHM	Hospital discharge data
NSIH	National Surveillance of Infections in Hospitals
NSP	National Surveillance Programme
OECD	Organisation for Economic Co-operation and Development
OOP	Out-of-pocket
PAF	Population Attributable Fraction
PPP	Purchasing Power Parity
PROM	Patient reported outcome measure
PSI	Patient Safety Indicators
PYLL	Potential Years of Life Lost
QALY	Quality-Adjusted Life Year
RAI	Resident Assessment Instrument
RIZIV – INAMI	National Institute for Health and Disability Insurance
ROB – MRPA	Home for the elderly
RR	Relative Risk

RVT – MRS	Nursing home
SE	Socioeconomic
SES	Socioeconomic status
SHA	System of Health Accounts
SHARE	Survey of Health, Ageing and Retirement in Europe
SP	Specialist Physician
THE	Total Health Expenditures
UPC	Usual Provider Continuity
US	United States
VAZG	Agency for Care and Health of the Flemish Community
VDAB	Work and Employment Office (Flanders Region)
WHO	World Health Organization
WIV – ISP	Scientific Institute of Public Health

SUPPLEMENT PERFORMANCE REPORT: TECHNICAL FICHES

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1. PREVENTIVE CARE

1.1. Vaccination against selected childhood infectious diseases (P-1, P-2, P-3)

1.1.1. Documentation sheet

Description	Percentage of **infants** who have been fully vaccinated against important infectious childhood diseases. The following coverage will be monitored: Poliomyelitis, Diphtheria, Tetanus, Pertussis, and Hepatitis B. Percentage of **infants and adolescents** who have been fully vaccinated against Measles.
Calculation	***Diphtheria-tetanus-pertussis (DTP), poliomyelitis, hepatitis B*** **For national policies purposes:** Percentage of infants of 18-24 months who have been fully vaccinated for this age according to national vaccination schedules, against pertussis, diphtheria, tetanus, poliomyelitis, hepatitis B (4 doses) **For international comparisons purpose**: The international definition is “Percentage of infants reaching their 1st birthday in the given calendar year who have been fully vaccinated for this age according to national vaccination schemes, against pertussis, diphtheria, tetanus, poliomyelitis, hepatitis B”. In Belgium, this is operationalized as “Percentage of infants of 18-24 months having received 3 doses for those vaccines”. ***Measles*** Percentage of infants reaching their 2nd birthday in the given calendar year who have been fully vaccinated against measles (first dose). Percentage of adolescents who have received the second dose of vaccination against measles.
Rationale	Immunisation is one of the most powerful and cost-effective forms of primary prevention. It is a classical prevention strategy which should be maintained to ensure collective protection. Moreover, Belgium has signed the international commitment to eliminate measles, which implies a vaccination coverage of 95% for the first and the second dose of measles. The choice of the specific vaccination in our indicator set is a sub-selection of the vaccination indicators from ECHIM and OECD.
Primary data source	Regional vaccination coverage surveys (organized by the Communities) [1-3]
Indicator source	Vaccination surveys reports for regional indicators; IPH (Service of Epidemiology of Infectious Diseases) for a Belgian pooled value
Periodicity	Vaccination coverage surveys occur every 3-4 years (5-6 years in Brussels)
Technical definitions	For diphtheria, tetanus, pertussis, polio, HepB, the complete schedules in Belgium comprise 4 doses. However, the recommended international indicators measure the coverage at the age of 1 year, which is the coverage of the 3rd dose (completed-for-age

	coverage). The coverage of the 4th dose (full coverage) is always a bit lower than the coverage of the international figures (3d dose coverage). So the rates must be carefully interpreted in function of the number of doses. For measles, the vaccination objective for elimination is to reach a 95% coverage of the 1st (12 months) and 2nd dose (which is given around 11-12 years in Belgium). However, coverage for the 2nd dose is currently only available for the regions but not available for the whole country. In Belgium, vaccination is a regional health competence and the vaccination rates are measured at regional level. A "national" rate is computed afterwards as a weighted average of the 3 regional rates, assuming that the rates remain constant during the inter-survey period.
Targets and critical immunization rates	The critical immunization rate (minimal level to reach herd immunity ensuring a collective protection) varies according to authors.[1] Based on those ranges, WHO has recommended minimal targets to reach: 90% for DTP and polio, 95 % for measles. The Superior Health Council[4] recommends a 95% coverage for poliomyelitis. For the diseases with a 4 dose schedule, the 4th dose coverage is to be compared to the targets and to the critical threshold.

Critical immunization threshold and WHO immunization target rates:

Disease	Critical threshold	WHO target	Belgian Superior Health Council
Poliomyelitis	80-93%	90%	95%
Diphtheria	80-85 %	90%	
Pertussis	92-95%	90%	
Measles	92-95%	95%	
Hepatitis B	90% [3]	/	

International comparability	Availability: yes Standardisation: no, because the immunization schemes are not harmonized in the EU. In order to make meaningful comparison, it may be recommended to calculate the vaccination coverage according to the national schemes; unfortunately this is not done for the data in WHO-HFA.[5]
Dimensions	Accessibility
Related indicators	Child mortality, cancer screening coverage

1.1.3. Results

Table 1 summarizes the immunization rates for polio, DTP, hepatitis B and measles for the entire Belgium as computed at the Institute of Public Health. Those national rates are computed as a weighted average from the regional rates (shown in Table 2).

For polio, DTP and hepatitis B, we present both the 3rd and 4th dose immunization rates: indeed, while the full vaccination scheme in Belgium includes 4 doses of the vaccine against those diseases, the published international comparisons (OECD and HFA) focus on the immunization rate at 1 year, meaning that they compare the 3rd dose rate. Both indicators do not have the same meaning: the 4th dose rate is useful to evaluate the vaccination policy at national/regional level. The 3rd dose coverage is only used for international comparison purpose and gives a too optimistic picture that cannot be used to pilot the vaccination strategies at local level.

Table 1 – Immunization rate by disease (2000-2012)

Year of calculation	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Polio 3	95.7%	95.7%	95.6%	96.4%	96.4%	97.4%	98.7%	98.7%	98.8%	98.3%	98.4%	98.4%	99.0%
Polio 4							93.3%	93.3%	94.5%	93.0%	93.0%	93.0%	92.0%
DTP 3	95.0%	95.0%	95.0%	95.5%	95.5%	97.3%	98.5%	98.5%	98.7%	98.4%	98.4%	98.4%	98.9%
DTP 4	86.9%	86.9%	86.8%	89.5%	89.5%	91.4%	93.2%	93.1%	94.4%	93.0%	93.0%	93.0%	91.9%
HepB 3	59.5%	59.5%	59.3%	64.2%	64.1%	76.8%	94.4%	94.4%	97.5%	97.5%	97.5%	97.5%	97.8%
HepB 4										92.7%	92.7%	92.7%	91.3%
MMR 1 / MCV 1	82.1%	82.1%	82.1%	82.1%	82.1%	87.7%	91.9%	92.0%	93.4%	94.5%	94.5%	94.5%	95.6%
MMR 2 *							77.6%	77.6%	81.4%	83.1%	83.1%	83.1%	85.0%

indicator for international comparisons; § indicator of completed vaccination; ** 1st dose coverage;* methodology differs between the regions*
Source=official national estimates (Institute of Public Health), computed from the weighted average of the regional survey results

Table 2 – Immunization rates against selected diseases by region compared to previous regional vaccination surveys (2012)

	Flanders		**Wallonia**		**Brussels**	
	2008	**2012**	**2009**	**2012**	**2006**	**2012**
polio 4	95.3%	93.2%	90.4%	90.4%	90.0%	91.1%
DTP4	95.2%	93.0%	90.6%	90.4%	90.0%	91.1%
Hep 4	95.1%	93.0%	90.4%	89.2%	88.4%	89.6%
MMR 1	96.6%	96.6%	92.4%	94.4%	91.1%	94.1%
	2008	**2012**	**2006**	**2009**	**2006**	**2009**
MMR2	90.6%	92.5%	70.5	75.5	70.5	75.5

Note: in green= achievement of WHO targets. Sources: [1 2 3 6,7 8 9]

Polio and DTP vaccination:

The full vaccination coverage (4 doses) was 92% in 2012, which is a mitigated result: while the WHO target (90%) was reached for the whole Belgium and the 3 regions, it didn't reach the 92% critical threshold for pertussis in Wallonia and Brussels. Moreover, for polio the 95% coverage recommended by the Belgian CSS is not reached.

There is a slight decrease of the 4th dose coverage since 2008. The rate is higher in Flanders than in the other regions, but decreased by 2% since 2008.

A 98% coverage is achieved since 2006 for the 3rd dose coverage (international comparison indicator).

Measles

Measles vaccination: the 1st dose vaccination reached 95% for the first time in 2012 at Belgian level, and the regional disparities have diminished (Table 2): the immunization rate against measles remained good in Flanders (96.6%), and increased in Wallonia and Brussels in 2012.

The coverage of the second dose was 92.5% in Flanders in 2012,[3] what is slightly too low ; in Wallonia and Brussels the 2009 coverage was (at least) 75.6% [9]; the authors of the report estimate that this rate should be seen as a minimal coverage, because data collection methodology (school surveys) leads to underestimation bias.

Some small epidemic outbreaks of measles have continued to occur in the recent years, in all regions of Belgium and a large outbreak of measles occurred in 2011.[10]

VHB vaccination: Belgium has expanded the coverage in a very short period of time. Between 2000 and 2010, the coverage increased from 60% to 97 %.

Factors associated with a better coverage in Flanders were the ranking of the child (with rank-1 child better vaccinated), the origin of the mother (children from EU mother better vaccinated), the attendance to Kind and Gezin (health program for young children below school age) consultations (better coverage in children who attend K&G).[3] In Wallonia, the best predictor was the attendance to the ONE (health program for young children below school age) consultations.[1]

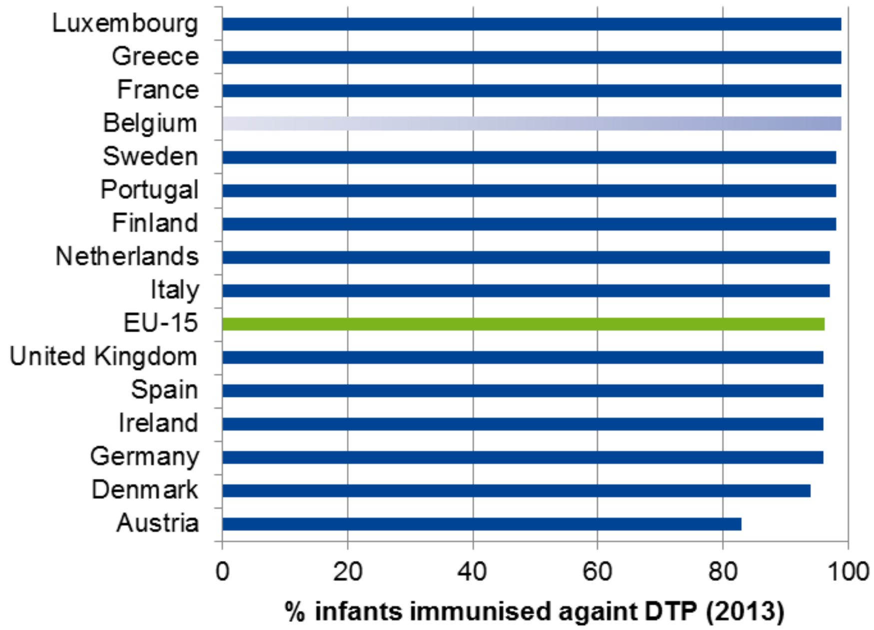
International comparisons

The following graphs are built with data from the OECD database Health statistics 2015, and compare Belgium to the EU-15 countries.

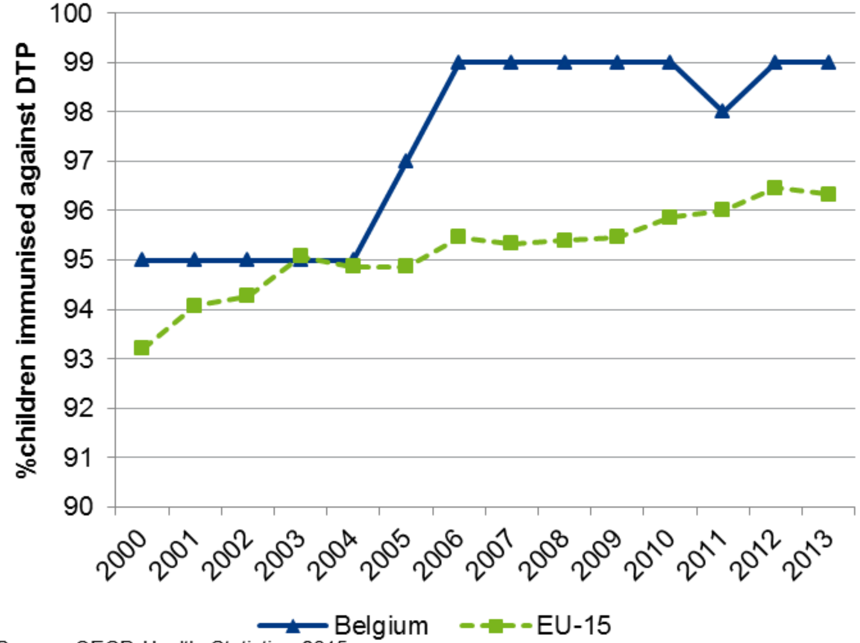
Belgium ranks very good for DTP3 coverage, mostly since 2003. For measles (1st dose), the global coverage ranks good, has much improved and reaches now the recommended level.

Belgium performs very well for the VHB vaccination coverage.

Figure 1 – Vaccination of infants against Diphtheria, Tetanus, Pertussis (DTP): international comparison (2013)

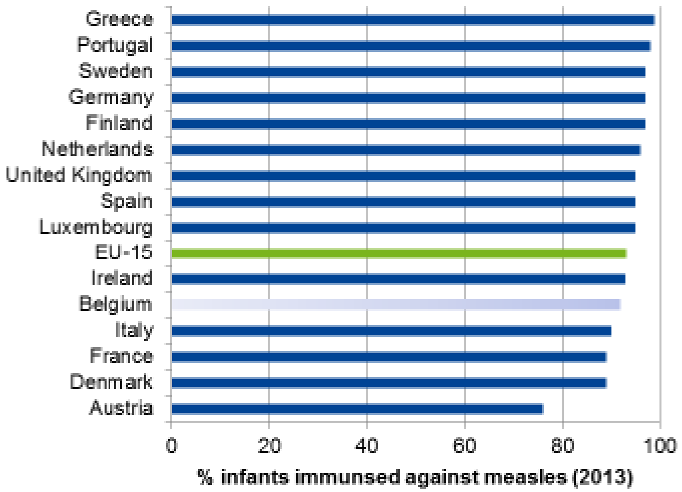


Source: OECD Health Statistics 2015

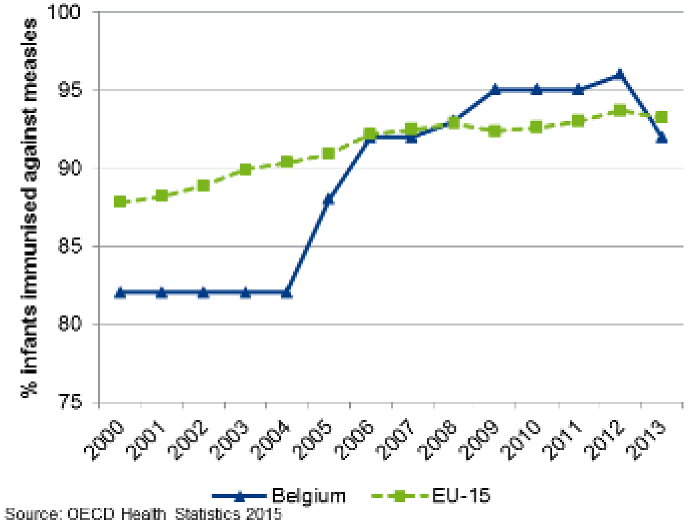


Source: OECD Health Statistics 2015

Figure 2 – Vaccination of infants against Measles, International Comparison (2013)

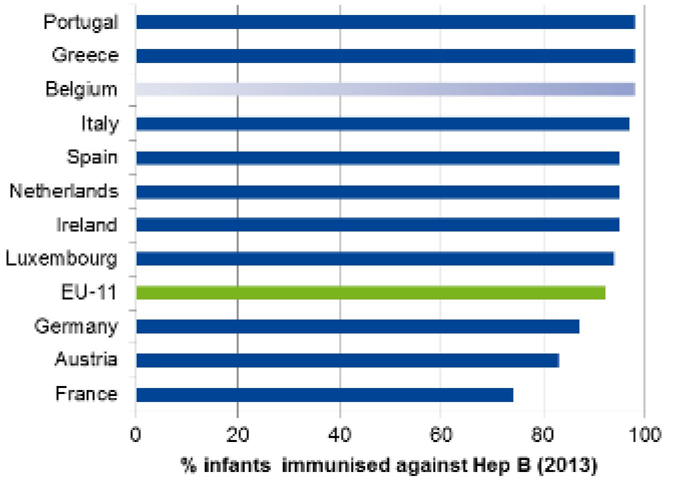


Source: OECD Health Statistics 2015

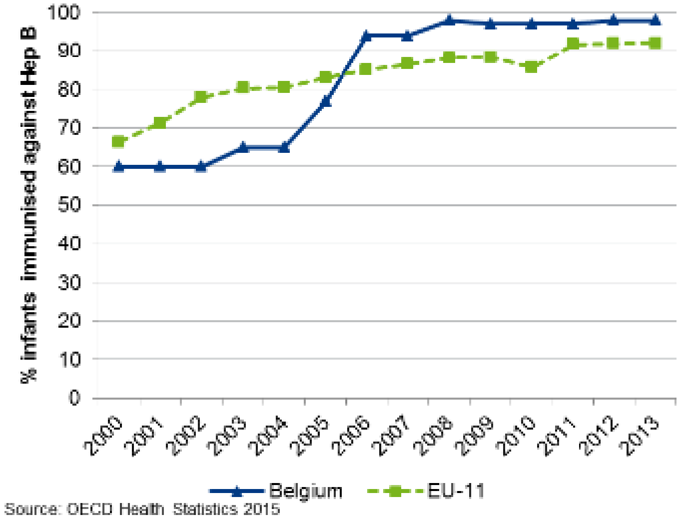


Source: OECD Health Statistics 2015

Figure 3 – Vaccination of infants against Hepatitis B: international comparison (2013)



Source: OECD Health Statistics 2015



Source: OECD Health Statistics 2015

Key points

- **Belgium performs rather good for the DTP-polio vaccination; however there are some regional disparities, and the coverage for pertussis is not optimal in Wallonia.**
- **Belgium has now reached for the first time the WHO target of 95% for the 1st dose vaccination against measles. This is a considerable improvement. However the vaccination rate for the second dose is still too low. To reach the objective of elimination, continuous and targeted efforts are still needed to reach a 95% coverage for both doses.**

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1.2. Vaccination against influenza for the elderly (P-4)

1.2.1. Documentation sheet

Description	Proportion of the population aged 65 years and over that were vaccinated against influenza
Calculation	Numerator: number of individuals aged 65 years and over who received a dose of influenza vaccine during the past calendar year.[a] Denominator: number of individuals aged 65 years and over Because results are based on sickness funds data, all calculations are based on elderly patients who are not residing in an institution (see section limitation for details).
Rationale	Influenza vaccines are considered as the most effective preventive tool to reduce disease burden and severe disease due to influenza in individuals. In Belgium, seasonal influenza vaccination is currently recommended for the prevention of influenza for all persons aged 65 years and over and for all persons living in institutions (among other groups).[1] The WHO recommends a target a 75% vaccination rate for the elderly.[2]
Primary data source	There are two sources of results for this indicator: • Results presented in this report are based on billing data (IMA data) of influenza vaccines which have been reimbursed. • Results presented in international databases (OECD, Eurostat) are based on Belgium health interview survey (HIS) (self-reported vaccination status).[3] [4]
Technical definitions	In IMA data: all vaccines belonging to the ATC 4 class J07BB (anti-influenza vaccines).
Limitation	In IMA data, only vaccines which have been reimbursed are taken into account. In Flanders, since 2010, vaccines are free of charges for elderly residing in elderly and nursing homes: vaccines are bought as a group by the Flemish community, and hence are not reimbursed by sickness funds, and do not appear in the IMA database (source: Agentschap voor Zorg and Gezondheid). Hence all calculations for this indicator exclude (from numerator and denominator) elderly residing in elderly or nursing homes, which may result in an underestimation of the true coverage rate. As a sensitivity analysis, this indicator is computed including the elderly residing in elderly or nursing homes, but for Wallonia and Brussels only. In the Health Interview survey, results are based on self-reported vaccination status.
International comparability	ECHIM, OECD and Eurostat data are based on Health interviews. International comparisons are also regularly published by the ECDC, but Belgium did not participate to last publication of the groups.[5]
Dimension	Accessibility of preventive care

[a] This definition differs from epidemiological studies, where rates are generally calculated on one influenza season, which usually overlaps two calendar years.

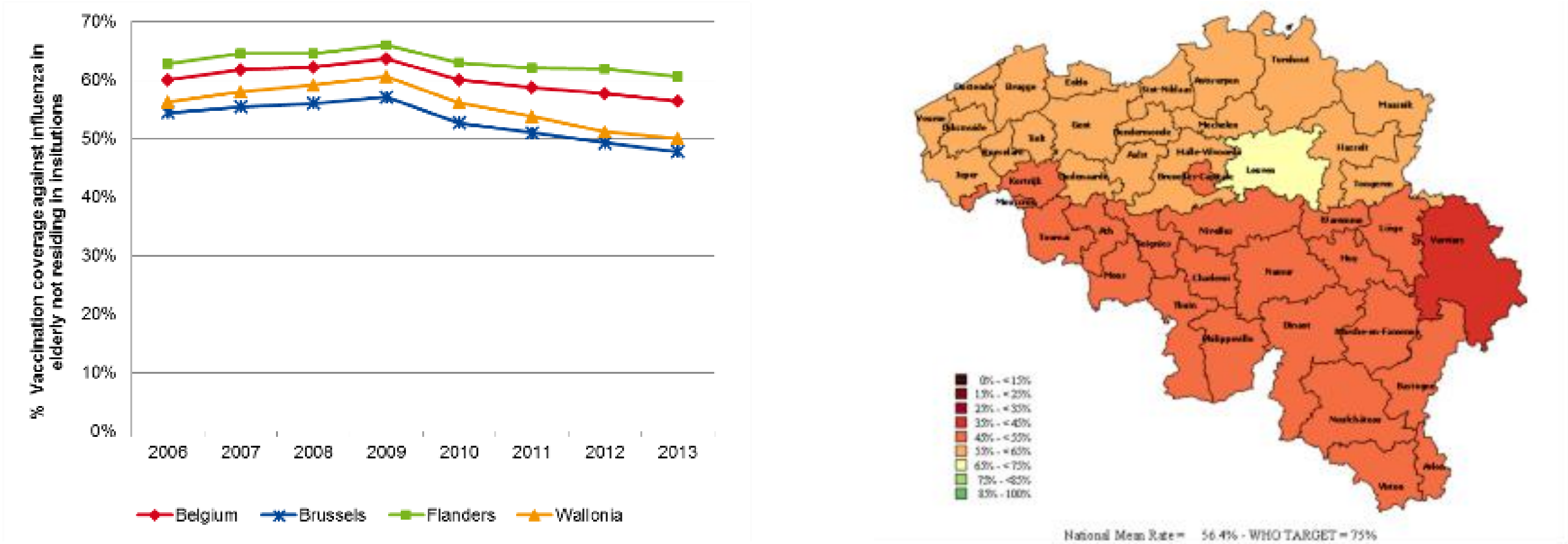
1.2.2. Results

1.2.2.1. Belgium

Based on reimbursement data, vaccinations rates against influenza for patients aged 65 years old have been stable on the 8 recent years (2006-2013): from 60% in 2006, then reaching a peak at 63.6% in 2009 (partly explained afterwards by disbelief in flu vaccine after the A/H1N1 epidemics [6] and slightly decreasing since then, to reach 56.4% in 2013 (Figure 4), with higher coverage rates in Flanders (60.6%) than in Wallonia (50.1%) and Brussels (47.8%), and moderate differences between patient districts (see Table 3 and Figure 4). All the previous results exclude elderly residing in institution (which account for 8.4% of the population of elderly patients in 2013) because in Flanders influenza vaccines for this population are bought directly by the regional health authority. A sensitivity analysis was performed including elderly residing in institutions, limiting the analysis to Wallonia and Brussels. The vaccination coverage, which then globally reaches 52.2%, is improved both in Wallonia (52.6%) and in Brussels (50.6%) due to the high rate (82.2%) measured in institutions (80.8% in Brussels and 82.6% in Wallonia). There are also large differences in coverage rates by patient age: while the rate only reaches 42.4% for the 64-69 years old, it improves to almost 70% for the 80+ (Table 3). The same data also show that there is no accessibility problem for people having preferential reimbursement.

These results are very similar to results published by IMA on influenza vaccination coverage during winters 2008 and 2009.[7]

Figure 4 – Coverage of vaccination against influenza in people aged 65 years and over, by region (2006-2013)



Source: IMA data, KCE calculation.
Note: ***People residing in institution are excluded from the analysis*** *(see section limitation in technical fiche for details).*

Table 3 – Coverage of vaccination against influenza in people aged 65 years and over, by patient characteristics (2013)

		BELGIUM CALCULATION, INSTITUTIONS EXCLUDED.			WALLONIA+BRUSSELS CALCULATION, INSTITUTIONS INCL.		
Variable	**Category**	**Numerator**	**Denominator**	**Influenza vaccination coverage**	**Numerator**	**Denominator**	**Influenza vaccination coverage**
Data 2013 by categories							
Age (years)	65-69	238 822	562 754	**42.4%**	82 187	225 867	**36.4%**
	70-74	223 683	408 178	**54.8%**	75 838	155 301	**48.8%**
	75-79	237 127	376 088	**63.1%**	82 458	143 753	**57.4%**
	80-84	195 093	286 560	**68.1%**	77 343	121 372	**63.7%**
	85-89	101 867	145 146	**70.2%**	51 502	75 209	**68.5%**
	90-94	31 715	45 359	**69.9%**	22 421	31 463	**71.3%**
	95-99	3048	4528	**67.3%**	3331	4583	**72.7%**
	>=100	365	634	**57.6%**	587	836	**70.2%**
Gender	Female	580 915	1 017 499	**57.1%**	238 719	446 088	**53.5%**
	Male	450 805	811 748	**55.5%**	156 948	312 296	**50.3%**
Entitlement to increased reimbursement	No	735 739	1 327 507	**55.4%**	272 059	533 302	**51.0%**
	Yes	295 981	501 740	**59.0%**	123 608	225 082	**54.9%**
Long term care	Home care	61 190	85 654	**71.4%**	18 531	28 739	**64.5%**
	Institutions	-	-	**-**	48 816	59 373	**82.2%**
	No long term care	970 530	1 743 593	**55.7%**	328 320	670 272	**49.0%**
Province	Antwerpen	188 069	304 908	**61.7%**	-	-	**-**
	Brabant Wallon	32 396	62 637	**51.7%**	36098	67030	**53.9%**
	Bruxelles-Capitale	65 328	136 653	**47.8%**	75663	149451	**50.6%**
	Hainaut	104 878	210 133	**49.9%**	120045	228153	**52.6%**
	Limburg	89 609	142 156	**63.0%**	-	-	**-**
	Liège	86 279	173 943	**49.6%**	98320	188943	**52.0%**
	Luxembourg	19 140	39 815	**48.1%**	21706	42880	**50.6%**
	Namur	38 830	75 830	**51.2%**	43835	81927	**53.5%**
	Oost-Vlaanderen	154 639	255 575	**60.5%**	-	-	**-**
	Vlaams Brabant	117 835	188 744	**62.4%**	-	-	**-**
	West-Vlaanderen	134 717	238 853	**56.4%**	-	-	**-**

Note: ***People residing in institution are excluded from the analysis on Belgium (on the left of the table) but included on the analysis on Wallonia and Brussels (on the right of the table)*** *(see section limitation in technical fiche for details).Source: IMA data, KCE calculation*

Table 4 – Coverage of vaccination against influenza in people aged 65 years and over, by patient characteristics (2013)

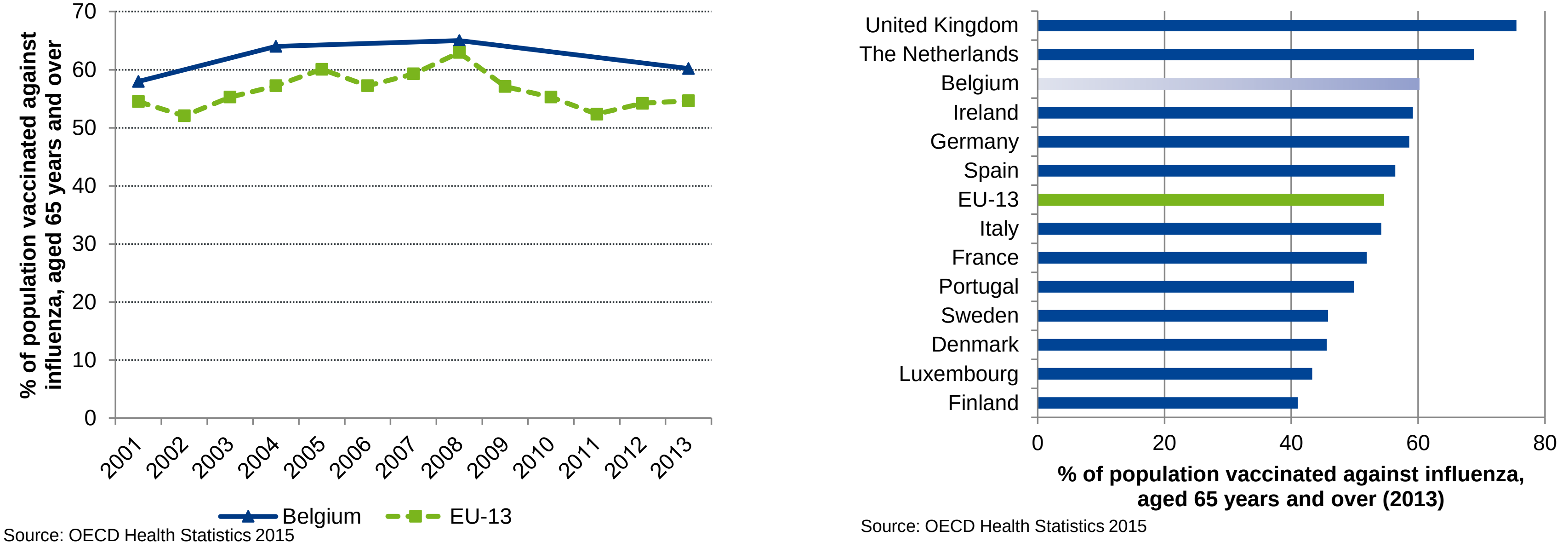
	N (denominator)	Coverage vaccination 65+
Belgium	1112	60.2%
Flanders	454	61.9%
Wallonia	455	57.0%
Brussels	203	58.7%

Source: HIS

1.2.2.2. International comparison

International comparisons are based on results from HIS survey. Based on the last results from the Health interview survey, coverage of influenza vaccination in Belgium for 2013 was 60% in this age group (this is only slightly superior to the results obtained by the billing IMA data). Compared to other European countries, this is above the EU-15 average (55%), and the number three in EU-15 countries (after UK and The Netherlands).

Figure 5 – Coverage of vaccination against influenza for elderly: international comparison (2001-2013)



Source: Data from Belgium are based on the Health Interview Survey.
Note: fluctuation of the EU-15 is an artefact of the available of the coverage data of the different countries.

Key points

- **In 2013, the vaccination coverage against influenza of people aged 65 years and over (and not residing in an institution) was 56.4%, below the WHO target of 75%. It decreased slightly since 2009 (63.6%), as it did in the majority of EU-15 countries.**
- **In 2013, Belgium was in the three EU-15 with higher influenza vaccination coverage, after UK and The Netherlands.**
- **Based on the same population, vaccination rates are higher in Flanders (60.6%) than in Wallonia (50.1%) and Brussels (47.8%), and globally also higher for people aged 80+**
- **There is no accessibility problem to influenza vaccine for people entitled to preferential reimbursement.**

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1.3. Incidence of measles (P-5)

1.3.1. Documentation sheet

Description	Incidence of measles per million inhabitants
Calculation	Number of cases of measles notified in a given year, divided by the population
Rationale	Measles is a highly communicable diseases caused by the measles virus; complications are frequent (30%), and very severe complications occur in 4 on 1000 cases in developed countries (death or encephalopathy with permanent brain damages).[1] The European countries have committed to eradicate measles, as proposed by the WHO Regional Office for Europe.[2,3] The target is to reach an incidence rate lower than 1 per million inhabitants.[3]
Primary Data source	Institute of Public Health, service 'Epidemiology of Infectious Diseases'[4]
Indicator source	For Belgium: Scientific Institute of Public Health (WIV-ISP), service 'Epidemiology of Infectious Diseases' For EU: the ECDC publishes yearly data (based on TESSy inputs from each member state).[b] Those are reused for international comparison purposes by the OECD (Health Data 2015)
Periodicity	Yearly
Technical definitions	Case definition: cases are defined by the EU [5] as "possible" (clinical only), "probable" (clinical and an epidemiological link with a case) or "confirmed" (clinical and laboratory). All 3 types of cases are pooled and reported together for the computation of incidence. From 2003 to 2009, cases were reported through a network of paediatricians, PediSurv, at the WIV – ISP. Mandatory notification in Belgium has only started in June 2009. Since 2010 cases are reported by several sources to the WIV – SP (national reference centre, sentinel laboratories, mandatory notification in the three regions, network of paediatricians). The records are pooled based on an identifying key to avoid duplicates.[4] When reporting to WHO on the country's status related to the elimination process, incidence is calculated using only the non-imported cases of measles.
Limitation	Although the cases are reported by several sources to the WIV – ISP, some cases can remain undiagnosed (under-ascertainment), and some are diagnosed but not reported to one of the used sources (underreporting). This can result in an underestimation of the incidence.
International comparability	Availability: yes, data are published by ECDC and by the OECD (Health Data 2015) Standardisation: the data sources and the exhaustiveness of the coverage differ between the countries. Caution is required when interpreting the data because of the diversity of the surveillance systems.[6]
Dimensions	Quality, Effectiveness of preventive care
Related indicators	Measles vaccination

[b] http://ecdc.europa.eu/en/healthtopics/measles/epidemiological_data/Pages/Number-of-measles-cases,-2013.aspx

1.3.2. Results

Background: In the pre-vaccine era, measles was endemic in Belgium as in all European countries, and most children got infected. Regular outbreaks occurred at 2–5 year intervals in most populations. Immunisation against measles has completely changed the epidemiology of the disease: in Europe, the incidence has fallen dramatically over the past 30 years, and measles is no longer endemic in some European countries; however, limited outbreaks remain common in countries where subgroups of the population have low levels of immunity. The European countries have committed to eradicate measles, as proposed by the WHO Regional Office for Europe. [2,3] The target is to reach an incidence lower than 1 per million inhabitants.[3] Achieving this target is consistent with progress towards measles elimination but does not define measles elimination or confirm that it has been achieved.

In Belgium, vaccination against measles has been introduced in the vaccination schedule in 1985 (single dose) and 1995 (2 doses). The Superior Health Council has published a recommendation to reach a 95% coverage for each dose of the measles vaccination.[7]

From 1982 to 1999 measles surveillance was conducted through a sentinel network of general practitioners. In 2003, systematic surveillance of measles incidence was set up through a sentinel network of paediatricians (see technical definitions).

1.3.2.1. Belgium

In 2013 : the incidence was 3.5 per million for the whole Belgium. It was the highest in Brussels (13.9 per million), followed by Wallonia (3.9) and Flanders (1.4).

The WHO-target for elimination was almost reached in Flanders for the year 2013. However, as measles is an epidemic disease, it is not possible to get a conclusion based on one year.

In 2014 (provisional data): the incidence increased to 6.1 per million for Belgium. It increased to 7.8 in the Flemish Region, while it decreased to 1.9 in Wallonia and 8.6 in Brussels.

Time trends:

The rate fluctuated between 1 and 9 per million between 2003 and 2010, afterwards, an epidemic occurred in 2011.

Figure 6 shows the evolution of the notification rate by region since the epidemic of 2011: the global rate reached 54 per million in 2011, then dropped to 9.2 (2012), to 3.5 (2013), and increased again to 6.1 in 2014.

The impact of the 2011 epidemic was the highest in Brussels (161 per million), followed by the Walloon region (71); the rate was lowest in Flanders (23 per million).The rate decreased in all regions until 2013; in 2014 it continued to decrease in Brussels and Wallonia while increasing in Flanders (2014: provisional data,, Service Epidemiology of Infectious Diseases (WIV – ISP), personal communication).

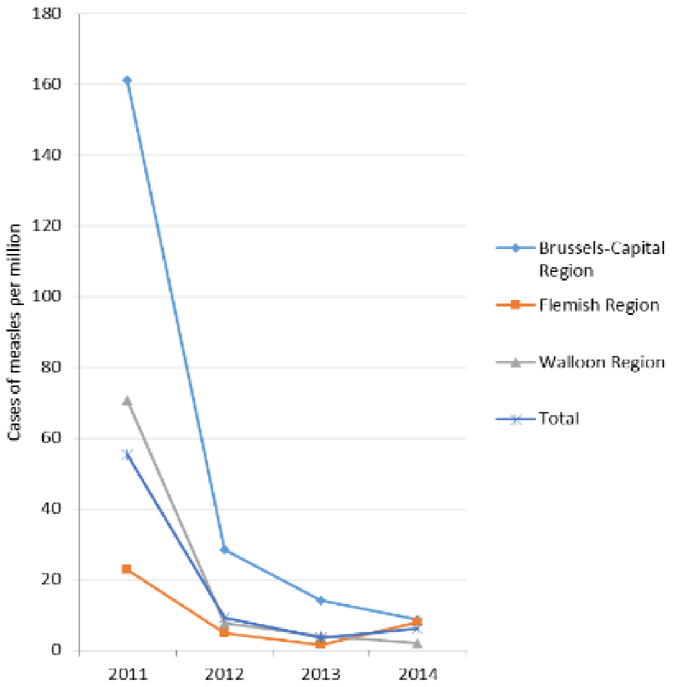
1.3.2.2. *International comparisons:*

Figure 7 shows the notification rate by EU-country in 2013 [8]: 11 countries reported an incidence that meets the WHO-target (lower than 1 per million). Belgium had a lower notification rate than the average EU-15 rate, but did not reach the elimination target.

Figure 7 also shows the evolution of the notification rate by country since 2003 (OECD Health Data 2015). We see that the measles virus is circulating at low level in Europe, with regular outbreaks occurring in some countries, and moving to other countries form one year to another.

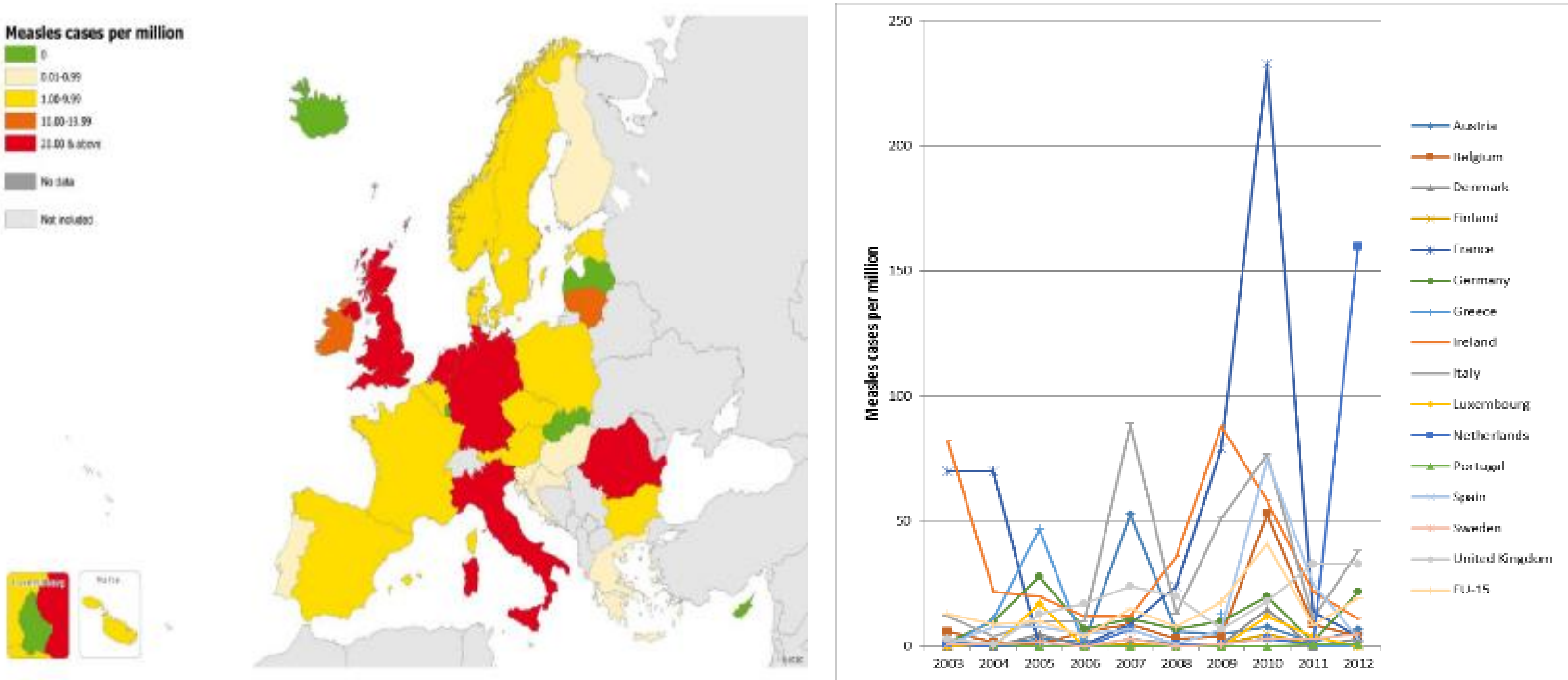
Discussion and interpretation: the WHO target (incidence rate lower than 1 per million) was not achieved in any of the Belgian regions in 2014. In 2013, the Flemish Region was very close to this target, but the rate increased again in 2014. The persistence of small epidemics, despite good vaccination coverage for the first dose (>95% in Flanders and 94% in Wallonia and Brussels) is probably due to some clusters of people who refuse the vaccination or in children too young to be vaccinated. Moreover, the coverage rate for the second dose is not optimal, in none of the Belgian region.

Figure 6 – Measles notification rate (per million) in Belgium since the 2011 epidemic, by region (2011-2014)



Source: Provisional data, Service Epidemiology of Infectious Diseases (WIV – ISP), personal communication

Figure 7 – Measles notification rate (cases per million) in 2013, by country (ECDC measles monitoring): international comparison (2003-2012)



Key points

- **Measles elimination remains a challenge at EU as well as at Belgian level.**
- **The incidence rate of measles in Belgium has ranged between 1 and 9 per million since the beginning of the follow up (2003), except during the epidemic year (2011). In 2013, the results were getting close to the WHO target, but this latter is not yet reached. In 2014, the incidence raised again to 6.8 per million.**
- **The incidence is the highest in Brussels for all the years considered; it is higher in Wallonia than in Flanders, except for the last year (2014). Despite a good vaccination coverage, small outbreaks are persisting , even in Flanders, due to some clusters of people refusing vaccination or as occurred in 2014, due to infection of children too young to be vaccinated (< 1 year of age). Moreover, the vaccination coverage for the 2d dose is too low.**
- **To reach the target of measles elimination a sufficient level of coverage for the first and second vaccination dose should be reached (95%), which is not yet the case for Belgium.**

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1.4. Breast cancer screening (P-6, P-7)

1.4.1. Documentation sheet

Description	Proportion of women aged 50-69 having received at least one mammogram within the last two years 1. Within the context of the organized screening programme (mammotest only) 2. Within or outside the context of the organized screening programme (all mammograms)
Calculation	Numerator: number of women aged 50-69 in a given year, having received a (screening) mammogram within the year or the preceding year. Denominator: Total number of women aged 50-69 affiliated to a Sickness fund in a given year
Rationale	In Belgium, breast cancer is by far the first female cancer in incidence (10 531 cases in 2012),[c] and is also the leading cause of death by cancer in females (20.2% of all female cancer deaths).[1] Since 2001 in Flanders and 2002 in Brussels and Wallonia, a national breast cancer screening programme exists for women aged 50-69 years[d]. Each woman aged 50 years or more receives every 2 years an invitation to participate in the screening programme. She can choose the examination service that will do the test. The mammograms realized in the programme follow a specific procedure, and have their own RIZIV/INAMI billing codes. The examination is free of charge for the women. Those mammograms are called “mammotests” in order to distinguish them from the opportunistic screening using mammogram (i.e. outside the programme). The first indicator measures the rate of eligible women undergoing mammotest (i.e. organized screening coverage), whereas the second measures the rate of eligible women undergoing mammotest or other mammogram (i.e. total coverage of mammogram). Together, these indicators measure the coverage of breast cancer screening in Belgium. There is a generally accepted target of 75% for this indicator.[2]
Data source	IMA Atlas, based on Permanent Sample (EPS) data
Technical definitions	RIZIV/INAMI billing codes: 450192-450203 (mammogram within the screening programme – referred as mammotest in this report). 450096 (other mammography), 461090 (other mammography). In the IMA database only the year of birth is available and not the exact date of birth. The age is the difference between the calendar year and the year of birth (snapshot on the 30th of June or the 31st of December). If the woman’s age falls between 50 and 69 years, she enters the denominator.
Limitations	It is impossible to distinguish opportunistic screening mammograms (i.e. mammogram made for screening purposes but outside the organised programme) from diagnostic mammograms (i.e. mammogram made for diagnostic reasons, e.g. in women with symptoms

c http://www.kankerregister.org/Statistiques_tableaux%20annuelle

d http://www.zorg-en-gezondheid.be/Ziektes/Vlaams-bevolkingsonderzoek-naar-borstkanker/ and http://www.sante.cfwb.be/index.php?id=cancerdusein0

	or at high risk). Since the fraction of diagnostic mammograms among all mammograms is quite low, the rate of mammograms outside the screening is an acceptable proxy of the opportunistic screening.[3]
International comparability	The OECD publishes the number of women aged 50-69 reporting having had a bilateral mammography within the past two years (for the majority of countries). The OECD warns for a limited comparability, since some countries use patient surveys to calculate the indicator, while other countries use administrative billing data. For Belgium, both results are available: IMA reports[4] under the label “programme data”, and health interview surveys, under the label “survey data”.
Dimension	Accessibility of preventive care
Related indicators	Breast Cancer 5-year survival rate Breast cancer screening mammography in women aged 40-49

1.4.2. Results

1.4.2.1. Belgium

Since 2003, the organized screening programme coverage is slightly getting better from year to year (from 21.5% in 2003 till 32.5% in 2012, Table 5) while the total coverage by all mammograms remains stable around 63% suggesting a small switch from opportunistic mammograms to screening programme mammotests. This overall coverage is still lower than the 75% European target screening rate. [2] At the start of the first breast cancer screening programme in 2001 the (total) coverage only reached 43%.[5]

The total breast cancer screening coverage (mammotests and other mammograms) is higher for younger women within the target age group (50-69 years).

In both organized and global screening, vulnerable women (those entitled to increased reimbursement) have a lower coverage than the remaining population (respectively 24.9% versus 34.3% and 49.8% versus 65.8%). This is in line with evidence from other countries: Several countries of income inequalities in breast cancer screening (Canada, Estonia, France, New Zealand, Poland and the United States).[6] The breast cancer screening coverage by level of income is considered by the OECD as an indicator of access of care.

As observed in the two previous performance reports,[7,8] the organized screening coverage (as well as the total coverage) is still increasing in Flanders (until 2012) while stabilizing in the two other regions, or even decreasing (mammotests in Brussels). In Flanders the total mammograms coverage slowed down its positive progression between 2007 and 2010 but is growing again since then. The high coverage by mammograms outside the organized screening coverage in Wallonia is historically due to the early implantation of the opportunistic breast cancer screening.

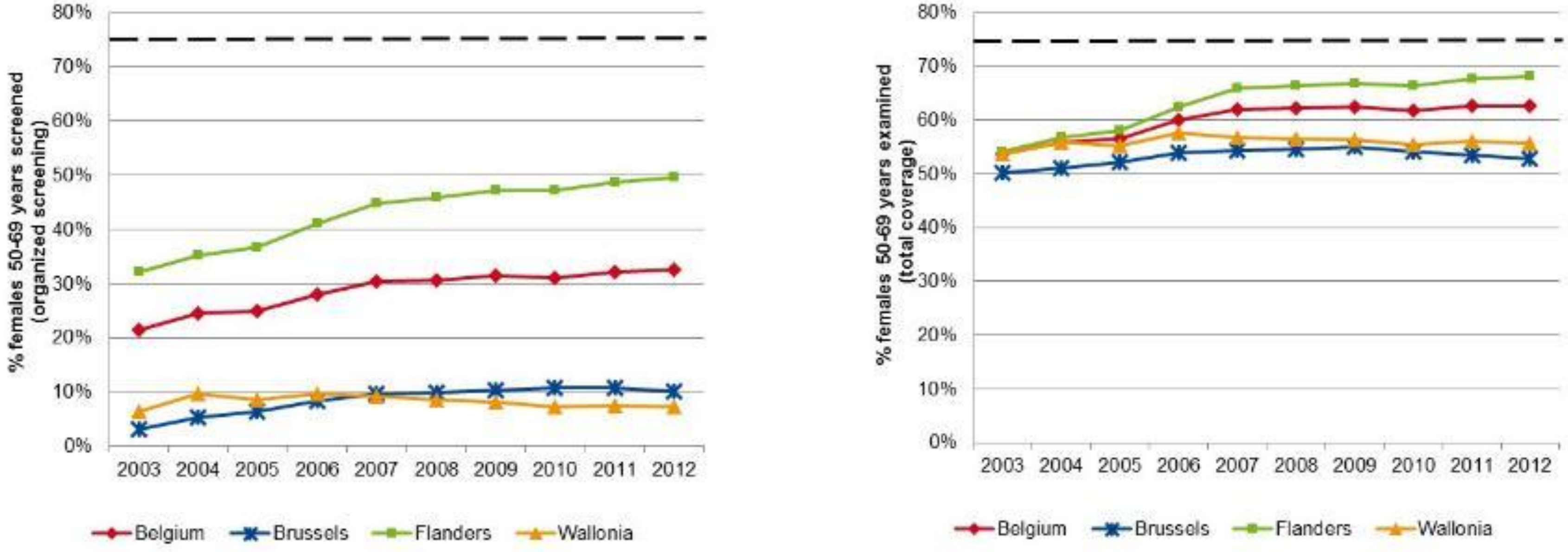
In its report covering the period 2003-2010, the Brussels Health and Social Observatory also found disparities in terms of coverage between the Brussels districts.[9]

Table 5 – Coverage of breast cancer screening in women 50-69 years old (mammotest and other mammogram coverage) by year and woman characteristics (2003-2012)

Variable	Category	Organized program (mammotest)	Total coverage
Age (years)	50-54	34.6%	68.5%
	55-59	31.0%	61.0%
	60-64	32.1%	61.6%
	65-69	32.0%	58.2%
Data 2012 by categories			
Entitlement to increased reimbursement	No	34.3%	65.8%
	Yes	24.9%	49.8%
Province of residence	Antwerpen	47.1%	67.0%
	Brabant Wallon	9.4%	60.6%
	Bruxelles-Capitale	10.2%	52.9%
	Hainaut	6.7%	55.0%
	Limburg	59.9%	73.1%
	Liège	7.3%	55.8%
	Luxembourg	8.8%	50.5%
	Namur	6.3%	55.4%
	Oost-Vlaanderen	51.0%	69.9%
	Vlaams Brabant	41.7%	66.4%
	West-Vlaanderen	51.3%	65.0%

Source: IMA Atlas 2015

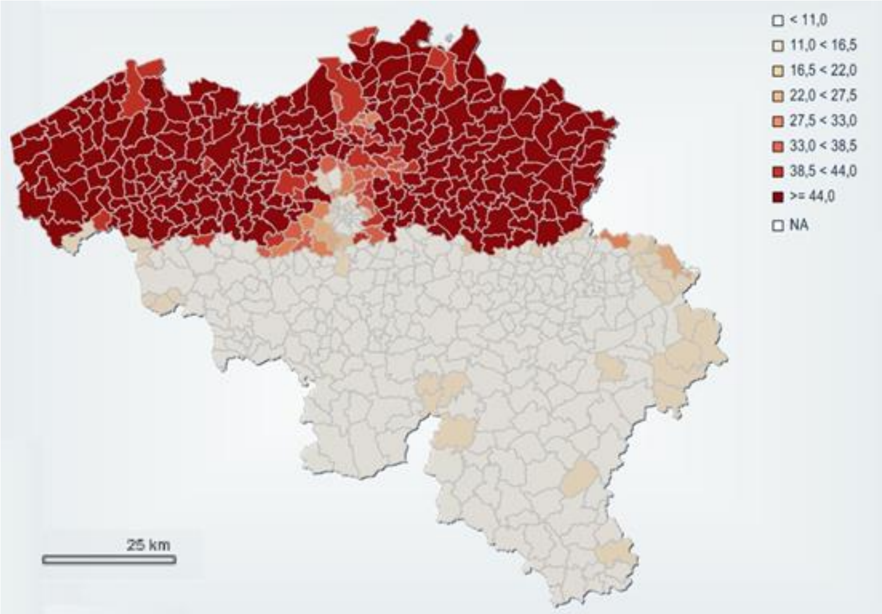
Figure 8 – Coverage of breast cancer screening (organized and all mammograms) in women 50-69 years old, by region (2003-2012)



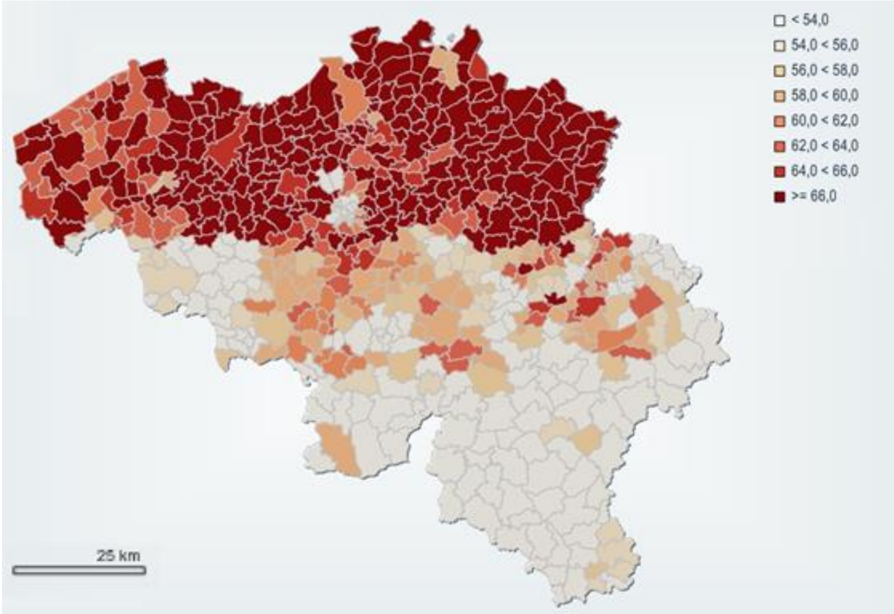
Source: IMA Atlas 2015
Note: mammotest = organized screening program, mammogram = organized + opportunistic screening + diagnostic test; Dashed line= European target screening rate.

Figure 9 – Coverage of breast cancer screening (organized and all mammograms) in women 50-69 years old, by municipality (2012)

Organized screening



All mammograms

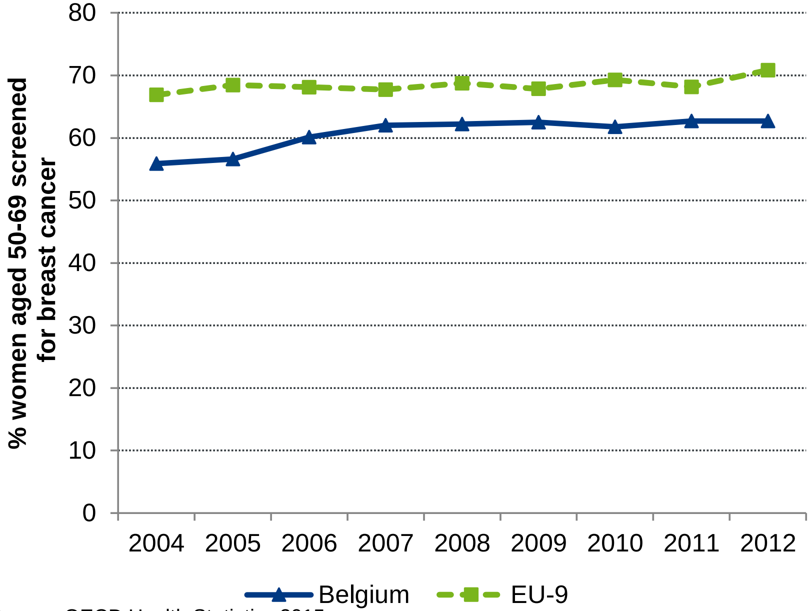


Source: IMA Atlas 2015

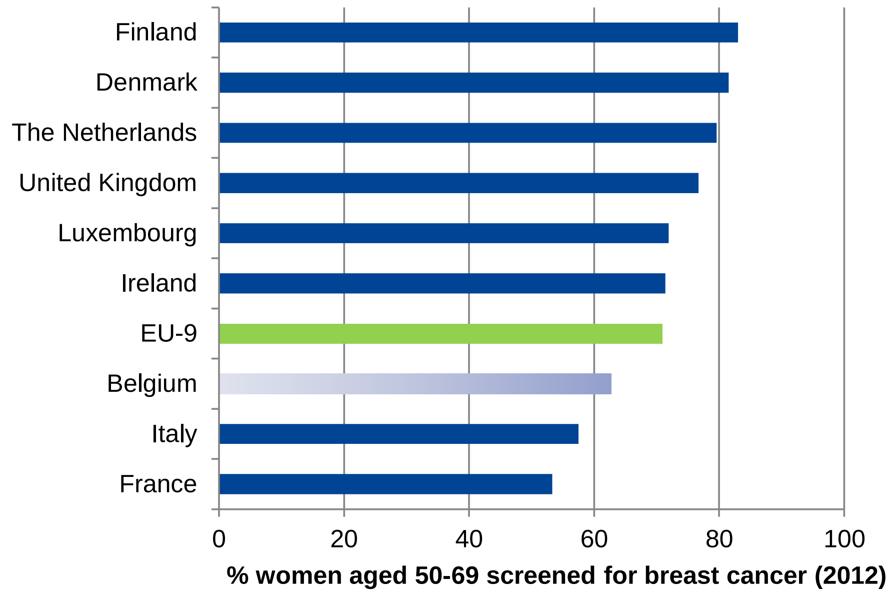
1.4.2.2. International comparison

Only the total mammogram coverage can be compared with other countries. The Belgian coverage is consistently below the EU-15 average of 70%. 4 Countries reach the 75% target coverage: Finland, Denmark, Netherlands and UK.

Figure 10 – Coverage of breast cancer screening: international comparison (2000-2012)



Source: OECD Health Statistics 2015



Source: OECD Health Statistics 2015

Source OECD 2015.
Note: In OECD database, data for Belgium are missing since 2007, so we used data from IMA Atlas instead, and compared to countries also reporting programme data.

Key points

- **The total coverage of breast cancer screening was 62.7% in 2012. This coverage has improved at the early 2000s (it was 54% in 2003) but has stagnated during the 5 preceding years (around 62.3%). In 2012, Flanders reached the highest rate at 68% while the lowest rate of 53% was achieved in Brussels.**
- **The breast cancer screening coverage in Belgium fails to achieve the commonly accepted target of 75%, which is reached by Finland, Denmark, The Netherlands and UK. It is also lower than the EU average of 71%.**
- **The coverage of the organized breast cancer screening stagnates at a national level around 32%, with very large differences in participation between Regions: Flanders: 50%, Brussels: 10%, Wallonia 7%.**
- **There are indications of socio-economic inequalities in the access to breast cancer screening: women with a lower socio economic status have a lower participation rate in the screening procedures than other women.**

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1.5. Cervical cancer screening (P-8)

1.5.1. Documentation sheet

Description	Proportion of women aged 25-64 screened for cervical cancer within the last three years.
Calculation:	Numerator: number of women aged 25-64 in a given year, having had at least one screening test (smear test, or “PAP” test) within the last three years. Denominator: total number of women aged 25-64 affiliated to a Sickness fund in the last year of the considered 3-year period.
Rationale	Cervical cancer is a rare cancer (679 cases in 2012[e]) with a medium to poor prognosis, and affects rather young women. It can largely be detected at a curable stage by an accessible and harmless test, the smear test which can substantially decrease the incidence and mortality.[1] Cervical cancer screening is essentially opportunistic in Belgium. It has been shown that the opportunistic cervical screening is performed too often in the women that are screened, but only reaches 60% of the women; the total number of smear tests performed is sufficient to screen all the women.[2] A better organization of the screening is thus highly desirable. Screening initiatives were set up in the Flemish provinces, but efforts to start a central cervical cancer screening programme have failed so far. The smear test is for screening of cervical cancer. It was reimbursed once every year before July 1st 2009, once every two years between July 1st, 2009 and May 1st, 2013, and once every three years since then.
Data source	IMA ATLAS based on IMA data
Technical definitions	RIZIV/INAMI billing codes: collection of Pap smear (114030-114041 or 149612-149623). Some previous studies also included the cytology code (588350-588361) in their selection to assess the coverage of cervical cancer screening, [2,3] [4] but this was not done in the IMA ATLAS, which is considered now as the official source for this indicator. As gynaecologists do not always mention the code of Pap smear collection, more cytological interpretations of Pap smears are registered than collections of Pap smears. Therefore, the exclusion of cytology codes results in a small underestimation of the screening coverage. In comparison with the results calculated on the Permanent Sample data, including the cytology code, and published in the previous KCE report, the underestimation decreased in time but still reached 3% in 2010. In the IMA database only the year of birth is available and not the exact date of birth. The age is the difference between the calendar year and the year of birth (snapshot on the 30th of June or the 31st of December). If the woman’s age falls between 25 and 64 years, she enters the denominator.
Limitations	Only reimbursed tests are reported.
International comparability	This is an international indicator. The OECD warns for a limited comparability, since some countries use patient surveys (generally overestimated), while other countries use administrative data. Also, the age categories covered are not the same in all OECD countries.[5]
Dimension	Accessibility of preventive care
Related indicators	none

e http://www.kankerregister.org/Statistiques_tableaux%20annuelle

1.5.2. Results

1.5.2.1. Belgium

The cervical cancer screening coverage, defined as the proportion of women aged 25-64 who had a Pap smear in the last 3 years, decreased from 60% in 2009 to 54% in 2012 (Figure 11). This may be due to limitation of the reimbursement for the smear tests (those that were former reimbursed each year, were reimbursed every 2 years since 2009 - and every 3 years since 2013, but this does not show yet in the data). The number of Pap tests was also divided by two between 2008 and 2010.[4]

More than ten years ago, the cervical cancer screening coverage in 1998-2000 was already 59% at the national level.[f] [3]

The coverage rate is highest in women aged 30-34 (64%) then steadily decreases with age, falling to 36% in the 60-64 years old group. A possible explanation is that once the fertility decreases, women tend to go less often to their gynaecologist.[6]

There are small regional differences in the coverage of cervix cancer screening: Wallonia reaches 56%, Brussels almost 53% and Flanders obtains the lowest rate with 52% in 2012. This is a different pattern to what was observed in breast cancer screening.

The regional rates also decline slightly after 2008.

Vulnerable women (those entitled to increased reimbursement) have a lower coverage than the remaining population (respectively 41.6% versus 55.7). This is in line with observations from other countries. Income-related inequalities in cervical cancer screening are significant in 15 out of 16 countries.[7] The cervical cancer screening coverage by level of income is considered by the OECD as an indicator of access of care.

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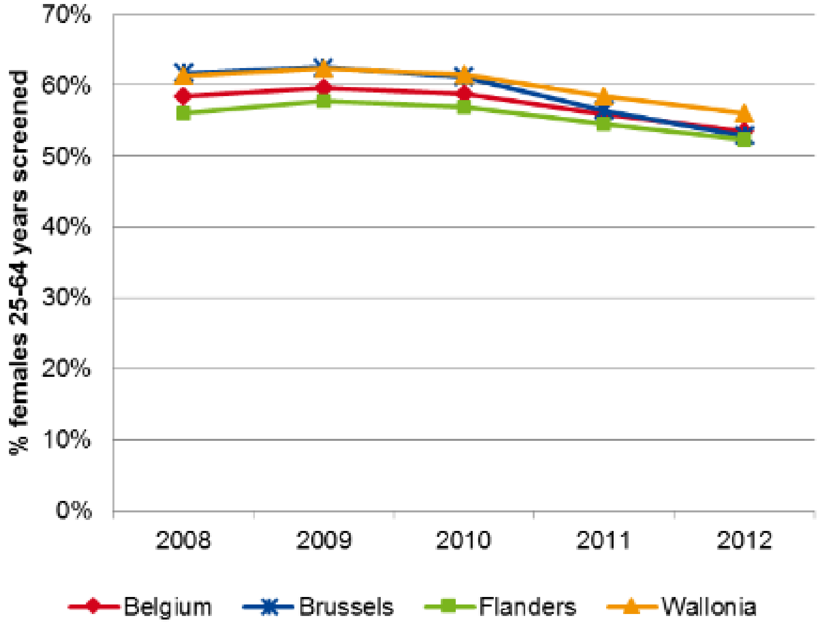
[f] The methodology to compute this rate was not totally comparable, as reimbursements for cytology were also included, which led to a difference of approximately 3%.

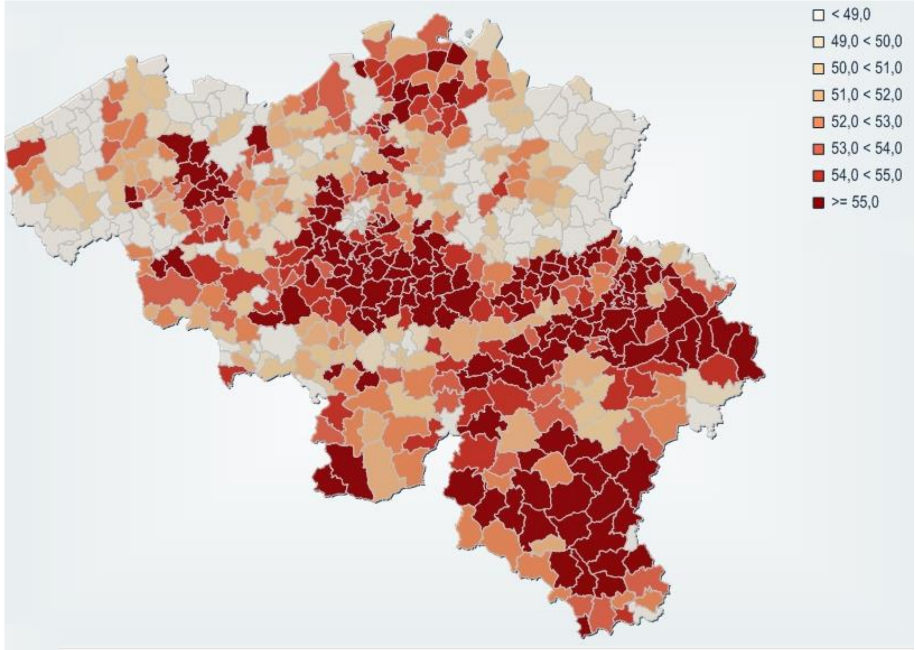
Table 6 – Coverage of cervical cancer screening in women aged 25-64, by patient characteristics (2012)

Variable	Category	Cervix cancer screening rate
Data 2012 by categories		
Age (years)	25-29	61.8%
	30-34	63.7%
	35-39	62.0%
	40-44	59.2%
	45-49	55.5%
	50-54	49.2%
	55-59	41.2%
	60-64	35.6%
Entitlement to increased reimbursement	No	55.7%
	Yes	41.6%
Province	Antwerpen	52.8%
	Brabant Wallon	60.5%
	Bruxelles-Capitale	52.9%
	Hainaut	53.7%
	Limburg	50.0%
	Liège	57.3%
	Luxembourg	56.3%
	Namur	55.3%
	Oost-Vlaanderen	52.6%
	Vlaams Brabant	54.8%
	West-Vlaanderen	50.8%

Source: IMA Atlas

Figure 11 – Coverage of cervical cancer screening in target group, by women region and municipality (2008-2012)



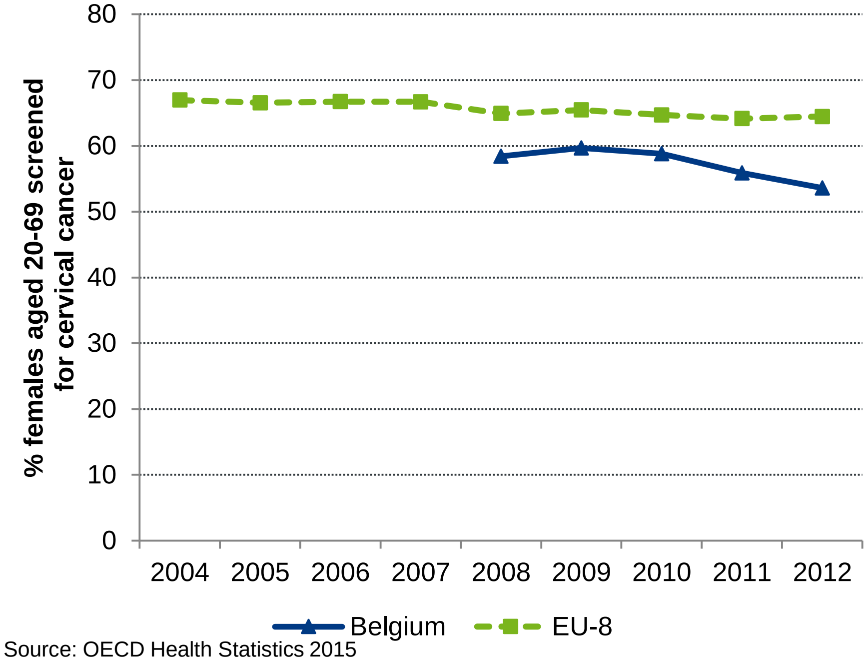


Source: IMA Atlas

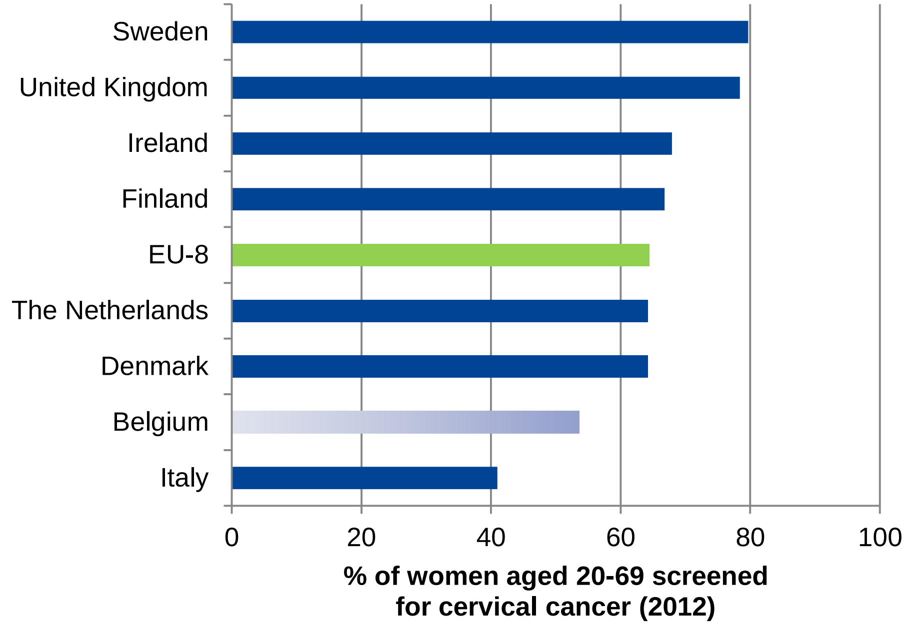
1.5.2.2. *International comparison*

Results of 8 EU countries reporting data to the OECD show stable coverage of cervical cancer screening over time, reaching 65% in 2012. Countries such as Sweden and UK almost reach an 80% coverage in this target population.

Figure 12 – Coverage of cervical cancer screening: international comparison (2004-2012)



Source: OECD Health Statistics 2015



Source: OECD Health Statistics 2015

Source: OECD Health data 2015.
Note: Belgian data are not available in OECD since 2009, so we used IMA Atlas data instead, but there might be a difference in methodology (use of cytology codes or not).
Note: EU data before 2004 are not shown hence the few number of countries providing data.

Key points

- **Coverage of cervical cancer screening decreased from 58% to 54% between 2008 and 2012.**
- **Coverage is higher for young women than older women**
- **Women with lower socio economic status are less screened than other women**
- **Coverage is slightly higher in Wallonia (56%) than in Brussels (53%) and Flanders (52%).**
- **Coverage in Belgium is lower than the EU-15 average (65%).**

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[1] Hulstaert F, Ramaekers D, Puddu M, Vinck I, Huybrechts M, Arbyn M. Dépistage du cancer du col de l’utérus et recherche du Papillomavirus humain (HPV). Brussels: Belgian Health Care Knowledge Centre (KCE); 2006. KCE Reports 38

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[5] OECD. Health at a Glance: Europe 2014. OECD Publishing; 2014.

[6] IMA-AIM. Dépistage du cancer du col de l’utérus 2006-2012. 2015 February, 2015.

[7] OECD. Health at a Glance 2013. OECD Publishing; 2013.

1.6. Colorectal cancer screening (P-9)

1.6.1. Documentation sheet

Description	Proportion of persons (aged 50-74) having been screened for colorectal cancer within the last two years
Calculation	Numerator: number of individuals aged 50-74 participating to the Health Interview Survey (HIS), reporting having undergone a faecal occult blood test (FOBT), either classic guaiac FOBT (gFOBT) or immunochemical FOBT (iFOBT) within the past two years Denominator: number of individuals aged 50-74 participating to the survey responding to the question ; Weighted percentages are calculated to account for the survey design.
Rationale	There were approximately 8600 new patients diagnosed in 2012 with colorectal cancer in Belgium.[g] It is a frequent cancer (third cancer for men, second for women), with a high mortality if detected at advanced stage.[1] In 2003, the European recommendations on cancer prevention recommended to screen the population aged 50 to 74 years old.[2] In 2006, a Health Technology Assessment (HTA) report showed that colorectal cancer screening with FOBT, followed by colonoscopy if FOBT was positive, was cost-effective in persons aged 50 years and older.[3] The organisation of the cancer screening programs is a competence of regional entities: • In the French Community (Wallonia and Brussels), a screening programme was started in March 2009, and targeted persons aged 50 to 74 years old. Every two years, those persons are invited to undergo a FOBT test (using the classical gaiac test:gFOBT), or directly a colonoscopy for individuals at high or very high risk.[h] • In Flanders, since 2013, all persons of the targeted age group are invited to undergo a FOBT; the screening test used in Flanders is the iFOBT (immunochemsitry faecal occult blood test).[i]
Primary data source	In the absence of regional data reported by the screening programmes, Health interview survey are used (2008, 2013)
Technical definitions	Data from the health interview survey provide data, with the limitation that these are self-reported results. Questions from HIS on colorectal screening (HIS, 2013):[j] SC.01. Il existe un test de dépistage du cancer de l'intestin (colorectal) qui consiste à détecter la présence de sang dans les selles. Avez-vous déjà eu ce genre de test? SC.02. Quand avez-vous eu un test pour détecter la présence de sang dans les selles pour la dernière fois? SC.03. Un examen plus sophistiqué consiste en un examen interne (endoscopie) de l'intestin en utilisant une sonde. Cela s'appelle une "colonoscopie". Avez-vous déjà eu une colonoscopie? SC.04. Quand avez-vous eu une colonoscopie pour la dernière fois?

[g] http://www.kankerregister.org/Les_chiffres_du_cancer
[h] http://www.cancerintestin.be/?lang=fr
[i] http://www.stopdarmkanker.be/bevolkingsonderzoek/
[j] https://his.wiv-isp.be/fr/Documents%20partages/qauto_2013_fr.pdf

	SC.01. Er bestaat een test voor het vroegtijdig opsporen van darmkanker door de aanwezigheid van bloed in de stoelgang na te gaan. Hebt u ooit zo een test gehad? SC.02. Wanneer hebt u voor het laatst een test gehad om de aanwezigheid van bloed in de stoelgang op te sporen? SC.03. Een meer gesofistikeerd onderzoek bestaat uit een inwendig onderzoek van de darmen waarbij gebruik gemaakt wordt van een flexibele slang. Dit wordt "colonoscopie" genoemd. Hebt u ooit zo'n colonoscopie gehad? SC.04. Wanneer hebt u voor het laatst een colonoscopie gehad? Although There are 2 nomenclature codes for the reimbursement of the faecal occult blood test (FOBT) by the Health Insurance (codes 120713, 125716), the tests performed within the organized screening programs are not included in sickness funds database. Calculating the coverage of the screening using reimbursement data would lead to a major underestimation.
International comparability	Screening rate are based on the self-reported responses to the first wave of the European Health Interview Survey (EHIS) around 2008. [4] There is, to this date, no more recent data.
Related indicators	Colorectal cancer 5 year survival rate

1.6.2. Results

The following text is a (summarized) translation of the last HIS results.[5]

In Belgium in 2013, 16% of the target population aged 50 to 74 years old declared to have passed a FBOT in the last two years.

The FBOT coverage is the same for men and women. The coverage is higher for older people (60-64 years old: 21% versus 50-54 years old, 11%).

The FOBT coverage was measured for the first time in the 2008 HIS, which showed an 8% coverage in the target population. Rates have increased in the three Regions, and are higher in Brussels (20%) than in Flanders (16%) or Wallonia (16%), but this difference is not statistically significant after adjustment for age and sex.

In addition to the FOBT, the HIS also asked for having had a colonoscopy within the past ten years. This rate reaches 24% in the target population aged 50 to 74 years. In total, if we combine these two techniques (FOBT within the last two years or colonoscopy within the last 10 years), the coverage rate of colorectal cancer by the 50-74 years is 34% for Belgium. This combined coverage varies by region: 33% in Flanders and Wallonia, 48% in Brussels.

There are no social inequalities for the FOBT use, but there are educational differences in the colonoscopy rate: people with lower education status have lower coverage rates than people with higher education status. This difference is especially marked in Brussels.

In the target age group of 50-74 years old, 30% of the 33% people who underwent a FOBT test at least once did so more than 2 years ago. This reveals that the population is aware of the importance of colorectal cancer screening, and that there is a real potential to increase the coverage with a better adherence to the two years delay between two tests (and no longer).

Table 7 – Proportion of the target population (50-74 years old) who declared having undergone a FOBT within the past two years (A) or a colonoscopy within the last 10 years (B) (2013)

Proportion of the target population (50-74 years old) who declared having undergone a FOBT within the past two years (A)

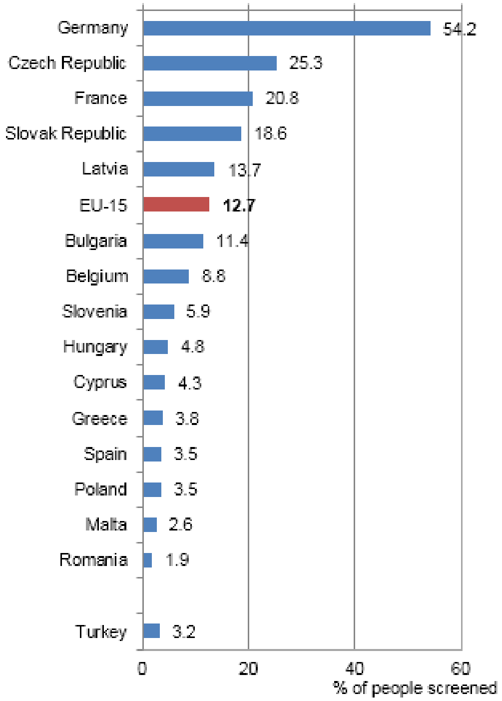
SC_8		Taux brut (%)	IC 95% brut	Taux stand*	IC 95% stand	N
SEXE	Homme	16,9	(14,0-19,8)	16,5	(13,8-19,5)	1123
	Femme	16,2	(13,3-19,1)	15,7	(13,0-18,7)	1203
GROUPE D'AGE	50 - 54	10,6	(7,3-14,0)	10,6	(7,7-14,5)	520
	55 - 59	16,2	(12,0-20,4)	16,2	(12,4-20,8)	550
	60 - 64	21,2	(15,5-26,9)	21,2	(16,0-27,5)	490
	65 - 69	18,6	(13,8-23,4)	18,6	(14,2-23,9)	465
	70 - 74	17,5	(11,8-23,2)	17,6	(12,6-23,9)	301
NIVEAU D'INSTRUCTION	Primaire/sans diplôme	15,1	(8,4-21,9)	14,0	(8,6-21,8)	234
	Secondaire inférieur	15,1	(10,3-19,9)	14,1	(10,2-19,2)	388
	Secondaire supérieur	14,8	(11,4-18,2)	14,5	(11,3-18,3)	754
	Enseignement supérieur	19,0	(15,2-22,8)	18,8	(15,4-22,8)	924
DEGRE D'URBANISATION	Zone urbaine	17,3	(13,9-20,6)	16,7	(13,8-20,2)	1046
	Zone semi-urbaine	15,6	(11,5-19,6)	15,2	(11,6-19,6)	596
	Zone rurale	16,6	(12,8-20,4)	16,2	(12,7-20,5)	684
REGION	Région flamande	16,2	(13,2-19,2)	15,7	(13,0-18,9)	895
	Région bruxelloise	19,9	(15,5-24,3)	19,6	(15,5-24,5)	443
	Région wallonne	16,4	(13,0-19,7)	15,9	(13,0-19,5)	988
ANNEE	2008	8,9	(7,4-10,4)	8,8	(7,5-10,4)	2289
	2013	16,5	(14,4-18,7)	16,1	(14,1-18,3)	2326

Proportion of the target population (50-74 years old) who declared having undergone a colonoscopy within the past 10 years (B)

SC_11		Taux brut (%)	IC 95% brut	Taux stand*	IC 95% stand	N
SEXE	Homme	25,1	(21,6-28,6)	24,9	(21,6-28,5)	1109
	Femme	23,6	(20,3-26,9)	23,4	(20,3-26,8)	1196
GROUPE D'AGE	50 - 54	19,9	(15,5-24,3)	19,9	(15,8-24,7)	528
	55 - 59	23,7	(18,8-28,6)	23,6	(19,1-28,8)	539
	60 - 64	25,4	(19,4-31,3)	25,4	(19,9-31,7)	485
	65 - 69	30,0	(23,9-36,0)	29,9	(24,3-36,3)	455
	70 - 74	23,9	(17,8-30,1)	24,0	(18,4-30,6)	298
NIVEAU D'INSTRUCTION	Primaire/sans diplôme	17,0	(9,8-24,3)	15,9	(10,1-24,2)	221
	Secondaire inférieur	19,9	(14,9-24,8)	19,3	(14,9-24,6)	379
	Secondaire supérieur	24,6	(20,1-29,0)	24,5	(20,4-29,1)	742
	Enseignement supérieur	27,6	(23,6-31,7)	27,6	(23,7-31,9)	936
DEGRE D'URBANISATION	Zone urbaine	25,8	(22,2-29,5)	25,5	(22,1-29,2)	1041
	Zone semi-urbaine	24,6	(19,7-29,4)	24,4	(20,0-29,5)	581
	Zone rurale	22,0	(17,7-26,4)	21,9	(17,8-26,6)	683
REGION	Région flamande	23,4	(20,0-26,8)	23,2	(19,9-26,8)	881
	Région bruxelloise	36,4	(30,1-42,8)	36,5	(30,4-43,0)	449
	Région wallonne	23,4	(19,7-27,1)	23,2	(19,7-27,0)	975
ANNEE	2013	24,3	(21,9-26,8)			2305

Source: HIS 2013 [5]
*Note: * corrected for age and sex based on a logistic regression model (Belgian population 2013 as reference)*

Figure 13 – Colorectal cancer screening (people aged 50-74): international comparison (2010)



Source: Health at a glance [4]
Note: 2010 or nearest year

Key points

- **It is curently not possible to evaluate the coverage of colorectal cancer screening on the basis of facturation data, contrary to the coverage of breast or cervix cancer screening. Health interview survey data are used instead (such in other european countries).**
- **In the Health Interview Survey 2013, a total of 16.5% of the target population (persons aged 50-74 years old) reported to have had a faecal occult blood test (FOBT) performed within the last two years. This represents an real increase since 2008, when coverage FOBT was only 9%. Rates are higher in Brussels (20%) than in Flanders (16%) or Wallonia (16%).**
- **No differences were observed between men and women, and between socio economic groups.**
- **When combined with colonoscopy within the last 10 years, the coverage rate of colorectal cancer screening for the 50-74 years is 34% for Belgium. This combined coverage varies by region: 33% in Flanders and Wallonia, 48% in Brussels.**
- **In the target age group of 50-74 years old, the number of persons who already had a test but for whom this test was older than 2 years ago, is relatively important (30%). This phenomenon reveals that the population is generally aware of the importance of colorectal cancer screening and that there is a real potential to increase the coverage with a better adherence to the two years delay between two tests (and no longer).**

References

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[2] European Council. Recommendation of 2 December 2003 on cancer screening 2003.

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[4] OECD. Health at a Glance: Europe 2014. OECD Publishing; 2014.

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1.7. Breast cancer screening for women younger than the recommended age target group for screening (P-10)

1.7.1. Documentation sheet

Description	Proportion of women aged 41-49 having had a mammogram within the last two years.
Calculation	Numerator: number of women aged 41-49 in a given year who are still alive at the end of that year, having had a mammogram within the past two years. Denominator: total number of women aged 41-49 affiliated to a sickness funds in a given year who are still alive at the end of that year
Rationale	Since 2001 in Flanders and 2002 in Brussels and Wallonia, a national breast cancer screening programme exists for women aged 50-69. Guidelines do not recommended the extension of the scope of this programme to the younger (40-49) category in Belgium[1] and aids for better informed decision have been recently published.[2] This indicator measures in which extent screening is performed in inappropriate (too young) age groups.
International comparability	This is not an international indicator
Primary data source	IMA data
Indicator source	KCE calculation
Technical definitions	NIHDI billing codes: 450096 and 461090 (mammograms for ambulatory patients). In the IMA database only the year of birth is available and not the exact date of birth. Therefore, it is impossible for an individual woman to verify if she undergoes a mammography within the 2 years prior to her 41^{st} – 49^{th} birthday. It is only possible to verify if a woman undergoes a mammography in the year of her 41^{st} – 49^{th} (T) and the year before (T-1). Self-employed persons are not included before 2008 (no examinations recorded in 2006-2007).
Limitations	It is impossible to distinguish opportunistic mammograms (i.e. mammogram used for opportunistic screening outside the screening programme) from diagnostic mammograms (i.e. mammogram used for diagnostic reasons, e.g. in women with symptoms or at high risk). So the target rate for this indicator should not reach zero.
Performance dimensions	Quality (as an indicator of non-appropriateness);
Related indicators	Coverage of target group for breast cancer screening (within and earlier than the organized screening programme); Breast cancer 5-year survival rate

1.7.2. Results

1.7.2.1. Belgium

The percentage of women aged 41-49 years who had a mammogram in the last 2 years has slightly decreased between 2007 and 2013 (from 36.9% to 33.3%), mainly due to a decrease in Flanders, which had already the lowest rate of the country (see Figure 14). No evolution was observed neither for Wallonia nor for Brussels during this period of observation. In 2013, rates were 44.9% in Wallonia, 43.5% in Brussels and 25.4% in Flanders respectively.

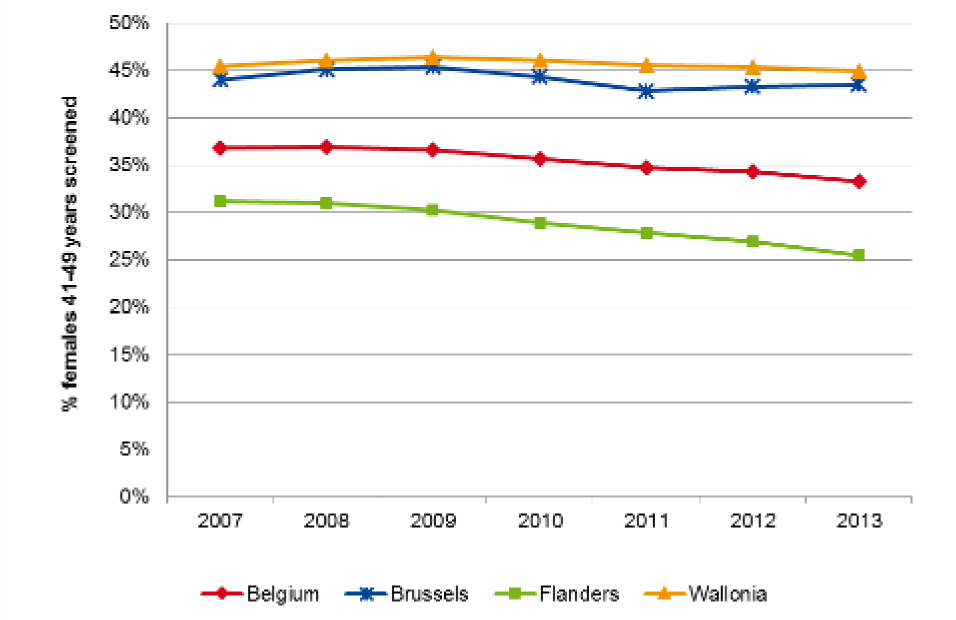
The rate is higher in women close to 50 years than in younger women (36.5% versus 29.2%).

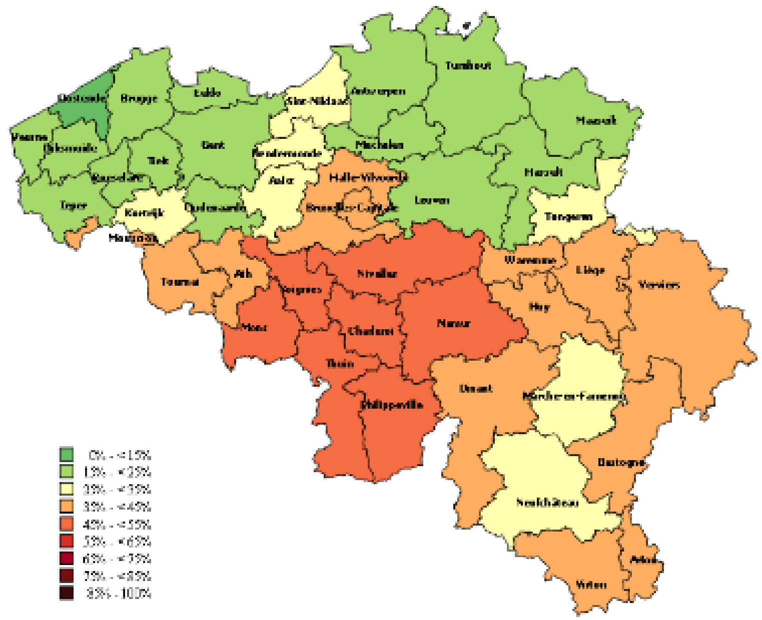
Table 8 – Proportion of women aged 41-49 having had a mammogram within the last two years, by woman characteristics (2013)

Variable	Category	Numerator	Denominator	coverage
Data 2013 by categories				
Age (years)	40-44	86 504	296 428	29.2%
	45-49	139 915	383 726	36.5%
Entitlement to increased reimbursement	No	199 853	583 810	34.2%
	Yes	26 566	96 344	27.6%
Province of residence	Antwerpen	26 239	111 161	23.6%
	Brabant Wallon	13 289	25 260	52.6%
	Bruxelles-Capitale	26 964	62 011	43.5%
	Hainaut	38 337	82 344	46.6%
	Limburg	12 359	52 565	23.5%
	Liège	26 984	65 716	41.1%
	Luxembourg	4772	13 486	35.4%
	Namur	14 000	30 141	46.4%
	Oost-Vlaanderen	24 318	93 964	25.9%
	Vlaams Brabant	24 156	71 466	33.8%
	West-Vlaanderen	15 001	72 040	20.8%

Source: IMA data, KCE calculation.

Figure 14 – Mammogram coverage of women aged 41-49 years, by region (2007-2013) and by district (2013)





Source: IMA data, KCE calculation

Key points

- **In Belgium, breast cancer screening is recommended only for women aged 50-69 years. However, a third of women aged 41-49 years are screened before that age range. There are important regional disparities, with a prevalence of screening in women younger than the age target groupreaching almost a half of the women aged 41-49 years in some Walloon provinces.**
- **Evolution over time shows a slight declining trend in Flanders (above 30% in 2007, around 25% in 2013). No evolution is observed neither in Wallonia nor in Brussels between 2007 and 2013.**

References

[1] Mambourg F, Robays J, Camberlin C, Vlayen J, Gailly J. Dépistage du cancer du sein entre 40 et 49 ans. Brussels: Belgian Health Care Knowledge Centre (KCE); 2010. KCE Reports 129

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1.8. Regular contacts with a dentist (P-11)

1.8.1. Documentation sheet

Description	Proportion of the population with a “regular contact with a dentist” (defined as at least 2 contacts in 2 different years during the last three years)
Calculation	Numerator: number of individuals 3 years old and older who had a contact with a dentist at least twice in 2 different years during the last three years. Denominator: number of individuals aged 3 years and older in a given year and the two years before.
Rationale	Oral health is a condition in which people can eat, speak and socialize without (oral) disease, discomfort or embarrassment.[1] While having good levels of oral health is important in itself, it has also been linked to general health.[2] Fortunately, some oral disorders (like dental caries and dental erosion) can be prevented. Regular dental visits not only enable the diagnosis and treatment of any dental problem in an early stage, they also help to prevent such problems through personal oral hygiene and dietary advice and the delivery of professional prophylaxis (i.e. the removal of dental plaque and calculus, the application of fluoride and sealants). Several studies demonstrated (inter- and intracountry) socioeconomic inequalities in access to oral healthcare, oral health and oral health related behaviour (e.g. toothbrushing).[2-6]
Primary data source	IMA Atlas
Indicator source	IMA calculation on IMA data
Technical definitions	Contact definition: all INAMI-RIZIV nomenclature codes belonging to N group 04 (dentist care) or 16 (stomatology).
Limitation	As self-employed persons were until 2008 not insured for dental care through the compulsory health insurance, no contacts were recorded for them in 2006-2007.
International comparability	This is not an international indicator. The definition of regularity varies from one country to another; the most frequently used is yearly contact.
Dimension	Access to dental care

1.8.2. Results

1.8.2.1. Belgium

The proportion of the population who had at least two dental visits in two different years in the last three years, increased slightly from 47% in 2008 to 49% in 2012. This percentage is the highest in children and adolescents (63% and 67% for the age groups 5-14 years and 15-17 years, respectively), which is logical as this is the age span in which many children receive orthodontic diagnosis and/or treatment. The lowest percentage is seen in very young children (3-4 years old, 10%), and in the elderly (75 years and older, 30%).

These results, which are based on billing data, are in line with the results reported in the 2013 Health Interview Survey, which is based on self-report. In the latter 62% of the respondents declared that they had consulted a dentist in the preceding 12 months. Similarly, the highest rate was observed in the 2-14 years old age group (71%) and the lowest in the elderly (aged 75 or older, 34%).

In comparison, in the Belgian Health Interview Survey 2013 62% of the respondents reported they had seen the dentist in the preceding 12 months. The figure lies logically above the IMA result since it is a self-reported survey.[7] Yet, the self-reported survey revealed important sociodemographic differences, even after correction for age and gender. The lower the educational level the less likely respondents were reporting a dental visit in the preceding year. Only 36% of the group with a lower educational level reported having seen the dentist in the preceding year and this proportion increases with educational up to 72% in the group who had taken higher education. Similar sociodemographic gradients were reported in the survey performed in 2012-2014 by a team of several Belgian Universities at the request of the INAMI-RIZIV. In the lowest educational group (highest degree primary school or no degree) 72% had a registered contact (IMA data) with a dentist in the preceding 5 years, while in the highest group (higher education) this was 85%. For regular dental visits (defined as at least three dental contacts in three different years in a time span of 5 consecutive years) the differences between the respective groups were more pronounced: 35% and 65%.[8]

Unfortunately, differences between different sociodemographic groups are not available (yet) in the IMA Atlas.

On the regional level, Flanders has the highest rate, still slightly progressing from 51% to 53% between 2008 and 2012. Wallonia also slightly increased from 42% to 44% in the same period, almost catching up with Brussels, stationary at 45%. The regional differences were also observed in the data-registration project (2012-14): 61% of the respondents of the Flemish region had a regular registered contact (IMA data) with a dentist in the preceding 5 years, while this proportion dropped to 46% and 42% in the Walloon region and Brussels respectively.[8] Likewise, regional peculiarities were seen with regard to the proportion of respondents of the Belgian Health Interview Survey 2013 (at least 2 y.o.) who had never been to a dental practice: 7% in Brussels, 5% in the Walloon region and 3% in Flanders.[7]

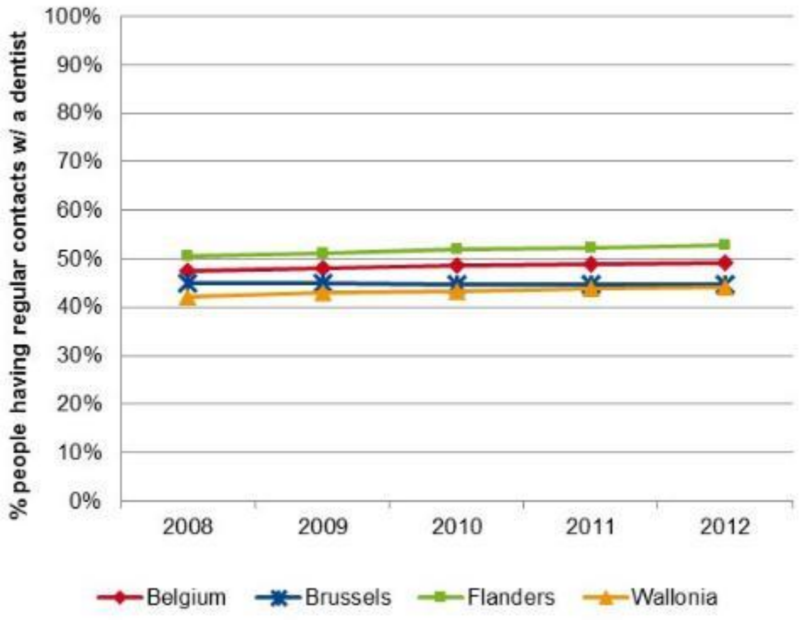
Table 9 – Regular contacts with a dentist, by year and patient characteristics (2008-2012)

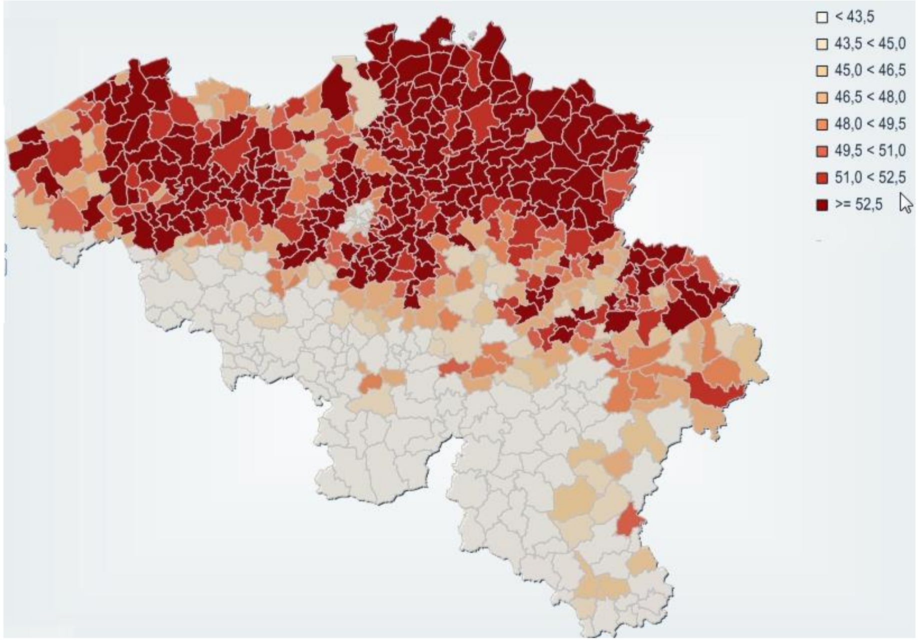
Variable	Category	Rate[k]
Year	2008	47.4%
	2009	47.9%
	2010	48.5%
	2011	48.8%
	2012	49.2%
Age (2012) (years)	03-04	9.9%
	05-14	62.6%
	15-17	67.4%
	18-24	47.8%
	25-44	50.6%
	45-64	51.9%
	65-74	44.8%
	75+	29.7%
Province (2012)	Antwerpen	51.9%
	Brabant Wallon	50.7%
	Brussels	44.7%
	Hainaut	39.3%
	Limburg	54.7%
	Liège	48.6%
	Luxembourg	41.7%
	Namur	42.5%
	Oost-Vlaanderen	52%
	Vlaams Brabant	53.8%
	West-Vlaanderen	52.6%
Region (2012)	Brussels region	44.7%
	Flemish region	52.7%
	Walloon region	44.0%

Source: IMA Atlas
Note: contact is defined as two contacts in two different years in the last three years

[k] Proportion of the population who had at least two dental visits in 2 different years in the time span 2006-2008; similarly for the other percentages

Figure 15 – Regular contacts with a dentist, by patient region and municipality (2008-2012)





Source: IMA Atlas
Note: contact is defined as two contacts in two different years in the last three years

1.8.2.2. *International Comparison*

As defining “regular dental visit” as at least two contacts with a dentist in a time span of three consecutive years is not a standardized approach, the results cannot be compared with the results of the OECD, Eurostat, or other international studies. On average, 57% of the EU-27 population declared having seen a dentist in the last year which was also the percentage observed in Belgium.[9] Northern European countries globally score better, the Netherlands leading with 83%. According to the CBS Gezondheidsenquête, the rate in the Netherlands was 78.7% in 2013, with a clear sociodemographic gradient as well (lowest educational level: 57% - highest educational level: 87%).[10]

One of the process indicators adopted in the 2012 proceedings of the Nordic project of Quality indicators in oral health care was the percentage of the population receiving oral health services[l] within the past year.[11] The proportion in the population under 18/19/20 (limits depending on the country) ranged from 50% (Finland) to 69% (Norway). For the adult population, the proportion lay between 59% (Sweden) and 77% (Finland and Denmark).[11]

Key points

- **The population seeing their dentist on a regular basis is slightly increasing; almost half the Belgian population had a dental contact at least twice in two different years in the period 2010-2012.**
- **The highest “regular attendance rate” is seen in the 15-17 year old age group (67%), the lowest in the 3-4 year-olds (10%) and the people aged 75 years or more (30%). Flanders shows the higher rate (53%), 8% above the two other regions.**
- **It is difficult to benchmark these data with other countries, because of the definition of a regular contact (at least two contacts in two different years in a time span of three years).**

[l] Including dental treatments delivered by dental/oral hygienists.

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2. ACCESSIBILITY OF CARE

2.1. Health insurance status of the population (A-1)

2.1.1. Documentation sheet

Description	Health insurance status of the population (% of population)
Calculation	Number of insured persons divided by total mid-year Belgian population
Rationale	Belgium has a compulsory public health insurance system, in principle covering the entire population (employees, self-employed, civil servants, unemployed, pensioners, minimum income recipients, disabled, students, foreign nationals, as well as all of their dependents) and a wide range of services. The percentage of insured persons is an indicator of accessibility of health care. Data on the number of persons with private health insurance is currently not available.
Data source	Number of insured individuals: RIZIV – INAMI (web application: https://applstst2.riziv.fgov.be/analytics/NL/Portal/mainUnchallenged.do?unchallenged=yes)
Technical definitions and limitations	An uninsured person can be defined as someone who is not affiliated with a sickness fund and hence is not entitled to compulsory health insurance. The main reason is that administrative and/or financial requirements are not fulfilled. This does not mean that “uninsured people” have no right to necessary medical care. They are covered by the public municipal welfare centres (OCMW – CPAS).
International comparability	International comparability is possible. However, health insurance coverage is a partial indicator of accessibility, since the range of services covered and the degree of cost sharing applied to those services can vary across countries.
Related performance indicators	Out-of-pocket payments

2.1.2. Results

Based on data provided by the National Institute for Health and Disability Insurance (RIZIV – INAMI), the percentage of uninsured persons (persons not affiliated with a sickness fund) was stable between 2009 and 2014 at about 1% (see Table 10). There are, however, some differences in coverage rates (2014) between regions, men and women and between age categories. Possible explanations for the lower coverage rates of persons aged 25-40 are related to family and work situation. At the age of 25 or when people start working, they are no longer insured as a dependent person of their parents but become insured in their own name. Moreover, when two individuals who are affiliated with a different sickness fund start living together, they often choose one of the sickness funds. These changes present some paperwork to be done or contributions to be paid.

According to the OECD Health Statistics 2015, all EU-15 countries have coverage rates between 99 and 100%, except for Luxembourg (96.4%) (data not shown because of the limited variation between countries). However, it is not clear from the definitions how countries with a 100% coverage rate report persons who do not fulfil administrative and/or financial requirements. In Germany, all residents are legally required since January 2009 to have health insurance but those earning above a threshold may choose to remain with social health insurance or take out private health insurance.[1]

Table 10 – Percentage of the population covered by public health insurance, by year and patient characteristics (2009-2014)

Variable	Category	Number of insured persons (mid-year) (N)	Number of persons affiliated to a sickness fund (mid-year) (A)	Rate N/A
Year	2009	10 546 590	10 650 480	99.0%
	2010	10 632 028	10 735 039	99.0%
	2011	10 715 356	10 823 976	99.0%
	2012	10 785 206	10 904 425	98.9%
	2013	10 851 160	10 969 707	98.9%
	2014	10 906 348	11 028 464	98.9%
Data 2014 by categories				
Age (years)	00-04	628 099	632 094	99.4%
	05-09	629 782	634 480	99.3%
	10-14	596 543	600 254	99.4%
	15-19	612 223	615 568	99.5%
	20-24	667 576	677 358	98.6%
	25-29	678 632	698 250	97.2%
	30-34	704 145	722 607	97.4%
	35-39	692 442	707 552	97.9%
	40-44	739 931	753 124	98.2%
	45-49	772 379	783 548	98.6%
	50-54	789 063	797 154	99.0%
	55-59	729 630	734 659	99.3%
	60-64	649 704	652 437	99.6%
	65-69	584 260	585 706	99.8%
	70-74	424 205	424 708	99.9%
	75-79	398 447	398 898	99.9%
	80+	609 287	610 067	99.9%
Gender	Female	5 564 907	5 610 232	99.2%
	Male	5 341 441	5 418 232	98.6%
Province	Antwerpen	1 761 181	1 773 925	99.3%
	Brabant Wallon	379 198	382 210	99.2%
	Bruxelles-Capitale	1 055 998	1 079 928	97.8%

	Hainaut	1 293 560	1 303 896	99.2%
	Limburg	821 099	825 463	99.5%
	Liège	1 053 520	1 062 318	99.2%
	Luxembourg	218 105	219 678	99.3%
	Namur	477 339	480 635	99.3%
	Oost-Vlaanderen	1 452 420	1 460 690	99.4%
	Vlaams Brabant	1 076 509	1 082 988	99.4%
	West-Vlaanderen	1 162 274	1 167 593	99.5%
	Abroad	143 814	173 185	83.0%
	Unknown	11 331	15 955	71.0%
Region	Brussels region	1 055 998	1 079 928	97.8%
	Flemish region	6 273 483	6 310 659	99.4%
	Walloon region	3 421 722	3 448 737	99.2%
	Abroad	143 814	173 185	83.0%
	Unknown	11 331	15 955	71.0%

Source: RIZIV – INAMI

Key points

- **The percentage of uninsured persons (not affiliated with a sickness fund) in Belgium is about 1% but in Brussels and for age categories 25-40 years of age this percentage amounts to more than 2%.**
- **All EU-15 countries have coverages rates between 99 and 100% (except for Luxembourg).**

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2.2. Out-of-pocket payments per capita and as a share of total healthcare expenditure (A-2, A-3)

2.2.1. Documentation sheet

Description	Out-of-pocket payments (in US $ PPP/capita) Out-of-pocket payments (% of total health expenditures)
Calculation	Amount of out-of-pocket payments (HF.2.3 in the ICHA-HF classification of healthcare financing) divided by population (mid-year for the relevant year) Amount of out-of-pocket payments (HF.2.3 in the ICHA-HF classification of healthcare financing) divided by total healthcare expenditure
Rationale	Financial access is a basic condition for a functional healthcare system. Foregoing necessary treatment because of its cost can be detrimental to a person's health. High out-of-pocket payments that affect other necessary expenses are also considered undesirable. Healthcare is generally considered financially inaccessible when people limit or postpone the use of necessary care because of (excessively) high costs, or when they have to relinquish other basic necessities because they need care.
Primary data source	OECD Health Statistics[1]
Technical definitions	Out-of-pocket payments are expenditures borne directly by a patient because health insurance does not cover the (full) cost of the health good or service. They include cost-sharing (co-payment, coinsurance – "ticket modérateur" in French and "remgeld" in Dutch – or deductible), self-medication and other expenditure paid directly by private households. It does not include the patient contribution to long-term care in elderly and nursing homes. This is due to the fact that nursing homes (mostly used by the elderly) are classified under 'social care' in national accounts.
International comparability	The OECD definition was adopted. OECD member countries are at varying stages of implementing the System of Health Accounts (SHA). Therefore, the data reported in OECD Health Statistics 2015 are at varying levels of comparability.
Performance dimension	Accessibility
Related indicators	Healthcare expenditure according to the System of Health Accounts (OECD) Delayed contacts with health services for financial reasons

2.2.2. Results

Table 11 gives the evolution over time (2003-2013) of out-of-pocket payments expressed in million euros, as a percentage of total current healthcare expenditure and in euros per capita. Total out-of-pocket payments rose from 5.22 to 7.22 billion euros between 2003 and 2013, with the largest increase noticed in 2011. The share of out-of-pocket payments in total healthcare expenditure remained rather constant during the same period (20.0% in 2003, but 18.2% in 2004 and 17.9% in 2013). Measured in per capita terms, out-of-pocket payments increased from € 502.8 in 2003 to € 646.0 in 2013.

Table 11 – Out-of-pocket payments and co-payments in Belgium (2003-2013)

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Out-of-pocket (OOP) payments (in million euros)	5217.4	4937.8	4936.4	5455.2	6028.8	6140.9	6444.0	6484.2	7208.8	7044.9	7223.6
Co-payments (in million euros)			1602.4	1653.3	1718.7	1852.6	1964.2	1936.8	1957.2	1999.6	
OOP-payments as a share of total expenditure on health (in %)	20.3	18.2	17.6	18.7	19.4	18.5	18.2	17.9	18.7	17.8	17.9
Per capita (in €)	502.8	473.8	471.1	517.2	567.4	573.4	596.9	595.1	652.5	633.1	646.0

Source: SHA, OECD Health Statistics 2015

The picture is somewhat more positive for the amount and evolution of co-payments for (partially) reimbursed products and services. One explanation for the better results for co-payments compared to out-of-pocket payments is that safety nets, such as the maximum billing system or increased reimbursement of medical expenses, target the protection of patients against large amounts of co-payments only. Other out-of-pocket payments such as over-the-counter medicines or supplements are not included in these safety nets.

The cost of healthcare for patients or households is not necessarily the same as the financial burden of healthcare. A household financial burden is measured in terms of its capacity to pay rather than an absolute amount of out-of-pocket payment. Hence, the financial burden depends on household income. Since out-of-pocket payments for health displaces resources available for other goods and services, they should be related to household consumption patterns to measure 'financial protection' in health. The Household Budget Survey (2014) showed that, on average, the share of out-of-pocket payments in total household consumption is 4.6%.[2] Higher income households spend relatively more on health than lower income households (4.4% and 4.1% for the lowest income quartiles and 5.3% 5.1% for the highest income quartiles). The share of household consumption allocated to medical spending excluding long-term care expenditure (to make results more comparable between countries) amounted to 3.0% in 2013 in Belgium.[3]

A third dimension of coverage, in addition to population and cost coverage, is service coverage which can be defined as the proportion of primary health coverage in total health spending. Service coverage in Belgium largely varies by function of care: 84% service coverage for inpatient care, 78% for outpatient primary and specialist care, 57% for pharmaceuticals, 91% for ancillary services and 49% for dental care and dental prosthesis.[4]

International comparison

In an international perspective[m] (Figure 16), out-of-pocket payments represent a relatively large share in total healthcare expenditure in Belgium (17.8%), with only Finland and the Southern European countries showing a larger share. In Portugal and Greece out-of-pocket payments are more than 25% and 30% of total healthcare expenditure, respectively. In the Netherlands the share is only slightly more than 5% but the value for the Netherlands is underestimated because compulsory co-payments by patients to health insurers are not included.

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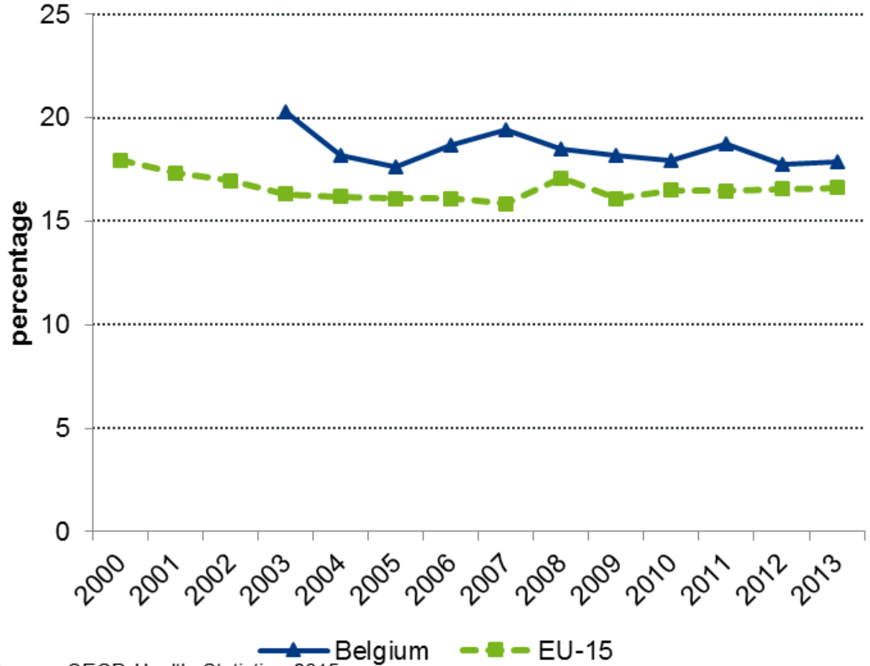
[m] While the amounts in Table 11 are expressed in euros, all amounts in Figure 16 and Figure 17 are expressed in US $ PPP.

Figure 16 also compares the evolution over time (2003-2013) of the share of out-of-pocket payments in total healthcare expenditure between Belgium and EU-15. For the whole period the share for Belgium was above the share for EU-15 and ranged between 15% and 20%, except for the year 2013 where the share for Belgium was slightly above 20%.

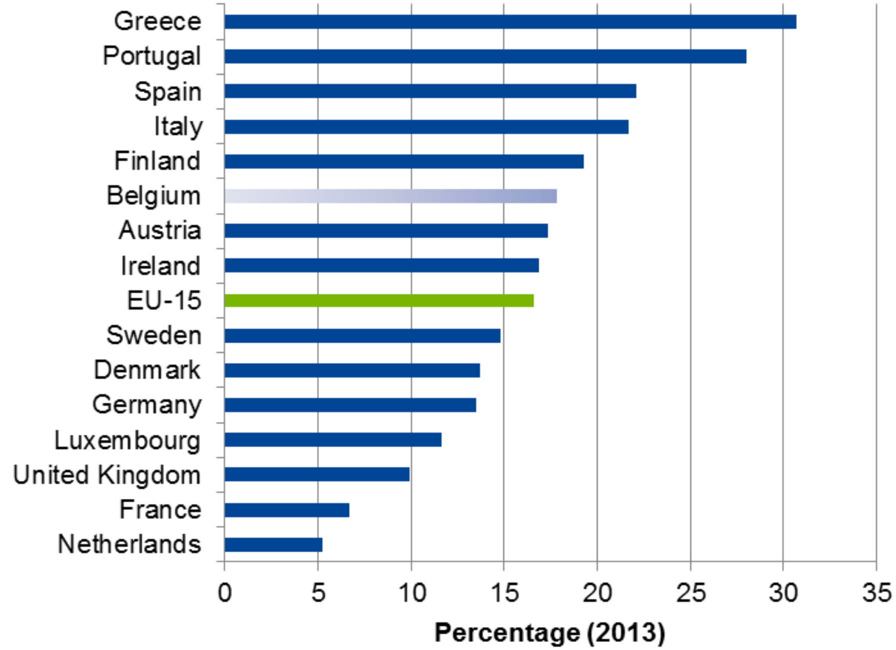
When out-of-pocket payments are expressed per capita, Belgium is at the top of the ranking, only preceded by Austria (see Figure 17). In 2013, the Belgian population paid on average US $ 760 (PPP) out-of-pocket for healthcare per person, whereas the EU-15 average equalled almost US $ 600 (PPP). In the Netherlands out-of-pocket payments per capita amounted to US $ 270 (PPP) in 2013 but also here the amount is underestimated.

Figure 17 also compares the evolution over time (2003-2013) of the share of out-of-pocket payments per capita between Belgium and EU-15. As was the case for out-of-pocket payments expressed in terms of total healthcare expenditure, the amount per capita for Belgium was above the amount for EU-15 for the whole period. Both in Belgium and in EU-15 the average amount per capita increased during the 2003 and 2013, with a large increase in Belgium in 2011.

Figure 16 – Out-of-pocket payments as a percentage of total healthcare expenditure: international comparison (2000-2013)

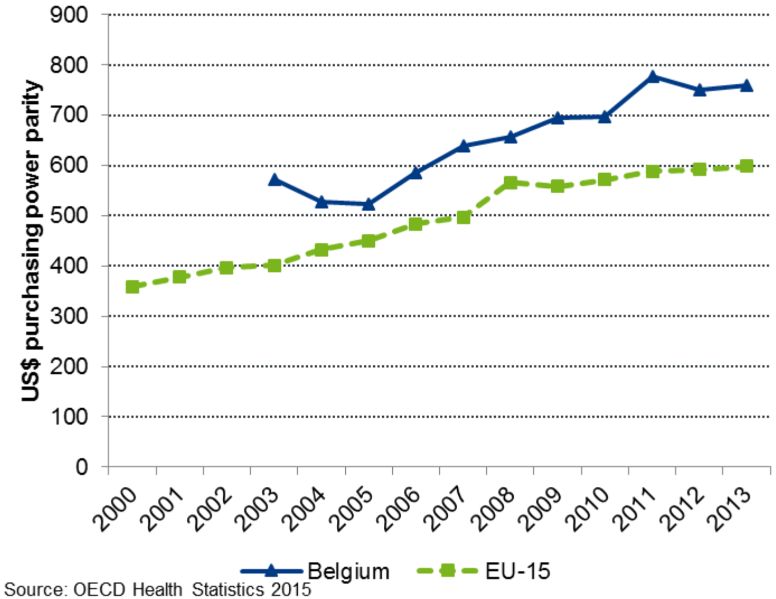


Source: OECD Health Statistics 2015

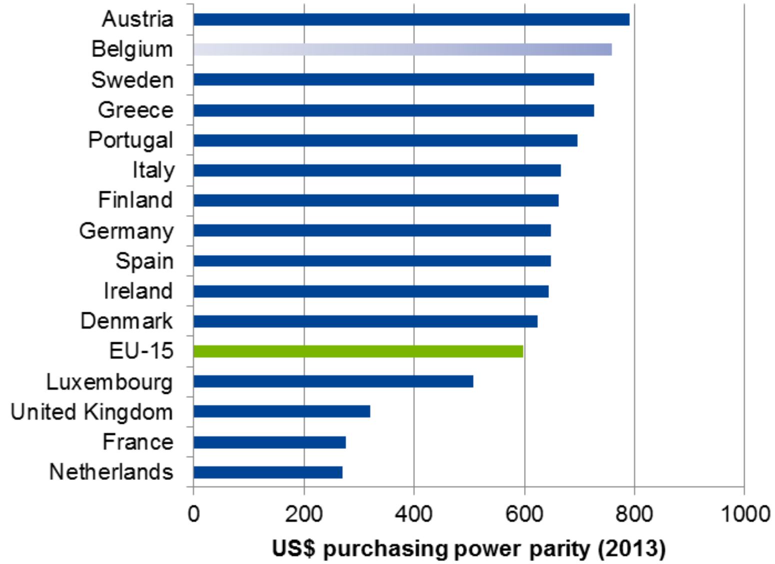


Source: OECD Health Statistics 2015

Figure 17 – Out-of-pocket payments per capita: international comparison (2000-2013)



Source: OECD Health Statistics 2015



Source: OECD Health Statistics 2015

Key points

- **High out-of-pocket payments for health, which are private payments at the point of use, raise issues of accessibility of healthcare.**
- **Out-of-pocket payments in Belgium rose between 2003 and 2013 when expressed as absolute amounts (from 5.22 to € 7.22 billion euros) or per capita (€ 502.8 to € 646.0), but remained rather stable as a share of total healthcare expenditure, with a slight decrease during the last years (from 20.3% to 17.9%).**
- **In an international perspective, Belgium is at the top of the ranking compared to member states of EU-15 and the EU-15 average. This result holds whatever the measure: per capita (expressed in terms of US PPP) or as a share of total healthcare expenditure.**

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2.3. Delayed contacts with health services for financial reasons (A-4)

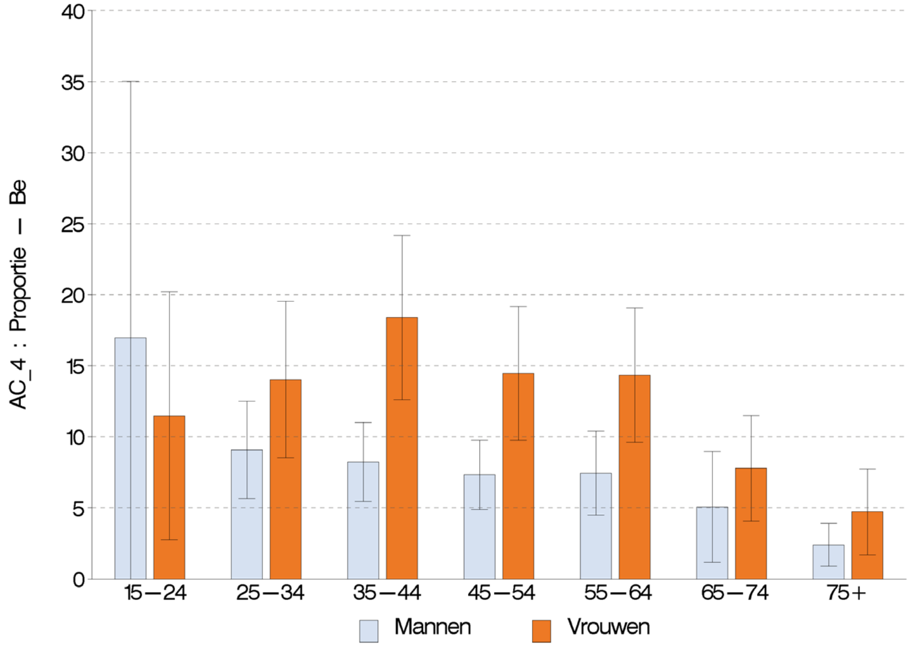
2.3.1. Documentation sheet

Description	Self-reported delayed contacts with health services for financial reasons (% of households)
Calculation	Idem
Rationale	Financial access is a basic condition for a functional healthcare system. Foregoing necessary treatment because of its cost can be detrimental to a person's health. High out-of-pocket payments that affect other necessary expenses are also considered undesirable. Care is generally considered financially inaccessible when people limit or postpone the use of necessary care because of (excessively) high costs, or when they have to relinquish other basic necessities because they need care.
Primary data source	Health Interview Survey (HIS)
Technical definitions	AC.04. Was there any time during the past 12 months, when you or someone in the household needed the following kinds of care, but could not afford it? • AC.04.01. Medical care or a surgery (yes/no)? • AC.04.02. Dental care (yes/no)? • AC.04.03. Prescribed medicines (yes/no)? • AC.04.04. Eyeglasses or contact lenses (yes/no)? • AC.04.05. Mental healthcare, by a psychologist or a psychiatrist for example (yes/no)? An indicator AC_04 was constructed and set equal to one as soon as one household member answered yes to one of the above questions and the household was considered to have postponed healthcare for financial reasons. More technical details on the methodology are available in the HIS report.[1]
International comparability	Data on unmet healthcare needs are available in the OECD Health Statistics and are based on the EU-SILC. Reasons include financial reasons, too long waiting times or too long travelling distances.
Performance dimension	Accessibility
Related indicators	Out-of-pocket payments as a share of total healthcare expenditure and per capita

2.3.2. Results

In 2013, 8% of households declared that they had to postpone healthcare (medical care, surgery, dental care, prescribed medicines, eyeglasses or contact lenses, mental healthcare) for financial reasons. This proportion is higher for women than for men, for all age categories (Figure 18). The percentage of households that has to postpone healthcare for financial reasons is much lower in the age group of 75 years and older compared to age groups between 15 and 64 years of age. While the percentage is (more or less) decreasing by age group for men, the results for women show an inverse U-shape.

Figure 18 – Percentage of households that reported to have delayed contacts with health services for financial reasons, by age and sex (2013)



Source: Demarest, 2015[1]

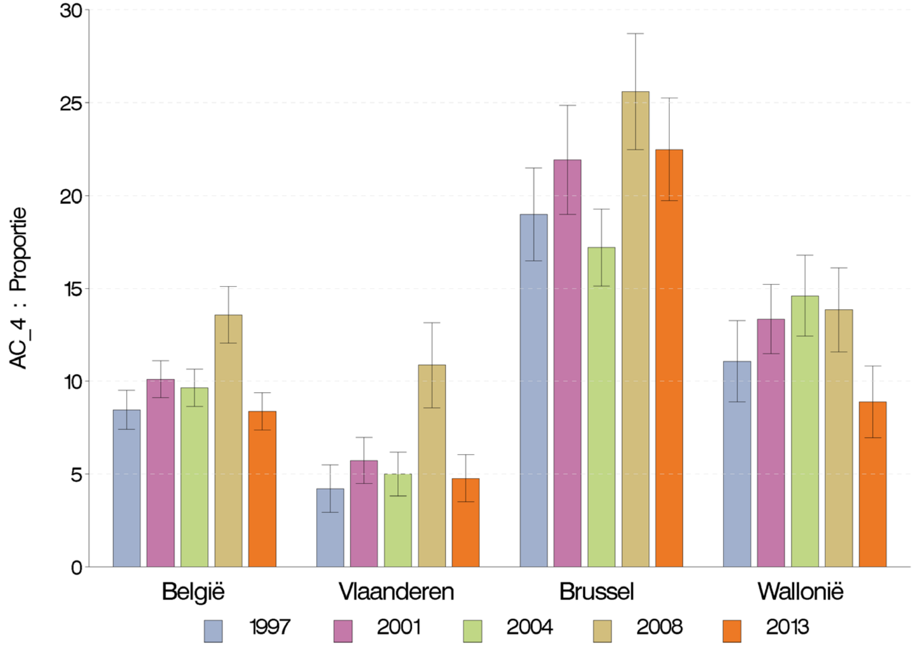
There is a clear association with the level of education of the household: 12% for households from the lowest education level versus 6% for households in the highest education level. This is also true for household income: 19% for households in the lowest income level versus 3% for households in the highest income level.[1]

There is also a regional difference: in Brussels 22% of households declared to postpone healthcare, versus 9% in Wallonia and 5% in Flanders. In the three regions this percentage is increasing over time (Figure 19).

All results still hold after adjustment for age and sex.

Figure 19 also shows the evolution since the first Health Interview Survey in 1997. For Belgium, the share of households was more or less stable in 1997, 2001, 2004 and 2013 (around 8%) but increased to 14% in 2008. The results for Flanders and Brussels show a comparable course over time, be it at a lower (Flanders) or higher (Brussels) level. The results for Wallonia are deviating from the other regions: the highest level was found in 2004 and not in 2008 and the results for 2013 are the best since the first survey in 1997.

Figure 19 – Percentage of households that reported to have delayed contacts with health services for financial reasons, by region (1997-2013)



Source: [1]

The results for the percentage of households delaying contacts with health services for financial reasons in the HIS are divergent from those in the Eurostat database, which are based on the EU-Statistics on Income and Living Conditions (EU-SILC) survey.[2] Data in the EU-SILC refer to the population aged 16 years and over in private households (collective households are excluded) and results are not standardised for age or sex.

The EU-SILC survey includes questions on different possible barriers (such as cost, distance, waiting times, etc.) to accessing medical or dental examinations or treatment, but does not include questions on unmet need for surgery, prescribed medicines, eyeglasses or contact lenses or mental healthcare.

The share of persons aged 16 and over in Belgium reporting unmet needs for medical care due to cost, distance or waiting times was 1.3% in 2004 and 1.9% in 2013 (1.8% when only cost is taken into account). There are, however, large differences between income quintiles (equivalent disposable household income). The share of persons reporting unmet needs for medical care due to cost, distance or waiting times was 0.1% in 2013 for the highest income quintile versus 5.5% for the lowest income quintile.

The results for dental care show a comparable pattern but shares are higher: 2.3% in 2004 and 3% in 2013 for unmet needs due to cost, distance or waiting times for the population aged 16 and over. Results per income quintile range from 0.4% for the highest income quintile to 8.3% for the lowest income quintile.

Results for 2014 (made available by Statistics Belgium) show an increase for medical and dental care for the total population and for most income quintiles. The share of persons reporting unmet needs for medical care due to cost, distance or waiting times was on average 2.5%, 7.8% for the lowest income quintile and 0.2% for the highest. For dental care, these percentages are 3.9%, 11.5% and 0.3% respectively.

Key points

- **The percentage of households delaying contacts with health services for financial reasons is an indicator of how accessible, at least in financial terms, a health system is.**
- **In 2013, 8% of the households declared that they had to postpone healthcare (medical care, surgery, medicines, eyeglasses or contact lenses, mental healthcare) for financial reasons. The percentage is in line with results of previous surveys (1997, 2001 and 2004) but is lower than the 14% found in 2008.**
- **Shares of households delaying contacts with health services are not equally spread across different income or educational groups. Generally, the lower the income or educational level, the larger the percentage of households that has to postpone healthcare for financial reasons.**
- **There is also a clear regional difference: in Brussels 22% of households declared to postpone healthcare, versus 9% in Wallonia and 5% in Flanders.**

References

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2.4. Practising physicians (A-5)

2.4.1. Documentation sheet

Description	Number of practising physicians per 1000 population
Calculation	Numerator : Number of practising physicians x 1 000 Denominator: Total mid-year Belgian population
Rationale	The number of care providers gives important information on the medical workforce and thus the accessibility of healthcare. Together with the number of graduates, this information can be used for health providers supply planning. The “Commision de planification de l’offre médicale” publishes every year statistics on the number of physicians licensed to practise.[1] Since this year (2015), the PlanCad project also allows to compute estimated Full Time Equivalents of the healthcare professionals.[2]
Primary data source	RIZIV/INAMI: yearly statistics[3]
Technical definitions	A care provider is considered to be practising (RIZIV – INAMI: “profiles”) if he/she provided more than 1 clinical service (i.e. consultations, visits, technical acts, but not prescriptions) during a given year or the 2 preceding years. General practitioners working as salaried in medical houses or in homes for elderly are added to those numbers. Physicians still in training are not counted.
International comparability	The OECD differentiates between practising physicians (doctors providing direct care to patients), professionally active physicians (including also doctors working in the health sectors as managers, educators, researches, etc) and physicians licensed to practise (ie having the required diploma). In addition, OECD countries use different methodologies to calculate the same indicator (such as different levels of activity). Comparisons are therefore potentially inadequate.[4] Before 2009, Belgian data transferred to OECD for practising physicians included all registered physicians at the INAMI – RIZIV (all physicians having a RIZV – INAMI code). This amounted to a physician density of 4.03/1 000 pop, one of the highest in Europe.[5] Since 2009 (and since then data have been adapted retrospectively) these data are based on the number of practising physicians, giving a better picture of the medical density in Belgium.
Dimensions	Accessibility, Health workforce
Related indicators	Qualification levels of healthcare providers (GP versus SPs). Medical graduates

2.4.2. Results

2.4.2.1. Belgium

Based on the last RIZIV – INAMI statistics, there were **32 999** physicians in practice in Belgium (Table 12), corresponding to density of 2.96/1000 pop (Table 13, with evolution since 2005). The qualification level of those practising medical doctors is presented in Figure 20.

This indicator poorly reflects the real workforce of practising physicians, as all physicians performing at least 1 clinical act are included in the head counts. To overcome this problem, the FPS Public health recently published FTE counts per speciality. This data are presented in Table 14. [2] For instance, while the number of GP licensed to practise is 16 144, their estimated FTE is 11 545. All data are available per speciality (Table 14)

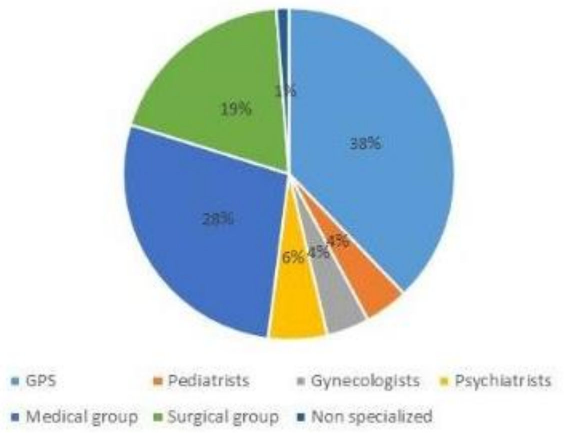
Table 12 – Number of practising physicians (per 1000 population) (2013)

Speciality	Licensed to practise (INAMI-RIZIV number) 31-12-2013 *			Practising 2013**	In training 2013		Density 2013
	65 and over	- 65	Total	**Number**	Number	%	/ 10.000 inhab.
TOTAL Physicians	**8951**	**33 468**	**42 419**	**32 999**	**5,103**	**15%**	**29.6**
GPS	3154	11 798	14 952	**12 483**	776	6%	11.2
Pediatrists	445	1359	1804	**1414**	374	26%	1.3
Gynecologists	382	1212	1594	**1377**	304	22%	1.2
Psychiatrists	615	1633	2248	**1899**	300	16%	1.7
Medical group	2324	8652	10 976	**9157**	1790	20%	8.2
Surgical group	1508	6165	7673	**6261**	1559	25%	5.6
Non specialized	523	2649	3172	**408**	-	0%	0.4

Source: RIZIV – INAMI [3]

- *Licensed to practise (who has a INAMI-RIZIV number)*
- *Practising: at least one reimbursed act during the year.*
- *Density on practising physicians only*

Figure 20 – Qualification level of practising medical doctors (2013)



Source: RIZIV – INAMI [3]

Table 13 – Number of practising physicians, by category (2005-2013)

Spécialités / professions	2005	2006	2007	2008	2009	2010	2011	2012	2013	Accroissement annuel moyen
TOTAL Physicians	30081	30440	30868	31281	31561	31794	32164	32573	**32983**	1.16%
GPs	12405	12415	12336	12273	12272	12217	12273	12356	**12472**	0.07%
Pediatrists	1174	1197	1236	1269	1301	1331	1350	1378	**1414**	2.35%
Gynecologists	1211	1233	1265	1317	1331	1346	1352	1370	**1377**	1.62%
Psychiatrists	1803	1840	1855	1891	1914	1932	1865	1890	**1899**	0.65%
Medical group	7829	8027	8193	8372	8500	8627	8866	9042	**9157**	1.98%
Surgical group	5155	5231	5510	5717	5806	5916	6059	6150	**6261**	2.46%
Non specialized	504	497	473	442	437	425	399	387	**403**	-2.76%

Source: RIZIV – INAMI [3]

Table 14 – Recapitulative table on the number of physicians, by speciality and region (2012)

		EN DROIT DE PRESTER				DESCRIPTION ACTIVITE										DESCRIPTION POPULATION ACTIVE INAMI ONSS						EVOLUTION	
		Répartition effectif par région				Activité							ETP moyen INAMI par région			Nationalité		Genre	Répartition effectif actif par âge			2004-2012	
Groupe d'analyse	N	RBC	RF	RW	AU	% actifs	% actifs INAMI	% conv INAMI	% accr INAMI	ETP moyen INAMI	ETP Global INAMI	ETP Global ONSS	RBC	RF	RW	% belge	% diplôme belge	% femme	% <45	% 45<65	% 65+	Δ% Actifs	Δ% ETPs
Médecine générale	16.144	1.561	8.383	5.360	840	76,1	66,5	82,0	84,3	0,72	11.545,1	1.616,9	0,38	0,90	0,64	97,3	98,8	36,0	28,1	62,0	9,9	-0,7	0,1
Pédiatrie	2.021	321	864	602	234	72,3	68,4	86,7	73,1	0,84	1.705,2	413,2	0,63	1,15	0,84	91,7	92,3	63,9	42,3	45,6	12,1	15,8	20,0
Gériatrie	283	21	176	81	5	95,4	94,0	98,1	80,8	0,83	236,1	43,4	0,64	0,93	0,71	94,8	97,0	57,8	48,5	46,7	4,8	.	.
Ophtalmologie	1.306	155	694	347	110	78,0	77,9	38,2	84,1	0,84	1.093,6	81,8	0,69	0,98	0,86	94,5	95,0	60,1	36,9	49,5	13,6	8,4	13,2
Otorhinolaryngologie	783	107	364	254	58	80,2	79,7	65,1	75,3	0,66	514,2	98,9	0,51	0,80	0,66	96,2	95,5	40,8	34,6	53,5	11,9	12,4	10,0
Dermato-vénéréologie	856	131	429	238	58	82,0	81,7	26,9	78,1	0,70	602,1	53,7	0,54	0,79	0,81	95,0	95,6	71,9	38,5	48,1	13,4	11,5	1,9
Médecine d'urgence	41	15	14	12	.	95,1	82,9	100,0	55,9	0,85	35,0	13,7	0,73	1,03	0,81	89,7	92,3	46,2	71,8	28,2	0,0	.	.
Médecine aiguë	319	44	113	151	11	92,5	90,3	99,3	44,1	1,27	404,8	28,6	0,72	1,96	1,00	94,6	96,9	38,6	54,6	43,7	1,7	.	.
Médecine interne	1.968	307	847	620	194	71,0	66,8	93,9	66,2	0,72	1.412,2	511,0	0,60	0,83	0,82	94,2	96,0	36,4	38,9	46,9	14,2	-30,2	-20,2
Médecine interne - compétence Endocrino-diabétologie	274	47	120	97	10	93,4	92,0	92,9	81,7	0,87	237,8	65,8	0,59	1,15	0,72	94,5	94,5	52,3	44,1	43,8	12,1	30,5	21,9
Médecine interne - compétence Hématologie clinique	133	18	67	42	6	94,0	92,5	96,7	77,2	1,00	132,8	62,3	0,38	1,32	0,90	94,4	96,0	44,8	46,4	47,2	6,4	44,8	33,5
Médecine interne - compétence Néphrologie	322	41	171	91	19	87,9	85,7	99,3	72,8	0,79	255,6	76,0	0,76	0,84	0,85	94,3	97,5	37,8	48,4	44,2	7,4	26,5	20,3
Médecine interne - base et compétences résiduelles	1.239	201	489	390	159	59,2	53,6	91,6	55,4	0,63	786,0	306,9	0,59	0,68	0,83	94,0	95,9	28,9	32,2	48,9	18,9	-86,0	-53,7
Cardiologie	1.269	182	573	398	116	81,3	79,7	77,3	71,9	0,78	988,8	180,9	0,47	1,05	0,76	93,6	95,0	19,5	36,1	53,7	10,2	22,6	19,8
Gastro-entérologie	749	106	358	235	50	84,5	83,3	81,7	82,5	0,74	550,8	114,2	0,43	0,91	0,76	96,7	97,5	27,5	37,8	54,7	7,6	34,8	37,8
Pneumologie	587	63	283	199	42	85,2	83,8	91,7	81,7	0,81	474,1	118,0	0,67	0,97	0,78	94,8	96,8	37,8	42,8	52,6	4,6	33,6	35,8
Rhumatologie	279	42	130	92	15	79,6	79,2	70,1	79,2	0,89	247,6	43,4	0,86	0,90	1,02	98,6	99,1	41,9	28,4	54,5	17,1	0,0	-9,2
Médecine physique et réadaptation	600	42	332	178	48	78,0	77,2	71,1	78,0	0,73	438,9	80,9	0,55	0,86	0,74	96,6	98,1	44,9	35,9	54,9	9,2	11,1	-3,4
Oncologie médicale	230	41	99	78	12	94,3	90,4	95,2	84,1	0,98	224,7	66,8	0,64	1,21	0,96	88,0	89,4	50,2	47,0	48,4	4,6	.	.
Radiothérapie-oncologie	267	17	136	79	35	67,4	64,8	93,6	80,3	0,53	142,2	64,3	0,46	0,70	0,50	95,0	97,8	60,0	51,7	47,8	0,6	22,2	14,1
Anesthésie-réanimation	2.801	260	1.287	771	483	66,5	64,5	85,8	71,4	0,63	1.766,6	360,8	0,44	0,91	0,61	93,2	95,0	38,9	47,4	49,1	3,5	19,0	12,1
Chirurgie	2.008	234	902	595	277	66,8	64,7	74,2	56,4	0,59	1.194,5	314,8	0,39	0,83	0,59	91,3	95,2	18,0	34,8	52,4	12,8	7,7	2,8
Chirurgie plastique	306	44	145	63	54	72,9	71,9	28,2	36,4	0,81	248,0	30,7	0,61	1,05	1,05	91,0	92,8	22,4	39,5	51,6	9,0	18,8	16,9
Neurochirurgie	240	18	131	61	30	76,3	75,4	69,6	50,8	0,67	161,0	47,9	0,54	0,81	0,69	84,2	84,7	9,3	43,7	45,4	10,9	20,8	17,3

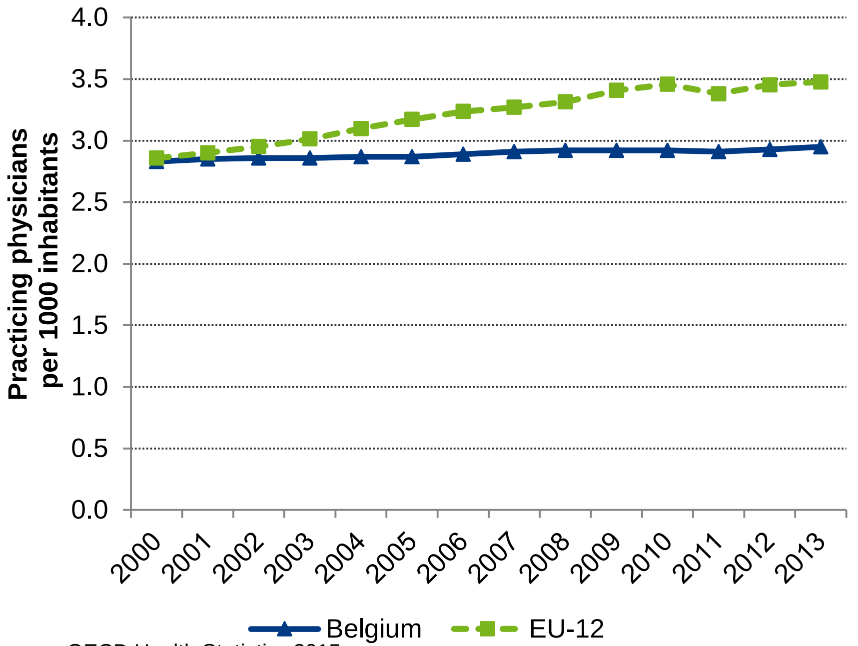
	EN DROIT DE PRESTER					DESCRIPTION ACTIVITE										DESCRIPTION POPULATION ACTIVE INAMI ONSS						EVOLUTION	
		Répartition effectif par région				Activité							ETP moyen INAMI par région			Nationalité		Genre	Répartition effectif actif par âge			2004-2012	
Groupe d'analyse	N	RBC	RF	RW	AU	% actifs	% actifs INAMI	% conv INAMI	% accr INAMI	ETP moyen INAMI	ETP Global INAMI	ETP Global ONSS	RBC	RF	RW	% belge	% diplôme belge	% femme	% <45	% 45<65	% 65+	Δ% Actifs	Δ% ETPs
Stomatologie	388	68	202	92	26	73,5	73,5	67,4	47,4	0,54	209,6	27,0	0,24	0,75	0,46	95,8	97,9	26,0	38,6	48,8	12,6	8,1	-13,4
Chirurgie orthopédique	1.259	110	654	355	140	76,7	75,9	58,1	62,4	0,65	816,0	118,6	0,35	0,85	0,63	94,4	97,0	7,9	33,4	55,4	11,2	12,9	6,3
Gynécologie-obstétrique	1.787	272	755	547	213	77,2	76,5	43,2	67,8	0,69	1.231,7	200,1	0,52	0,91	0,73	93,3	95,2	48,3	36,6	48,8	14,6	11,0	4,9
Urologie	489	48	254	140	47	77,1	75,9	63,9	75,2	0,72	351,5	58,6	0,60	0,93	0,61	95,0	97,6	10,3	38,2	49,1	12,7	14,9	20,1
Anatomie pathologique	405	46	225	104	30	74,3	72,3	91,8	80,5	0,70	282,0	102,5	0,65	0,76	0,76	93,4	93,7	56,5	40,2	52,8	7,0	16,6	13,7
Biologie clinique	841	116	398	260	67	63,4	57,8	95,1	74,3	0,81	680,7	175,1	0,97	0,93	0,76	97,6	97,9	45,8	24,0	61,2	14,8	-5,6	-2,5
Radiodiagnostic	1.965	186	920	636	223	74,2	73,2	60,8	80,9	0,67	1.309,9	204,4	0,52	0,83	0,70	94,9	96,4	28,1	31,6	60,8	7,5	8,8	4,9
Médecine nucléaire	370	38	166	141	25	74,3	72,7	92,9	72,1	0,70	257,7	63,6	0,67	0,81	0,69	97,5	96,4	38,2	27,3	59,3	13,5	-2,2	-7,5
Psychiatrie (3 titres)	2.106	399	967	573	167	84,6	82,7	87,7	67,4	1,00	2.112,7	379,2	0,73	1,26	1,03	94,6	96,6	48,4	36,9	47,3	15,8	22,6	20,5
Psychiatrie- particulièrement en psychiatrie infanto-juvénile	278	33	189	45	11	91,7	86,0	97,5	84,5	0,99	275,0	87,3	0,59	1,15	0,82	94,5	98,0	74,1	65,5	29,0	5,5	63,5	56,0
Psychiatrie- particulièrement en psychiatrie adulte	702	72	496	90	44	85,8	84,2	92,9	70,1	0,89	628,2	108,3	0,51	1,03	0,87	95,5	98,2	43,0	46,7	39,0	14,3	40,5	41,0
Psychiatrie*	1.126	294	282	438	112	82,1	80,9	81,8	61,1	1,00	1.125,7	183,6	0,80	1,45	1,09	93,9	95,2	44,9	22,6	57,7	19,7	-0,4	-11,8*
Neuropsychiatrie*	403	66	172	89	76	39,7	37,2	75,3	50,7	0,28	113,6	33,2	0,17	0,40	0,38	99,4	98,8	17,5	0,0	58,8	41,3	-188,1	-272,0*
Neurologie	546	71	261	169	45	89,6	86,4	87,3	76,3	0,85	461,5	130,1	0,67	1,08	0,77	91,6	93,9	43,8	47,2	47,9	4,9	56,2	52,6
Médecine d'urgence - aiguë ou compétence particulière Médecine d'urgence	848	107	387	330	24	92,0	89,7	97,2	61,1	1,33	1.125,7	139,6	0,89	1,68	1,14	96,2	97,4	31,4	44,2	52,6	3,2	58,2	61,7
Compétence particulière Soins intensifs	801	68	503	197	33	89,5	89,1	90,3	79,8	0,98	785,0	168,9	0,61	1,13	0,87	96,4	98,5	27,1	42,3	55,1	2,6	26,1	26,3
Médecine physique et réadaptation ou compétence particulière Réadaptation fonctionnelle et professionnelle des handicapés	1.349	142	730	414	63	78,7	77,2	77,0	73,9	0,75	1.017,1	237,2	0,50	0,82	0,83	97,6	98,3	39,5	24,8	55,1	20,2	3,5	-16,2
Neuropsychiatrie ou Neurologie	949	137	433	258	121	68,4	65,5	84,4	70,1	0,61	576,3	163,3	0,43	0,81	0,63	93,5	95,1	37,3	35,6	50,5	13,9	-4,0	-11,8
Médecine du travail	998	70	616	239	73	67,6	3,4	-	-	-	0,0	555,3	-	-	-	95,9	97,0	61,3	35,3	62,2	2,5	21,9	-
Gestion de données de santé	59	11	26	21	1	76,3	3,4	-	-	-	0,0	41,4	-	-	-	97,8	97,8	35,6	11,1	86,7	2,2	-11,1	-
Médecine légale	41	1	18	22	.	58,5	17,1	-	-	-	0,0	15,5	-	-	-	100,0	100,0	25,0	41,7	41,7	16,7	-	-
Médecine d'assurance et expertise médicale	1.178	85	645	444	4	80,9	46,4	-	-	-	0,0	465,5	-	-	-	99,2	99,9	23,0	9,3	78,4	12,3	-	-
Sans spécialité ou agrément	6.578	728	1.674	985	3.191	19,7	4,9	73,1	0,0	0,02	117,5	828,0	0,03	0,04	0,03	84,7	84,2	53,5	41,3	50,8	7,9	-36,5	-38,7
Spécialités INAMI	27.472	3.570	12.851	8.160	2.891	75,3	73,4	73,3	71,0	0,73	20.183,6	4.159,5	0,57	0,93	0,75	94,0	95,6	39,2	38,0	51,0	10,9	14,5	11,9
Spécialités hors INAMI (Total)	2.231	165	1.281	707	78	76,6	29,3	-	-	-	0,0	1.061,7	-	-	-	97,8	98,7	38,2	19,9	71,6	8,5	66,3	70,7
Médecins (Total)	51.420	5.956	23.653	14.814	6.997	68,3	60,8	76,3	74,7	0,64	32.660,0	7.305,7	0,47	0,85	0,66	94,9	96,3	39,0	34,5	55,2	10,2	7,7	4,3
Médecins en formation	4.950	1.013	2.703	1.107	127	97,3	27,8	98,1	0,6	0,00	0,0	3.751,6	0,00	0,00	0,00	86,2	90,7	62,5	99,0	1,0	0,0	19,7	-

Source : [2]

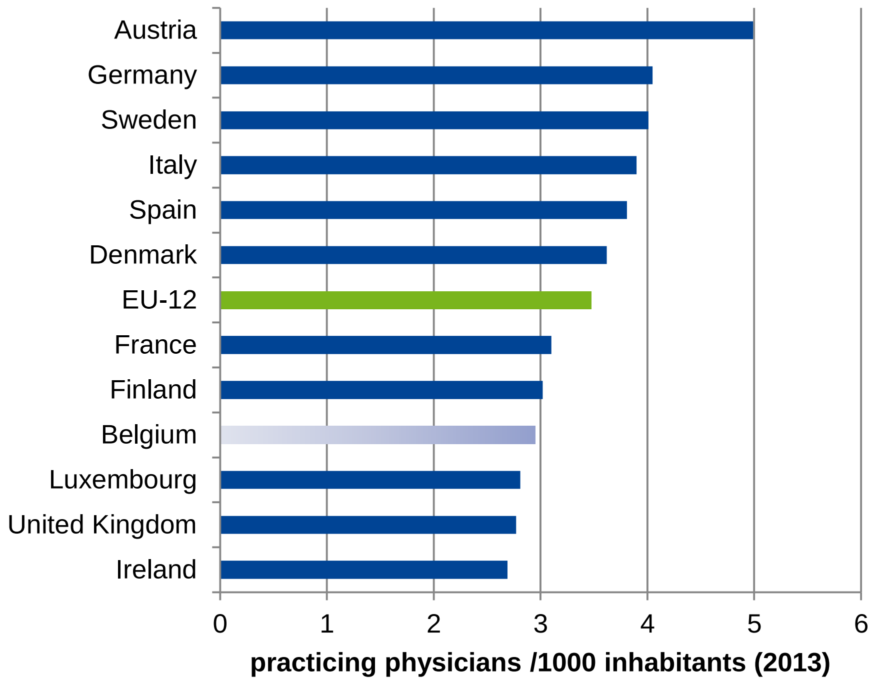
2.4.2.2. *International comparison*

Based on the 12 countries that report data on practising physicians to the OECD, Belgium has a lower density than EU average (3.5 / 1000 pop).

Figure 21 – Number of practising physicians (per 1000 population): international comparison (2000-2013)



Source: OECD Health Statistics 2015



Source: OECD Health Statistics 2015

Source: OECD Health Data 2015

Key points

- **The density of practising physicians is very stable since 2000, around 2.9/1000 pop (this represents approximately 33 000 physicians in 2013)**
- **This indicator poorly reflects the real workforce of practising physicians, as all physicians performing at least 1 clinical act are included in the head counts. To overcome this problem, the FPS Public health recently published data on real workforce. For 2012, this represents 32 660 ETPs.**
- **Compared to other EU countries, Belgium has a density lower than EU-average (3.5 / 1000 pop)**

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[5] Vlayen J, Vanthomme K, Camberlin C, Piérart J, Walckiers D, Kohn L, *et al.* A first step towards measuring the performance of the Belgian healthcare system. Brussels: Belgian Health Care Knowledge Centre (KCE); 2010. KCE Reports 128

2.5. Practising nurses (A-6)

2.5.1. Documentation sheet

Description	Number of practising nurses per 10 000 population
Calculation	Numerator : Number of practising nurses x 10 000 Denominator: Total mid-year Belgian population
Rationale	Nurses play a critical role in providing health care in hospitals and long-term care institutions, but also in primary care and in the home care setting. In addition, they are in most countries the largest group of healthcare professionals. Monitoring the number of practising nurses per 10 000 inhabitants is therefore important in light of the sustainability of the healthcare system. These are essential figures for workforce planning.[1]
Data source	Results "PlanCAD" Gegevenskoppeling Verpleegkunde 2004-2009, Cel Planning Aanbod Gezondheidsberoepen, Dienst Strategische Coördinatie Gezondheidszorgberoepen, FOD Volksgezondheid, Veiligheid van de Voedselketen en Leefmilieu. [2]
International comparability	The definition used by OECD distinguishes between nurses licensed to practise (with the required diploma), professionally active nurses (including those working as managers, educators or researchers) and practising nurses (providing services directly to patients). Midwives are not included, except in some countries where they are considered specialist nurses. The differences in in- and exclusion criteria between countries make international comparison of these data hazardous. In OECD health statistics [1] Belgium reports data for practising nurses. For 2004-2009, these numbers are based on the PlanCad results (nurses employed in the healthcare sector). For 2010 onwards, an estimation is made based on the ratio "nurses practising in health sector"/"nurses licensed to practise" observed between 2004-2009, which is then applied to the number of nurses licensed to practise (personal communication, cellule planification offre médicale).
Technical definition	Practising nurses are defined as those employed on the health sector.[2]
Dimension	Accessibility (health workforce)
Related indicators	Number of practising physicians per 100 000 population Medical and nursing graduates

2.5.2. Results

In 2009, date of the last PlanCAD results, there were 161 299 nurses licensed to practise, 126 473 accredited nurses active on the Belgian labour market, and 97 667 practising nurses, ie working in the healthcare sector (Table 15).

In Table 16, results are detailed for **126 473** accredited nurses (13.96% males) who were active on the Belgian labour market: 61.4% (n=77 679) of the nurses work in Flanders, 10.59% (n=13 399) in Brussels and 27.97% (n=35 359) in Wallonia. This corresponds to 124.25 nurses per 10 000 inhabitants in Flanders, 122.98 nurses per 10 000 inhabitants in Brussels and 101 107 nurses per 10 000 inhabitants in Wallonia. From Table 16 it is clear that most nurses (53%) work as employees in hospitals followed by nursing homes (14%) and home nursing (7%). However, it should be noted that the latter is the fastest growing healthcare setting regarding nursing employment (i.e. 1289 additional nurses between 2004 and 2009 or a growth of 19%).

Based on OECD health statistics, there is a growth of 19% in the number of practising nurses in Belgium between 2004 and 2012 (Table 17). This is in line with what is observed in other European countries (see Figure 22, for the few countries which procured information).

Table 15 – Number of nurses (all categories) in Belgium (2004-2009)

NURSES	2004	2005	2006	2007	2008	2009
Licensed to practise [1]	143 893	147 068	150 414	153 889	157 591	161 299
Professionally active nurses [2]	113 919	117 346	119 623	121 991	124 064	126 473
Practising nurses [3]	88 990	90 669	92 565	94 088	95 839	97 667

Source: PlanCAD nurses 2004-2009 [2]

[1] Table 31 PlanCAD infirmiers, page 50 « enregistrés dans cadastre »

[2] Table 31 PlanCAD infirmiers, page 50 « actifs en Belgique »

[3] Table 35 PlanCAD infimiers, page 52 « secteur santé »

Table 16 – Distribution professionally active nurses, per sector and region of employment, per 10 000 inhabitants (2009)

	Flanders			Brussels			Wallonia			Total	
	N	%	Per 10 000	N	%	Per 10 000	N	%	Per 10 000	**N**	**%**
Healthcare sector											
Hospital	40 343	51.94%	64.53	7 822	58.38%	71.79	18 635	52.70%	53.27	**66 800**	**52.82%**
Nursing home	11 373	14.64%	18.19	1 411	10.53%	12.95	4 676	13.22%	13.37	**17 460**	**13.81%**
Home nursing	6 197	7.98%	9.91	180	1.34%	1.65	1 836	5.27%	5.33	**8 240**	**6.52%**
Combination hospital, nursing home, home nursing	1 294	1.67%	2.07	377	2.81%	3.46	1 466	4.14%	4.19	**3 137**	**2.48%**
Healthcare sector (other)	1 138	1.47%	1.82	311	2.32%	2.85	394	1.11%	1.13	**1 843**	**1.46%**
Healthcare related											
Social sector	478	0.62%	0.76	34	0.25%	0.31	180	0.51%	0.51	**692**	**0.55%**
OCMW/CPAS	2 034	2.62%	3.25	241	1.80%	2.21	628	1.78%	1.80	**2 903**	**2.30%**
Other											
Education	2 866	3.69%	4.58	490	3.66%	4.50	1 566	4.43%	4.48	**4 922**	**3.89%**
Public sector	1 206	1.55%	1.93	1 194	8.91%	10.96	1 737	4.91%	4.97	**4 137**	**3.27%**
Private sector	2 279	2.93%	3.65	758	5.66%	6.96	531	1.50%	1.52	**3 568**	**2.82%**
Self-employed staff											
Combination different sectors	890	1.15%	1.42	280	2.09%	2.57	388	1.10%	1.11	**1 558**	**1.23%**
Self-employee with INAMI billing codes	3 215	4.14%	5.14	125	0.93%	1.15	923	2.61%	2.64	**4 263**	**3.37%**
Self-employee without INAMI billing codes	4 366	5.62%	6.98	176	1.31%	1.62	2 372	6.71%	6.78	**6 914**	**5.47%**
Total	**77 679**	**100%**	**124.25**	**13 399**	**100%**	**122.98**	**35 359**	**100%**	**101.07**	**126 437**	**100%**

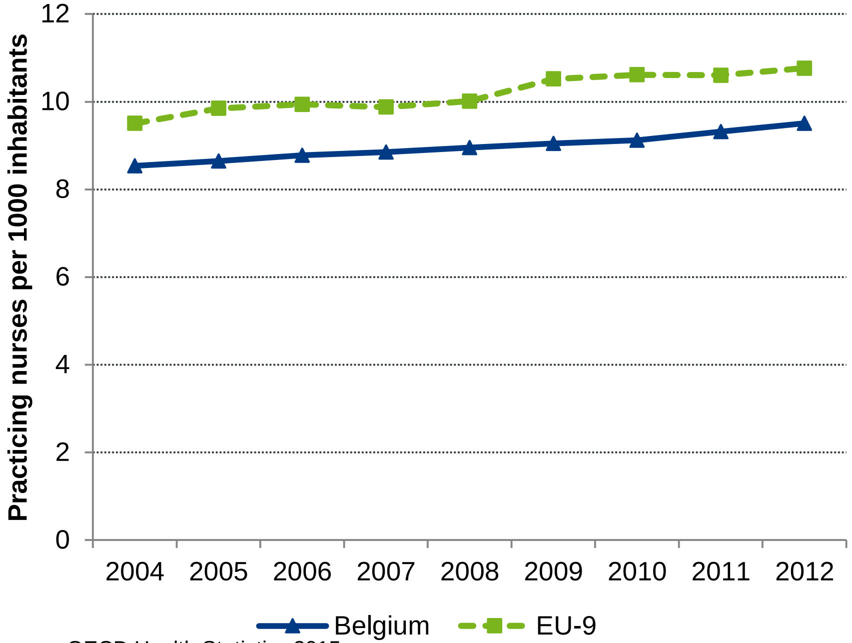
Source: PlanCAD 2009 [2].
Note: Data in light blue refers to nurses employed in the healthcare sector.

Table 17 – Data on practising nurses for Belgium available on OECD Health Statistics 2014 (2004-2012)

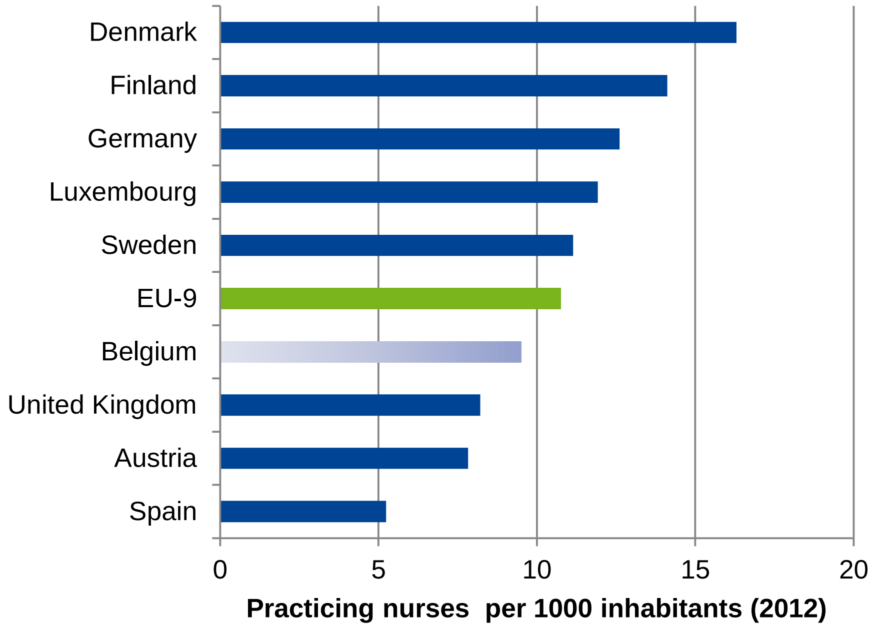
Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2004-2012
Number of practising nurses (head counts)	88 990	90 669	92 565	94 088	95 839	97 667	99 388	10 2949	105 872	+16882 +19.0%
Density per 1 000 population (head counts)	8.54	8.65	8.78	8.85	8.95	9.05	9.1	9.32	9.51	+11.4%

Source: OECD 2015. Data refers to the number of nurses active on the health sector.
Data 2004-2009: source PlanCad [2]. Data 2009-2012 estimation based on the number of nurses licensed to practise.

Figure 22 – Practising nurses: international comparison (2004-2012)



Source: OECD Health Statistics 2015



Source: OECD Health Statistics 2015

Source: OECD 2015 Health statistics

Key points

- **The recent PlanCAD project, resulting of a linkage of several administrative databases, allows for the first time the precise estimation of the number of nurses active on the Belgian labour market**
- **In 2009, there were 126 473 (13.96% males) professionally active nurses (i.e. accredited nurses who were active on the Belgian labour market): most nurses (53%) work as employees in hospitals followed by nursing homes (14%) and home nursing (7%).**
- **In 2012, 105 872 nurses were employed in the healthcare sector. This corresponds to a density of 9.51 practising nurses / 1000 pop. It is slightly above the European average, but few countries provided data to the OECD.**
- **In absolute number there is a growth of 19% in the number of practising nurses in Belgium between 2004 and 2012. This increasing trend is also observed in other European countries.**

References

[1] OECD. Health at a Glance: Europe 2014. OECD Publishing; 2014.

[2] Somer A, Vivet V, Delvaux A, Dumont G, Miermans P-J, Steinberg P. Eindrapport van de PlanCAD Gegevenskoppeling voor de beroepsgroep van de verpleegkunde. Brussels: Federale Overheidsdienst Volksgezondheid Veiligheid van de Voedselketen en Leefmilieu; 2014 April 2014.

2.6. Number of vacancies for (hospital) nurses (A-7)

2.6.1. Documentation sheet

Description	Number of vacancies for (hospital) nurses
Calculation	Absolute number of vacancies for (hospital) nurses (Bachelor degree and Diploma degree): head count and Full-time equivalents (FTE)
Rationale	For more than 2 decades nursing shortages are reported in most industrialized countries, a problem that will only accelerate by the ageing population (and the ageing nursing workforce)[n]. Both in Flanders as in Wallonia the nursing profession is labelled as a profession for which it is difficult to fill vacancies, the so called *'knelpuntberoepen'* in Flanders[o] and *'profession pour laquelle il existe une pénurie significative de main-d'oeuvre'* in Wallonia[p]. Monitoring nursing shortages via the number of unfilled vacancies is therefore important in light of the sustainability and accessibility of the healthcare system. After all, the nursing workforce is the largest healthcare profession for which shortages can cause problems with the accessibility (e.g. waiting lists) or quality (e.g. to high patient-to-nurse ratios) with healthcare services.
Data source	The yearly survey of 'hospital statistics'[q] contains, since 2013, a question about the number of unfilled vacancies. The number of vacancies is defined as 'the number of vacancies for which a call (intern/extern) is launched'. Hospitals are asked to complete this question for 4 moments in time: 31/03; 30/06; 30/09; 31/12. The data are collected per educational degree: Master degree; Bachelor degree; Diploma degree. For this report only data about the first year (31/12/2013) are available. In addition to national data, more detailed data are available for Flanders (including vacancies for Dutch speaking nurses in Brussels). Every three months the number of vacancies that are reported to the VDAB are listed. It should be noted that some bias is possible for the vacancy announcements for temporary 'ad interim' jobs (e.g. 1 vacancy announcement for several temporary jobs). The advantage of these data source is the availability of data for all sectors and for several professions (nursing; care assistants or 'zorgkundigen' (since 2013); qualified carers or 'verzorgenden'; kindbegeleiders, opvoeders, physiotherapists, occupational therapists.[r]
International comparability	There is no international benchmark available.
Dimension	Accessibility, sustainability,
Related performance indicators	NHPPD Medical and nursing graduates

n http://www.euro.who.int/en/health-topics/Health-systems/nursing-and-midwifery/data-and-statistics
o http://www.vdab.be/trendsdoc/maandverslag/topic_09.pdf
p http://www.onem.be/fr/documentation/feuille-info/t125
q http://www.health.belgium.be/eportal/Healthcare/Healthcarefacilities/Registrationsystems/Hospitalstatistics/Questionnaire/index.htm
r http://www.ikgaervoor.be/public/uploads/files/Boordtabellenset%202014%20-%202015%20.pdf

2.6.2. Results

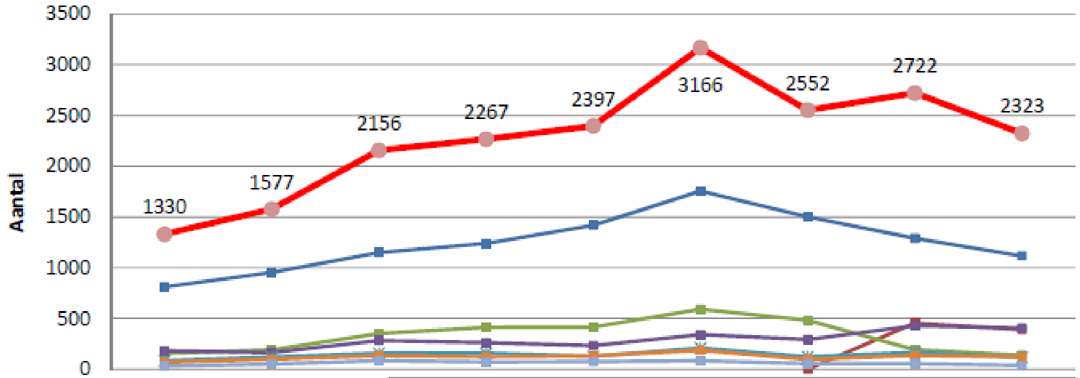
In table 1 the number of vacancies reported by Belgian hospital on 31/12/2013 is shown. There is a total of 2058 vacancies (number of hospital nurses in 2013: 66 800) with the most vacancies reported in Wallonia (n=1 386), followed by Flanders (n=455) and Brussels (n=235). It is unclear if these figures are an underestimation or if much more vacancies are reported for other sectors. The more detailed Flemish data, after all, show that in Flanders in September 2013, 1290 vacancies were reported for the nursing profession. The different methodology (survey hospitals versus vacancies reported to the VDAB; Dutch-speaking vacancies for Brussels included in VDAB-figures; hospital sector versus all sectors) make a comparison difficult. The VDAB-figures on the other hand make it possible to study time trends. Figure 1 shows that the number of nursing vacancies steadily increased between September 2006 (n=811) and September 2011 (n=1755) but is slightly decreasing since then with 1116 nursing vacancies reported in 2014.

Table 18 – Number of nursing vacancies in hospitals (2013)

Nursing vacancies in hospitals on 31/12/2013			
REGION	Level	NBR	FTE
Brussels	Bachelor	192	173.6
	Master	24	22.4
	Diploma	19	17.2
	Tot	235	213.1
Flanders	Bachelor	255	301
	Master	45	44.4
	Diploma	155	134.7
	Tot	455	480
Wallonia	Bachelor	871	732
	Master	44	41.4
	Diploma	453	366.4
	Tot	1368	1139.7
Belgium	Bachelor	1318	1206.5
	Master	113	108.2
	Diploma	627	518.2
	Tot	2058	1832.9

Source: SPF – FOD

Figure 23 – Vacancies in Flanders for nursing and other jobs in the (health) care sector (2006-2014)



	sep-06	sep-07	sep-08	sep-09	sep-10	sep-11	sep-12	sep-13	sep-14
Verpleegkundigen	811	954	1149	1240	1417	1755	1501	1290	1116
Zorgkundigen (beschikbaar sinds 2013)							0	455	390
Gekwalificeerd verzorgenden	156	190	351	412	416	591	483	192	137
Kindbegeleiders	182	164	282	262	232	341	293	429	405
Opvoeders	83	120	157	158	127	210	123	166	116
Kinesitherapeuten	68	99	133	123	131	186	97	135	121
Ergotherapeuten	30	50	84	72	74	83	55	55	38
TOTAAL	1330	1577	2156	2267	2397	3166	2552	2722	2323

Bron: VDAB studiedienst, Paul Poels

Key points

- **The yearly survey of 'hospital statistics' contains, since 2013, a question about the number of unfilled vacancies. On 31/12/2013, 2058 vacancies were reported in the Belgian hospitals.**
- **Most vacancies were reported in Walloon hospitals (n=1386), followed by Flanders (n=455) and Brussels (n=235).**
- **The number of nursing vacancies (across settings) for Dutch-speaking nurses in Flanders and Brussels steadily increased between September 2006 (n=811) and September 2011 (n=1755) but is slightly decreasing since then with 1116 nursing vacancies reported in 2014.**

2.7. Patient-to-Nurse Ratio (A-8)

2.7.1. Documentation sheet

Description	Patient-to-Nurse Ratio (Nursing Hours per Patient Day in Acute Hospitals) on General nursing units
Calculation	For international comparison we report patient-to-nurse ratios. Nurse staffing was calculated based on the RN4CAST-data (survey in 12 countries, 488 hospitals, 33 659 nurses), as a ratio of patients to nurses on the nursing units on each nurse's last shift, averaged across all nurses providing direct inpatient care in the sampled nursing units (general internal medicine and surgery). To monitor Belgian data over time we use Nursing Hours per Patient Day: Denominator: Total of patient hours per registration day The NHPPD-measure is calculated for general surgery nursing units (C) and general internal medicine units (D). It should be noted that we aim to measure the nursing staff availability (Bachelor prepared nurses and Diploma prepared nurses). However, the general feedback includes an aggregate measure including all nursing and caring staff: • CAT001: nurses with a Masters degree • CAT002: nurses with a Bachelor's degree • CAT003: nurses with a Diploma degree • CAT004: care assistants • CAT005: Supporting staff • CAT006: Students from categories CAT001-CAT004 with a clinical placement. (Excluded from the NHPPD calculation) We will therefore also report the NHPPD for the disaggregated numbers CAT001-CAT003. It should be noted that the distribution statistics are only reported for the nursing units with data available in the respective categories.
Rationale	Shortfalls in the nurse workforce have striking implications in light of a large and growing base of research literature demonstrating an association between nurse staffing and patient outcomes in hospitals.[1-3] Thus, scarce nursing resources should be allocated appropriately so that excessive workload (and its negative impact on patient outcomes) is avoided.
Data source	Since 1988, all Belgian acute hospitals have been obliged by law to submit to the Ministry of Public Health data about nurse staffing levels and nursing activities. Data are submitted quarterly (March, June, September and December), and these data form the basis of the Belgian Nursing Minimum Dataset (B-NMDS: MVG/RIM).[4] Data intended for the B-NMDS are recorded during the first 15 days of March, June, September and December, during which one recording takes place every 24 hours. Besides nursing activities, the number of hours that nursing staff work during the recording days are registered. The number of nursing staff is expressed as Nursing Hours per Patient Day (NHPPD), which is the sum of the staffed hours of Registered Nurses (bachelor's degree prepared and diploma level nurses) divided by the number of inpatient days per nursing unit per observation day. Since 2008, the B-NMDS was updated and integrated in the Belgian Hospital Discharge dataset (MZG – RHM).
International comparability	Although NHPPD is an international used indicator, no systematically collected dataset exists. Therefore, we have to fall back on a European survey (RN4CAST) from which a patient-to-nurse ratio can be calculated. In fact, in 2009-2010 a survey was conducted among 33 659 nurses working on general medical-surgical nursing units in 488 general acute care hospitals in 12 European countries (Belgium, England, Finland, Germany, Greece, Ireland, Netherlands, Norway, Poland, Spain, Sweden, and Switzerland).[5] Nurse staffing was calculated for each hospital from the nurse surveys, as a ratio of patients to nurses on the nursing units on each nurse's last shift, averaged across all nurses providing direct inpatient care in the sampled nursing units. Lower ratios indicated more favourable staffing. Primary data for nurse staffing allows the minimisation of differences in administrative reporting methods across countries and restrict staffing measures to nurses providing direct inpatient care. A "nurse" was defined as a fully qualified

	professional nurse by the standards of each country. The patient-to-nurse ratio as measured by the B-NMDS cannot be compared in a reliable measure with these patient to nurse ratios.
Dimension	Quality of care
Related performance indicators	Number of practising nurses per 10 000 population Nursing graduates Nursing student following a bachelor track

2.7.2. Results

2.7.2.1. Belgium

From table 1 it is clear that there is substantial variability in NHPPD across hospitals. Part of the variability can potentially be explained by differences in nursing intensity. In fact, hospitals receive (based on, a.o. the B-NMDS) extra budget for nursing staff if there nursing intensity is higher compared to other hospitals.[6] Yet, is has been shown that after correcting for these differences a substantial variation in staffing ratios remain[7], which is associated to variation in quality of patient care.[8]

There are no large changes between 2009 and 2011. This is also not expected since no specific policy measures were taken to increase the staffing norms in hospitals.

Table 19 – NHPPD* in Belgian hospitals (2009-2011)

		2009 (1st semester)						2011 (2nd semester)					
		P10	**P25**	**P50**	**P75**	**P90**	**Mean**	**P10**	**P25**	**P50**	**P75**	**P90**	**Mean**
NHPPD aggregate measure**	Surgery (C)	2.9	3.2	3.6	4.3	5.8	4.4	2.9	3.3	3.7	4.3	5.4	4.3
	Internal Medicine (D)	2.6	2.9	3.4	4.2	5.7	4.3	2.7	3.0	3.6	4.3	6.0	4.8
NHPPD* per educational level Surgical units**	Master	0.3	0.3	0.4	0.5	0.7	0.6	0.3	0.3	0.4	0.5	0.7	0.5
	Bachelor	1.0	1.3	1.7	2.3	3.3	2.3	0.9	1.2	1.6	2.3	3.0	2.1
	Diploma	0.6	1.0	1.4	1.9	2.4	1.6	0.6	0.9	1.4	1.9	2.4	1.5
NHPPD* per educational level Internal medicine**	Master	0.2	0.3	0.4	0.5	0.7	0.5	0.3	0.3	0.4	0.5	0.7	0.5
	Bachelor	0.8	1.1	1.5	2.3	3.5	2.1	0.9	1.1	1.6	2.3	3.4	2.2
	Diploma	0.6	0.9	1.3	1.7	2.2	1.5	0.6	0.9	1.2	1.7	2.2	1.8

Source: FOD[4];
*Note: *NHPPD= Nursing Hours per Patient Day; ** includes hours of nursing staff (Master, Bachelor, diploma), care assistants, supporting staff and students; ***the distribution statistics only concern the nursing unit with the respective educational level present on the nursing unit.*

2.7.2.2. *International comparison*

The average patient-to-nurse ratio in Belgium (10.7) is high compared to other EU countries (average for 12 countries: 9). The average number of patients assigned to 1 nurse is only higher in Germany (13.0) and Spain (12.6) and is nearly twice as high as in Norway (5.4). If besides registered nurses also lesser trained staff is counted the number of patients per staff member is 7.9 which is only higher in Germany.

Table 20 – Patient-to-Nurse ratios in European Hospitals: international comparison (2013)

	Nurse staffing ratio	
Country	Patients to professional registered nurses	Patients to total nursing staff (registered nurses + lesser trained care personnel)
Belgium	10.7 (2.2)	7.9 (1.7)
England	8.6 (1.5)	4.8 (0.6)
Finland	8.3 (2.2)	5.3 (0.8)
Germany	13 (2.3)	10.5 (1.6)
Greece	10.2 (2.8)	6.2 (2.1)
Ireland	6.9 (1.0)	5.0 (0.8)
Netherlands	7 (0.8)	5.0 (0.7)
Norway	5.4 (1.0)	3.3 (0.5)
Poland	10.5 (1.9)	7.1 (1.4)
Spain	12.6 (1.9)	6.8 (1.0)
Sweden	7.7 (1.1)	4.2 (0.6)
Switzerland	7.9 (1.5)	5.0 (1.0)

Source: RN4CAST[2]
Note: situation at 31/12/2013

Key points

- **The number of nursing staff allocated to patient care is associated with quality of patient care. It is shown that staffing rates in Belgian hospitals are varying considerably.**
- **In Belgium 1 nurse is, on average, responsible for 10.7 patients, this is amongst the highest in Europe.**

References

[1] Aiken LH, Clarke SP, Cheung RB, Sloane DM, Silber JH. Educational levels of hospital nurses and surgical patient mortality. JAMA. 2003;290(12):1617-23.

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[7] Van den Heede K, Diya L, Lesaffre E, Vleugels A, Sermeus W. Benchmarking nurse staffing levels: the development of a nationwide feedback tool. J Adv Nurs. 2008;63(6):607-18.

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2.8. Waiting time for an appointment with a specialist (A-9)

2.8.1. Documentation sheet

Description	Waiting time (in days) for an appointment with a specialist
Calculation	Number of days a patient has to wait for an appointment with a specialist
Rationale	Long waiting times are an important indication for accessibility problems.
Data source	HIS 2013, waiting time for generalists and specialists This is one of the indicators of the “patient experience” [1]
International comparability	No international comparison available. Wait for EHIS.
Dimension	Accessibility
Related performance indicators	Waiting time for face to face contact with mental health centre.

2.8.2. Results

The proportion of the population aged 15+ who waited more than 2 weeks to get an appointment with a specialist is 38.4% (with no major differences between Regions, Table 21). The delay to get an appointment with a specialist was considered problematic by 10.2% of the patients only.

Table 21 – Population (aged 15+ and over) who waited more than 2 weeks to get an appointment with a specialist (2013)

	N	%
Belgium	**1135**	**38.4**
Flanders	308	38.6
Brussels	363	36.0
Wallonia	464	38.9

Source: HIS 2013 [1]

Key points

- **The delay to get an appointment with a specialist was considered problematic by 10.2% of the patients surveyed (in the last Health Interview Survey 2013). This delay was more than 2 weeks for 38% of the patients surveyed (with no major difference between regions)**

References

[1] Van der Heyden J. L’expérience du patient. In: Drieskens S, Gisle L, editors. Enquête de santé 2013. Rapport 3: Utilisation des services de soins de santé et des services sociaux. Bruxelles: WIV-ISP; 2015

3. QUALITY OF CARE: EFFECTIVENESS

3.1. Hospital admissions for asthma (QE-1) and hospital admissions for uncontrolled diabetes or complication of diabetes (QE-2)

3.1.1. Documentation sheet

Description	A. Number of hospital admissions for asthma in people aged 15 years and over, per 100 000 population B. Number of hospital admissions for uncontrolled (or complication of) diabetes in people aged 15 years and over, per 100 000 population
Calculation	See technical definition section below. The indicator for diabetes admission is based on the sum of three indicators: admissions for short-term and long-term complications; and for uncontrolled diabetes without complications.
Rationale	Asthma and diabetes are two widely prevalent long term conditions. Common to all two conditions is the fact that the evidence base for effective treatment is well established and much of it can be delivered at a primary care level. A high performing primary care system can to a significant extent, therefore, avoid acute deterioration in people living with asthma, or diabetes and prevent their admission to hospital.[1] High hospital admission rates for these two conditions can thus serve as a proxy for pointing to poor effectiveness of first line care, as well as poor co-ordination or continuity of care.
Primary data source	RHM – MZG (hospital administrative discharge data), FPS Public Health
Source of results	FPS Public Health and OECD health data for international comparison. These indicators belong to the set of indicator on quality of care (HCQI). A recent report from OECD on “quality of care in cardiovascular diseases and diabetes “also discusses these indicators.[2] The OECD set of “avoidable hospital admission” also contains indicators of admissions for hypertension and COPD, but these have not been retained in this project to keep the number of indicators manageable.
Technical definitions	From OECD website: Definitions for Health Care Quality Indicators 2012-2013 HCQI Data Collection.[3] All ICD-9 CM and ICD-10 CM codes can be found on the OECD Quality indicator website. **Indicator A: Hospital admission for asthma** Coverage: Population aged 15 and older Numerator: All non-maternal/non-neonatal hospital admission with principal diagnosis code of asthma in a specified year Denominator: Population count Exclude cases: Transferring from another institution; MDC 14 (pregnancy, childbirth and puerperium); MDC 15 (new-born and other neonates); with cystic fibrosis and anomalies of the respiratory system diagnose code in any field; same day/day only admissions. **Indicator B: Admission of uncontrolled diabetes or complication of diabetes** Coverage: Population aged 15 and older Numerator: All non-maternal/non-neonatal hospital admission with principal diagnosis code of

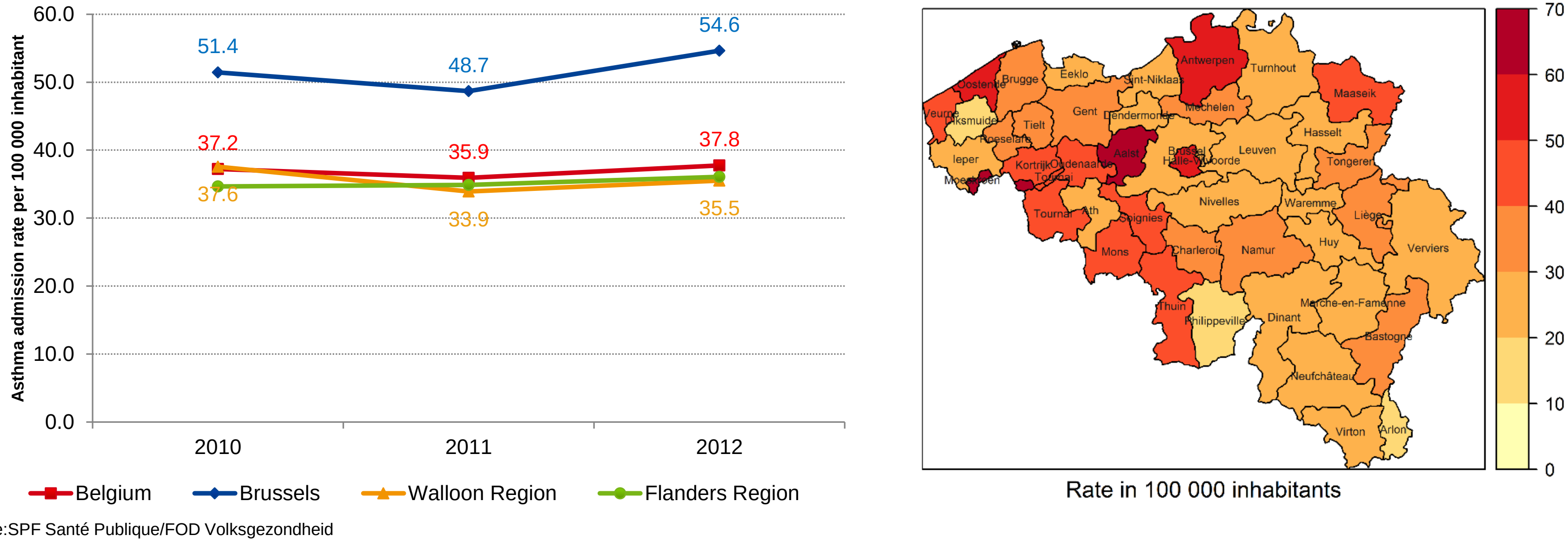
	- Uncontrolled diabetes - Diabetes Short-term complication (ie. ketoacidosis, hyperosmolarity) - Long term complication (ie. renal, eye; neurological, circulatory, or complication not otherwise specified). Denominator: Population count Exclude cases: Transferring from another institution; MDC 14 (pregnancy, childbirth and puerperium); MDC 15 (new-born and other neonates); Same day/day only admissions.
International comparability	These indicators do not take into account underlying differences in the prevalence of the different conditions. For example, with regard to diabetes, it is not always clear whether lower admission rates are due to a lower prevalence of diabetes in the population or a better management of people with diabetes. However, there are several ongoing OECD initiatives that focus on coding practices, dataset structure and data specification, with the aim of making the indicators more useful for international comparison. [4]
Dimensions	Effectiveness + Continuity (Management);

3.1.2. Results

3.1.2.1. Admissions at hospital for asthma

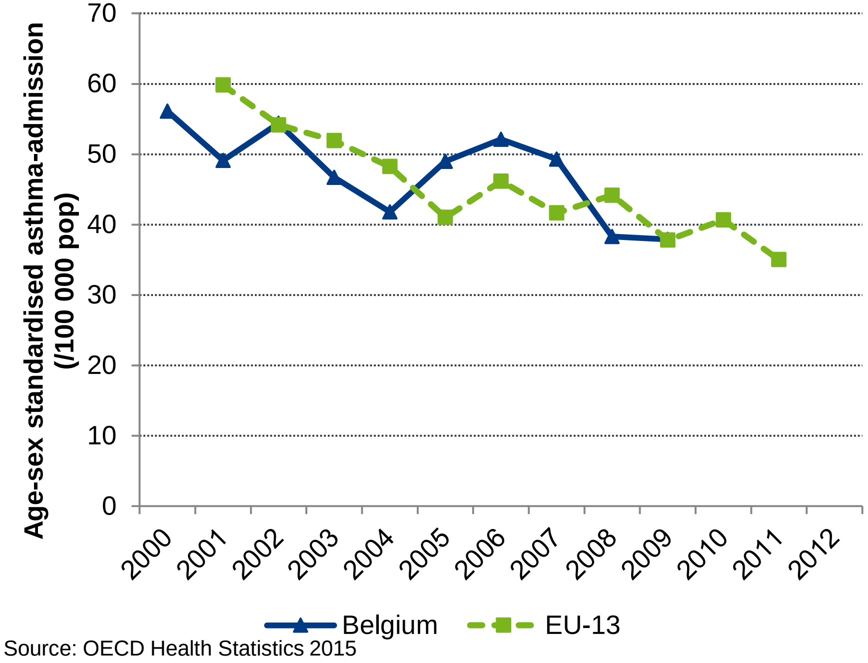
Data on asthma admissions on the 2000-2012 period show a decreasing trend: from 56.85 / 100 000 pop in 2000 to 37.8/ 100 000 pop in 2012, which is also observed in other EU- countries (Figure 25). Rates are similar in Wallonia (35.5) and Flanders (36.1), but higher in Brussels (54.6) (Figure 24).

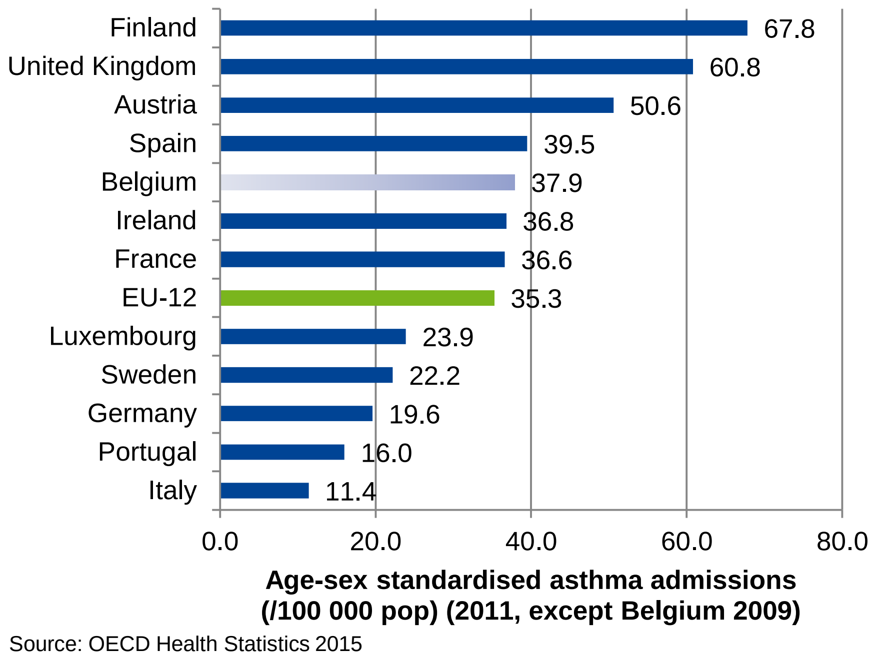
Figure 24 – Hospital admissions for asthma rate by patient's region (per 100 000 population aged 15 years and older (2010-2012) and per district (2012)



Source: FPS Public Health, hospital administrative discharge data

Figure 25 – Age-sex standardized hospital admissions for asthma (for population aged 15 years and older): international comparison (2000-2009)





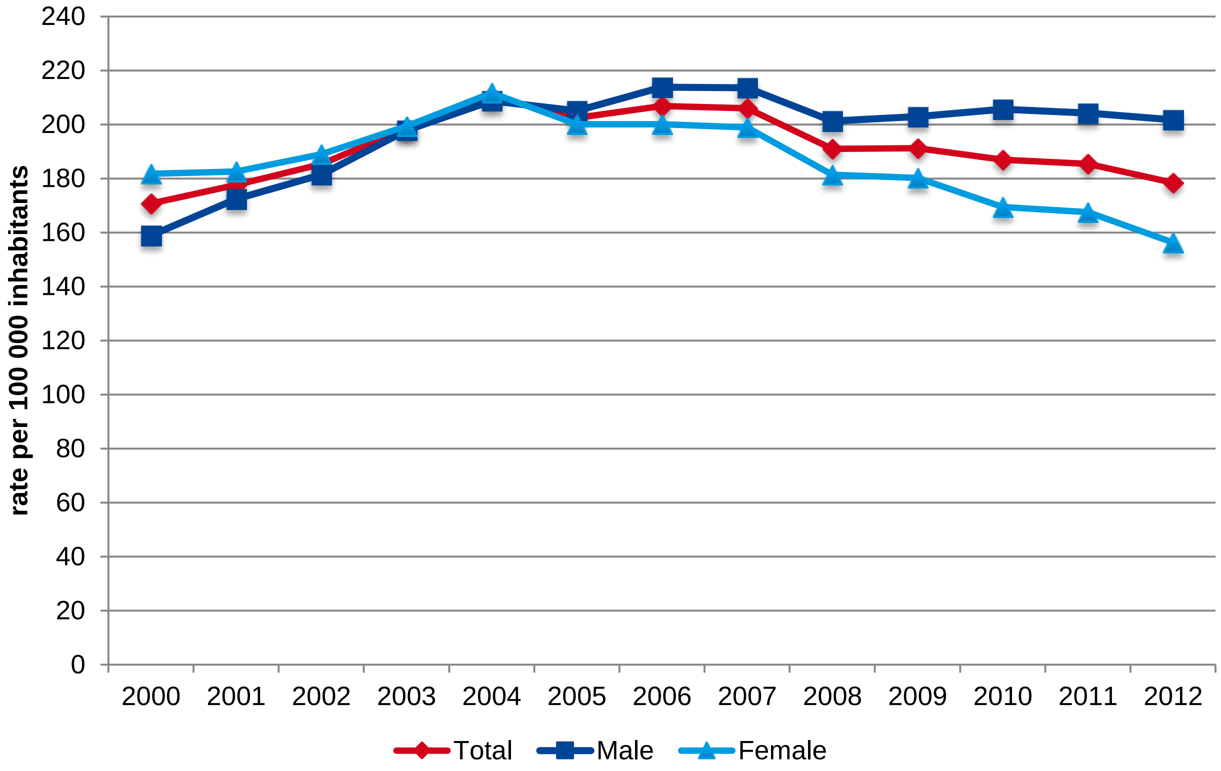
Source: OECD health statistics 2015.
Note: At the moment of writing this report, data for Belgium are not available after 2009 in OECD Health Statistics 2015. However, more recent data will be presented in the Health at a Glance 2015 report, which will be published in December 2015.

3.1.2.2. Admissions at hospital for uncontrolled diabetes, or complications of diabetes

Data on diabetes admission (for uncontrolled diabetes or for complication of diabetes) exhibit a strange pattern which would deserve deeper analysis: admission rates increase from 2000 to 2004, stabilize for a couple of years, and then decrease again until the last available year, 2012 (176.9/100 000 pop in 2012, 191.1 in 2008). The decrease in the recent years is also observed in other European countries (Figure 28). There is also a shift between women and men, where women have higher admission rates than men at the beginning of the study period, and after 2004 the situation is revered. (Figure 26).

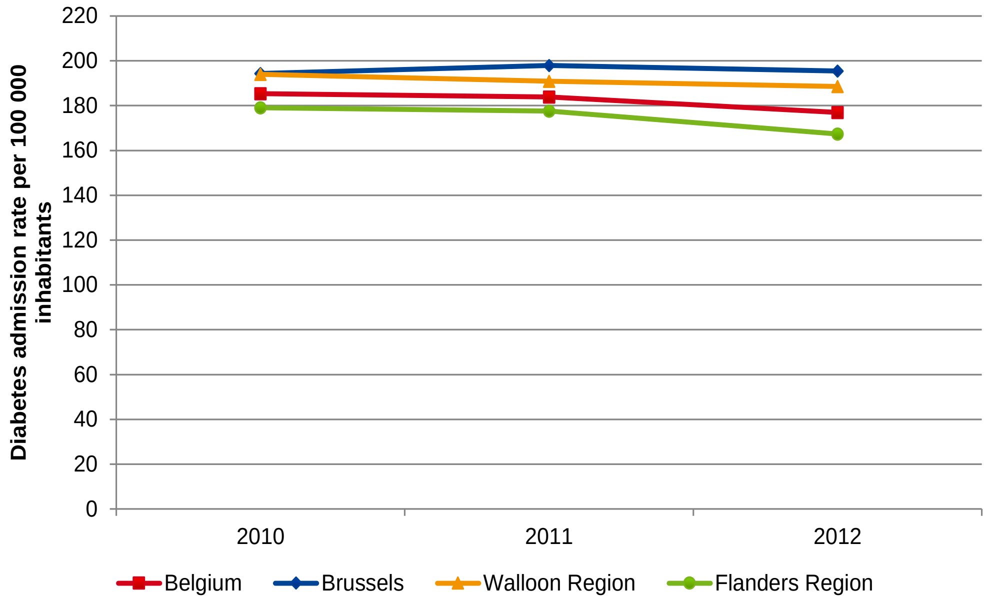
Rates are lower in Flanders (167.4) than in Wallonia (188.5) and Brussels (195.4) (Figure 27).

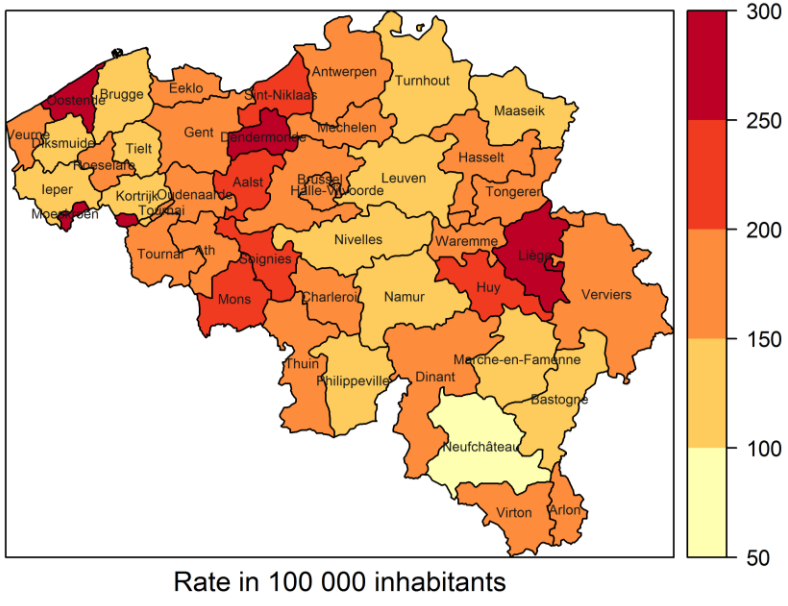
Figure 26 – Hospital admissions for (complication of) diabetes rate per sex (per 100 000 population aged 15 years and older (2000-2012)



Source: FPS Public Health, hospital administrative discharge data

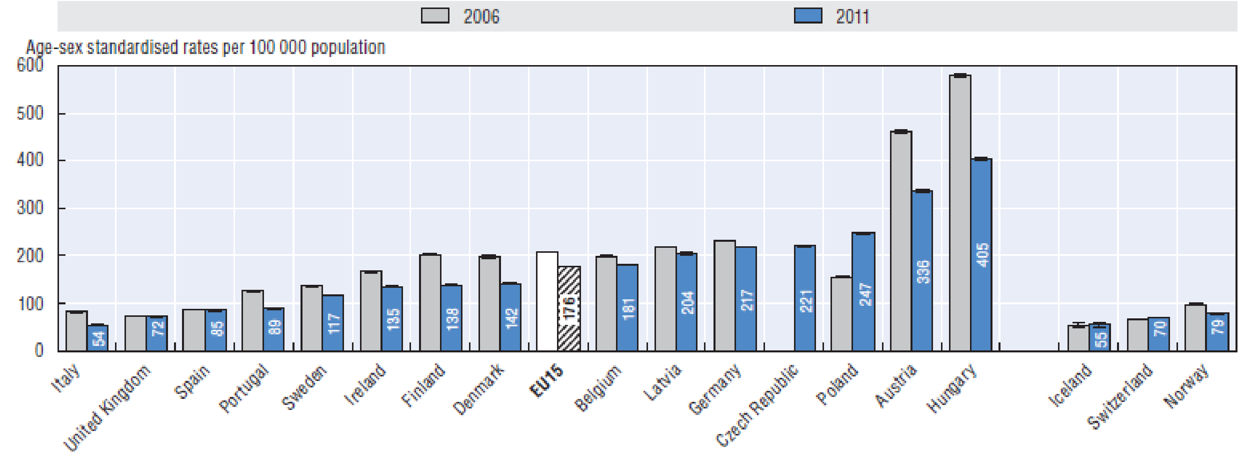
Figure 27 – Hospital admissions for (complications of) diabetes rate by patient's region (per 100 000 population aged 15 years and older) (2010-2012) and by patient district (2012)





Source: FPS Public Health, hospital administrative discharge data

Figure 28 – Age-sex standardized hospital admissions for diabetes (for population aged 15 years and older): international comparison (2006, 2011)



Note: 95% confidence intervals represented by H.
Source: OECD Health Statistics 2014, http://dx.doi.org/10.1787/health-data-en. StatLink http://dx.doi.org/10.1787/888933155669

Source: OECD Health at a Glance 2014 [1]

Note: The combination of the three indicators on diabetes admission is only available in the publication Health at a Glance, but no on the source data from OECD health Statistics. Hence, we cannot present the international comparison in the usual format, and publish a copy of the Health at a Glance report.

Key points

- **The relative rates of hospital admission for asthma and diabetes are often used as a measure of the extent to which people can access primary care and preventive care, and the quality of this care.**
- **For both indicators on avoidable hospital admissions, trends over time report a reduction in admission rates over recent years, which may represent an improvement in the quality of primary care. These decreasing trends are also observed in other European countries.**
- **Belgium is situated around the EU-15 average for both indicators, but this is not very informative, as differences between countries can be due to many other factors than quality of care. Trends over time are more informative in this case.**

References

[1] OECD. Health at a Glance: Europe 2014. OECD Publishing; 2014.

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[3] OECD. Health statistics 2014 [Web page].2014. Available from: http://www.oecd.org/els/health-systems/health-data.htm

[4] Kossarova L, Blunt I, Bardsley M. Quality Watch: Focus on international comparisons of healthcare quality, What can the UK learn ? . The Health Foundation and the Nuffiled Trust; 2015.

3.2. 5 year relative survival after breast cancer (QE-3) and after colorectal cancer (QE-4)

3.2.1. Documentation sheet

Description	5-year relative survival by stage after a diagnosis of breast or colorectal cancer.
Rationale	In Belgium, breast cancer is the most frequent cancer type in females, and also the leading cause of death by cancer in females. Colorectal cancer is the third and second most frequent cancer type in males and females respectively. For these two types of cancers, screening programmes exist, and several treatment strategies have been recommended in the national guidelines. An increase in cancer survival reflects advances in public health interventions, such as greater awareness of the disease, screening programmes, and improved treatments.
Calculation	The 5-year relative survival is computed as the 5-year observed survival for the population diagnosed with the specified type of cancer (=proportion of people surviving 5 years after the diagnosis), divided by the 5-year expected survival of a comparable group from the general population residing in Belgium. The relative survival is expressed as a percentage, and estimates the excess mortality that can be attributed to the cancer. A 100% 5-year relative survival indicates that patients who were diagnosed with cancer had a similar mortality rate than the general population of the same age, sex and Region.
Data source	Belgian Cancer Registry (BCR): incidence years 2004-2012. Kruispuntbank - Banque Carrefour for mortality data (vital status of patients diagnosed with cancer): 2004- October1st, 2014. Therefore, to allow 5 year follow-up, 5-year survival rates can be calculated for patients diagnosed between January 1st, 2004 and October1st, 2009.
Technical definition	Selection of patients: new diagnoses of cancer registered in the BCR, with the following ICD-10 codes: • Breast cancer (for women only): C50 • Colorectal cancer: C18-C20 The following exclusion criteria have been applied: • If the cancer is a subsequent cancer (only the first cancer for each patient is taken into account) • If for a patient, the date of death or the date of lost to follow-up equalled the day of incidence • If the patient had an unknown social security number (INSZ – NISS) • If the patient was younger than 15 years old The relative survival is computed using the Ederer II method.[1] The Region corresponds to the region of the place of residence of the patients at time of their diagnosis.
International comparability	EUROCARE-5 study for international comparisons.[2] Belgian survival rates published in the EUROCARE-5 study may be different from those published by the Belgium Cancer Registry,[3] for several reasons: • First, results from the EUROCARE-5 study are more ancient than those published here: in EUROCARE-5 study, data refer to patients diagnosed between 2000 and 2007. Besides evolution in cancer treatments, changes in screening practices may have an impact on

	survival over the years. For example, the stage distribution for breast cancers patients differs between both cohorts with a higher proportion of Stage I disease for Belgium, 2004-2012 (42.4% of known stages) than for Flanders, 2000-2007 (38.5% of known stages). • Second, result for Belgium in the EUROCARE-5 study refer only to patients residing in Flanders at the moment of diagnostic, because at that time these were the only exhaustive data available. • Third, in the EUROCARE-5 study, all patients are included in the analysis, even those with history of a previous cancer. Including subsequent cancers generally results in lower survival rates. Up till present, patients for which the studied cancer is a subsequent cancer, are systematically excluded from the national survival statistics computed by the BCR. • Last, in the EUROCARE-5 study relative survival rates are age-sex standardized to allow comparison across countries, while in alignment with most of the data presented by the BCR, this standardization was not carried out for the present analyses. The impact of the standardisation on the estimate (increase or decrease) is hard to predict, and depends of the age distribution, within a country, On top of the limitations mentioned above, the comparison of survival estimates between countries remains often challenging for cancer where screening is organized, as between-countries differences in screening coverage will tend to bias the survival comparisons: screening artificially increases the survival time (by advancing the date of diagnosis, i.e. lead time bias, and by discovering not evolving tumours, i.e. overdiagnosis). The solution to this bias is to include a comparison of the stage-distributions and a comparison of survival by stage, but this is currently not possible with the EUROCARE-5 data. OECD also publishes 5-year relative survival rates, but the methodology to compute those rates is not yet completely standardized between countries.[4 5]
Limitation	5-year relative survival can only be computed for patients diagnosed from 2004 to 2009, because follow-up is available until October 1st, 2014. The specific impact of screening or treatment on the survival can hardly be disentangled. Evolution of survival by stage reflects better the impact of treatment alone.
Dimension	Quality, Effectiveness of care
Related indicators	Coverage of target group for breast cancer screening and colorectal cancer screening. Percentage of patients with cancer discussed at the multidisciplinary team meeting (MDT)

3.2.2. Results

An overview of the 1-year, 3-year or 5-year relative survival is provided in the following tables for breast cancer (Table 22) and colorectal cancer (Table 23). Survival data are presented by year of incidence, combined stage[s], Region (or residence of the patient at diagnosis) and sex (when appropriate).

3.2.2.1. Breast

Belgium

For patients diagnosed between 2004 and 2009, 5 year relative survival after diagnosis of breast cancer is relatively stable over the years: 89.1% for the whole cohort, and 88.7% for patients diagnosed in 2009 (Table 22). The majority of patients is diagnosed at early stages (I (39%) or II (35%)), and for those groups relative survival at 5-year is the same as general population (stage I, 100.3%) or slightly lower (stage II 93.8%). For the group of 12% of women diagnosed at stage III, some notable increase of survival was observed (71.7% in 2004 to 77.3% in 2009, see Figure 29). For the group of patients diagnosed at stage IV, 5-year relative survival only reaches 31.4% on the whole cohort, and decreased from 32.2% in 2004 to 28.5% in 2009. A large decrease in survival is also observed for patients for which stage was unknown at diagnosis, from 76.3% in 2004 to 70.1% in 2009. This can partially be explained by the fact that in earlier incidence years there were % proportionally more unknown stages (11.7% in 2004 vs 7.6% in 2009). Those cancers for whom stage remains unknown nowadays, probably reflect more advanced diseases.

On the whole cohort, differences of maximum 1 percentage point are observed between regions: Walloon Region (89.6%), Flemish Region (88.9%) and Brussels Capital Region (88.6%).

International Comparison

Results from the international comparisons (the EUROCARE-5 study, Figure 30), show lower 5-year survival rates for Belgium than displayed in Table 22: in this study, 5 year relative survival for Belgium is only 82.7% (compared to 89.1% in Table 1), and place Belgium below the European average of EU-15 countries (83.6%, Figure 30). Different explanations to this difference are provided in the technical fiche under heading international comparison.

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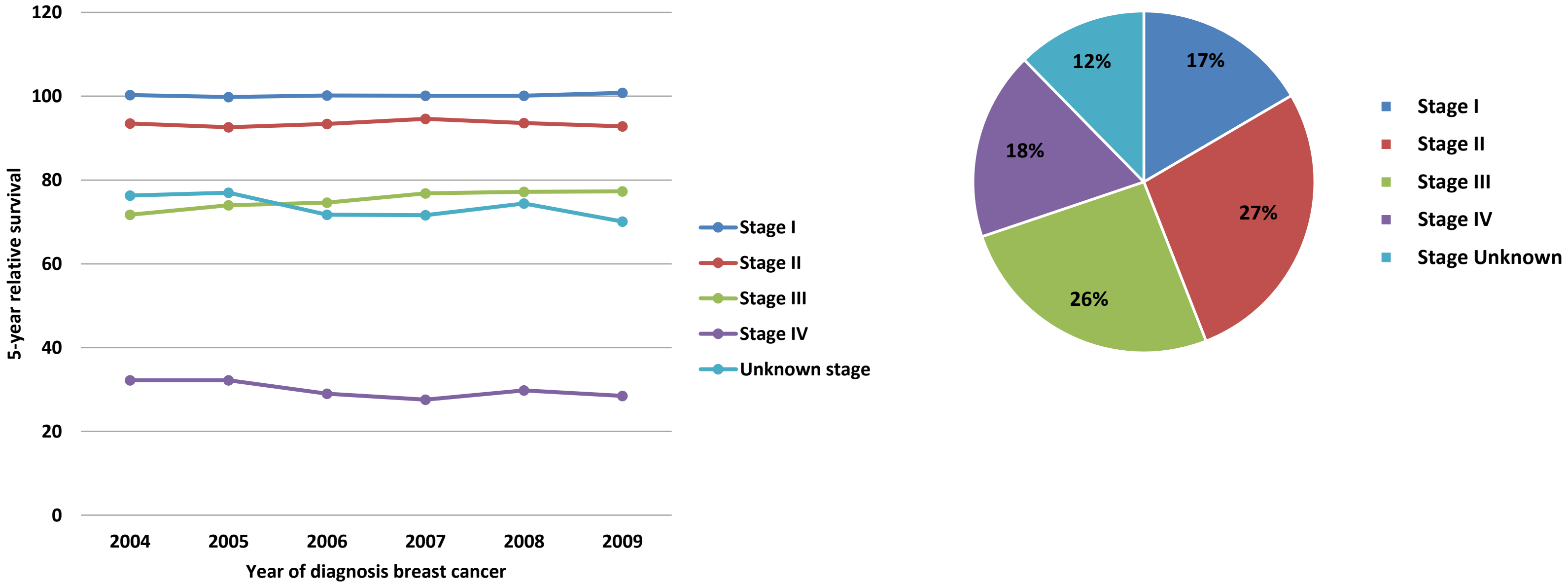
s Combined stage: because the cStage and/or pStage is lacking for some patients, a combined stage is defined. To determine this combined stage, known pStage prevails over known cStage, except when there is clinical proof of distant metastasis. When only pStage or cStage is known, this is considered as the combined stage. Otherwise, when pStage and cStage are unknown, the combined stage also remains unknown.

Table 22 – One-, 3- and 5-year relative survival for breast cancer, by year of incidence, stage and Region (2004-2012)

		Relative survival (%)					
	N at risk	1-year		3-year		5-year	
Characteristic		**1-y RS**	**95% CI**	**3-y RS**	**95% CI**	**5-y RS**	**95% CI**
Overall	84 644	97.4	[97.2, 97.5]	93.0	[92.7, 93.2]	89.1	[88.8, 89.4]
Incidence year							
2004	9 137	96.9	[96.4, 97.3]	92.3	[91.5, 93.0]	88.1	[87.1, 88.9]
2005	9 085	97.6	[97.2, 98.0]	92.6	[91.9, 93.4]	88.2	[87.3, 89.1]
2006	9 151	97.3	[96.8, 97.7]	92.8	[92.1, 93.5]	88.7	[87.8, 89.6]
2007	9 276	97.0	[96.6, 97.5]	93.0	[92.3, 93.7]	89.2	[88.3, 90.1]
2008	9 196	97.4	[97.0, 97.8]	92.9	[92.2, 93.6]	89.2	[88.3, 90.1]
2009	9 199	97.5	[97.0, 97.9]	92.9	[92.1, 93.6]	88.7	[87.8, 89.6]
2010	9 484	97.5	[97.0, 97.9]	93.2	[92.4, 93.8]		
2011	10 073	97.5	[97.0, 97.9]	93.3	[92.6, 93.9]		
2012	10 043	97.7	[97.3, 98.1]				
Stage							
I	32 908	100.4	[100.3, 100.5]	100.5	[100.3, 100.7]	100.3	[99.9, 100.6]
II	29 605	99.5	[99.3, 99.7]	96.7	[96.3, 97.0]	93.8	[93.3, 94.3]
III	10 417	96.3	[95.8, 96.8]	85.6	[84.8, 86.5]	75.8	[74.7, 76.9]
IV	4 540	76.1	[74.8, 77.4]	49.7	[48.1, 51.3]	31.4	[29.7, 33.0]
Unknown	7 174	89.2	[88.3, 90.0]	80.3	[79.1, 81.4]	73.6	[72.2, 75.0]
Region							
Brussels-Capital Region	7 820	97.1	[96.5, 97.5]	92.5	[91.7, 93.3]	88.6	[87.5, 89.7]
Flemish Region	48 852	97.4	[97.3, 97.6]	92.9	[92.6, 93.2]	88.9	[88.5, 89.3]
Walloon Region	27 972	97.3	[97.1, 97.6]	93.3	[92.9, 93.7]	89.6	[89.1, 90.2]

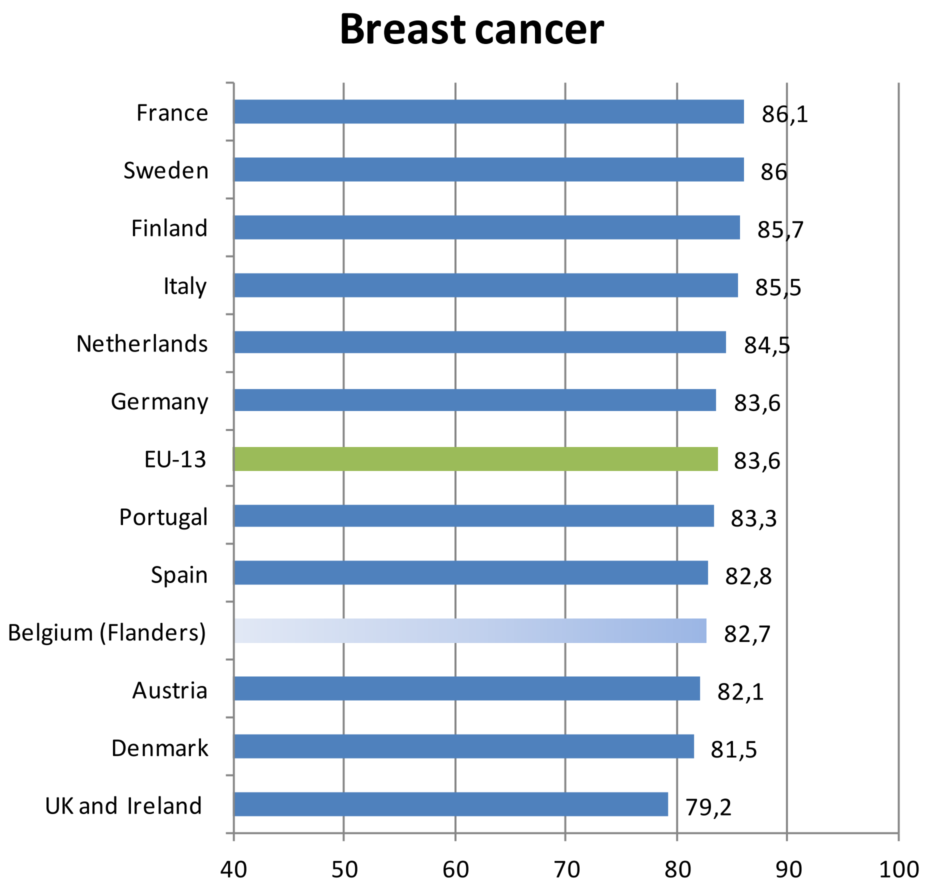
Source: Belgian Cancer Registry; CI confidence interval, RS relative survival

Figure 29 – Five-year relative survival for breast cancer, by stage and year of incidence and distribution of patients across stages (2004-2009)



Source: Belgian Cancer Registry

Figure 30 – Five-year relative survival for breast cancer: international comparison (incidence 2000-2007)



Source: EUROCARE-5 study [2]

3.2.2.2. Colorectal cancer

Belgium

For patients diagnosed between 2004 and 2009, 5 year relative survival after diagnosis of colorectal cancer slightly increases from 63.2% for patients diagnosed in 2004 to 67.1% for patients diagnosed in 2009 (Table 23). Survival is highly dependent of the stage, with 94.4% 5-year relative survival for patients diagnosed at stage I and 17.3% for patients diagnosed at stage IV. The majority of patients is diagnosed either at stage II (27%) or III (26%). For those two groups, 5-year relative survival increases notably from 2004 to 2009 (stage II, from 83.6% to 88.6%; stage III, 60.7% to 70.7%, see Figure 3).

Small regional differences are observed for the 5-year relative survival for colorectal cancer: survival is 2 percentage points higher in the Flemish Region (66.4%) than in the Walloon Region (64.4%), with even lower rates in the Brussels-Capital Region (62.5%).

International Comparison

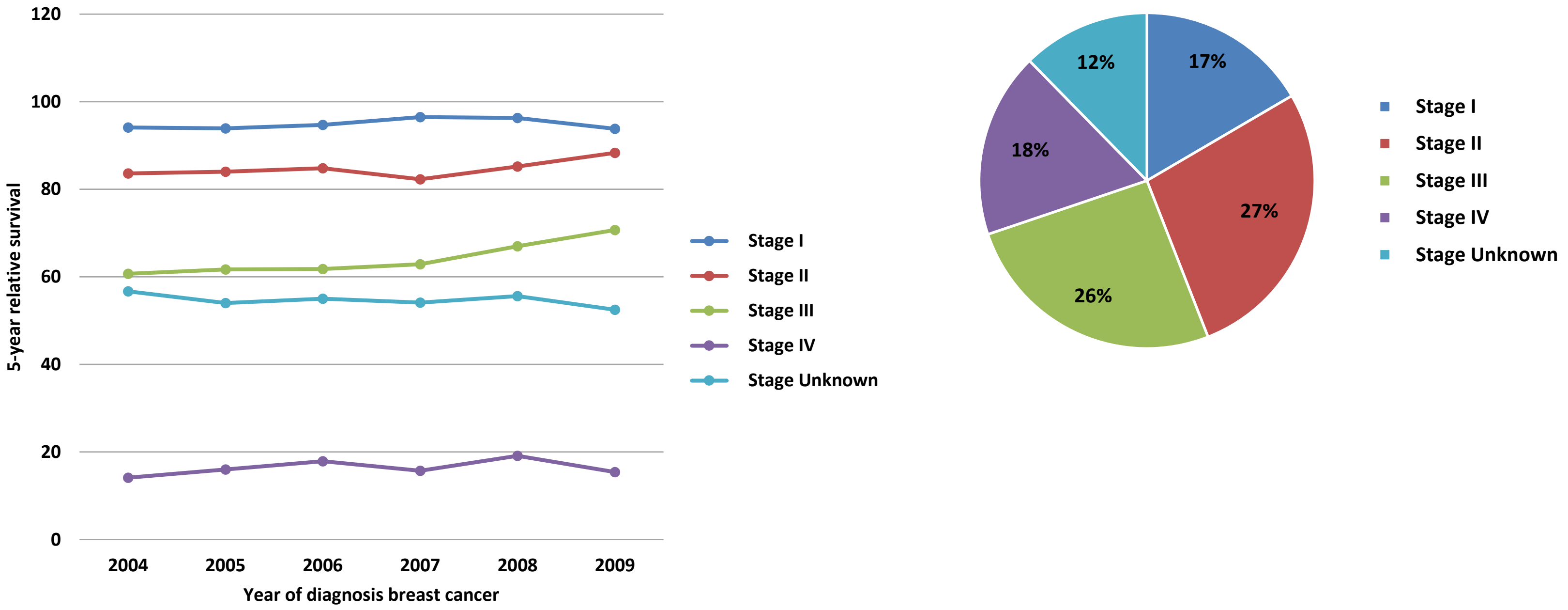
Results from the international comparisons (EUROCARE-5 study) are presented for colon cancer and rectal cancer separately, and show slightly lower 5-year survival rates for Belgium than displayed in Table 23 (61.7% for colon cancer, 62.9% for rectal cancer). Differences between EUROCARE-5 study and results published in Table 23 are explained in the technical fiche under heading international comparison. Keeping in mind these limitations, the EUROCARE-5 study places Belgium amongst the highest survival rates of EU-15 countries (58.9% for colon cancer, 58.4% for rectal cancer, Figure 4).

Table 23 – One-, 3- and 5-year relative survival for colorectal cancer, by year of incidence, stage and Region (2004-2012)

		Relative survival (%)					
	N at risk	1-year		3-year		5-year	
Characteristic		**1-y RS**	**95% CI**	**3-y RS**	**95% CI**	**5-y RS**	**95% CI**
Overall	63 673	84.1	[83.7, 84.4]	71.4	[71.0, 71.8]	65.5	[64.9, 66.0]
Incidence year							
2004	6 927	82.6	[81.6, 83.6]	69.1	[67.8, 70.4]	63.2	[61.7, 64.6]
2005	6 840	83.4	[82.4, 84.4]	70.1	[68.8, 71.4]	63.5	[62.0, 64.9]
2006	6 924	83.0	[82.0, 84.0]	70.4	[69.1, 71.7]	64.4	[62.9, 65.9]
2007	6 899	83.4	[82.4, 84.4]	70.0	[68.7, 71.3]	64.2	[62.7, 65.7]
2008	7 179	84.0	[83.0, 84.9]	72.3	[71.0, 73.5]	66.3	[64.9, 67.7]
2009	7 121	84.7	[83.8, 85.7]	73.0	[71.7, 74.3]	67.1	[65.6, 68.5]
2010	7 246	85.1	[84.2, 86.0]	72.4	[71.1, 73.6]		
2011	7 300	84.4	[83.4, 85.3]	71.6	[70.3, 72.8]		
2012	7 237	85.6	[84.6, 86.5]				
Stage							
I	10 551	97.3	[96.8, 97.7]	96.6	[95.8, 97.3]	94.4	[93.3, 95.5]
II	17 508	93.1	[92.6, 93.6]	88.7	[88.0, 89.5]	85.2	[84.2, 86.1]
III	16 396	88.2	[87.6, 88.8]	74.3	[73.4, 75.1]	65.7	[64.7, 66.7]
IV	11 364	62.6	[61.6, 63.5]	28.2	[27.3, 29.1]	17.3	[16.5, 18.2]
Unknown	7 854	68.6	[67.5, 69.7]	56.7	[55.4, 57.9]	53.5	[52.1, 54.9]
Region							
Brussels-Capital Region	5 038	81.8	[80.6, 83.0]	68.0	[66.4, 69.6]	62.5	[60.6, 64.4]
Flemish Region	39 575	84.8	[84.4, 85.2]	72.4	[71.8, 72.9]	66.4	[65.7, 67.0]
Walloon Region	19 060	83.1	[82.5, 83.7]	70.2	[69.4, 71.0]	64.4	[63.4, 65.3]
Sex							
Males	34 274	84.6	[84.2, 85.1]	71.6	[71.1, 72.2]	64.9	[64.2, 65.6]
Females	29 399	83.4	[82.9, 83.8]	71.1	[70.5, 71.7]	66.1	[65.3, 66.8]

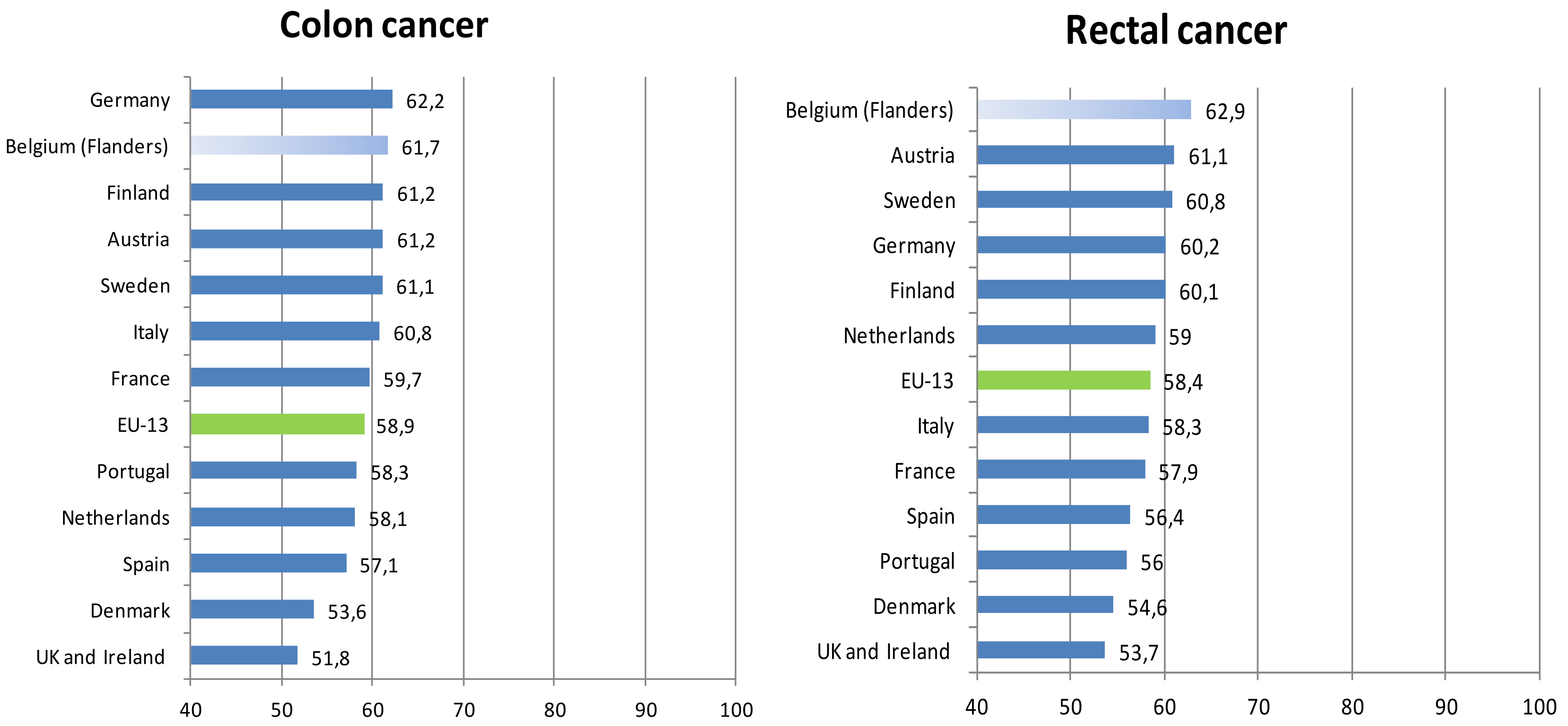
Source: Belgian Cancer Registry; CI confidence interval, RS relative survival

Figure 31 – Five-year relative survival for colorectal cancer, by stage and incidence year and distribution of patients across stages (2004-2009)



Source: Belgian Cancer Registry

Figure 4 –Age-sex adjusted 5-year relative survival for colon and rectal cancer: international comparison (incidence 2000-2007)



Source: EUROCARE-5 study [2]

Key points

- **The relative survival 5 years after the diagnosis of breast cancer or colorectal cancer is respectively 88.7% and 67.1%, based on the cohort of patients diagnosed in 2009. For both cancers, survival is highly influenced by the extent of disease at diagnosis (i.e. the stage). For breast cancer, the majority of patients are diagnosed at early stages (I or II), while for colorectal cancer diagnosis occurs at later stages (II or III), hence the difference in prognosis between these two cancers.**
- **Compared to patients diagnosed in 2004, trends over time show stable relative survival rates for breast cancer patients and a moderate increase for colorectal cancer patients. Notable increases are observed for stage II and stage III patients with colorectal cancer.**
- **Comparison of survival results with other European countries are complicated by several data and methodological limitations, and should thus interpreted with caution. In the most recent study comparing countries (EUROCARE-5), Belgium has outstanding 5-year survival rates for colon and rectal cancer, and lower than average results for breast cancer patients. These results are based on a cohort of patients diagnosed between 2000 and 2007 and residing in the Flemish Region (the only exhaustive data for the cohort considered).**
- **No regional differences are observed for breast cancer. Colorectal cancer survival shows lowest survival rates in the Brussels-Capital Region, but this should require further analysis (taken into account possible differences in patient populations) before drawing conclusions on differences in quality of care.**

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3.3. In hospital mortality after admission for acute myocardial infraction (QE-5) or ischemic stroke (QE-6)

3.3.1. Documentation sheet

Description	A. In-hospital case-fatality rate following admission for acute myocardial infarction (AMI) B. In-hospital case-fatality rate following admission for ischemic stroke
Calculation	A. Proportion of people who die within 30 days of being admitted (including same day admissions) to hospital with an AMI. B. Proportion of people who die within 30 days of being admitted (including same day admissions) to hospital with an ischemic stroke.
Rationale	From the OECD report "Health at a Glance":[1] Mortality due to coronary heart disease has declined substantially since the 1970s. This reduction can, in part, be attributed to better treatments, particularly in the acute phase of myocardial infarction (AMI). A good indicator of quality of care is the 30-day AMI case-fatality rate, which reflects the processes of care, such as timely transport of patients and effective medical intervention. Cerebrovascular disease was the underlying cause for about 11% of all deaths in EU countries in 2011. Ischemic stroke represents around 85% of all cerebrovascular diseases cases. Treatment of ischemic stroke has advanced dramatically over the last decade, with clear benefits from thrombolytic treatments and the emergence of stroke units. Case-fatality rates within 30 days of admission for ischemic stroke are thus an indicator of the quality of acute care received by patients. A recent report from OECD on "quality of care in cardiovascular diseases and diabetes "also discusses these indicators.[2]
Primary data source	RHM – MZG (hospital administrative discharge data), FPS Public Health
Source of results	FPS Public Health and OECD health data for international comparison.
Technical definitions	From OECD website: [3] (Definitions for Health Care Quality Indicators 2012-2013 HCQI Data Collection) **Indicator A: Admission based AMI 30 day in-hospital (same hospital) mortality** **Indicator B: Admission based ischemic stroke 30 day in-hospital (same hospital) mortality** Coverage: patients aged 15 and older Numerator: number of deaths in the same hospital that occurred within 30 days of hospital admission with primary diagnosis of (A) acute myocardial infarction [ICD9 410] (B) ischemic stroke [ICD-9 433, 434, 436] in a specified year. Denominator: number of admissions to hospital with primary diagnosis of (A) acute myocardial infarction (B) ischemic stroke in the specified year The same day hospital episodes are included in both the numerator and the denominator.
International comparability	These are two types of OECD quality of care indicators for acute conditions such as AMI and stroke. Ideally, rates would be based on individual patients (patient-based rates). However, not all countries have the ability to track patients in- and –out-of-hospital or even within the same hospital because they do not currently use a unique patient identifier. . Some countries (Denmark, Finland, Sweden, The Netherlands …) present also data on the most robust and comprehensive indicator on 30-day case-fatality rate, patient based. In order to increase country coverage, this indicator is presented based on unique hospital admissions and restricted to mortality within the same hospital(admission-based

	When counting the number of admissions for AMI (indicator A) or stroke (indicator B), Belgium excluded transfers to other hospitals from the analysis, which was not done previously by other countries (but in the last extraction 2015, the instruction was to exclude them).
Limitation	The indicator is influenced not only by the quality of care provided in the hospitals but also by differences in hospital transfers, average length of stay and AMI/stroke severity.
Dimension	Quality – effectiveness of care

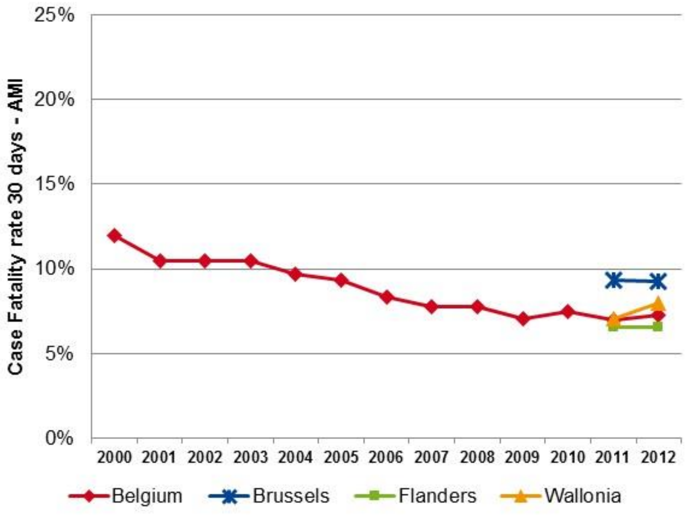
3.3.2. Results

3.3.2.1. Case Fatality Rate after hospital admission for Acute Myocardial Infarction

In Belgium, approximately 19 000 patients are admitted every year at the hospital for an episode of acute myocardial infarction. From 2000 to 2012, the case-fatality rate of AMI was divided by two in Belgium: from 11.9% to 7.3%, following the international trend (see Figure 32 and Figure 33). Rates are lower in Flanders (6.5%) than in Wallonia and Brussels (9.3% and 8%) (Figure 32).

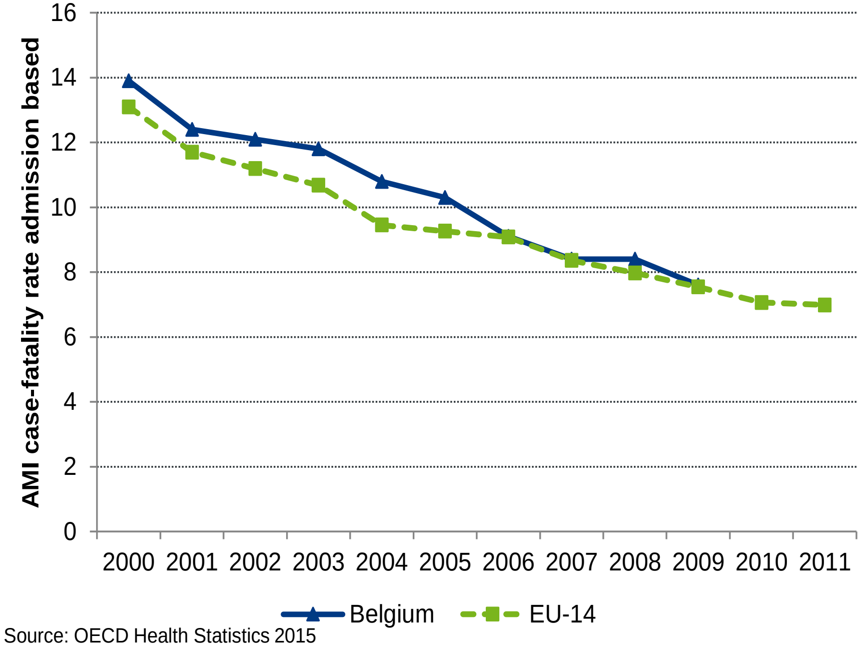
European countries differ by a factor two in AMI-case fatality rate: from the lowest rates observed in Denmark (3%) to highest in Germany (around 9%). In 2009 (last year of Belgian results available on OECD Health statistics) Belgium was slightly above the European average of 7.0% (Figure 33).

Figure 32 – Case-fatality within 30 days after admission for AMI, admission based (same hospital) by hospital region (2000-2012)

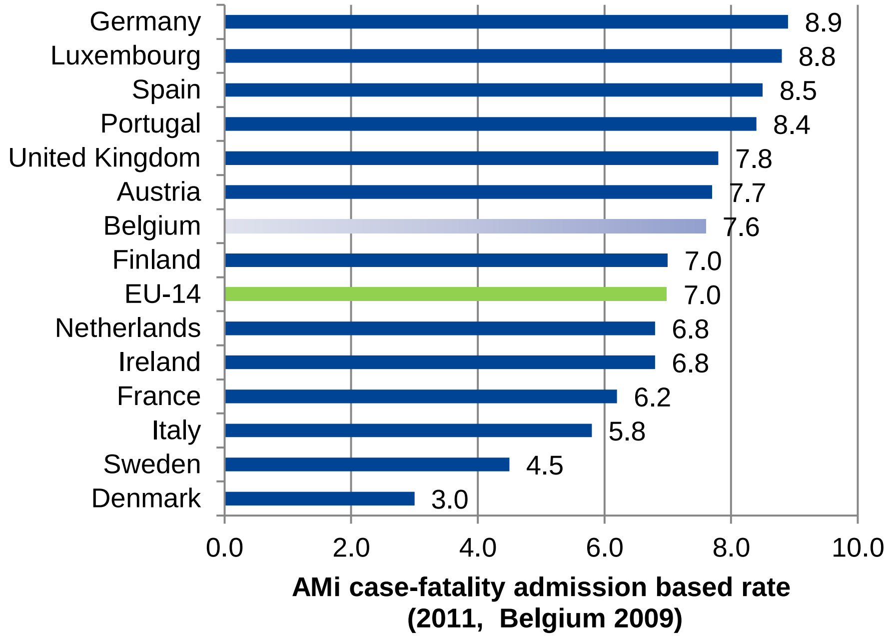


Source: RCM-MKG and RHM-MZG
Note: This indicator reports in-hospital death within the hospital of initial admission.

Figure 33 – Case-fatality within 30 days after admission for AMI, admission based (same hospital): international comparison (2000-2009)



Source: OECD Health Statistics 2015



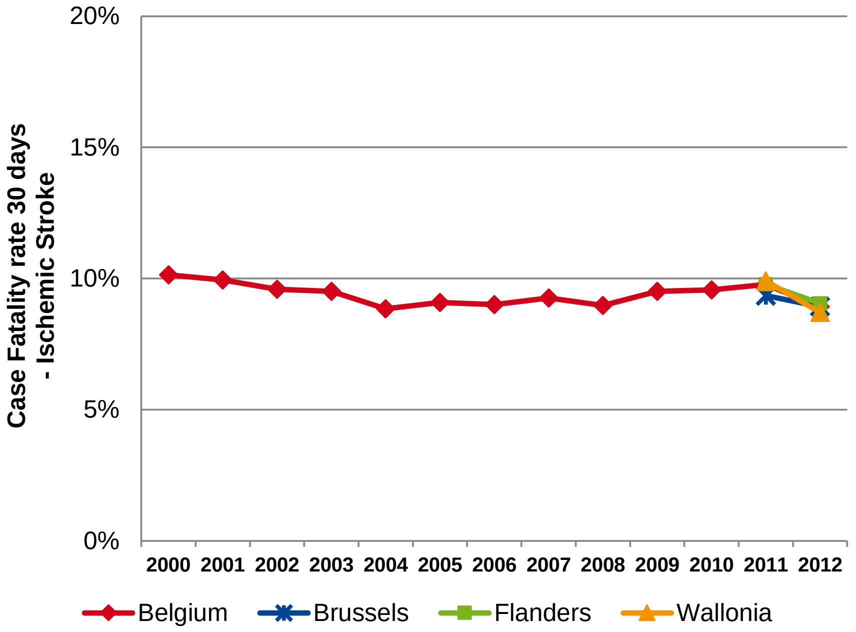
Source: OECD Health Statistics 2015

Source: OECD health statistics 2015. Data for Belgium have not been updated since 2009.
Note: At the moment of writing this report, data for Belgium are not available after 2009 in OECD Health Statistics 2015. However, more recent data will be presented in the Health at a Glance 2015 report, which will be published in December 2015.

3.3.2.2. *Case Fatality Rate after admission for Ischemic Stroke*

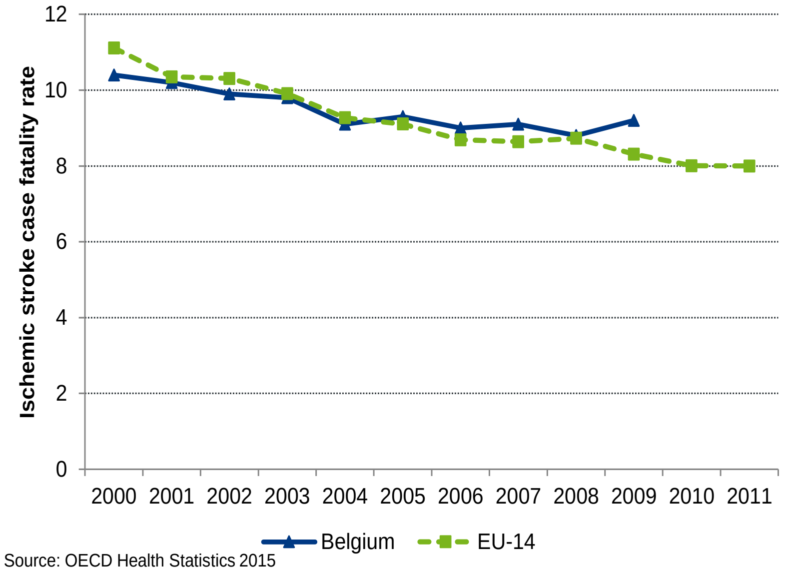
In Belgium, approximately 21 000 patients are admitted every year at the hospital for an episode of ischemic stroke. In opposition to trends in case-fatality after AMI, case-fatality after ischemic stroke was only slightly reduced during the 2000-2012 period, both in Belgium and in European countries (see Figure 34 and Figure 35): 10.1% in 2000, 8.9% in 2012, with small differences between Regions (Flanders 9.1%, Wallonia 8.7%, Brussels 8.9%). (Figure 34)

Figure 34 – Case-fatality within 30 days after admission for ischemic stroke, admission based (same hospital), by hospital region (2000-2012)

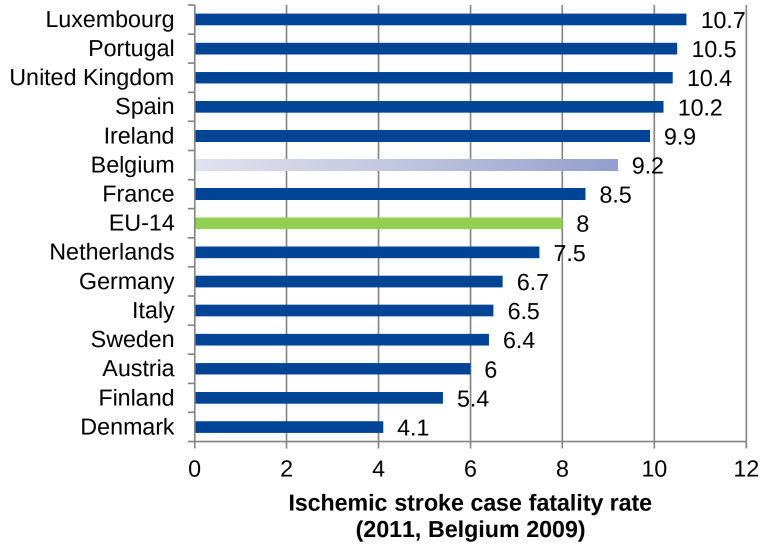


Source: RCM-MKG and RHM-MZG

Figure 35 – Case-fatality within 30 days after admission for ischemic stroke, admission based (same hospital): international comparison (2000-2011)



Source: OECD Health Statistics 2015



Source: OECD Health Statistics 2015

Note: At the moment of writing this report, data for Belgium are not available after 2009 in OECD Health Statistics 2015. However, more recent data will be presented in the Health at a Glance 2015 report, which will be published in December 2015.

Key points

- **Case-fatality after acute myocardial infraction decreased sharply in Belgium between 2000 and 2012, following the trend of all other European countries. Mortality results are lower in Flanders than in the two other regions.**
- **Case-fatality after ischemic stroke decreased slightly in Belgium between 2000 and 2012, following the trend of all other European countries. Results are similar across Regions.**
- **For international comparisons, last results available for Belgium in the OECD Health Statistics database refer to 2009. For both indicators, case-fatality rates were slightly above EU-15 average.**

References

[1] OECD. Health at a Glance: Europe 2014. OECD Publishing; 2014.

[2] OECD. Cardiovascular Disease and Diabetes: Policies for Better Health and Quality of Care. Paris: OECD; 2015. OECD Health Policy Studies

[3] OECD. Health statistics 2014 [Web page].2014. Available from: http://www.oecd.org/els/health-systems/health-data.htm

4. QUALITY OF CARE: APPROPRIATENESS

4.1. Appropriate follow-up of diabetic patients (QA-1, QA-2)

4.1.1. Documentation sheet

Description	Quality of diabetic patients follow-up based on different criteria
Calculation	Numerator: Number of diabetic patients who received these three tests in the past 15 months: a record of HbA1c, a test of serum Creatinine and a consultation by an ophthalmologist. Denominator: number of patients with any type of diabetes identified through their drugs prescription.
Rationale	Diabetes is a chronic disease, characterised by high levels of glucose in the blood. People with diabetes are at a greater risk of developing cardiovascular diseases such as heart attack and stroke if the disease is left undiagnosed or poorly controlled. They also have elevated risks for sight loss, foot and leg amputation due to damage to nerves and blood vessels. Renal failure requiring dialysis or transplantation can also be a complication.[1] In Belgium, prevalence of diabetes in adults aged 20-79 years is estimated to be at 4.8%.[2] In diabetics, it is recommended to measure at least once a year, the levels of glycohemoglobin and creatinine. It is also recommended that an ophthalmologist performs a dilated fundus examination once a year to prevent ocular complications.[3]
Primary data source	IMA data
Indicator source	KCE calculation
Technical definitions	Numerator: Test 1 : HbA1c : nomenclature code 540750 – 540761 (measure of glycohemoglobin in hemolysate) Test 2 : creatinine : nomenclature code 540330 –540341 (measure of creatinine) Test 3° ophtalmology : ophtalmologist consultation (specialist qualification code 370 ou 371 ou 374 ou 378 ou 397) Denominator: Diabetics selected on Pharmanet: class ATC A10 drugs prescription. Two distinct subgroups are considered : 1) Diabetics under insulin (ATC=A10A): A10A prescription >80 DDDs. 2) Diabetics under oral antidiabetics (ATC=A10B): A10B prescription >=300 DDDs (and 0≤A10A<80DDDs). For this subgroup, 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. Compared to our previous report,[4] the micro-albuminuria testing was abandoned considering it is less specific than the creatinine test.
Dimensions	Appropriateness of care, and Continuity of Care
International	These indicators were selected in the early phases of the OECD quality indicators project [5] but have been abandoned in the recent phases because of the poor availability of data in the majority of countries.[6] Hence, there are no international comparison available for this indicator.

4.1.2. Results

Recommendations for glycohemoglobin and creatinine measures are globally well followed in diabetics under insulin: 97.6% and 96.2% of them were measured with these respective tests in the last 15 months (last results available for 2013). Due to the lower proportion who consulted an ophthalmologist during the same period (69.7%), the proportion of patients who underwent the three tests amounts to 67.8%. Globally, for the group of patients under insulin, Flanders takes the lead (71.6% with all 3 tests), followed by Brussels and Wallonia (66.6% and 61.5%).

Recommendations are less well followed in diabetics under oral antidiabetics (respectively 91.1% and 92.5% for the blood tests), especially for the ophthalmologist consultation (47%), which gives a global proportion of 43.4% of the patients having received all three tests. Brussels leads in the group of patients treated under oral antidiabetics (47.9%) followed by Flanders (43.5%) and Wallonia (42.2%).

The GP performance report published in 2008 presented similar results for the follow-up by the GP in 2008: 95% for the glycohemoglobin and 93% for the creatinine test for the patients under insulin and respectively 88% and 90% for those under oral antidiabetics. The ophthalmologist consultation was measured in the year: 57% in patients with insulin and 39% in patients under oral antidiabetics.[3]

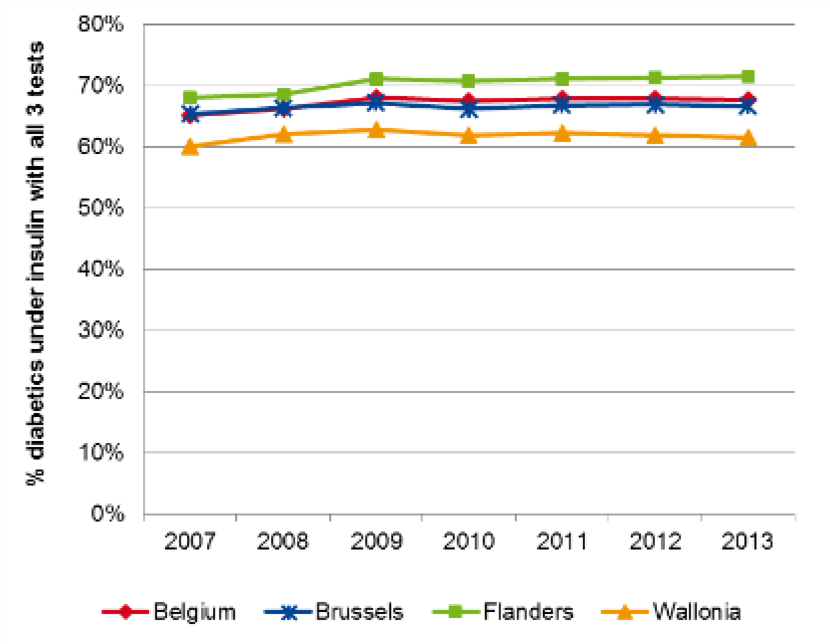
All proportions fall after 75 years in both populations. Before this point, blood tests rates are stable and ophthalmologist consultation rates increase.

The highest difference between patients who are entitled to increased reimbursements and those who are not is observed in the rate of ophthalmologist consultations in diabetics under insulin (66% versus 72.3%). There is no obvious difference for the glycohemoglobin and creatinine measures.

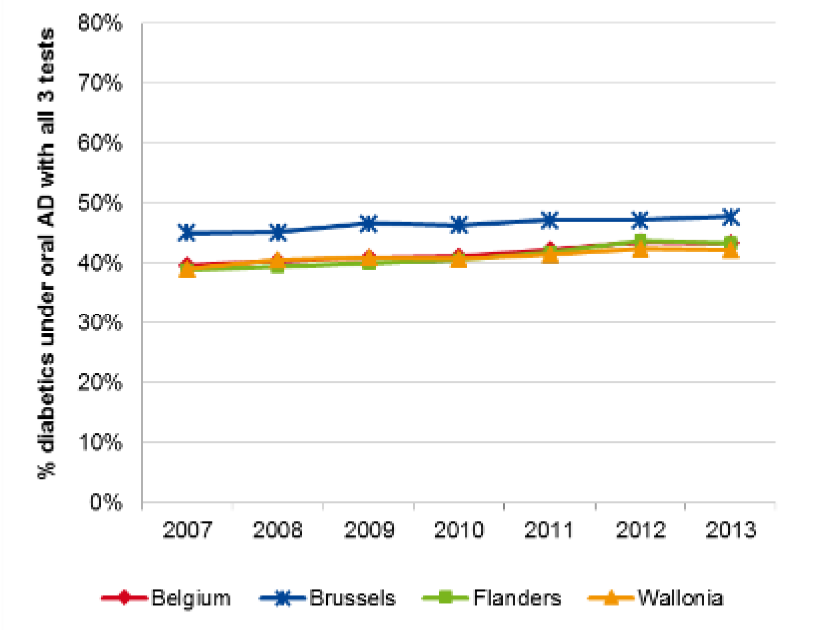
There is a clear inobservance of recommendations, especially concerning the ophthalmologist consultations in elderly residing in institutions (42.7% of the patients treated by insulin had a consultation and 29.2% of patients under oral antidiabetics).

Figure 36 –Follow-up of diabetic patients (combination of three tests), by region (2007-2013)

Diabetics under insulin



Diabetics under oral antidiabetic drug



Source: IMA data, KCE calculation

Table 24 – Follow-up of diabetic patients (combination of three tests), by patient characteristics (2013)

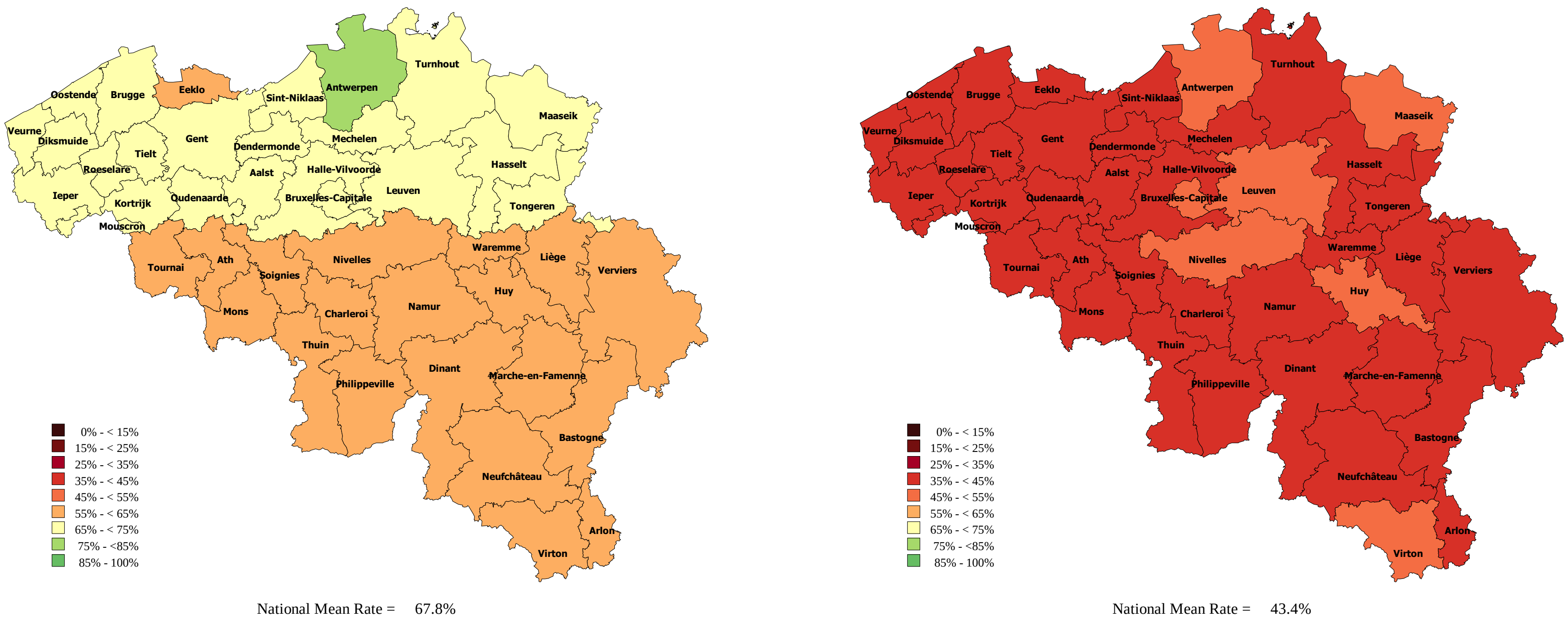
		PATIENTS TREATED UNDER INSULIN						PATIENTS TREATED UNDER ORAL ANTIDIABETICS (50 years or more)			
Variable	Category	N=128157	Proportion of patients having undergone:				N=179693	Proportion of patients having undergone:			
			HbA1c test	Creatinine test	ophtalmo. consult.	All 3 tests		HbA1c test	Creatinine test	ophtalmo. consult	All 3 tests
Age (years)	00-04	115	89.6%	81.7%	31.3%	**29.6%**					
	05-09	565	98.2%	82.7%	43.7%	**38.1%**					
	10-14	1230	98.6%	82.8%	61.5%	**51.3%**					
	15-19	1654	98.3%	89.3%	65.7%	**59.4%**					
	20-24	1905	97.1%	92.8%	61.9%	**59.0%**					
	25-29	2264	96.2%	92.8%	59.5%	**56.7%**					
	30-34	2775	96.4%	93.2%	60.2%	**57.7%**					
	35-39	3365	96.3%	93.3%	62.1%	**59.1%**					
	40-44	4605	96.6%	93.9%	65.4%	**62.8%**					
	45-49	6264	96.5%	95.1%	68.0%	**65.8%**					
	50-54	9062	97.4%	95.7%	69.9%	**67.7%**	13 171	90.2%	90.9%	40.6%	**37.3%**
	55-59	12 240	97.8%	96.6%	70.9%	**69.1%**	21 311	90.9%	91.4%	41.6%	**38.4%**
	60-64	14 852	98.1%	97.0%	74.7%	**72.9%**	28 127	91.6%	92.5%	45.0%	**41.7%**
	65-69	16 656	98.4%	97.5%	75.7%	**74.1%**	32 480	91.8%	92.9%	48.0%	**44.5%**
	70-74	14 707	98.3%	97.6%	76.2%	**74.8%**	27 067	92.4%	93.8%	51.1%	**47.7%**
	75-79	14 988	98.1%	97.5%	73.3%	**72.0%**	25 676	92.0%	93.8%	52.2%	**48.5%**
	80-84	12 182	97.6%	97.4%	66.9%	**65.5%**	19 603	89.9%	92.3%	49.0%	**44.6%**
	85-89	6412	96.0%	96.4%	56.4%	**55.0%**	9262	87.2%	90.9%	43.9%	**39.3%**
	90-94	2078	93.6%	94.5%	43.3%	**41.5%**	2678	83.8%	88.4%	36.9%	**32.6%**
	95-99	213	89.2%	91.5%	31.0%	**29.1%**	291	75.9%	78.7%	29.6%	**25.8%**
	>=100	25	68.0%	84.0%	16.0%	**12.0%**	27	59.3%	66.7%	11.1%	**11.1%**
Gender	Female	81 068	97.6%	96.4%	69.2%	**67.4%**	82 043	90.2%	92.2%	49.2%	**45.1%**
	Male	47 089	97.6%	96.0%	70.2%	**68.2%**	97 650	91.8%	92.8%	45.2%	**42.0%**
Entitlement to increased reimbursement (18 years or +)	No	78 936	97.7%	96.2%	72.3%	**70.3%**	125 131	91.4%	92.7%	48.1%	**44.4%**
	Yes	46 381	97.3%	96.9%	66.0%	**64.7%**	54 562	90.3%	92.2%	44.4%	**41.1%**
Long term care (65 years or +)	Home care	6575	97.4%	97.7%	59.2%	**58.1%**	6093	89.3%	93.4%	40.7%	**37.4%**
	Institutions	7867	94.2%	95.0%	42.7%	**41.3%**	6313	84.3%	89.0%	29.2%	**26.2%**
	No LT care	52 819	98.3%	97.6%	76.3%	**74.8%**	104 678	91.6%	93.1%	50.9%	**47.0%**
Province	Antwerpen	19 331	98.0%	94.9%	77.5%	**74.6%**	26 257	92.8%	93.4%	50.0%	**46.8%**
	Brabant Wallon	3814	97.8%	95.0%	67.0%	**63.9%**	5496	92.7%	93.0%	50.1%	**46.9%**
	Bruxelles-Capitale	12 574	97.0%	95.6%	68.1%	**66.6%**	15 420	91.9%	92.8%	50.8%	**47.9%**
	Hainaut	18 717	97.6%	95.9%	61.8%	**60.1%**	25 725	90.2%	91.5%	46.1%	**42.3%**
	Limburg	10 220	96.3%	96.5%	72.2%	**69.4%**	11 766	92.4%	92.9%	46.9%	**43.2%**
	Liège	11 849	97.9%	97.3%	63.1%	**61.9%**	21 884	86.5%	91.1%	46.5%	**40.9%**

Variable	Category	PATIENTS TREATED UNDER INSULIN N=128157	Proportion of patients having undergone: HbA1c test	Creatinine test	ophtalmo. consult.	All 3 tests	PATIENTS TREATED UNDER ORAL ANTIDIABETICS (50 years or more) N=179693	Proportion of patients having undergone: HbA1c test	Creatinine test	ophtalmo. consult	All 3 tests
	Luxembourg	2374	97.9%	96.9%	63.2%	**61.8%**	4258	91.7%	93.7%	45.1%	**41.9%**
	Namur	5427	97.9%	96.7%	65.3%	**63.6%**	8424	90.7%	93.5%	46.1%	**42.7%**
	Oost-Vlaanderen	16 559	97.4%	96.2%	71.0%	**69.3%**	23 177	91.0%	91.2%	44.0%	**40.5%**
	Vlaams Brabant	11 878	97.5%	96.5%	74.1%	**72.0%**	16 605	91.9%	93.1%	48.8%	**45.4%**
	West-Vlaanderen	15 414	97.9%	97.2%	72.6%	**71.3%**	20 681	92.7%	94.0%	43.9%	**41.3%**

Source: IMA data, KCE calculation.

Figure 37 – Follow-up of diabetic patients (combination of three tests), by patient district (2013)

Diabetics under insulin **Diabetics under oral antidiabetic**



Source: IMA data, KCE calculation

Key points

- **The tree tests selected to assess the quality of diabetes follow-up are done for 67.8% of the diabetic patients under insulin. The glycohemoglobin and creatinine measures are very well covered, but the annual consultations with an ophthalmologist are less frequent.**
- **For the diabetic population under oral antidiabetic, the coverage of the three tests combined is lower: 43.4%, again mainly due to a lower coverage of the annual visit with an ophthalmologist.**
- **There are signs of accessibility problems to consultations with an ophthalmologist for patients entitled to increase reimbursement.**
- **There are regional differences for both subgroups population. For diabetic under insulin, differences between Flanders and Wallonia reach almost 10%, again due to lower annual tests with an ophthalmologist. For diabetic patients under oral antidiabetic, Brussels shows the highest coverage rates.**

References

[1] OECD. Health at a Glance: Europe 2014. OECD Publishing; 2014.

[2] International Diabetes Federation. IDF DIABETES ATLAS, Sixth edition. 2013.

[3] Meeus P, Aubel X. Performance de la médecine générale, bilan de santé. Health Services Research (HSR). National Institute for Health and Disability Insurance; 2012 February 2013.

[4] Vrijens F, Renard F, Jonckheer P, Van den Heede K, Desomer A, Van de Voorde C*, et al.* Performance of the Belgian Health System. Report 2012. Health Services Research (HSR). Brussels: Belgian Health Care Knowledge Centre (KCE); 2012. KCE Reports 196C (D/2012/10.273/112)

[5] GREENFIELD S, NICOLUCCI A, MATTKE S. Selecting indicators for the quality of diabetes at the health system level in OECD countries. 2004. OECD Technical Paper

[6] OECD. Cardiovascular Disease and Diabetes: Policies for Better Health and Quality of Care. Paris: OECD; 2015. OECD Health Policy Studies

4.2. Appropriate prescription of antibiotics (QA-3, QA-4, QA-5)

4.2.1. Documentation sheet

Description	Three indicators are used to assess the adequate prescription of antibiotics 1. Volume in Defined Daily Dose (DDD) of antibiotics prescribed in ambulatory care 2. % patients with at least one antibiotic prescribed during that year 3. The ratio of second line antibiotics, compared to the total of DDDs prescribed
Calculation	See technical definition
Rationale	The amount of prescribed AB is considered as an important indicator of health care quality. "Antibiotics, for example, should be prescribed only where there is an evidence-based need, to reduce the risk of resistant strains. Likewise, quinolones and cephalosporins are considered 2nd-line antibiotics in most prescribing guidelines. Their use should be restricted to ensure availability of effective 2nd-line therapy should first-line antibiotics fail. (OECD Health at a glance 2015) An increase of resistant pathogens against antibiotics is observed.[1] Recent studies found a significant association between high antibiotic consumption and increasing resistance.[2,3] Since 1998, the WHO urged its Member States to encourage appropriate and cost-effective use of antibiotics.[4] In May 2015, the World Health Assembly[t] endorsed a global action plan to tackle antimicrobial resistance which is also reflected in several national strategies. In Europe, the European Surveillance of Antimicrobial Consumption network (ESAC[u]) is continuously monitoring AB consumption across Europe. The Belgian Antibiotic Policy Coordination Committee (BAPCOC) is active since 1999 to approach the problem. A new strategy was developed for 2015-2019 defining several targets. Clinical practice guidelines are intended to reduce variability in care and to enhance the *appropriateness* of medical acts. However, the implementation of guidelines remains a challenge. One of BAPCOC major targets is to decrease the prescription by 1000 inh from 800 (nowadays) to 600 (by 2020) and 400 (by 2025) The Total volume antibiotics prescribed, and the 2nd line antibiotics as a proportion of total volume of AB, have been designate by BAPCOC as markers of quality in the primary care setting, but BAPCOC prefers to monitor the ratio of amoxicillin to amoxicillin clavulanate targeting rising the result from 50/50 to 80/20 during the period 2014-2019.[5]
Data source	RIZIV – INAMI for indicator 1 (pharmanet database) , IMA (KCE calculation) for indicators 2 and 3
Technical definitions	1. Amount of DDDs / class AB (The volume of antibiotics or antimicrobials for systemic use (ATC J01) (measured by DDD, expressed in grams) prescribed in within ambulatory care a per day by 1000 insured persons

[t] WHO, 2015

[u] Antimicrobial consumption interactive database (ESAC-Net)

	DDDs are calculated according to the ATC classification and source of data is pharmanet (ambulatory reimbursement database, including GPs and specialists). 2. Amount Patients with criteria (criteria = A1 prescription AB (J01C)

ATC	DENOMINATION
J01A	TETRACYCLINES
J01B	AMPHENICOLS
J01C	BETA-LACTAM ANTIBACTERIALS, PENICILLINS
J01D	OTHER BETA-LACTAM ANTIBACTERIALS
J01E	SULFONAMIDES AND TRIMETHOPRIM
J01F	MACROLIDES, LINCOSAMIDES AND STREPTOGRAMINS
J01G	AMINOGLYCOSIDE ANTIBACTERIALS
J01M	QUINOLONE ANTIBACTERIALS
J01R	COMBINATIONS OF ANTIBACTERIALS
J01X	OTHER ANTIBACTERIALS

	3. Amount of DDDs with criteria (criteria = prescription 2nd line AB (Amoxicillin clavulanate, cephalosporin, quinolones, macrolides) among all AB DDDs (J01)
Limitation	The DDD does not exactly reflect the consumed dose in a country. One should also take into account the impact of the packaging of the drug (antibiotic) which has changed over time, and which may influence the number of DDDs a patient purchases. This varies from country to country. Furthermore, this indicator reflects the average use, but it doesn't it reflects either the proportion of the population that takes that DDD, nor the simultaneous combination of antibiotics for each patient. Another point of discussion is a lack of standard which defines the correct use of antibiotics, since there is also some concern about underuse which could have a negative effect on morbidity and mortality. In other words, there's no consensus about which indicator is the most appropriate to measure the usage of and the resistance against antibiotics. For this project, the volume in DDD has been chosen (in place of amount packaging), which makes it possible to compare Belgium with other countries. Indicator 3 slightly differs from the international indicator, Since the range of second line AB is large in Belgium: international defines cephalosporin and quinolones as second line. In Belgium Amoxicillin clavulanate and macrolides were added to this list, to narrow a similar indicator in the Netherlands.[v]
International comparability	ESAC, OECD (and ECHI) have data on the ambulatory pharmaceutical consumption by daily defined dose, according to the anatomic therapeutic chemical classification.

[v] Dutch performance report 2014 (RIVM)

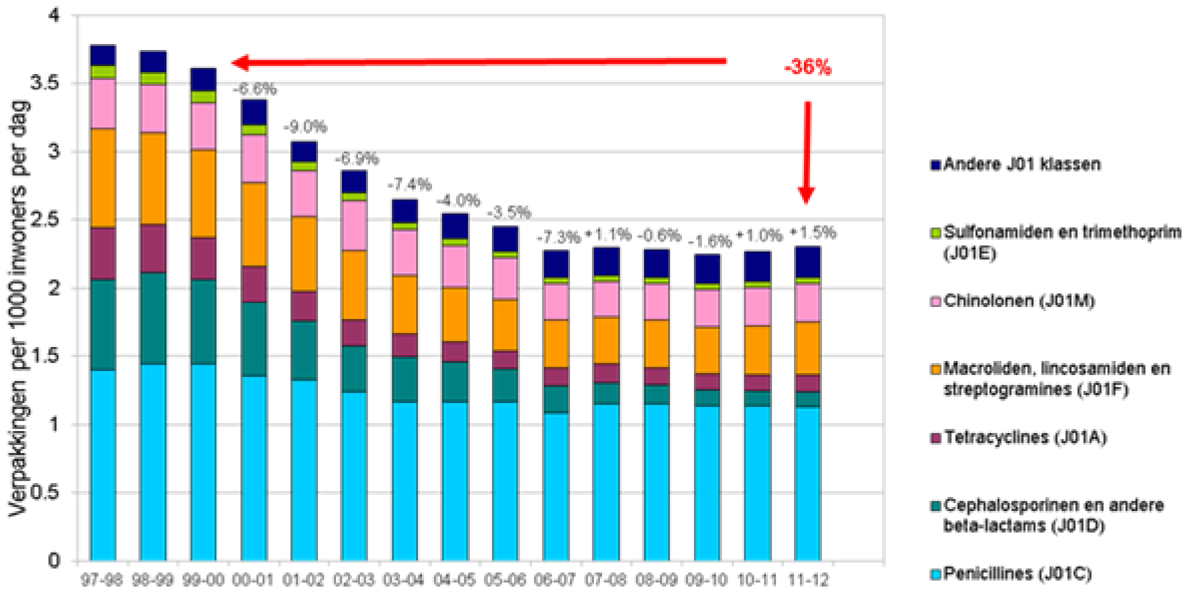
	Indicator 3 (proportion of 2ndline AB): The Netherlands uses a similar indicator
Dimension	Quality – appropriateness; Safety
Related indicators	Incidence of MRSA

4.2.2. Results

Since 2000, the Belgian government information campaign inform population, pharmacists and practitioners about the correct use of antibiotics and the danger of antibiotic resistance. Antibiotics only need to be prescribed if necessary. Second choice (Amoxicillin clavulanate, cephalosporin, quinolones, macrolides,…) shouldn't be use in first intention and be kept in reserve. GPs are in front to inform the patient and follow recommendation.

This campaign seem to improve the AB consumption: Overall packaging of Antibiotics delivered decrease by 36% during the period 2000 – 2006.

Figure 38 – Amount antibiotics packaging a year by 1000 inhabitants (1997-2012)

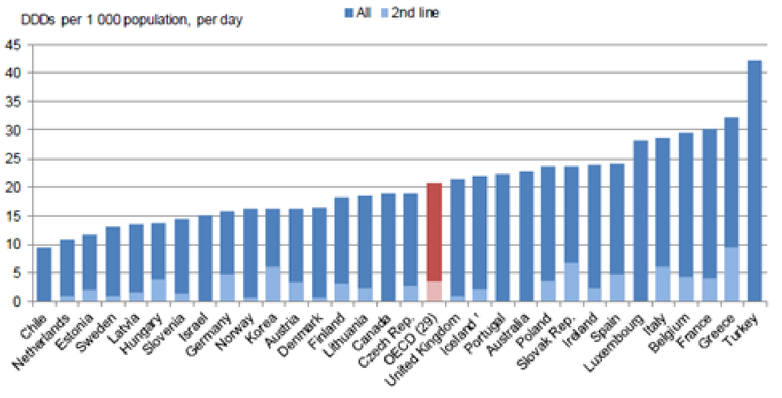


Source: BAPCOC report 2015

4.2.2.1. *Volume (DDD) of antibiotics prescribed in ambulatory care (amount DDD AB / day / 1000 inhabitants)*

However, the volume of antibiotics remains one of the highest in DDD in OECD countries,[6] about 29 DDDs / day / 1000 insured persons, similar to France. In comparison, the consumption in the Netherlands is much lower: 12 DDDs / day / 1000 inhabitants.

Figure 39 – Overall volume of antibiotics (DDD AB / day / 1000 inhabitants): international comparison (2013)

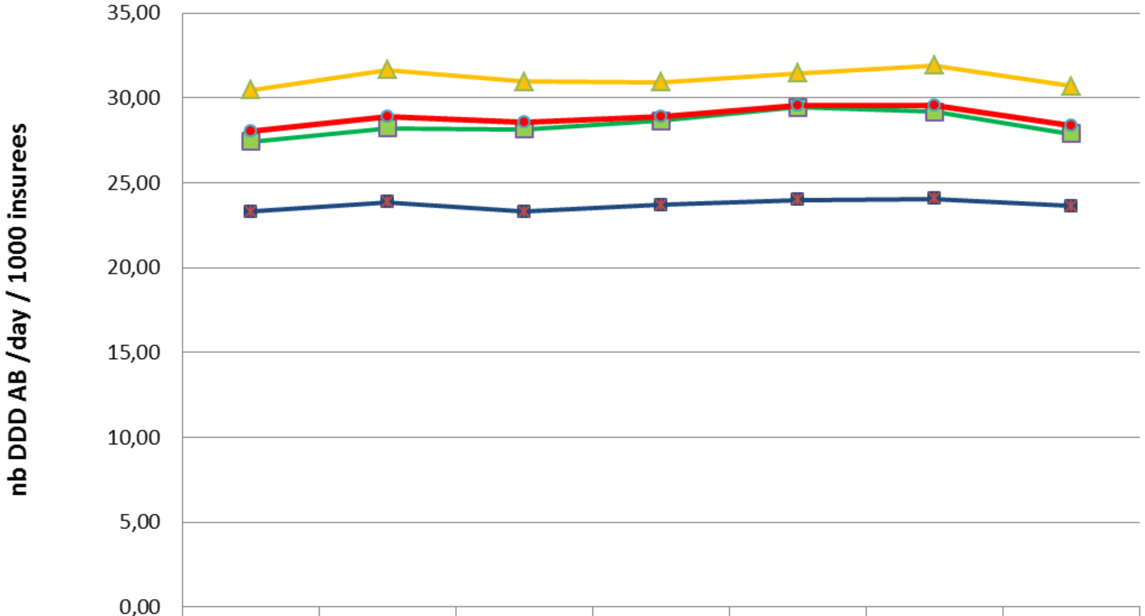


1. Data refer to all sectors (not only primary care).

Source: OECD health data 2015

Differences between regions are important and stable (Wallonia is continuously above 30 DDDs). The change in the observed trend in 2014 (28 DDDs / day / 1000 insured persons) should be confirmed.

Figure 40 – Overall volume of antibiotics (DDD AB / day / 1000 inhabitants) by region (2008-2014)



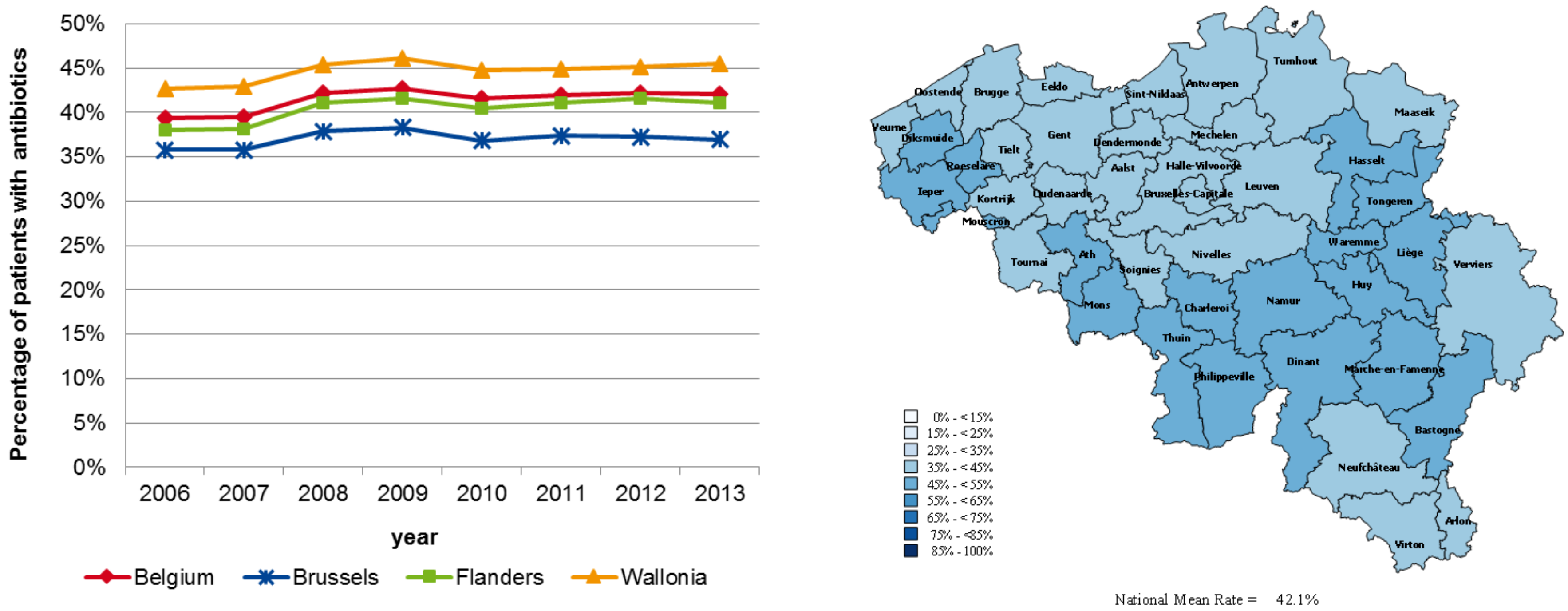
	2008	2009	2010	2011	2012	2013	2014
Brussels	23,31	23,86	23,28	23,71	23,97	24,05	23,63
Wallonie	30,46	31,65	30,97	30,92	31,46	31,93	30,69
Vlaanderen	27,43	28,22	28,14	28,64	29,46	29,18	27,89
BELGIUM	28,01	28,90	28,57	28,88	29,55	29,54	28,36

Source: RIZIV - INAMI

4.2.2.2. Percentage of patients with at least one antibiotic prescription a year an antibiotic at least once a year

In 2013 about 42 % of patients have received at least one antibiotic prescription. Since 2010 the numbers are stable. There are large differences between regions: 46% in Wallonia, 41% in Flanders and 37% in Brussels. Numbers are especially high in long term care institutions and home care (60% - 62%)

Figure 41 – Percentage of patients with antibiotics, by patient region (2006-2013) and patient district (2013)



Source: IMA data, KCE calculation.

Table 25 – Percentage of patients with antibiotics, by patient characteristics (2013)

Variable	Category	Numerator	Denominator	Percentage with antibiotics
Age (years)	00-04	338 251	625 822	54.0%
	05-09	250 456	620 439	40.4%
	10-14	176 253	591 881	29.8%
	15-19	233 473	609 816	38.3%
	20-24	249 667	668 279	37.4%
	25-29	257 471	670 958	38.4%
	30-34	291 307	698 846	41.7%
	35-39	289 019	684 046	42.3%
	40-44	307 634	738 481	41.7%
	45-49	318 942	774 225	41.2%
	50-54	328 477	780 268	42.1%
	55-59	314 569	720 372	43.7%
	60-64	280 421	644 652	43.5%
	65-69	249 526	575 026	43.4%
	70-74	187 234	423 622	44.2%
	75-79	184 430	403 799	45.7%
	80-84	158 500	335 776	47.2%
	85-89	103 367	207 445	49.8%
	90-94	47 647	89 911	53.0%
	95-99	8 270	14 510	57.0%
	>=100	1 732	3 019	57.4%
Gender	Female	2 555 674	5 556 235	46.0%
	Male	2 020 972	5 324 958	38.0%
Entitlement to increased reimbursement (18 years or more)	No	2962 237	7 151 072	41.4%
	Yes	714 089	1 527 625	46.7%
Long term care (65 years or more)	Home care	60 581	1 008 00	60.1%
	Institutions	107 092	1 725 46	62.1%
	no LT care	773 033	1 779 762	43.4%
Province	Antwerpen	683 341	1 779 414	38.4%
	Brabant Wallon	155 945	383 345	40.7%

Variable	Category	Numerator	Denominator	Percentage with antibiotics
	Bruxelles-Capitale	396 655	1 073 260	37.0%
	Hainaut	612 738	1 311 885	46.7%
	Limburg	371 872	827 906	44.9%
	Liège	485 252	1 068 011	45.4%
	Luxembourg	98 594	222 850	44.2%
	Namur	225 663	482 986	46.7%
	Oost-Vlaanderen	590 495	1 467 496	40.2%
	Vlaams Brabant	440 063	1 087 647	40.5%
	West-Vlaanderen	516 028	1 176 393	43.9%

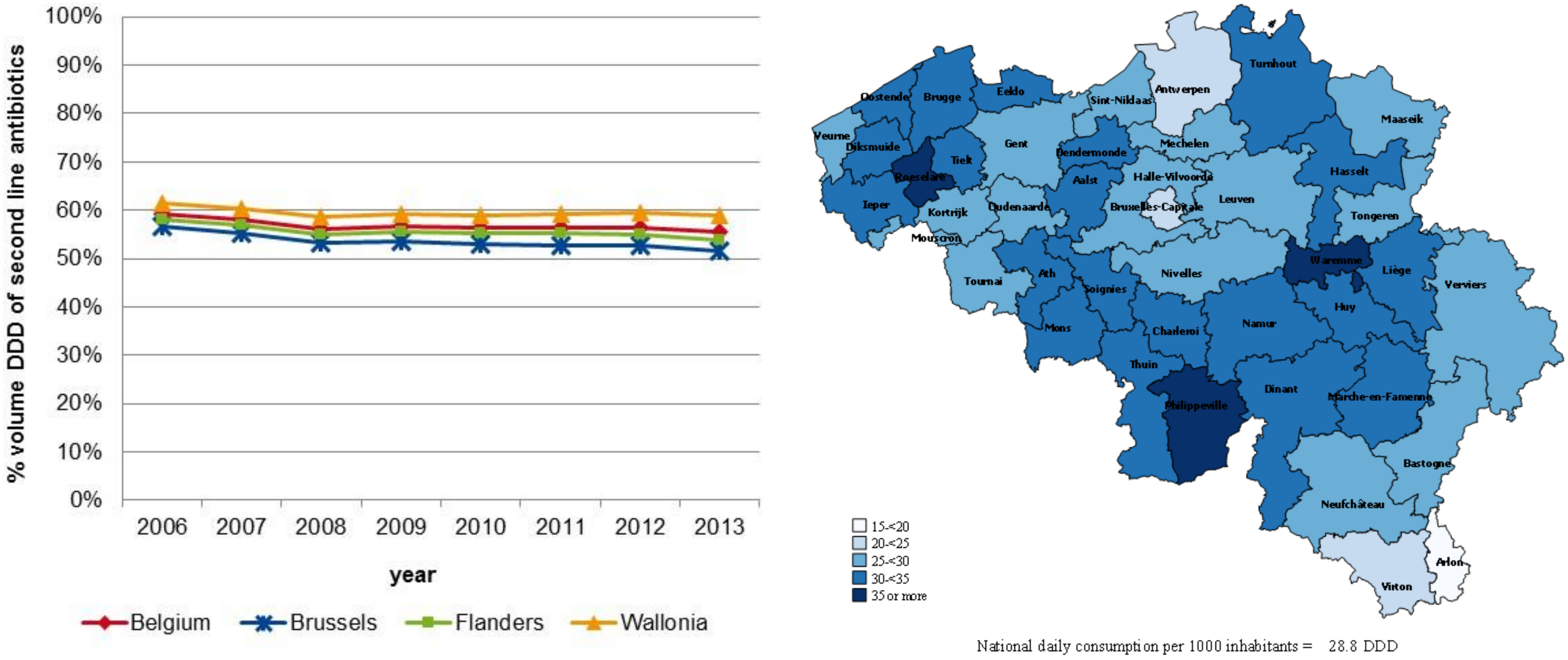
Source: IMA data, KCE calculation.

4.2.2.3. Percentage of volume (DDD) of antibiotics for Amoxicillin clavulanate, cephalosporin, quinolones, macrolides

Second line AB as a proportion of total volume is considered as quality indicator of AB prescription. The amounts even if improving slightly through the time are quite high in Belgium, about 55 % (60% in 2006). In comparison, the same indicator in the Netherlands is about 15 %.[w] This indicator score badly even by children (> 38%), and all over the country.

[w] Dutch performance report p128, figure 5.11.

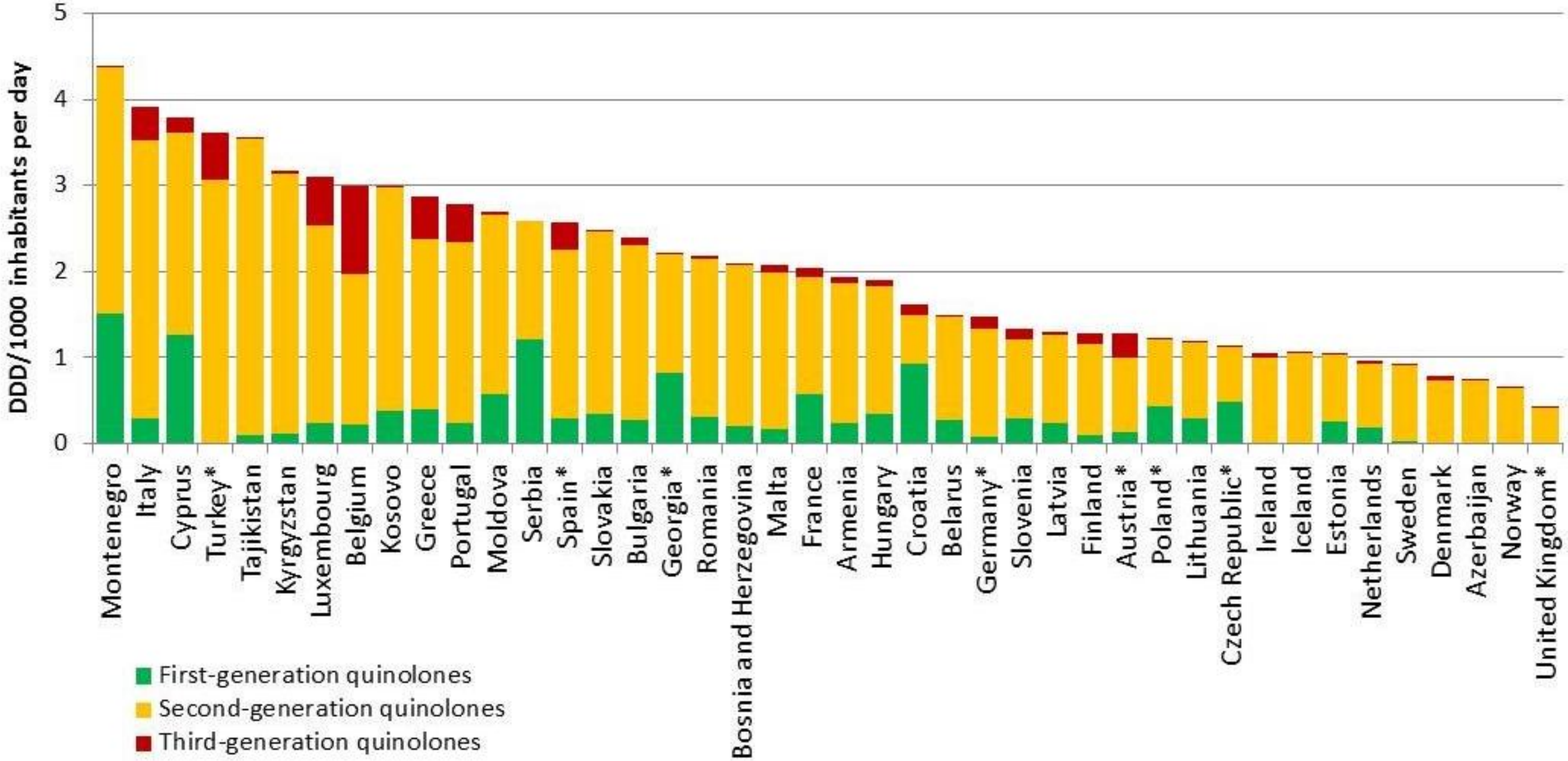
Figure 42 – Percentage of volume (DDD) of second line antibiotics, by patient region (2006-2013) and patient district (2013)



Source: IMA data, KCE calculation.

In particular, third generation of quinolones seem to be overused in Belgium.[5]

Figure 43 – Antibiotic consumption, amount DDD / inhabitant of quinolones by type of generation: international comparison (2011)



Source: BAPCOC report 2015

Table 26 – Percentage of volume (DDD) antibiotics for amoxicillin clavulanate, cephalosporin, quinolones and macrolides by patient characteristics (2013)

Variable	Category	Numerator (DDD)	Denominator (DDD)	Percentage of volume (DDD)
Age (years)	00-04	1 435 396	3 985 950	36.0%
	05-09	1 172 867	2 975 053	39.4%
	10-14	1 153 263	3 057 303	37.7%
	15-19	2 329 774	6 090 894	38.3%
	20-24	2 817 654	5 957 051	47.3%
	25-29	3 176 793	6 270 101	50.7%
	30-34	3 964 069	7 496 218	52.9%
	35-39	4 228 530	7 563 462	55.9%
	40-44	4 724 211	8 061 352	58.6%
	45-49	5 120 192	8 487 710	60.3%
	50-54	5 619 241	9 082 232	61.9%
	55-59	5 773 099	9 134 569	63.2%
	60-64	5 376 687	8 443 109	63.7%
	65-69	4 853 115	7 728 821	62.8%
	70-74	3 649 999	5 983 440	61.0%
	75-79	3 536 045	6 021 842	58.7%
	80-84	3 001 408	5 296 466	56.7%
	85-89	1 926 962	3 542 535	54.4%
	90-94	881 033	1 671 823	52.7%
	95-99	153 658	298 553	51.5%
	>=100	30521	59 058	51.7%
Gender	Female	34 741 722	66 827 184	52.0%
	Male	30 182 795	50 380 357	59.9%
Entitlement to increased reimbursement (18 years or more)	No	46 144 313	79 897 026	57.8%
	Yes	13 700 710	23 635 830	58.0%
Long term care (65 years or more)	Home care	1 484 190	2 548 872	58.2%
	Institutions	2 297 356	4 299 361	53.4%
	no LT care	14 251 195	23 754 304	60.0%
Province	Antwerpen	9 296 147	17 171 568	54.1%

Variable	Category	Numerator (DDD)	Denominator (DDD)	Percentage of volume (DDD)
	Brabant Wallon	2 127 699	3 951 221	53.8%
	Bruxelles-Capitale	4 877 753	9 441 763	51.7%
	Hainaut	9 524 315	15 501 566	61.4%
	Limburg	4 741 077	9 296 717	51.0%
	Liège	7 254 852	12 338 560	58.8%
	Luxembourg	1 548 515	2 594 697	59.7%
	Namur	3 339 570	6 006 874	55.6%
	Oost-Vlaanderen	8 531 753	15 618 182	54.6%
	Vlaams Brabant	6 233 786	11 547 104	54.0%
	West-Vlaanderen	7 449 049	13 739 289	54.2%

Source: IMA data, KCE calculation.

Key points

- **Appropriate prescription of antibiotics: Belgium is still scoring very badly.**
- **Belgium ranks very high internationally in terms of antibiotic consumption expressed in Defined Daily Dose (DDD). This amount is similar to France, but higher than in the Netherlands (29 DDDs/day/1000 inhabitants in Belgium , compared to 12 DDDs/day/1000 inhabitants in the Netherlands). There are serious concerns about comparability of results expressed in DDD, especially if differences exist in package size between countries. Even between regions differences can be observed (Wallonie is stable above 30 DDDs/day / 1000 inhabitants). Information campaign, addressed to the public and professional health workers, do not seem to influence the volume of prescription since 2008.**
- **In 2013 about 42 % of patients have received at least one antibiotic prescription. Since 2010 the numbers are not decreasing. There are large differences between regions: 46% in Wallonia, 41% in Flanders and 37% in Brussels. The amounts are especially high in long term care institutions and home care (60% - 62%)**
- **Second line AB as a proportion of total volume is considered as a quality indicator of antibiotics prescription in ambulatory care. The amount expressed in DDD, even if improving slightly through the time are quite high in Belgium, about 55 % (60% in 2006). In comparison , the same indicator in the Netherlands is about 15 %.[x] This indicator score badly even by children (> 38%) and all over the country.**
- **BAPCOC has develop a new policy during the period 2014-2019, suggesting numeric targets for the hospital and ambulatory sector: the percentage of prescription by 1000 inhabitants should decrease from 800 nowadays to 400 by 2025. The ratio of amoxicillin to amoxicillin clavulanate should change shift from 50/50 to 80/20 by 2019. The quinolons consumtion should decrease by 50 % (from 10% to 5%).**

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[x] Dutch performance report p128, figure 5.11.

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4.3. Medical radiation exposure due to non-appropriate medical imaging (QA-6)

4.3.1. Documentation sheet

Description	Medical radiation exposure due to non-appropriate medical imaging (mSv/capita/year)
Calculation **Denominator**	Numerator: Prescribed medical radiation dose (number of patients with non-appropriate medical imaging test, multiplied by constant dose factors) [1]. Denominator: Number of insurees
Rationale	In the past, Belgium realized that the population dose burden caused by medical applications of ionizing radiation was very high compared to neighboring countries. The Superior Health Council published recommendations to reduce the medical radiation exposure (Superior Health Council, 2007). It stressed the need to follow the referral guidelines for diagnostic imaging elaborated by the Consilium Radiologicum in 2004, and based on the guidelines of the European Association of Radiology. The guidelines recommend the use of more appropriate exams (last updated release 2010). In order to reduce such inappropriate use which may potentially be hazardous to patients, the health authorities have coordinated their efforts and come up with different strategies to restrict this phenomenon. The BELMIP (Belgium Medical Imaging Platform) was created in 2010 to promote a global strategy with several components[2]: 1) An information campaign geared towards the public and patients on the subject of “No radiation without reason” (Department of Public Health, 2011, 2013). 2) Simultaneously all doctors were informed of excessive exposure to ionizing radiation due to medical imaging (RIZIV – INAMI 2009). 3) Relevant, individual information was sent to each health professional, based on their specific practice (RIZIV – INAMI 2010, 2013, 2015) targeting inappropriate prescribing. This information concerning inappropriate prescribing primarily included examinations with very limited indications (spinal column (especially lowerback) (CT, X-rays), skull, face, sinuses (X-ray, CT), chest (X-rays)); examinations with rare indications (plain abdominal X-rays, with or without contrast agent, pyelography and cystography procedures (X-rays)) venography of limbs (X-rays and phlebography).
Data source	IMA(EPS), RIZIV – INAMI (DOC N), FANC
Technical definitions	Used nomenclature codes and their weight in terms of a (constant) patient dose factor. These factors are expressed in terms of effective dose and were derived from Belgian medical exposure data evaluated in 2008, supplemented by data from the literature.

Nomenclature number	Dose factor (mSv/examination)	Exam type
451474, 451485, 451511, 451522, 451710, 451721, 451754, 451765, 462512, 462523, 462711, 462722, 462755, 462766	20	Contrast barium enema
458850, 458861	12	CT vertebra

	458813, 458824, 459550, 459561, 459572, 459583,459594, 459605, 459616, 459620, 459631, 459642	10,63	CT neck/thorax/abdomen
	451312, 451323, 451356, 451360, 451393, 451404, 451430, 451441, 462431, 462442	10	Contrast barium enema
	450531, 450542, 461532, 461543	7,2	Intravenous urography
	450634, 450645, 461635, 461646, 450671, 450682, 461672, 461683, 450715, 450726, 461716, 461720, 461591, 461602, 450590, 450601	7,2	Urologic X-ray
	458835, 458846	5,7	CT vertebra
	453316, 453320, 464310, 464321, 453331, 453342, 464332, 464343, 453390, 453401, 453412, 453423	5	Venography
	455475, 455486, 466476, 466480	4,2	X-ray lumbar spine
	455593, 455604, 466594, 466605	3,5	X-ray spine
	455394, 455405, 466395, 466406, 455416, 455420, 466410, 466421	2,6	X-ray cervical/dorsal spine
	458673, 458684, 459675, 459686, 459690, 459701	2,1	CT skull
	458732, 458743	1,7	CT sella turcica
	455534, 455545, 466535, 466546	1,6	Sacroiliacal X-ray
	455895, 455906,	1,554	CT hip spine
	455276, 455280, 466270, 466281	1,2	Pelvic X-ray
	455254, 455265, 466255, 466266	1,2	Hip X-ray
	451835, 451846, 459115, 459126, 469114, 469125	1	Radioscopy
	451010, 451021, 450516, 450520, 450015, 450026, 461510, 461521	0,83	Abdomen X-ray
	452712, 452723, 463713, 463724	0,23	Chest X-ray
	455630, 455641, 466631, 466642	0,22	Skull X-ray
	452690, 452701, 463691, 463702	0,06	Chest X-ray

Limitations	Change in nomenclature codes : In 2010, new nomenclature codes were defined for CT examinations of the trunk: while the old nomenclature emphasized all examinations of the abdomen, the thorax and the neck and any combinations of them, the new codes distinguish between these examinations. This don't affect the calculation of the indicator Change in dose evaluation The real dose for each examination is very difficult to estimate. It depends from the technology used and from the precision of the nomenclature code. Moreover, due to improvement of technologies and optimization processes the mean dose is decreasing through the years. In conclusion, this indicator is valid to estimate the use of inappropriate imaging tests and their evolution. It is not a valid indicator to estimate the real exposure to medical irradiation which is overestimate.
International comparability	The European Commission uses this information from several European countries to compare the global medical radiation exposure across Europe.
Dimension	Quality – appropriateness, safety
Related indicators	None

4.3.2. Results

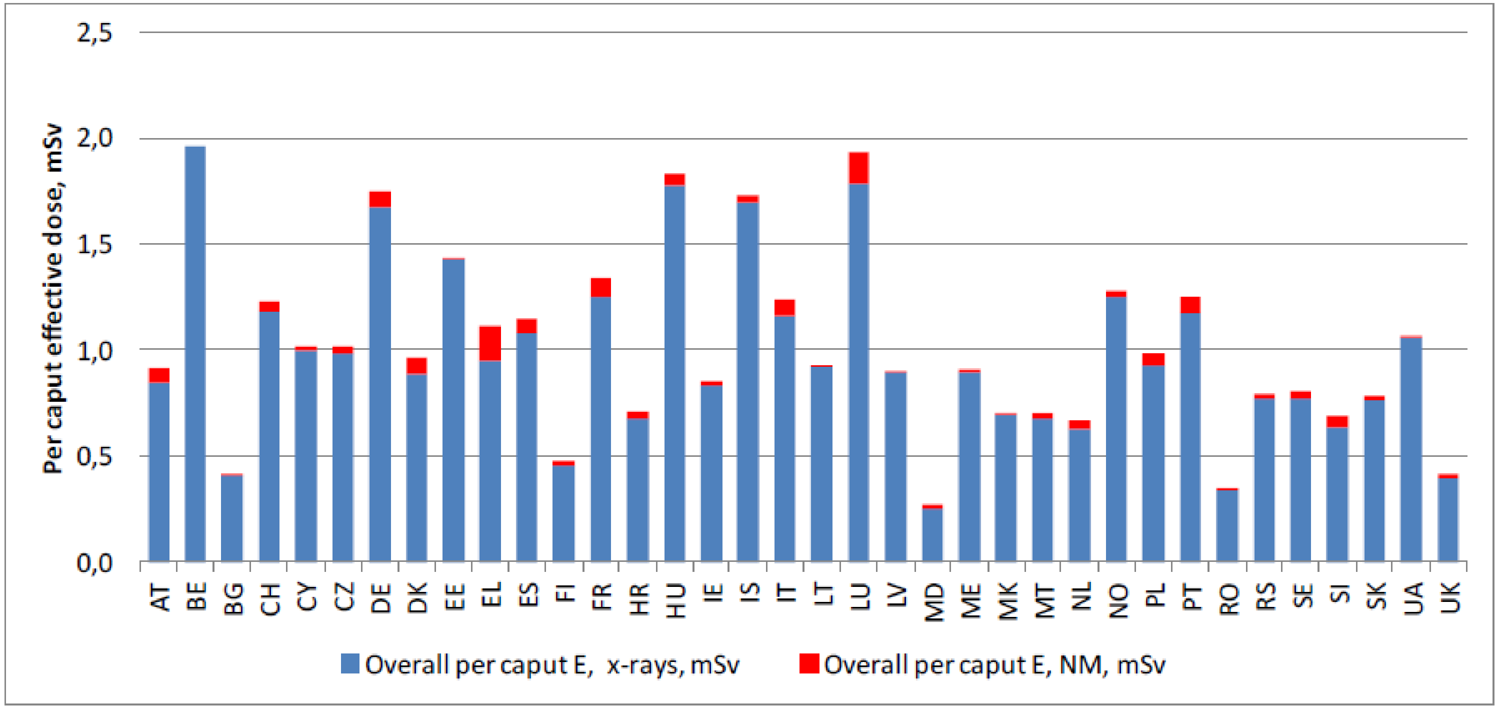
Introduction

Compared to other countries the level of irradiation due to medical imaging procedures is very high.

However, the reliability and completeness of the data available from different countries is extremely variable and strongly cautions against over-interpreting the data when making international comparisons.

Despite the above considerations, the last comparison at European level shows that the Belgian medical exposure was high compared to other countries.

Figure 44 – European population dose from medical imaging (Belgium: data 2006)

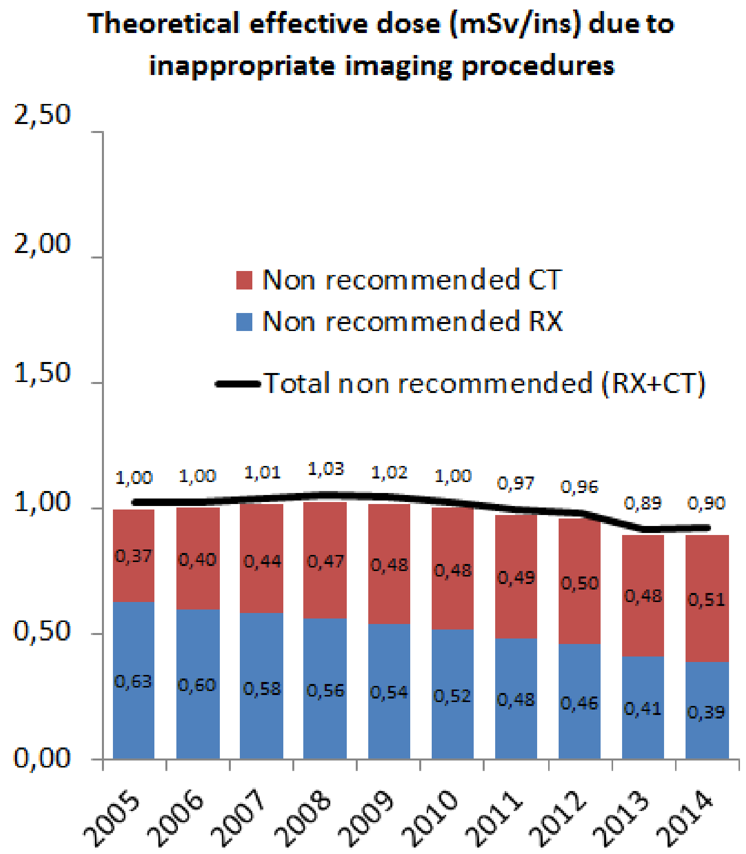


Source: EUROPEAN COMMISSION, RADIATION PROTECTION No. 180 (2014) Medical Radiation Exposure of the European Population, p 87 [3]

Medical radiation exposure due to non-appropriate medical imaging

The contributions of the obsolete RX and CT examinations (and the total non-recommended) to the total dose are shown in Figure 45.

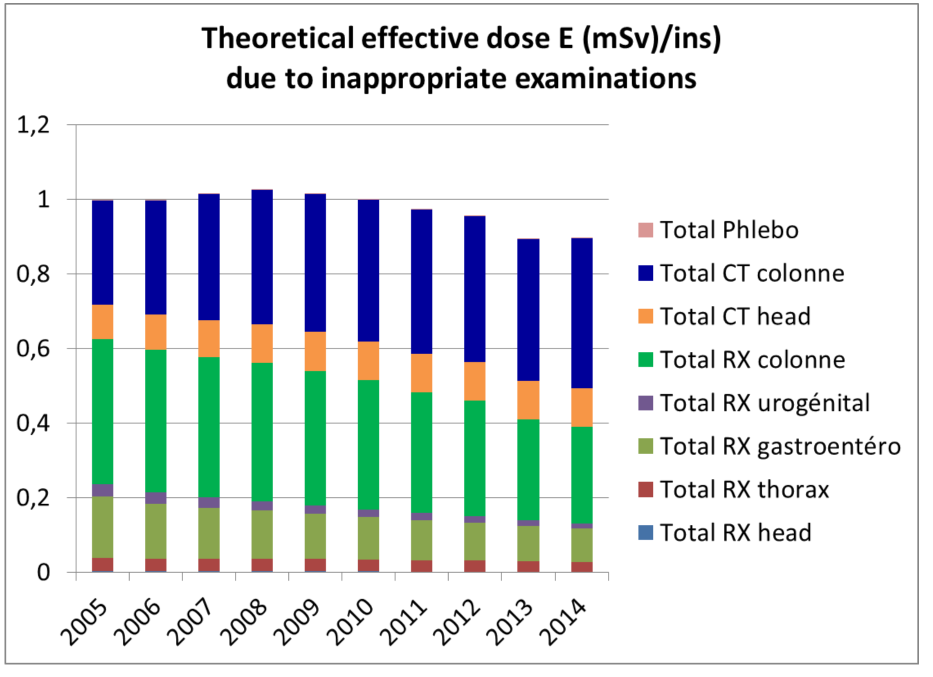
Figure 45 – Theoretical non-appropriate medical radiation (X-rays and CT) (in mSv per population) (2005-2014)



The theoretical indicator shows an increase up to 2008. Since 2009, we can see that there has been a slight reduction in the theoretical irradiation level of inappropriate imaging procedures, which had decreased to 0.9 mSv/insuree by 2013, i.e. the level observed in 2005. However in 2014, a slight increase can be observed in comparison with 2013.

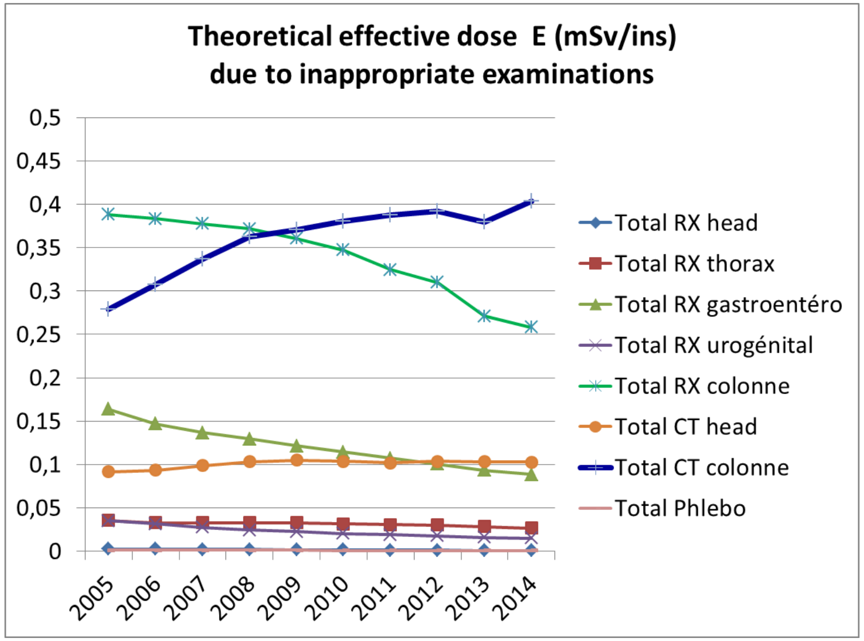
Figure 46 details the different components of inappropriate prescription.

Figure 46 – Theoretical non-appropriate medical radiation (X-rays and CT) (in mSv per insuree) (2005-2014) by type of procedure



This diminishing trend is primarily due to the decrease in traditional X-ray examinations (-18% for irradiation due to examinations with limited indications). In the case of CT, growth has slowed down, but not reduced. (See Figure 47).

Figure 47 – Theoretical non-appropriate medical radiation (X-rays and CT) (in mSv per insuree) (2005-2014) by type of procedure



Reductions in the number of X-ray examinations are particularly noticeable for gastro-abdominal examinations (X-ray) and spinal examinations (X-ray). There are signs of encouraging changes in respect of chest examinations and examinations of the head (X-rays of the skull, sinuses or urogenital system (IVP, pyelography).

On the contrary, while the number of CT examinations of the head stays approximately constant since 2008, the contribution of spinal CT is still growing In 2010, The college of radiology has estimated that 81% of CT spine are not justified) [4]

We need to temper this result: the observed slowdown of exposition due to examinations with limited indications is not as significant as expected. This disappointing outcome is linked to the dismal result for spinal CT examinations, which make a considerable contribution to the radiation dose. This probably indicates that additional actions targeting lumbar pathology in particular, will be required.

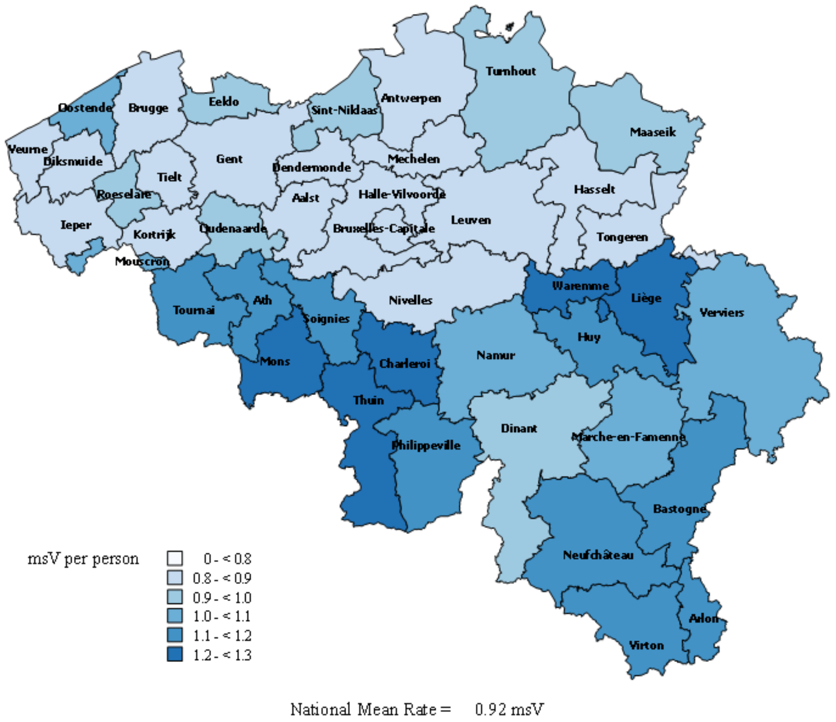
Table 27 – Theoretical non-appropriate medical irradiation (in mSv per insuree) (2014) by age, gender and region

nb MSV/insuree age class	BRUXELLES-CAPITALE /	RÉGION WALLONNE	VLAAMS GEWEST	mSv/ insuree
0-14	0,14	0,16	0,18	0,17
15-29	0,37	0,55	0,42	0,45
30-44	0,69	1,07	0,74	0,83
45-59	1,12	1,49	1,03	1,18
60-74	1,42	1,69	1,21	1,38
75-89	2,03	2,22	1,71	1,89
90+	1,94	1,90	1,64	1,75
total	**0,78**	**1,11**	**0,83**	**0,92**
M	**0,63**	**0,96**	**0,72**	**0,79**
W	**0,93**	**1,25**	**0,94**	**1,04**

A higher level of irradiation is observed by older insuree.

Important geographical variation can be observed between region

Figure 48 – Theoretical non-appropriate medical radiation (X-rays and CT) (in mSv per insuree) (2014) standardized by age class and gender by arrondissement



Key Points :

The theoretical level of irradiation due to non recommended tests has been reduced to the level of 2003.

However, the level stopped diminishing in 2014 due to the increasing number of spine CT scans: Spine exams and more specifically lowerback CT scans are responsible for this high level of irradiation. The college of radiology estimates that 81% of CT spine are not justified. Important geographical variation can be observed.

Specific actions should target these exams to diminish the prescription of inappropriate exams, thereby reducing radiation.

<u>Appendix: Irradiation exposure due to optimization of diagnostic exams (DRL's = optimalisation):</u>

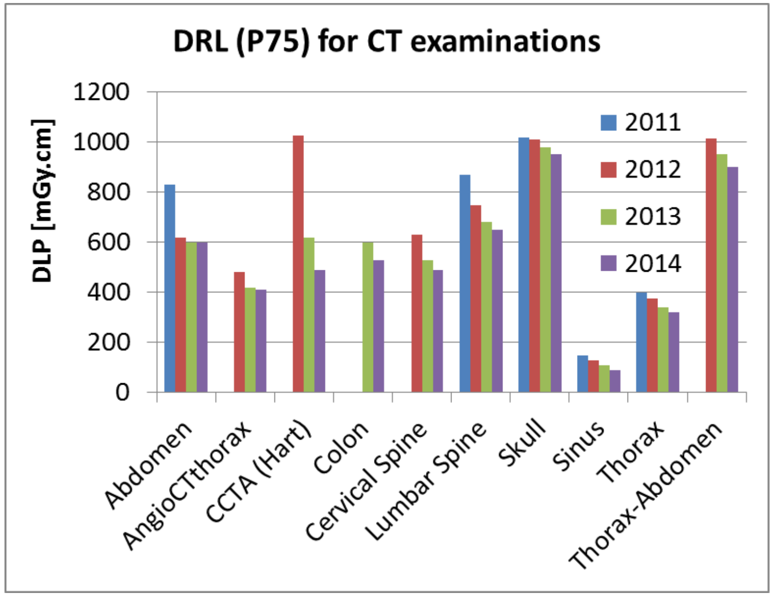
<u>The level of radiation exposure per exam is diminishing</u>

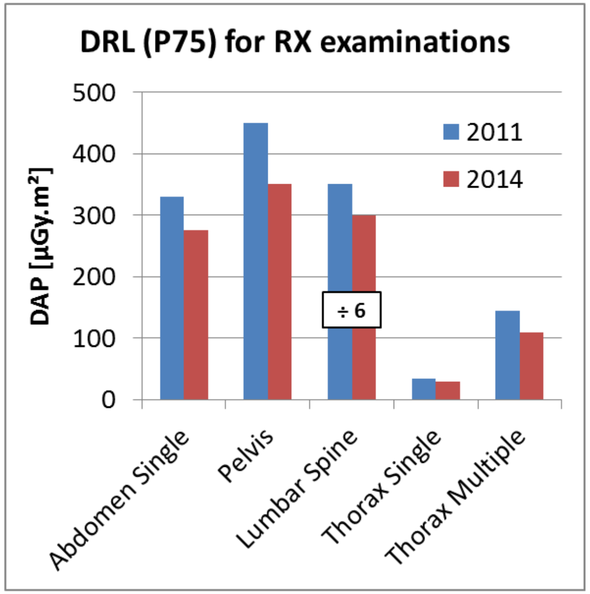
Since 2006, the dose administered to Belgian patients during specific, well defined diagnostic procedures are approximately estimated by the patient dosimetry survey, organized by the AFCN-FANC. The first survey continued until 2010 and results were very difficult to calculate. In 2011, a AFCN-FANC decree was published which forced the medical institutions to participate to the surveys. Diagnostic reference levels (DRL's, determined from the 75th percentile of the dose distributions) were computed each year for CT and every three years for other procedures. They are shown in figure 4.

The DRL's for all CT and RX examinations decreased along the surveys. This shows the efforts done in the medical sector to diminish the mean dose per procedure by improving technologies and optimizing the dose.

However, efforts must still be made to reduce the dose of irradiating examinations such as CT of the trunk (Thorax-abdomen), the skull and the spine, and the RX examinations of the lumbar spine (divided by 6 for clarity of Figure 49).

Figure 49 – Belgian diagnostic reference levels (DRL's) for CT and RX examinations (adults) (2011-2014)





<u>The level of radiation dose per procedure is diminishing (safety)</u>

The Diagnostic reference levels (DRL's) for all CT and RX examinations decreased along the surveys. This shows the efforts done in the medical sector to diminish the mean dose per procedure by improving technologies and optimizing the doseas mentioned before. However, efforts must still be made to reduce the dose of irradiating examinations such as CT of the trunk (Thorax-abdomen), the skull and the spine, and the RX examinations of the lumbar spine

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4.4. Variability in caesarean sections rates (QA-7)

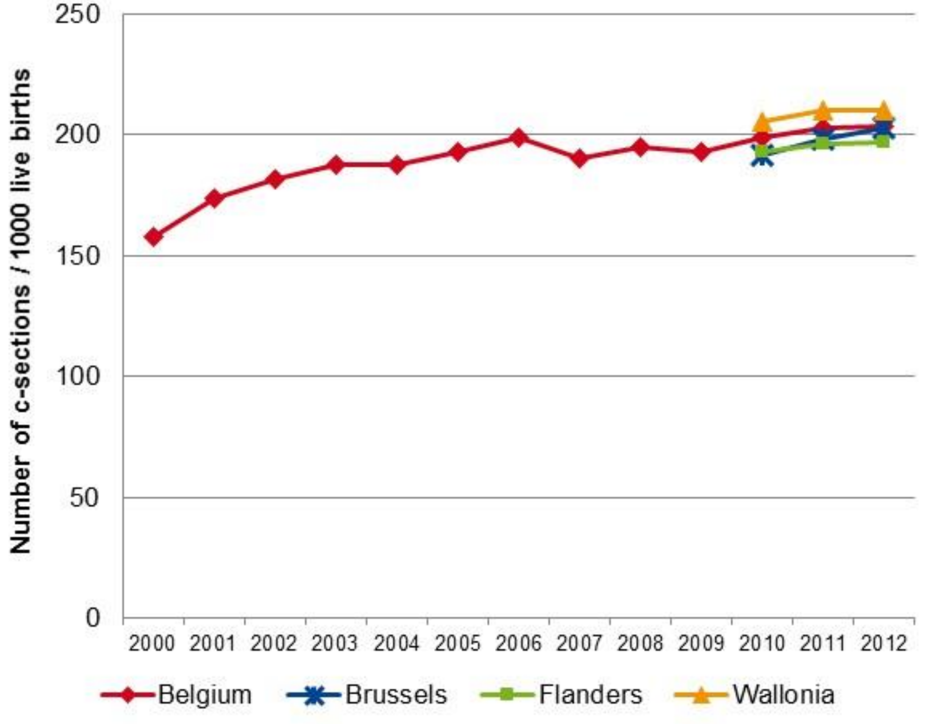
4.4.1. Documentation sheet

Description	Variability in caesarean sections per 1000 live births
Calculation	Number of caesarean sections (x1000), divided by all live births. Variability is calculated per centre or per district.
Rationale	Since 1985, the international healthcare community has considered the ideal rate for caesarean sections to be between 10% and 15%.[1] Since then, rates of caesarean delivery have increased in the majority of European countries. Reasons for the increase include reductions in the risk of caesarean delivery, malpractice liability concerns, scheduling convenience for both physicians and patients, and changes in the physician-patient relationship, among others. While caesarean delivery is required in some circumstances, the benefits of caesarean versus vaginal delivery for normal uncomplicated deliveries continue to be debated. There is some evidence from observational studies of increased maternal mortality, maternal and infant morbidity, and increased complications for subsequent deliveries. Nevertheless, the Cochrane Collaboration review on caesarean section for non-medical reasons at term could not reach strong conclusions on the best medical indications due to a lack of trials on the topic.[2] These concerns, combined with the greater financial cost (the average cost associated with a caesarean section is at least two times greater than a normal delivery in many OECD countries), raise questions about the appropriateness of some caesarean delivery that may not be medically required.[3] These concerns are translated into professional guidelines. Professional associations of obstetricians and gynaecologists in countries such as Canada now encourage the promotion of normal childbirth without interventions such as caesarean sections [4]. Recent guidelines from the French Health Authority recommend informing the patient on the increased risk of complication for future pregnancy after a caesarean section.[5] In Belgium, guidelines for low risk pregnancy recommend to not perform induction of labour before 41 weeks,[6] but otherwise are not very explicit in reducing the number of interventions. Trends and variability of caesarean rates inform on the appropriateness of care. The analysis of geographic variation can provide a powerful screening tool to identify areas with inappropriate practice of c-section.[7 8]
Primary data source	Numerator: Hospital administrative discharge data (RHM) Denominator: FPS Economy - Directorate-General Statistics and Economic Information, Demographics division This indicator is also regularly monitored by IMA.[9 10]
Source of results	SPF Public health and OECD Health Statistics for international comparison Caesarean section is one of the 5 surgical intervention studied by OECD to study variability between countries.[11]
Technical definitions	Numerator : ICD9-CM codes: 74.0 Classical caesarean section; 74.1 Low cervical caesarean section; 74.2 Extraperitoneal caesarean section; 74.4 Caesarean section of other specified type; 74.99 Other caesarean section of unspecified type
International comparability	Same definition of ICD9 codes, but not all countries use the same definition of live births
Performance Dimension	Quality (appropriateness); variability of care

4.4.2. Results

Following an increasing trend in the early 2000 (15.8%in 2000) and a stabilisation since 2006, the caesarean section rate in Belgium was 20.4 % in 2012 (or expressed per live births, 204 / 1000 live births). There are small regional differences with rates of 19.7% in Flanders, 21.0% in Wallonia and 20.3% in Brussels.

Figure 50 – Caesarean sections rates, by region of mother's residence (2000-2012)



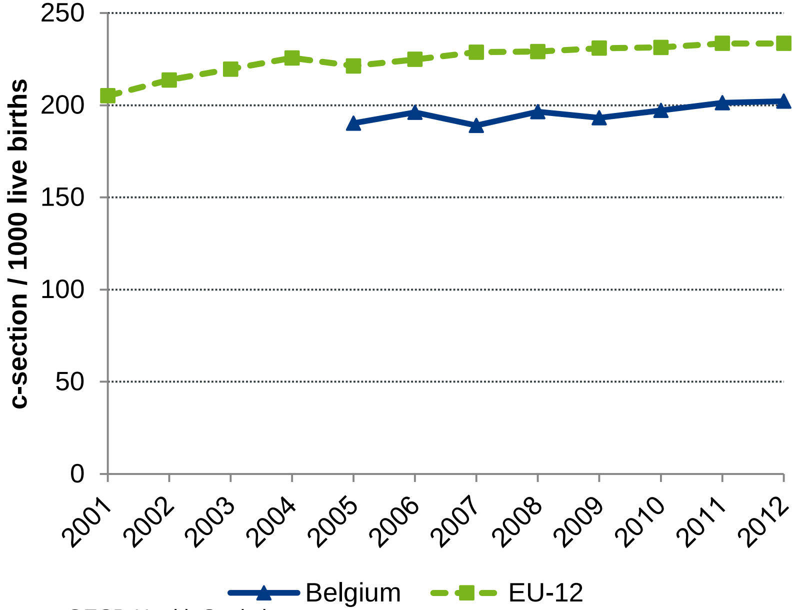
Source SPF – FOD

A multivariate regression analysis in the multidisciplinary feedback from the SPF – FOD, based on data from 2004-2007, revealed the following factors to be associated with higher probability of c-section: age of the mother, day in the week (Monday highest rate) and low gestational age (37-38 weeks lower than above 42 weeks). The analysis also revealed a very high variability between hospitals; the national rate was 13.7% for women at low risk for CX, and differences range from -61% to 70% around this average.[8,12]

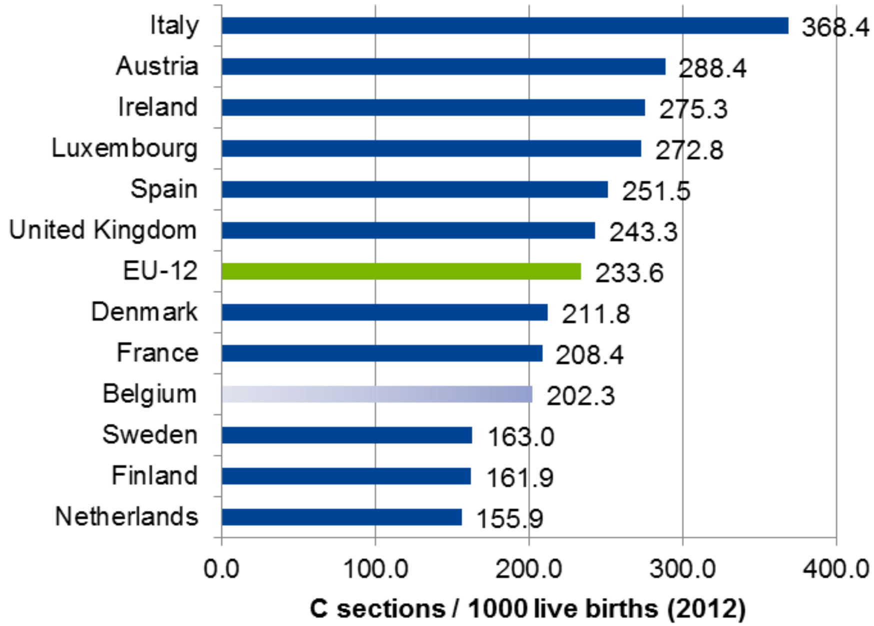
A recent analysis based on IMA data 2011 confirmed the large variability between hospitals, with a factor two between hospitals with lowest rates (13%) and hospitals with highest rates (31%). While some factors could explain part of those differences (age of the mother, some comorbidities, the social status, the risk of the pregnancy), there remain large differences between hospitals and individual gynaecologists.[10]

Results from international comparison show that C-sections are increasing in majority of European countries, with EU-15 average at 24.4% (or 244 caesarean sections / live births) in 2012. Belgium has c-sections rate similar to France, and lower EU-15 average.

Figure 51 – Number of caesarean sections (per 1000 live births): international comparison (2001-2012)



Source: OECD Health Statistics



Source: OECD Health Statistics 2015

Source: OECD Health statistics 2015

Key points

- **Caesarean rates in Belgium are lower than the EU-15 average (in Belgium; 204/1000 live births in 2012, EU-15 average 244/1000 live births).**
- **C section rate is stable since 2006, and was increasing before that period.**
- **Several studies on Belgian data have shown a large variability between hospitals in caesarean rates.**

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5. QUALITY OF CARE: SAFETY

5.1. Prevalence of healthcare-associated infections (QS-1)

5.1.1. Documentation sheet

Description	Proportion of patients with at least one healthcare-associated infections (HAI) on any day in acute care hospitals
Calculation	The prevalence of HAIs was reported as the Proportion of patients with at least one HAI over the total number of patients, based upon a point prevalence survey (PPS).
Rationale	Healthcare-associated infections represent a threat (burden) to the safety of patients (morbidity, mortality, length of stay, treatment costs).
Primary Data source	Scientific Institute of Public Health - operational directorate public health & surveillance (service healthcare-associated infections & antimicrobial resistance – www.wiv-isp.be/nsih)
Indicator source	European Centre for Disease Prevention and Control (ECDC)[1]
Periodicity	Belgium: last surveys: 2010 (pilot), and 2011 National PPSs should be repeated optimally once every five years. ECDC will organise a second coordinated PPS in all Member States in 2016–2017, but will also support the organisation, data collection, validation and analysis of national PPSs in 2013–2015.
Technical definitions	An active infection was defined as healthcare-associated (associated with acute care hospital stay only) when: 1. the onset of the signs and symptoms was on Day 3 of the current admission or later (with Day 1 being the day of admission); or 2. the signs and symptoms were present on admission or became apparent before Day 3, but the patient had been discharged from an acute care hospital less than two days before admission; or 3. the signs and symptoms of an active surgical site infection were present on admission or started before Day 3, and the surgical site infection occurred within 30 days of a surgical intervention (or in the case of surgery involving an implant, a deep or organ/space surgical site infection that developed within a year of the intervention); or 4. the signs and symptoms of a *Clostridium difficile* infection were present on admission or started before Day 3, with the patient having been discharged from an acute care hospital less than 28 days before the current admission.
International comparability	Yes
Dimensions	Quality (safety)
Related performance indicators	Incidence of post-operative sepsis; Incidence of hospital-acquired MRSA (methicillin resistant *Staphylococcus aureus*) infections

5.1.2. Results

Belgium

The prevalence of patients with at least one HAI on any given day in 2011, based upon 52 acute care hospitals (coverage >50%) was estimated at 7.1% (95% CI 6.1–8.3%).

The most frequently reported HAI types in the EU survey were also the most common in Belgium: pneumonia / lower respiratory tract infections (24% in Belgium), surgical site infections and urinary tract infections (both 18%), and bloodstream infections (14%).

The microorganisms most frequently reported from HAIs were the most common in almost all countries with some rank differences.

The first three most frequently microorganisms reported from HAIs in Belgium were *Escherichia coli*, *Staphylococcus aureus* and *Pseudomonas aeruginosa*.

Regional coverage

No information available.

Figure 52 – Healthcare-associated infections (2011)

I. Hospital characteristics

Table 1. Types of hospitals

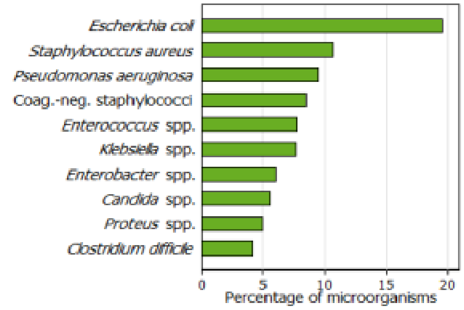
Hospital type	N	%
Primary	16	30.8
Secondary	22	42.3
Tertiary	13	25
Specialised	1	1.9
Unknown	0	0

Table 2. Size of the hospitals and average length of stay

	Median	[IQR]
Size (number of beds)	275	[199- 525]
Average length of stay (days)*	7.7	[6.7-8.8]

*Hospital statistics of year preceding PPS

Figure 2. Top ten microorganisms isolated in HAIs



II. Healthcare-associated infections (HAIs) and antimicrobial resistance

Table 3. HAI prevalence and key results

Number of patients with HAI	980
HAI prevalence % (95%CI)	**7.1 (6.1-8.3)**
N of HAIs	1086
N of HAIs per infected patient	1.11
N HAIs with microorganism (%)	703 (64.7)
Total N of reported microorg.	904

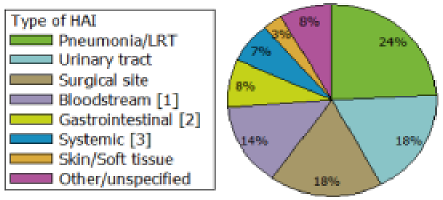
N=number

Table 4. Origin of HAIs

Origin of HAI	N HAIs	Rel%	Pts HAI	HAI%
HAI present on admission	151	13.9	136	1
Origin of HAI=Same hospital	98	64.9	87	0.6
Origin of HAI=Other hospital	43	28.5	40	0.3
Origin of HAI=Other/unknown	10	6.6	9	0.1
HAI during current hospitalisation	934	86	843	6.1
Missing	1	0.1		

N HAIs=number of HAIs, Rel%=% of total number of HAIs,
Pts HAI=N patients with HAI, HAI%=HAI prevalence % within category

Figure 1. Distribution of types of HAI



[1] incl. catheter-related bloodstream infections (4.4%)
[2] incl. *C. difficile* infections (3.4%)
[3] incl. clinical sepsis (5.8%)
LRT=Lower respiratory tract

Table 5. HAI prevalence by specialty

Specialty	N pts	Rel%	N pts with HAI	HAI%
Surgery	3459	25.1	291	8.4
Medicine	4596	33.4	311	6.8
Paediatrics	747	5.4	18	2.4
Intensive care*	797	5.8	162	20.3
Obstetrics and gynaecology	1057	7.7	10	0.9
Geriatrics	2048	14.9	171	8.3
Psychiatry	945	6.9	12	1.3
Rehabilitation/Other	109	0.8	5	4.6
All specialties	13758	100	980	7.1

N pts=number of patients, Rel%=% of total N pts, N pts with HAI=
N of patients with ≥1 HAI, HAI%=HAI prevalence % for specialty
*includes non-intensive care specialties in intensive care units

Table 6. Percentage of antimicrobial resistance for selected microorganism-antimicrobial combinations

Microorganism / Resistance	N isol.	N test.	N NS	% NS
Staphylococcus aureus / MRSA	97	95	35	36.8
Enterococci / VRE	71	56	2	3.6
Enterococcus faecalis / VAN-R	43	34	0	0.0
Enterococcus faecium / VAN-R	13	11	2	18.2
Enterobacteriaceae / 3GC-NS	382	333	74	22.2
Escherichia coli / 3GC-NS	177	160	22	13.8
Klebsiella spp. / 3GC-NS	70	63	18	28.6
Enterobacter spp. / 3GC-NS	55	51	26	51.0
Enterobacteriaceae / CAR-NS	382	333	4	1.2
Escherichia coli / CAR-NS	177	160	2	1.3
Klebsiella spp. / CAR-NS	70	63	1	1.6
Enterobacter spp. / CAR-NS	55	51	0	0.0
Pseudomonas aeruginosa / CAR-NS	86	76	13	17.1
Acinetobacter baumannii / CAR-NS	1	1	1	.

N=number, N isol.=total N of isolates, N test.=N of isolates with known susceptibility results, R=resistant, NS=non-susceptible,
N NS=N of NS isolates (only R isolates for MRSA, VRE and VAN-R),
% NS=N NS/N test. (not shown if N test.<10 isolates),
MRSA=meticillin-resistant *S. aureus*, VAN=vancomycin,
3GC=third-generation cephalosporin, CAR=carbapenem

Source: ECDC Point Prevalence Survey 2011-2012
Note : PPS data Belgium 21/09/2011-29/12/2011, 52 hospitals, 52 standard protocols, 0 light protocol, 13758 patients. Data representativeness: Good.

International comparisons (ECDC report)

The comparability of HAI prevalence percentages between European countries needs to be improved. Before making comparisons between countries in HAI prevalence, including case-mix adjusted prevalence, considerable efforts should be taken to harmonise the interpretation of case definitions, validate results and enhance diagnostic capacity in many EU/EEA Member States. Direct comparison of HAI prevalence percentages between countries were not an objective of the ECDC PPS.

The prevalence of HAIs is known to be influenced by a variety of factors such as the type of hospital and healthcare system, the severity of the patient case mix (co-morbidities), methodological differences such as different interpretations of the case definitions for HAIs, differences in availability of diagnostic tests, differences in the level of training and skills of healthcare workers (surveillance, hand hygiene compliance, antimicrobial stewardship, bundle care, …) applying the definitions and differences in reporting behaviour between hospitals and between countries. The latter are largely determined by possible legal or financial incentives or disincentives for reporting HAIs. Some of these determinants were included in the protocol and were used to interpret the observed HAI prevalence results, but others were not measured in the PPS and therefore their influence could not be assessed.

Comparing crude prevalence percentages of HAI between countries without taking into account differences in case mix, representativeness and confidence intervals and differences in sensitivity and specificity is therefore not meaningful. Representativeness of the PPS data by country was evaluated based on compliance with the recommended sampling methodology of hospitals and sample size. Representativeness was optimal or good in 25 (76%) countries and poor or very poor in 8 (24%) countries. Countries (and number of hospitals) with optimal representativeness were Bulgaria, Cyprus, Finland, France, Germany, Hungary, Ireland, Italy, Latvia, Luxembourg, Malta, Portugal, Slovakia, Slovenia, UK-England, UK-Northern Ireland, UK-Scotland; good representativeness was obtained in Belgium, Greece, Iceland, Lithuania, Netherlands, Poland, Spain, UK-Wales; poor representativeness in Austria, Croatia, Czech Republic, Estonia, Norway, Romania and very poor representativeness in Denmark and Sweden.

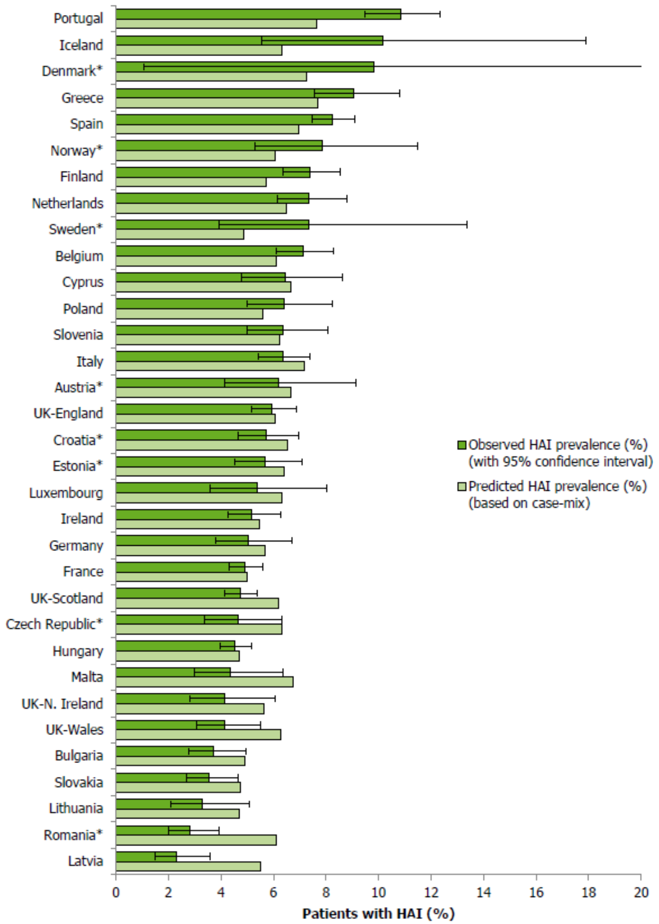
The following graphs compare the 30 EU countries (all EU Member States plus Norway, Iceland and Croatia). The overall figure for Europe is 5.7% (95% confidence interval: 4.5–7.4%); the HAI prevalence by country varied from 2.3% to 10.8%. The prevalence of patients with HAIs in Belgium was 7.1% (95% CI 6.1–8.3%).

The predicted and observed HAI prevalence by country are represented in Figure 53.

The standardised infection ratio (SIR) was calculated as the number of observed patients divided by the number of predicted (or expected) patients with at least one HAI. The number of predicted patients with one or more HAI was calculated by summing up, for each country, the individual probabilities for each patient (values between 0 and 1) after fitting the European model. Standardised ratios <1 indicate a lower prevalence than predicted, standardised ratios >1 indicate a higher prevalence than predicted based on the (country's) case mix after applying the European risk model. The correlation between the observed and predicted prevalence by country is shown in figure 27 (correlation coefficient Pearson's rho 0.61, p<0.001, R-squared 0.37; Spearman's rho 0.55, p<0.01).

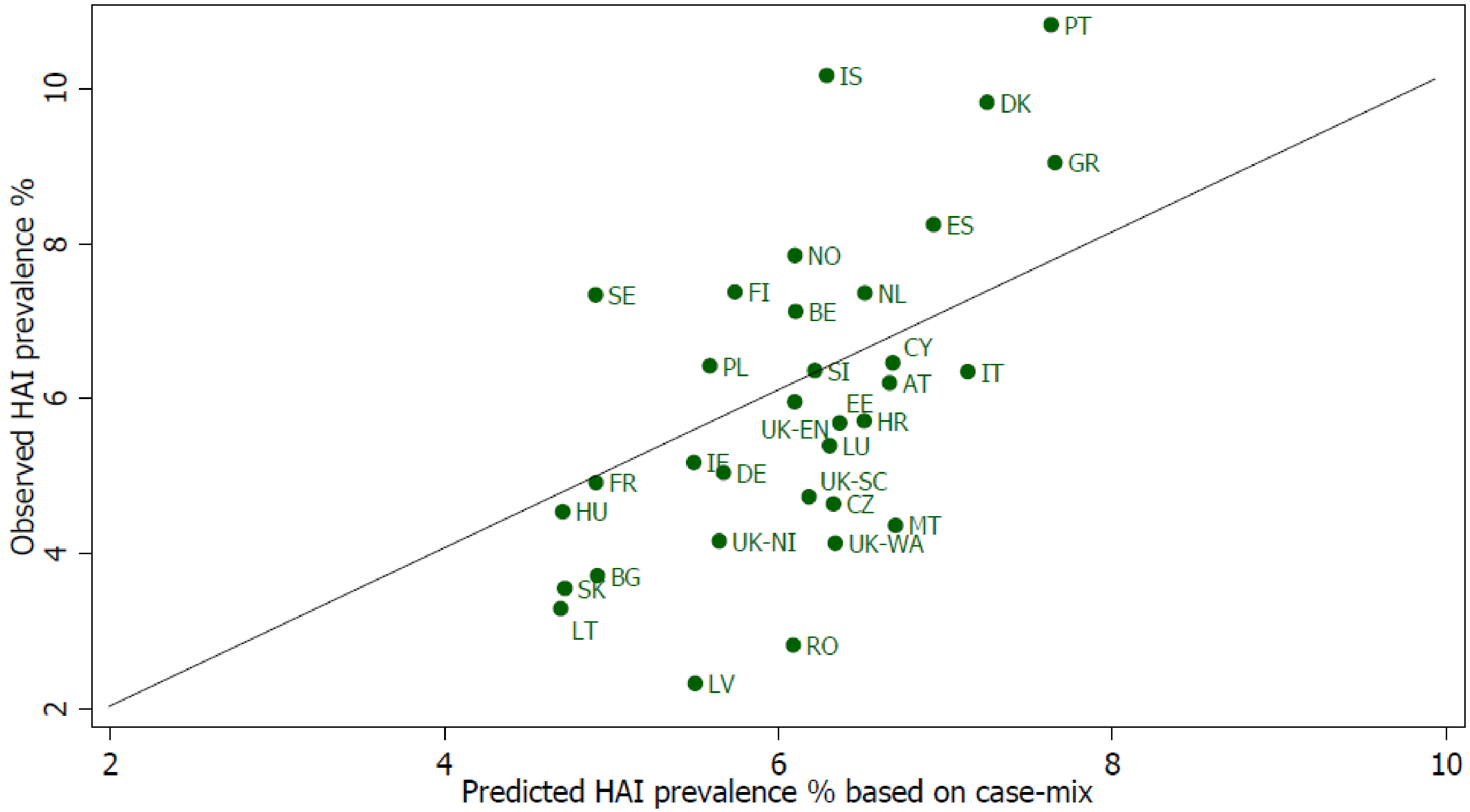
Belgium has a higher prevalence than predicted.

Figure 53 – Observed Healthcare-Acquired Infections prevalence with 95% confidence intervals and predicted HAI prevalence based on case mix and hospital characteristics, by country: international comparison (2011–2012)



Source: ECDC Point Prevalence Survey 2011-2012
*Note : *Country representativeness of the PPS data was optimal or good in 25 (76%) countries, and poor or very poor in 8 (24%) countries. Countries (number of participating hospitals) with poor representativeness were: Austria (n=9), Croatia (n=11), Czech Republic (n=14), Estonia (n=4), Norway (n=7), Romania (n=10) and countries with very poor representativeness were Denmark (n=3) and Sweden (n=4). Denmark: upper limit of 95% confidence interval not included, HAI prevalence=9.8% (95% CI 1.0–52.7).*

Figure 54 – Correlation between the observed and predicted prevalence of HAI, by country: international comparison (2011-2012)



Line: Observed prevalence = predicted prevalence (Standardised Infection Ratio (SIR) =1). Countries below the line have a SIR lower than 1, countries above the line have a SIR higher than 1. The smaller the distance between the dot and the line, the closer the observed prevalence comes to the predicted prevalence based on case mix.

Source: ECDC Point Prevalence Survey 2011-2012

Discussion

Comparison with previous estimates of the annual number of patients acquiring at least one HAI in acute care hospitals, in Belgium to validate the PPS data

The previous point estimate of 125 000 patients per year with an HAI in Belgium[2] fell within the 2011–2012 interval of 73 556 – 159 292.

After adjusting for case-mix, Belgium has a higher than expected HAI prevalence, implying progress remains to be made with HAI prevention. Care-bundles have recently been introduced for specific HAI such as VAP (Ventilator Associated Pneumonia). Attention also has been given to the safe surgery list and an audit has been performed by BAPCOC (Belgian Antibiotic Policy Coordination Committee) on surgical prophylaxis on a voluntary basis. A fifth national hand hygiene campaign has been launched after the 2011-2012 PPS, with improvement of both basic requirements and compliance.[3] Finally, a multidrug resistant organisms (MDRO) task force has been set up to enhance infection prevention and control in the near future. Emphasis is given among others on microbiological and epidemiological surveillances, antimicrobial consumption improvement, and outbreak support (MDRO protocol, Belgisch Staatsblad – Moniteur belge 21-11-2013, p 86540-86545).

Key points

- **The prevalence of patients with at least one healthcare-associated infection on any given day in 2011 was estimated at 7.1% (95% CI 6.1–8.3%). The overall figure for Europe is 5.7% (95% confidence interval: 4.5–7.4%); the healthcare-associated infections prevalence by country varied from 2.3% to 10.8%. After adjusting for case-mix, Belgium has a higher than expected healthcare-associated infections prevalence, implying progress remains to be made with healthcare-associated infections prevention.**
- **The most frequently reported healthcare-associated infections types in the EU survey were also the most common in Belgium : pneumonia / lower respiratory tract infections (24% in Belgium), surgical site infections and urinary tract infections (both 18%), and bloodstream infections (14%).**
- **The first three most frequently microorganisms reported from healthcare-associated infections in Belgium were Escherichia coli, Staphylococcus aureus and Pseudomonas aeruginosa.**

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5.2. Hospital-acquired MRSA (QS-2)

5.2.1. Documentation sheet

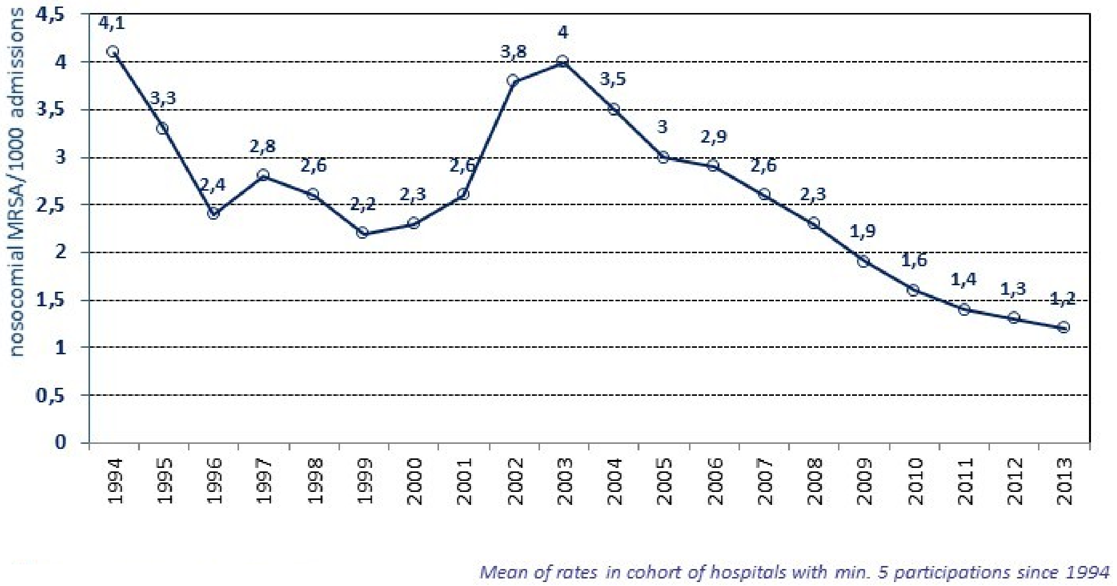
Description	Incidence of nosocomial MRSA (Methicillin-resistant *Staphylococcus aureus*) infections per 1000 hospital admissions
Calculation	Numerator: Number of newly acquired nosocomial MRSA infections in acute care hospitals in the reporting period. Nosocomial is defined as not present at admission, no known carriage (for 12 months), or first positive strain >48h after admission. Denominator: Number of hospital admissions in the reporting period x 1000.
Rationale	*Staphylococcus aureus* is an important cause of infections of the skin and mucosae, of postoperative wound infections, catheter infections, pneumonias, bacteremias and infections of articulations.[1] Since his first description,[2] MRSA was a major source of nosocomial infections in European countries and abroad. Participation in the surveillance of MRSA (at least one semester/year) is compulsory in Belgium since 2007.[3]
Data source	Primary data: Scientific Institute of Public Health (IPH): National Surveillance of Infections in Hospitals (NSIH): Nationale Surveillance van Methicilline-Resistente *Staphylococcus aureus* (MRSA) in acute ziekenhuizen. / Surveillance nationale du *Staphylococcus aureus* résistant à la Méthicilline (SARM) dans les hôpitaux aigus.[4]
International comparability	ECHI (long list[5]) measures the percentage of samples showing resistance by making use of the EARS-network (European Antimicrobial Resistance Surveillance network, ECDC project data.[6] The focus is on *Staphylococcus aureus* (MRSA), *Streptococcus pneumoniae* and other resistant pathogens. No international organisations include data on MRSA, making comparison difficult. An exception is the European Antimicrobial Resistance Surveillance System (EARSS), but this European program does not focus on nosocomial acquisition and considers MRSA from blood cultures and cerebrospinal fluid only. Differences between countries concerning the coverage and participation, the quality of the lab results, and the frequency of sampling are also possible.
Periodicity	Semestrial data are available since 1994. Surveillance is continuous. Since 2012 the retrospective MRSA data (for the previous surveillance year) are transmitted once a year instead of each semester.
Technical definitions	In Belgium the following indicator is in use: the total number of hospitalised patients with new Methicillin Resistant *Staphylococcus aureus* strain isolated from clinical samples (all). MRSA is not present at admission, no known carriage for the 12 past months or the first MRSA-positive strain is isolated >48h after admission (nosocomial MRSA). Duplicates and screening samples are excluded. Only patients admitted to one of the following departments of acute care hospitals are taken into account: • intensive care, intensive neonatology, coronary care, mixed departments (H-index) • surgery, medicine, paediatrics, maternity, neonatology (N-index) • psychiatry • geriatrics and Sp-index as far as these two departments are physically part of the hospital or the fusion. An admission is defined as a stay in a hospital bed of minimally one night. Samples of ambulant patients (e.g. day clinic, one-day clinic, haemodialysis department, policlinic services) are not included in the surveillance. The retrospectively collected data (previous year) are transmitted, aggregated at hospital level. Institutions that are part of a fusion unity are asked to gather their data per hospital site.
Dimensions	Quality (Safety)
Related indicators	Post-operative sepsis; MRSA in institutions

5.2.2. Results

The mean incidence of nosocomial MRSA was calculated as the average of all incidence rates of hospitals participating at the surveillance period. A decreasing incidence was found between 1994 and 1999 (from 4.1 to 2.2 cases/1000 admissions, respectively), after which the incidence again increased reaching 4 in 2003. Since 2004, we measure a slow, constant and statistically significant decrease of the incidence of nosocomial MRSA in acute care hospitals, finally reaching 1.2 new cases/1000 in 2013 (test for linear trend for a cohort op hospitals participating at least at 5 surveillance periods since 2003: annual decrease of 0.27 new cases/1000 admissions, p<0.001) (Figure 55).

Probably, the application of the recommendations for the control of MRSA (since 2003), the national hand hygiene campaigns, and the rationalization of the use of antibiotics influenced positively this evolution. Nevertheless, the interpretation of the indicator remains influenced by the screening practices which vary in coverage rate and intensity between hospitals. [7] However, it will be essential to support MRSA screening efforts if we want to hand-hold the excellent results since 2003. Indeed, the attention with respect to the MRSA could weaken under the pressure of the extra efforts necessary to fight against the emergence of Extended-Spectrum Beta-Lactamase (ESBL)-producing) or carbapenemase (CPE) producing enterobacteriaceae and other multi-resistant micro-organisms (MDRO).

Figure 55 – Mean incidence of nosocomial MRSA infections per 1000 admissions in acute care hospitals (1994-2013)



Source: IPH, NSIH (B. Jans)

In order to illustrate the trends by region, we used the median incidence of nosocomial MRSA by region, because the Brussels Region contains only a small number of acute care hospitals and the participation of less or more Brussels hospitals during a period can lead to very large variations in the incidence for the Brussels Region.

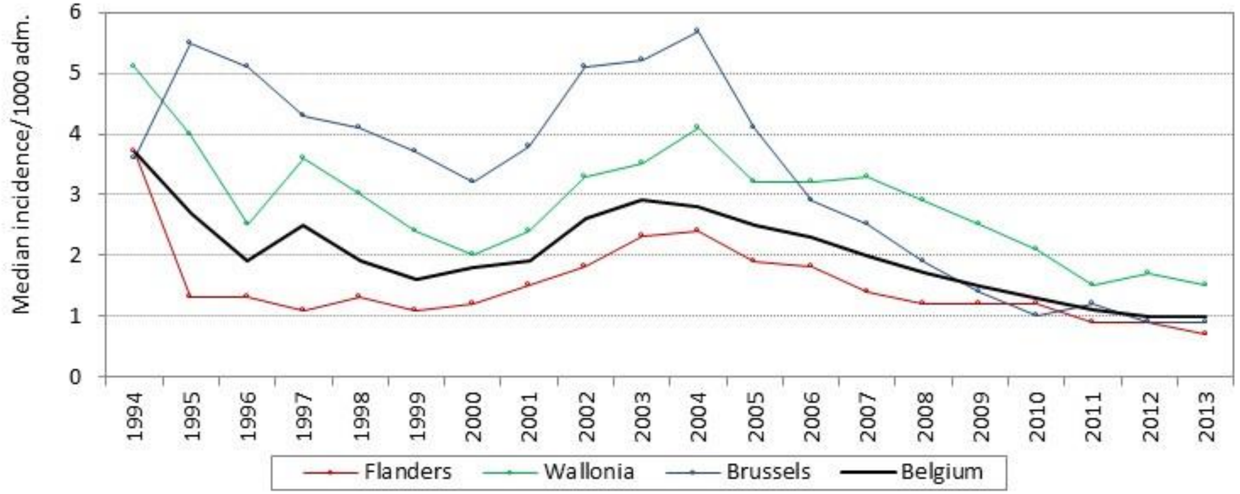
Only data from hospitals participating at least 5 times since the start of surveillance are taken into account. The median incidence was increasing in all Regions between 2000 and 2003-2004, but again decreasing afterwards (Figure 56).

This decrease was most impressive in the Brussels hospitals: from 5.7 cases/1000 admissions in 2004 to 0.9 case/1000 admissions in 2013 (test for linear trend for hospitals with at least 5 participations (cohort 2003-2013): annual decrease with 0.51 cases/1000 admissions, p<0.001).

In the Flanders Region, the incidence decreased from 2.4 cases (2004) to 0.7 cases/1000 admissions in 2013 (annual decrease with 0.23 cases/1000, p<0.001).

In the Walloon Region, after a peak at 4.1 cases/1000 (2004), the incidence reached 1.5 cases/1000 in 2013 (annual decrease with 0.27 cases/1000, p<0.001).

Figure 56 – Median incidence of nosocomial MRSA by region (1994-2013)



Source: IPH, NSIH (B. Jans)

Key points

- **A decreasing incidence in MRSA was found between 1994 and 1999, after which the incidence again increased in 2003. Since 2004, we measure a slow and constant decrease of the incidence of nosocomial MRSA in acute care hospitals. This decrease was most impressive in the Brussels hospitals.**
- **Probably, the application of the recommendations for the control of MRSA (since 2003), the national hand hygiene campaigns, and the rationalization of the use of antibiotics influenced positively this evolution. Nevertheless, the interpretation of the indicator remains influenced by the screening practices which vary in coverage rate and intensity between hospitals. However, it will be essential to support MRSA screening efforts if we want to hand-hold the excellent results since 2003.**
- **No data are currently available internationally to benchmark these results.**

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5.3. Postoperative complications (patient safety indicators) (QS-3 and QS-4)

5.3.1. Documentation sheet

Description	A. Postoperative pulmonary embolism or deep vein thrombosis in adults after hip or knee replacement B. Postoperative sepsis in adults after abdominal surgery
Calculation	A. Number of hospitalisations with a pulmonary embolism or deep vein thrombosis as a complication of hip or knee replacement, per 100 000 discharges for patients aged 15 and older B. Number of hospitalisations with a septicaemia as a complication of abdominal surgery, per 100 000 discharges for patients aged 15 or older
Rationale	Postoperative pulmonary embolism (PE) or deep vein thrombosis (DVT) cause unnecessary pain and in some cases death, but can be prevented by anticoagulants and other measures before, during and after surgery. Likewise, sepsis after surgery which may lead to organ failure and death, can in many cases be prevented by prophylactic antibiotics, sterile surgical techniques and good post-operative care.[1] Two types of patient safety event can be distinguished: **sentinel events** that should never occur such as failure to remove surgical foreign bodies at the end of a procedure; and **adverse events**, such as post-operative sepsis, which can never be fully avoided given the high-risk nature of some procedures, although increased incidence at an aggregate level may indicate a systemic failing. These two indicators are international indicators calculated based on administrative hospital discharge data (Patient Safety Indicator, PSI), which belong to the framework of HCQI.[2] They were originally developed by the US AHRQ Agency,[3] and are included in the maxi feedback sent from FPS Public health to hospitals.[4]
Data source	RHM-MZG (hospital administrative discharge data), Federal Public Service Public Health
Technical definitions	From OECD website (all ICD-9 codes can be found on the HCQI OECD website): **Indicator A: Postoperative pulmonary embolism or deep vein thrombosis in adults after hip or knee replacement** Numerator: Discharges among cases defined in the denominator with ICD code for **deep vein thrombosis** or **pulmonary embolism** in any secondary diagnosis field Denominator: All **hip and knee replacement discharges**, meeting the inclusion and exclusion rules with an ICD code for an operating room procedure ICD-9-CM Total hip and knee replacement procedure code: 8151 Total hip replacement, 8153 Revision of hip replacement, 8154 Total knee replacement and 8155 Revision of knee replacement. Exclude cases (from numerator and denominator): • with principal diagnosis of deep vein thrombosis or pulmonary embolism or (secondary diagnosis present on admission if known), • where a procedure for interruption of vena cava (ICD-9 CM 387 Interruption of vena cava) is the only operating room procedure,

	• where a procedure for interruption of vena cava occurs before or on the same day as the first / main operating room procedure. (Note that if day of procedure is not available in the input data file, the rate may be slightly lower than if the information was available), • MDC 14 (Pregnancy, childbirth, and puerperium). • with length of stay less than 2 days. **Indicator B: Postoperative sepsis in adults after abdominal surgery** Numerator: Discharges among cases defined in the denominator with ICD code for **sepsis** in any secondary diagnosis field Denominator: All **abdominopelvic surgical discharges** only, meeting the inclusion and exclusion rules with an ICD code for an operating room procedure. Exclude cases: • with principal diagnosis of sepsis (or secondary diagnosis present on admission), • with principal diagnosis of infection (or secondary diagnosis present on admission) – • with any code for immunocompromised state, or cancer –, • MDC 14 (Pregnancy, childbirth, and puerperium) or principal diagnosis - • with length of stay of less than 3 days. These exclusion rules were developed to deal with the uncertainty of the time when the problem occurred (during or before hospitalization). From 2008 this information (diagnostic present at admission) is recorded in the RHM, and exclusion rules will need to be adapted.
Limitation	A report on Belgian RHM data showed that these indicators are highly dependent of the quality of the registration of secondary diagnoses (as one could expect from the definition of the indicator).[5]
International comparability	This definition is the same than the one used for reporting to health statistics at OECD. Caution is needed in interpreting the extent to which these indicators accurately reflect international differences in patient safety rather than differences in the way that countries report, code and calculate rates of adverse events. In some cases, higher adverse events rates may signal more developed patient safety monitoring system rather than worse care. Differences in data reporting across countries may influence the calculated rates of patient safety indicators. These include differences in coding practice, coding rules (e.g. definition of principal and secondary diagnoses), coding for billing purposes and the use of diagnosis type markers (e.g. “present at admission”).[1]
Dimension	Quality – safety
Related indicators	Hospital-acquired MRSA and Clostridium difficile

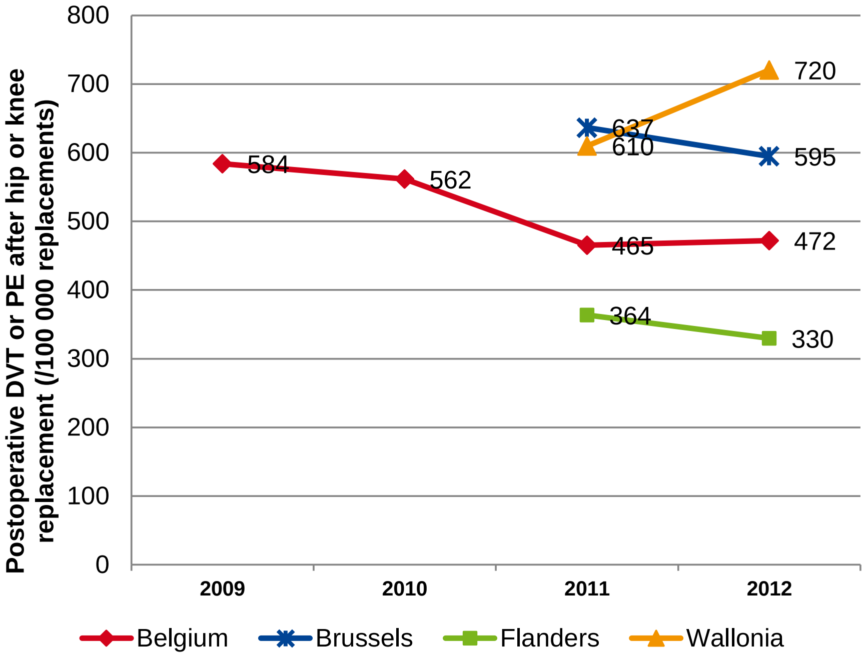
5.3.2. Results

The results for both indicators, per Region, are presented in Figure 57. Results from the international comparison are presented in Figure 58. Caution is needed in interpreting the extent to which these indicators accurately reflect international differences in patient safety rather than differences in the way that countries report, code and calculate rates of adverse events. In some cases, higher adverse events rates may signal more developed patient safety monitoring systems rather than worse care. [1]

Figure 57 – Incidence of (A) postoperative deep vein thrombosis or pulmonary embolism after hip or knee replacement (B) postoperative sepsis after abdominal surgery, by hospital region (2009-2012)

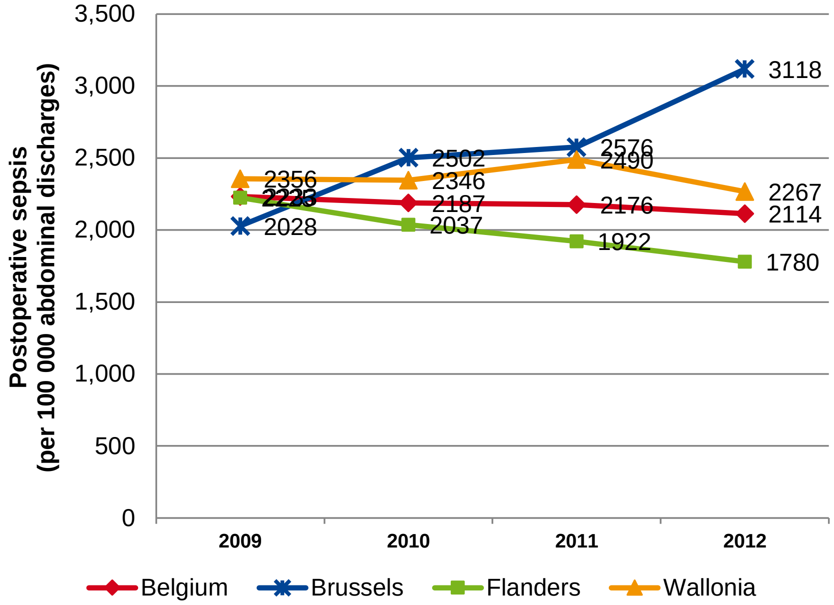
Indicator A:

Postoperative deep vein thrombosis or pulmonary embolism after hip or knee replacement (/100 000 hip or knee replacements)



Indicator B

Postoperative sepsis after abdominal surgery (/100 000 abdominal discharges)

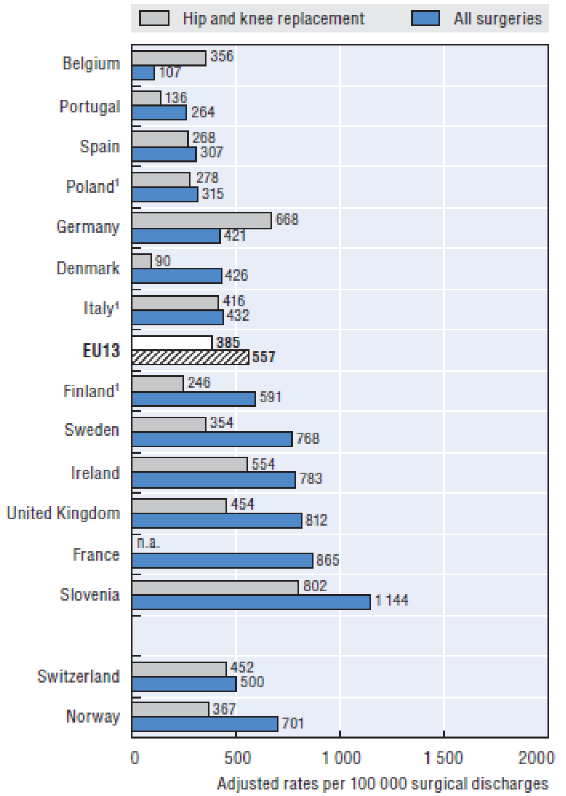


Source: RHM-MZG

Figure 58 – Incidence of (A) postoperative deep vein thrombosis or pulmonary embolism after hip or knee replacement (B) postoperative sepsis after abdominal surgery: international comparison (2011 or nearest year)

Indicator A:

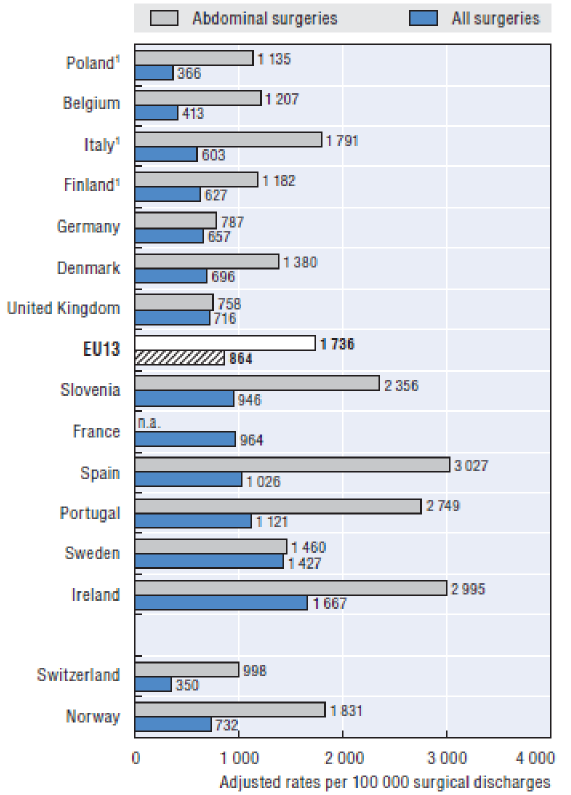
Postoperative deep vein thrombosis or pulmonary embolism after hip or knee replacement



1. The average number of secondary diagnoses is < 1.5.

Indicator B:

Postoperative sepsis after abdominal surgery



1. The average number of secondary diagnoses is < 1.5.

Source: OECD Health at a Glance 2014 [1].
Note: Due to change in methodology between the publication of this report and the calculation of the indicators, results are not totally comparable with previous results presented in Figure 57.

Key points

- **The incidence of complications after surgery are international indicators of patient safety, which are monitored on the basis on administrative hospital discharge data, and hence rely highly on the quality of the coding of complications.**
- **Between 2009 and 2012, the incidence of postoperative pulmonary embolism or deep vein thrombosis in adults after hip or knee surgery decreased slightly, while the second indicator shows no evolution.**
- **In comparison with other countries, Belgium has good results on these indicators (lover rates of postoperative complications) than other European countries, but this might be due to large differences in coding practices between countries.**

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5.4. Pressure ulcer in patients hospitalized (QS-5)

5.4.1. Documentation sheet

Description	Prevalence of pressure ulcer in patients hospitalized in general hospitals
Calculation	Numerator: number of patients having a pressure ulcer at the moment of survey Denominator: number of patients surveyed during the prevalence study
Rationale	The occurrence of a pressure ulcer in a hospitalised patient has a serious negative impact on the individual's health and often leads to a much prolonged hospital stay. A substantial part of pressure ulcers can be prevented with good quality nursing care. Measuring the prevalence of pressure ulcers in different hospital wards can help targeting areas where preventive actions are the most needed, and can evaluate effectiveness of preventive interventions already taken.
Data source	A survey on the prevalence of pressure ulcers in general hospitals has been organized in 2012 by the Federal Council on the quality of the Nursing activities (Conseil Fédéral pour la Qualité de l'Activité Infirmière - CFQAI - Federale raad voor de kwaliteit van de verpleegkundige activiteit - FRKVA). Several structure, process and outcomes indicators were collected in the 70 participating hospitals. This report is the most recent source of data for this indicator.[1]
Technical definitions	The prevalence is established based on a *one day measure every 3 months*, among all patients hospitalized that day in services C, D, I, G and Sp. The severity of pressure ulcer can be categorized in: • Category 1: non- blanchable erythema • Category 2: partial thickness skin loss (blister/abrasion) • Category 3: full thickness skin loss (superficial pressure ulcer) • Category 4: full thickness tissue loss (deep pressure ulcer)
Limitation	Results of a point prevalence survey should not be used to benchmark hospitals on the quality of their nursing care, as patients who developed a pressure ulcer in another healthcare institution are also included in the survey.
International comparability	The prevalence survey method is based on a method developed by the European Pressure Ulcer Advisory Panel (EPUAP),[2] which has been validated internationally.
Related indicators	Incidence of pressure ulcers in long-term care facilities
Dimensions	Quality (safety of care)

5.4.2. Results

National studies

In 2012, a national study to measure the prevalence of pressure ulcers was organized by the Federal Council on the Quality of the Nursing Activities (CFQAI – FRKVA) in 70 general hospitals. It consisted of 4 point-prevalence surveys, each organized every trimester, and results are presented for the whole year 2012. A total of 90 095 patients were surveyed: the prevalence of pressure ulcer (categories 1 to 4) was 7.8% (7.1% in Flanders, 8.9% in Wallonia and 8.0% in Brussels, Table 28), and showed large variability between hospitals (Figure 59) When taking into account only cat 2-4, the prevalence was reduced to 5.1%.

In 2008 a prevalence study was organized for the first time at a national level in general hospitals, following the last European Pressure Ulcer Advisory Panel guidelines (which are specific for the registration and the classification of pressure ulcers). This study was organized in 84 hospitals and included 19 964 patients. A pressure ulcer prevalence of 12.1% was observed. The prevalence of category 2 to 4 pressure ulcers was 7%.[3] A clear distinction was made between a pressure ulcer and Incontinence- Associated Dermatitis (IAD), which showed a prevalence of 5.7%.

The comparison between these two surveys is difficult, mainly because of the differences in training of the assessors to identify pressure ulcers: in the 2008 survey 2 nurses were specially trained per ward, and had to asses patients and agree on the classification, while in the FRKV study bedside nurses were not specially trained for pressure ulcer prevalence screening. The difference between these two approaches may partly explain the differences in results between the two surveys.

Local studies

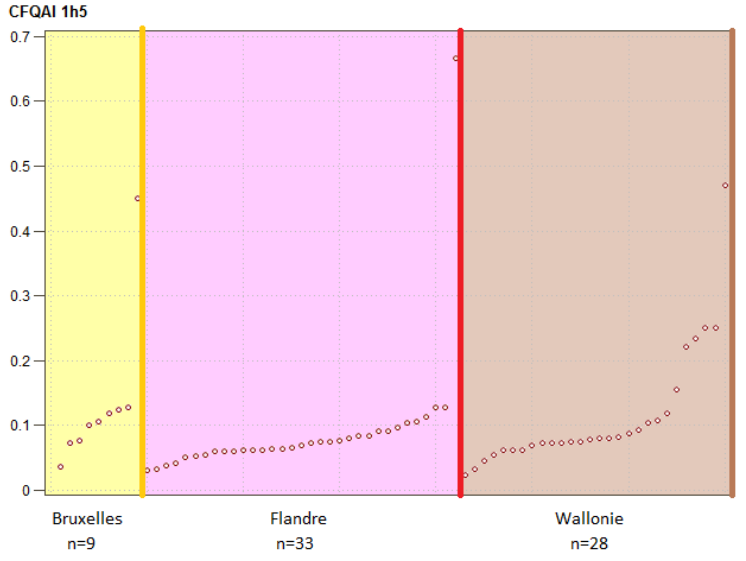
A prevalence study organized by 13 hospitals from Vlaamse Ziekenhuisnetwerk KU Leuven showed a prevalence from 3 to 5% for PU category 2 to 4 (number of patients surveyed 18 992) (see Figure 60). No information is available on category 1 pressure ulcers.

Table 28 – Prevalence of pressure ulcers in acute hospitals, results from national survey (2012)

	Belgium	Flanders	Wallonia	Brussels
Number of hospitals participating to the survey	70	33	28	9
Number of patients surveyed on one year	90095	49051	33750	7294
Number of patients having a with pressure ulcer (category 1-4)	7041	3461	2993	587
Prevalence of pressure ulcer (category 1-4)	**7.8%**	**7.1%**	**8.9%**	**8.0%**
Number of patients having a with pressure ulcer (category 2-4)	4111	1992	1739	380
Prevalence of pressure ulcer (category 2-4)	**5,1%**	**4%**	**7,7%**	**5,9%**

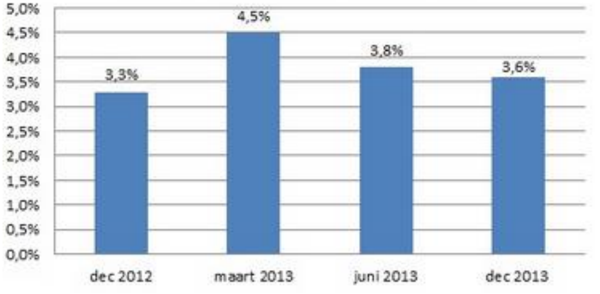
Source: Prevalence surveys in general hospitals, 2012, Federal Council on the quality of the Nursing activities, [1]

Figure 59 – Variability between hospitals in prevalence of pressure ulcer, by region (2012)



Source: Prevalence surveys in general hospitals, 2012, Federal Council on the quality of the Nursing activities, [1]
Note: Results are expressed as a proportion (from 0 to 1)

Figure 60 – Prevalence of pressure ulcer in a local study of 13 hospitals from KU Leuven network (2013)



Source: http://www.vznkul.be/content/decubitus

International comparison

The comparison between countries remains difficult because of differences in pressure ulcer definitions, methods of data collection and patient population.[4 5] A recent report reviewed results of prevalence studies conducted in hospital settings in several European countries (Table 2). The reported prevalence rates ranged from 8.9% (France 2004) to 18.1% (The Netherlands, 2004). More recent surveys (2013) in the Netherlands showed a much lower prevalence, 8.4%, and evidence of decreasing trends over time.[6]

In Belgium, the prevalence of pressure ulcers has been studied twice on a national level within the hospital setting, and reported prevalence of 12.1% in the first survey (2008) and 7.8% in the second one (2012), but methodological difference between these two surveys may partly explain the differences in results.

Table 29 –Prevalence of pressure ulcers in adults, in a selection of European countries, in hospitals: international comparison

Country	Study year	Sample size (n)	Prevalence (Grade I-IV)
Belgium	2008	19 968	12.1%
	2012	90 095	7.8%
France	2004	37 307	8.9%
Germany	2004	8 515	9.0%
Italy	2005	1 097	8.3%
Sweden	2011	16 466	16.6%
The Netherlands	2004	10 237	18.1%
	2013	2989	8.7%

Source of international comparison: KCE Report 203 [7]

Key points

- **In 2012, the prevalence of pressure ulcer of patients hospitalized in general hospitals was 7.8% (cat 1-4) and 5.1% (cat 2-4).**
- **In 2008, a previous national survey showed higher prevalence rates: 12.1% (cat 1-4) and 7% (cat 2-4), but the methodology was slightly different (trained assessors in 2008 versus mandatory data collection by bedside nurses in 2012). It is thus diffcult to know whether the difference between the two surveys is due to a real quality improvement in the prevention of pressure ulcer , or due to ta differences in sensitivty of the assessors.**
- **The comparison of Belgian data with other European countries also remains difficult because of differences in pressure ulcer definitions, methods of data collection and patient population. Taking into account these limitations, Belgium has the lowest prevalence rate of pressure ulcer of surveys organized in France, Germany, Italy, Sweden and The Netherlands.**

References

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5.5. Polypharmacy and excessive polypharmacy among the elderlies (QS-6, QS-7)

5.5.1. Documentation sheet

Description	Proportion of the population aged 65 years and older reporting having taken respectively 5 or 9 or more different medicines during the last 24 hours.
Calculation	Numerator: number of people aged 65 years and older participating to the Health Interview Survey (HIS), reporting having taken respectively 5 or 9 or more medicines during the last 24 hours. Are considered here as medicines only the official medicines that are listed in the Annotated Medicines Registry published by the Belgian Centre for Pharmacotherapeutic Information (BCPI). Denominator : number of people aged 65 years and older participating to the HIS
Rationale	Chronic diseases are prevalent among the older population. These chronic conditions often require multiple medications for optimal management. There are many consequences of polypharmacy. Aside from increased direct medicine costs, patients are at higher risk for adverse drug reactions, drug interactions, non-adherence, diminished functional status, and various geriatric syndromes.[1] Although the use of multiple medicines is widely referred to as polypharmacy, no consensus exists on what number should define the term. In the literature, ***polypharmacy*** has often been defined as taking at least five medicines concurrently. Polypharmacy may be appropriate to treat a patient with multiple comorbid conditions. ***Excessive polypharmacy*** is another type of polypharmacy that is defined by medicine count and generally uses cut points of nine/ten or more medicines. This definition is becoming increasingly studied as the population continues to age and use more medicines. Alternately, polypharmacy has also been defined by the consumption of more medicines than clinically indicated or by the consumption of medicines that are not clinically indicated.[2] The information on inappropriate medicine use is not considered here.
Primary Data source	WIV-ISP : Health Interview Survey, 2004-2008-2013
Indicator source	Idem
Periodicity	Every 3-5 years
Technical definitions	Question asked during a face-to-face interview: “Have you taken any medicines during the last 24 hours?” The respondent had to show the medicines that he/she has taken during the past 24 hours, if possible with the package. The interviewer records the brand names and national codes of all medicines. Polypharmacy was defined as taking at least five medicines in the past 24 hours.

	Excessive polypharmacy was defined as the use of nine medicines or more in the past 24 hours, and not ten medicines or more because the medicines considered were limited to official medicines that are listed in the Annotated Directory of Medicines published by the BCPI.
International comparability	Comparison with other countries is difficult/impossible because of important differences in definitions of (excessive) polypharmacy, study years, settings, designs, samplings, data collection methods, definitions of medicine and of time period used to count the number of medicines.
Dimensions	Quality (safety)
Related indicators	none

5.5.2. Results

5.5.2.1. Belgium

In 2013, the mean age of the study population (N=2020) is 75.4 years (range: 65-102). The majority are women (57.8%), aged 65-79 years (69.5%).

The mean number of medicines used per person is 3.1 (range: 0-20). Almost one seventh (14.6%) didn't take any medicines during past 24 hours. 27.4% (591) is in the polypharmacy group (mean number of medicines: 7.1), 5.6% (125) is in the excessive polypharmacy group (mean number of medicines: 10.6).

In the univariate analysis, we observe a gradient in the prevalence of polypharmacy (Table 30) in function of age and a higher prevalence in the lower educational levels and among the "older elderlies" (persons age 85 years and older). The prevalence of excessive polypharmacy is higher among the "older elderlies" and those living in a residential home for the elderly but this could be associated with having more longstanding illnesses, chronic conditions or handicaps (Table 31).

Cardiovascular medications are the most frequently used medicines (40.4% of all medicines used): they are used by 63.2% of all persons age 65 years and older, 94.3% of the polypharmacy users and 98.7% of the excessive polypharmacy users.

When we consider the pharmacological classes (ATC level 3), the medicines most frequently used by the polypharmacy users and the excessive polypharmacy users (tables 3 and 4) are lipid modifying agents (plain) and antithrombotic agents. They are followed by β-blocking agents and medicines for peptic ulcer and gastro-oesophageal reflux disease. In 2012, a study of medicines reimbursed in Belgium found also that the four most frequently used medicines associated with polypharmacy were lipid modifying agents (plain), antithrombotic agents, medicines for peptic ulcer and gastro-oesophageal reflux disease, and β-blocking agents.[3]

When we compare the data with those of 2004 and 2008, we observe a decrease of both polypharmacy and excessive polypharmacy in 2013.

Table 30 – Proportion of the population aged 65 years and older reporting having taken 5 or more different medicines during the last 24 hours (2013)

		N	Crude %* (95%CI)	OR (crude)
GENDER	Male	889	25.5 (21.9-29.1)	1
	Female	1131	28.7 (24.9-32.5)	1.18 (0.92-1.51)
AGE GROUP	65 - 69	597	19.1 (15.1-23.2)	1
	70 - 74	434	28.9 (22.4-35.3)	1.71 (1.15-2.56)
	75 - 79	401	29.0 (22.8-35.2)	1.73 (1.15-2.56)
	80 - 84	331	32.3 (25.6-39.1)	2.02 (1.35-3.03)
	85 +	257	34.0 (26.5-41.4)	2.18 (1.43-3.33)
EDUCATION LEVEL	No degree / Primary	519	31.3 (25.6-36.9)	1.50 (1.01-2.21)
	Secondary inferior	398	33.7 (26.6-40.8)	1.67 (1.09-2.56)
	Secondary superior	512	21.9 (17.5-26.3)	0.92 (0.63-1.36)
	Superior education	564	23.3 (18.2-28.5)	1
EQUIVALENT HOUSEHOLD INCOME	1° quintile	394	30.1 (23.1-37.2)	1.91 (1.09-3.35)
	2° quintile	441	26.0 (20.4-31.6)	1.55 (0.91-2.66)
	3° quintile	340	34.2 (27.5-41.0)	2.30 (1.34-3.96)
	4° quintile	303	24.4 (17.9-30.9)	1.43 (0.80-2.53)
	5° quintile	194	18.4 (11.7-25.2)	1
LIVING SITUATION	Living alone	660	31.3 (26.3-36.2)	1
	Cohabitant with other(s)	1232	24.3 (20.8-27.8)	0.71 (0.52-0.95)
	Living in a residential home for the elderly	107	40.2 (27.8-52.5)	1.48 (0.84-2.59)
PLACE OF RESIDENCE	Flemish Region	743	27.2 (23.1-31.2)	1
	Brussels Region	425	29.2 (24.1-34.4)	1.11 (0.80-1.53)
	Walloon Region	852	27.2 (23.2-31.3)	1.00 (0.75-1.34)
YEAR OF THE SURVEY	2004	3446	32.6 (30.3-34.9)	1
	2008	2778	32.6 (29.9-35.3)	1.00 (0.85-1.17)
	2013	2020	27.4 (24.6-30.2)	0.78 (0.65-0.93)

Source: Health Interview Survey, Belgium
** Weighted %*
° Limited to official medicines that are used in an ambulatory setting, for systemic or local use, and listed in the Annotated Directory of Medicines published by the Belgian Centre for Pharmacotherapeutic Information

Table 31 – Proportion of the population aged 65 years and older reporting having taken 9 or more different medicines during the last 24 hours (2013)

		N	Crude %* (95%CI)	OR (crude)
GENDER	**Male**	889	5.8 (3.9-7.7)	1
	Female	1131	5.4 (3.4-7.4)	0.93 (0.55-1.55)
AGE GROUP	**65 - 69**	597	4.0 (2.1-5.9)	1
	70 - 74	434	6.1 (1.6-10.6)	1.57 (0.61-3.99)
	75 - 79	401	6.7 (1.6-10.6)	1.73 (0.61-3.99)
	80 - 84	331	3.9 (1.8-6.0)	0.98 (0.46-2.06)
	85 +	257	8.9 (4.3-13.4)	2.34 (1.11-4.96)
EDUCATION LEVEL	**No degree / Primary**	519	5.9 (3.6-8.3)	1.43 (0.78-2.63)
	Secondary inferior	398	8.5 (3.4-13.6)	2.10 (0.95-4.62)
	Secondary superior	512	3.9 (1.9-5.9)	0.91 (0.46-1.82)
	Superior education	564	4.2 (2.5-6.0)	1
EQUIVALENT HOUSEHOLD INCOME	**1° quintile**	394	5.1 (2.1-8.0)	1.35 (0.53-3.41)
	2° quintile	441	4.3 (2.4-6.2)	1.14 (0.49-2.63)
	3° quintile	340	10.5 (4.9-16.1)	2.95 (1.17-7.45)
	4° quintile	303	3.7 (1.4 – 5.9)	0.96 (0.37-2.47)
	5° quintile	194	3.8 (1.2-6.4)	1
LIVING SITUATION	**Living alone**	660	3.8 (2.2-5.4)	1
	Cohabitant with other(s)	1232	5.4 (3.4-7.4)	1.44 (0.80-2.60)
	Living in a residential home for the elderly	107	17.0 (8.7-25.2)	5.15 (2.47-10.74)
PLACE OF RESIDENCE	**Flemish Region**	743	6.0 (3.9-8.2)	1
	Brussels Region	425	4.7 (2.5-6.9)	0.77 (0.42-1.43)
	Walloon Region	852	4.9 (3.3-6.5)	0.80 (0.48-1.33)
YEAR OF THE SURVEY	**2004**	3446	7.2 (6.0-8.5)	1
	2008	2778	8.2 (6.2-10.1)	1.14 (0.83-1.57)
	2013	2020	5.6 (4.1-7.0)	0.76 (0.55-1.05)

Source: Health Interview Survey, Belgium
** Weighted %*
° Limited to official medicines that are used in an ambulatory setting, for systemic or local use, and listed in the Annotated Directory of Medicines published by the Belgian Centre for Pharmacotherapeutic Information

Table 32 – Proportion of polypharmacy users that use specific groups of medicines (10 most used pharmacological classes in population of 65 years and older) (2013)

ATC_3		%	95%CI
C10A	LIPID MODIFYING AGENTS, PLAIN	61.9	(56.5-67.2)
B01A	ANTITHROMBOTIC AGENTS	61.4	(55.7-67.1)
C07A	BETA BLOCKING AGENTS	45.5	(39.9-51.1)
A02B	DRUGS FOR PEPTIC ULCER AND GASTRO-OESOPHAGEAL REFLUX DISEASE	41.2	(35.7-46.7)
A10B	BLOOD GLUCOSE LOWERING DRUGS, EXCL. INSULINS	28.1	(22.8-33.4)
N06A	ANTIDEPRESSANTS	26.7	(21.6-31.7)
C09A	ACE INHIBITORS, PLAIN	24.3	(19.3-29.2)
N05B	ANXIOLYTICS	23.4	(18.9-27.9)
N05C	HYPNOTICS AND SEDATIVES	19.7	(15.0-242.4)
C08C	SELECTIVE CALCIUM CHANNEL BLOCKERS WITH MAINLY VASCULAR EFFECTS	17.9	(13.8-22.0)

Source: Health Interview Survey, Belgium
Note: Based on N = 591

Table 33 – Proportion of excessive polypharmacy users that use specific groups of medicines (10 most used pharmacological classes in population of 65 years and older) (2013)

ATC_3		*%*	*95%CI*
C10A	LIPID MODIFYING AGENTS, PLAIN	70.1	(59.7-80.5)
B01A	ANTITHROMBOTIC AGENTS	61.9	(47.9-76.0)
A02B	DRUGS FOR PEPTIC ULCER AND GASTRO-OESOPHAGEAL REFLUX DISEASE	60.6	(46.5-74.8)
C07A	BETA BLOCKING AGENTS	51.8	(38.5-65.1)
N06A	ANTIDEPRESSANTS	42.0	(29.7-54.3)
A10B	BLOOD GLUCOSE LOWERING DRUGS, EXCL. INSULINS	37.8	(23.9-51.8)
C09A	ACE INHIBITORS, PLAIN	35.8	(23.7-47.9)
N05B	ANXIOLYTICS	34.1	(22.7-45.6)
N05C	HYPNOTICS AND SEDATIVES	30.1	(19.1-41.1)
C08C	SELECTIVE CALCIUM CHANNEL BLOCKERS WITH MAINLY VASCULAR EFFECTS	26.1	(15.1-37.1)

Source: Health Interview Survey, Belgium
Note: Based on N = 125

5.5.2.2. Evolution over time by region

Table 34 and Table 35 show, as it has already been mentioned for Belgium, a decrease of both polypharmacy and excessive polypharmacy in the Walloon Region in 2013. In 2004 and 2008, both polypharmacy and excessive polypharmacy were more frequent in the Walloon Region, but it not anymore the case in 2013.

Table 34 – Proportion of the population aged 65 years and older reporting having taken 5 or more different medicines during the last 24 hours, by region (2004-2008-2013)

	2004	*2008*	*2013*
Brussels Region	31.4 (27.9-35.0)	33.6 (29.1-38.1)	29.2 (24.1-34.4)
Flemish Region	30.4 (27.0-33.7)	27.4 (23.7-31.1)	27.2 (23.1-31.2)
Walloon Region	37.3 (33.5-41.0)	43.1 (38.6-47.6)	27.2 (23.2-31.3)
Belgium	32.6 (30.3-34.9)	32.6 (29.9-35.3)	27.4 (24.6-30.2)

Source: Health Interview Survey, Belgium
Note: Percentages are crude %.

Table 35 – Proportion of the population aged 65 years and older reporting having taken 9 or more different medicines during the last 24 hours, by region (2004-2008-2013)

	2004	*2008*	*2013*
Brussels Region	5.1 (3.6-6.6)	7.2 (4.7-9.7)	4.7 (2.5-6.9)
Flemish Region	6.4 (4.6-8.1)	6.9 (4.0-9.9)	6.0 (3.9-8.2)
Walloon Region	9.5 (7.4-11.5)	11.0 (8.4-13.5)	4.9 (3.3-6.5)
Belgium	7.2 (6.0-8.5)	8.2 (6.2-10.1)	5.6 (4.1-7.0)

Source: Health Interview Survey, Belgium
Note: Percentages are crude %.

5.5.2.3. International Comparison

Comparisons between the results from this study and those from previous studies are difficult due to different definitions of excessive polypharmacy, countries, study years (new medicines), settings, designs, samplings, data collection methods, definitions of medicine and of time period used to count the number of medicines. Factors related to the health care system can explain differences observed between countries: organizational characteristics, availability of medicines on the market, country specific regulatory measures / medicine-policies: prescription status, reimbursement system (subsidized versus non-subsidized medicines / level of patient co-payment), clinical practice (prescribing attitudes). As observed in the study of Fialová et al. [4] among elderly home care patients in Europe, differences among the eight participating countries were significant for all study population characteristics studied.

When considering only the people living in institution, the prevalence of excessive polypharmacy is 17%; this figure falls within the range of the results found in an European study conducted from 2009 to 2011 in nursing homes in eight countries: 9-57 %.[5] In 2003, Pitruzzella et al. [6] found in institutions for aged people in the Walloon Region, that 19% of the residents received more than 10 medicines on one day.

More than 90% of persons in the (excessive) polypharmacy groups use cardiovascular medications; this is also observed in the Kuopio75+ study (1998)[7] and in the Lieto study.[8] In 2005, in the sample of residents of Belgian nursing homes, the medicines acting on the nervous system were the most frequently used, followed by those acting on the alimentary tract and metabolism and the cardiovascular medications.[9] In 2003, Pitruzzella et al. found in institutions for aged people in the Walloon Region, the medicines acting on the nervous system were the most frequently used, followed by the cardiovascular medications and the medicines acting on the alimentary tract and metabolism.[6] In 2011, a study of the Belgian national union of independent health insurance funds groups on reimbursed medicines dispensed to their members residing in nursing homes found that the medicines acting on the nervous system were the most frequently used, followed by the anti-infectives for systemic use and the cardiovascular medications.[10]

Key points

- **The percentage of the population aged 65 and over, that used in the past 24 hours 5 and 9 or more different medicines, was respectively 27.4 and 5.6 % in Belgium in 2013.**
- **When we compare the data with those of 2004 and 2008, we observe a decrease of both polypharmacy and excessive polypharmacy in 2013.**
- **The prevalence of excessive polypharmacy is higher among the ‘older elderlies’. This group deserves particular attention because ‘older elderlies’ have an increased risk of adverse effects of medications, in particular due to impaired kidney and liver functions.**
- **Since more than 90% of persons in the (excessive) polypharmacy groups use cardiovascular medications, interventions could be focused on patients with cardiovascular diseases as suggested in some studies and mentioned by Jörgensen et al. [11].**

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6. QUALITY OF CARE: CONTINUITY

6.1. Coverage of global medical record (GMR) and preventive module (GMR plus) by GP (QC-1 and HP-10)

6.1.1. Documentation sheet

Description	1. Percentage of persons who have a global medical record (GMR) with a general practitioner (GP) 2. Among persons aged 45-74 with a GMR, percentage of persons who have a preventive counselling (preventive GMR)
Calculation	1. Numerator: number of insured persons with a global medical record Denominator: all insured persons 2. Numerator: number of insured persons with a preventive counselling Denominator: number of insured persons with a global medical record between 45-75
Rationale	Indicator 1: coverage of GMR; Since 2001, the global medical record (GMR) is implemented in Belgium. Each patient can ask a (unique) general practitioner to manage his/her medical information. By leaving the coordination of medical care to one central person, the quality of care is expected to increase. Referral to and communication with other care providers can become more efficient, and double investigations or contrasting treatments can be avoided. Indicator 2 : coverage of GMR+ (preventive module); since April 2011, if a patient aged from 45-75 has a GMR, the GP can provide some prevention measures like - Counselling (tobacco, alcohol, weight) and recommend physical activities - Screen or inform for screening for particular diseases following recommendation like cancer (colorectal, breast, cervical), diabetes, cardiovascular risk, depression or apply recommendation for vaccination (flu, pneumococci, tetanus)
Data source	NIHDI, and IMA permanent sample
Results source	1: GPs performance report[1] 2: Communication to Medico mut[2]
Technical definitions	Indicator 1: NIHDI billing codes: 102771, 102793, 102395. Those codes are used as a proxy to calculate the present indicator. Condition for the billing is to have a contact with the GP during the year. It means that people without contact during the year are not registered with a GMR, but still keep his GMR to his GP. This phenomenon affects particularly young patient who less often contact the GP a year Indicator 2: NIHDI billing codes, introduced in April 2011: 102395, 103272, 103294. Prerequisite: the patient has a GMR, is aged from 45 to 75, and has a contact with the GP during that year.
International comparability	Limited (specific to the Belgian system)
Performance dimension	Quality (continuity); Quality (effectiveness); Efficiency ; prevention ;
Related indicators	Preventive GMR (GMR+) coverage and type of contacts

6.1.3. Results

6.1.3.1. Indicator 1: Global medical Record coverage (GMR)

In 2002, the percentage of insured persons with a GMD was 20%,[3] and reached 46% in 2009.[4] In 2013 the coverage is 53%.

The coverage is higher in older patients (coverage for 75+ is 82%) and huge differences are observed between Flemish region (63%), Wallonia (40 %) and Brussels (34%).

By age the differences observed between regions / provinces remain the same.

Even within regions, big differences in coverage can be observed: for instance, within Flemish region, Limburg have a global coverage of 74% and Vlaams – Brabant have 56%)

Table 36 – Percentage of insured population with a Global Medical Record (GMR), by age class and sex (2013)

GMR coverage 2013		Age classes				Gender	
geographical entities	total	0-14	15-44	45-74	75+	F	M
Brussel/Bruxelles	34%	28%	28%	41%	65%	38%	30%
Brussel/Bruxelles	34%	28%	28%	41%	65%	38%	30%
Vlaanderen/Flandre	63%	47%	54%	71%	92%	67%	59%
Antwerpen	63%	44%	55%	72%	92%	68%	59%
Limburg	74%	63%	68%	80%	96%	78%	70%
Oost-Vlaanderen	59%	43%	50%	68%	89%	64%	55%
Vlaams-Brabant	56%	38%	47%	65%	88%	60%	51%
West-Vlaanderen	66%	51%	56%	73%	94%	70%	62%
Wallonië/Wallonie	40%	33%	31%	46%	68%	43%	36%
Brabant Wallon	37%	24%	28%	46%	69%	41%	34%
Hainaut	38%	32%	28%	44%	68%	42%	35%
Liège	42%	36%	33%	48%	70%	46%	39%
Luxembourg	41%	37%	32%	46%	66%	44%	38%
Namur	41%	36%	32%	47%	67%	45%	37%
Total	**53%**	**40%**	**44%**	**61%**	**82%**	**57%**	**49%**

Source: RIZIV – INAMI

Table 37 – Percentage of insured population with a Global Medical Record (GMR), by province (2009-2013)

GMR coverage	years				
Geographical entities	2009	2010	2011	2012	2013
Brussel/Bruxelles	28%	29%	31%	33%	34%
Vlaanderen/Flandre	58%	58%	60%	62%	63%
Antwerpen	58%	58%	60%	62%	63%
Limburg	68%	68%	71%	73%	74%
Oost-Vlaanderen	55%	56%	58%	59%	59%
Vlaams-Brabant	51%	51%	53%	55%	56%
West-Vlaanderen	60%	60%	63%	65%	66%
Wallonië/Wallonie	31%	32%	36%	38%	40%
Brabant Wallon	29%	31%	34%	36%	37%
Hainaut	30%	31%	36%	37%	38%
Liège	32%	33%	38%	40%	42%
Luxembourg	33%	35%	39%	40%	41%
Namur	31%	33%	37%	39%	41%
Total	46%	47%	50%	51%	53%

Source: RIZIV – INAMI

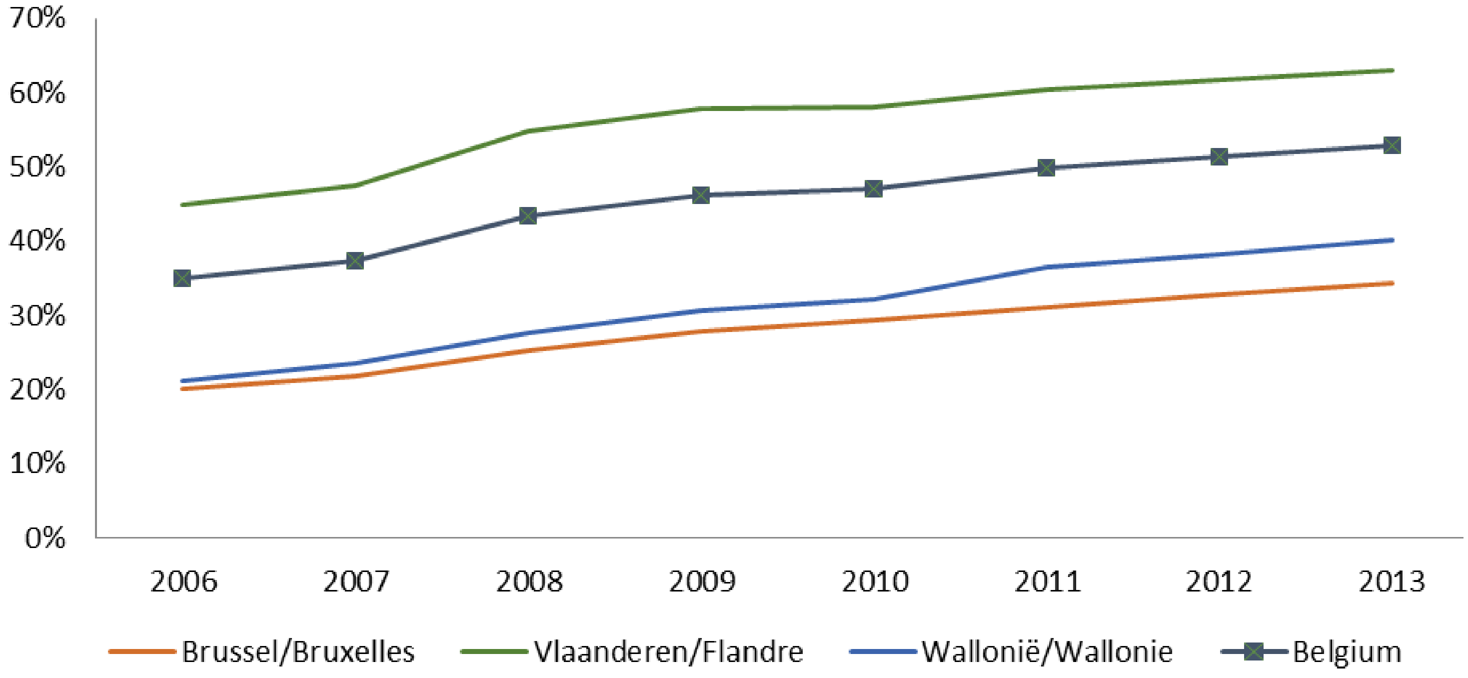
The overall coverage is continuously growing since the introduction of the code (2013: 53%; 2006: 35%), but the speed of growth is diminishing. (2% during the period 2010-2013 against 4% in the period 2006-2009). This diminution is not observed in Wallonia. This is perhaps linked to some incentives to encourage coverage by younger people (below age of 14) by insurance companies.

Table 38 – Percentage of insured population with a Global Medical Record (GMR), by region and province (2006-2013)

year	2006	2007	2008	2009	2010	2011	2012	2013	slope 2006-2009	slope 2010-2013
Brussel/Bruxelles	20%	22%	25%	28%	29%	31%	33%	34%	3%	2%
Vlaanderen/Flandre	45%	48%	55%	58%	58%	60%	62%	63%	5%	2%
Wallonië/Wallonie	21%	23%	28%	31%	32%	36%	38%	40%	3%	3%
Belgium	35%	37%	43%	46%	47%	50%	51%	53%	4%	2%

Source: RIZIV – INAMI

Figure 61 – Percentage of insured population with a Global Medical Record (GMR) by region and provinces (2006-2013)



Source: RIZIV – INAMI

One of the limitation of the proxy is that insured persons who have no contact with the GP are not receiving any bill for the GMR. This does not mean that they are not affiliated with a GP.

A supplementary analysis based on the permanent sample (IMA), evaluate the cumulative coverage within 3 years (people who received at once a GMR within 2011 to 2013).

The cumulative coverage over 3 years for the total population is 62 %, to be compared to 53%. It represents an improvement of 17%. This difference is much higher in younger insured persons (+31%). No differences are observed in older age class (75+) who are visiting GPs more frequently.

Brussels population coverage is 44% (to be compared with 34%, which represent 30% more coverage), Wallonia is 48% (in place of 40% - 20% more coverage) and Flanders is 73% in place of 63% - 16% more coverage). These numbers seems to be more realistic than the crude coverage usually calculated.

Table 39 – Cumulative coverage GMR by age class and sex (2011-2013)

cumulative GMF coverage	total	difference annual coverage versus cumulative coverage within 3 years	0-14	15-44	45-74	75+	F	M
BXL-BRU	**44%**	**30%**	**38%**	**38%**	**49%**	**69%**	**48%**	**40%**
Vlaanderen	**73%**	**16%**	**61%**	**67%**	**78%**	**90%**	**76%**	**69%**
Antwerpen	74%	17%	60%	69%	80%	91%	77%	70%
Limburg	83%	13%	77%	80%	86%	94%	86%	81%
O. Vl.	70%	18%	58%	64%	75%	88%	74%	66%
Vl. Brabant	65%	16%	51%	58%	71%	88%	69%	61%
W. Vl.	76%	15%	66%	68%	81%	92%	79%	72%
Wallonie	**48%**	**20%**	**43%**	**40%**	**52%**	**69%**	**51%**	**44%**
Brabant W.	45%	23%	32%	37%	53%	70%	49%	41%
Haintaut	46%	21%	43%	37%	51%	67%	50%	42%
Liège	50%	20%	46%	43%	54%	72%	54%	47%
Lux.	49%	21%	47%	40%	54%	69%	52%	47%
Namur	48%	17%	45%	41%	51%	69%	51%	44%
Total général	**62%**	**17%**	**52%**	**55%**	**68%**	**82%**	**66%**	**59%**
difference annual coverage versus cumulative coverage within 3 years	**17%**		31%	26%	11%	0%	15%	20%

Source: RIZIV-INAMI

6.1.3.2. Indicator 2: Coverage of preventive measures within patients aged 45-75 with Global medical Record coverage (GMR+)

The preventive GMR was introduced in April 2011. Within 3 years, the cumulative preventive coverage reached 22% of the target group. No important differences were observed by age group. Results in Brussels (26%) are slightly higher than in Flanders (21%) and Wallonia (21%)

Table 40 – Cumulative coverage preventive GMR by age class and sex among insured persons with GMR (2011-2013)

Preventive coverage 45-75	total	45 - 50	50 - 55	55 - 60	60 - 65	65 - 70	70 - 75	F	M
BXL-BRU	**26%**	**24%**	**30%**	**31%**	**29%**	**23%**	**17%**	**26%**	**26%**
Vlaanderen	**22%**	**17%**	**22%**	**23%**	**23%**	**23%**	**21%**	**22%**	**21%**
Antwerpen	21%	16%	21%	23%	24%	21%	21%	21%	21%
Limburg	28%	22%	29%	28%	29%	32%	31%	29%	28%
O. Vl.	18%	15%	18%	21%	20%	18%	17%	18%	18%
Vl. Brabant	20%	15%	22%	22%	20%	20%	19%	20%	20%
W. Vl.	22%	18%	23%	22%	24%	25%	22%	23%	22%
Wallonie	**21%**	**20%**	**23%**	**22%**	**21%**	**19%**	**18%**	**20%**	**21%**
Brabant W.	22%	20%	24%	22%	27%	21%	17%	22%	22%
Haintaut	18%	17%	22%	20%	18%	16%	14%	18%	18%
Liège	26%	26%	29%	29%	24%	26%	25%	26%	27%
Lux.	15%	16%	18%	17%	12%	14%	9%	14%	16%
Namur	16%	13%	16%	16%	18%	15%	17%	16%	16%
Total général	**22%**	**18%**	**23%**	**23%**	**23%**	**22%**	**20%**	**21%**	**22%**

Source: RIZIV – INAMI

However, if compared to the real coverage (all insured persons independently of GMR) the real number of coverage of the insured persons is 15% to be compared to 22%.

In an internal paper of NIHDI an evaluation was made from this preventive module.[2] The positive impact of preventive measures was specially focused on colorectal cancer screening and on tetanus vaccination. The preventive module didn't illustrate any significant impact on other measurement (other cancer screening, diabetes screening, …). In the same paper, a negative impact could be observed in over screening (vitamin D, thyroid testing,)

Key points

- **In 2013, the real (cumulative) coverage of global medical record by general practitioner is around 60%. Differences can be observed by age group. Older insured persons are better covered (82% for all Belgium, 90% for Flanders and 70 % for Wallonia).**
- **Differences are indeed large between regions: in Flemish region ¾ of the insured persons are covered. In the French part, however less than 50%. But the coverage is still growing. There is an increasing trend overall by 2% a year. Increase was slightly higher in Wallonia because an incentive focused on young population below 14.**
- **Within 3 years, the preventive module is covering 20 % of the target population (45-75 with a global medical record), but its impact must still be proven.**

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6.2. Usual provider continuity index (QC-2)

6.2.1. Documentation sheet

Description	Proportion of encounters that were conducted by the general practitioner (GP) consulted most frequently: Usual provider continuity (UPC) index.
Calculation	**Numerator**: number of encounters with the usual GP during 2 years for all patients (children and adults) **Denominator**: total of encounters with GPs during the same period for all patients (children and adults).
Rationale	Longitudinal relationship between physician and patient is acknowledged to encourage communication, improve satisfaction, medication compliance, and behavioural problems, stimulate receipt of preventive services and decrease hospitalisations and emergency department visits for patients with chronic disease.[1] There are several measures of longitudinal continuity with UPC as one of the most common index use.[2-8] The advantage of this indicator is its easy interpretation.
Primary data source	IMA data
Indicator source	KCE calculation
Technical definitions	**Nomenclature codes for GPs encounters** (consultation and home visits, out-of-hour visits excluded): 101010, 101032, 101076, 103110, 103132, 103213, 103235, 103316, 103331, 103353, 103412, 103434, 103515, 103530, 103552, 103913, 103935, 103950, 104112, 104134, 104156, 104355, 104370. 104650, 104672. **Usual GP**: the GP consulted most frequently or the more recent one if 2 GPs were consulted at the same frequency during the period. **Period**: Two years; one year may not be long enough for some patients to have a total of 3 visits and therefore might biased the results. **Categories:** • Very low continuity if UPC <0.25; • Low continuity if 0.25≤UPC<0.5 • Intermediate continuity if 0.5≤UPC<0.75 • High continuity if 0.75≤UPC<1 • Maximum continuity or exclusivity if UPC =1 **Exclusion criteria**: - patients with <3 encounters with GP during the period of 2 years.
Limitations	Problem with group practices: a growing number of patients are served by different GPs in a single practice or a group of GPs with a relative longitudinal continuity but we cannot identify the GPs belonging to the same practice or group; Exclusion from the analysis of some patients because they have less than 3 visits on 2 years period; Children are more often managed by paediatricians than by GPs.
International comparability	Nothing in OECD, OMS, ECHI and Eurostat
Related indicators	Coverage of global medical record in the population
Dimensions	Continuity (Longitudinal);); Ambulatory care;

6.2.2. Results

A proportion of 42.3% of the total Belgian population has exclusive encounters with the same GP during 2 years and less than 10% has an UPC<0.5. More often patients have an encounter with a general practitioner during two years, lower is the proportion of exclusivity. However if we consider an UPC threshold of high continuity (UPC≥0.75) instead of maximum (UPC=1), we notice an increase of continuity with the number of encounters (Table 1).

Table 41 – Proportion of individuals by Usual Provider Continuity (UPC) category, by patient characteristics (2012-2013)

Characteristics		UPC <0.25	0.25≤UPC<0.50	0.50≤UPC<0.75	0.75≤UPC<1	UPC=1	UPC≥0.75
Belgium		0.1%	6.3%	23.9%	27.4%	42.3%	**69.6%**
Encounter number							
	3 to 7	0.2%	6.6%	26.9%	17.9%	48.5%	**66.4%**
	8 to 12	0.1%	6.5%	22.9%	31.1%	39.4%	**70.5%**
	> 12	0.1%	5.8%	20.1%	39.1%	34.9%	**74.0%**
Gender							
	Male	0.1%	6.1%	23.7%	26.1%	44.1%	**70.2%**
	Female	0.1%	6.5%	24.1%	28.5%	40.8%	**69.3%**
Age group							
	00-19	0.3%	10.5%	32.1%	23.7%	33.4%	**57.1%**
	20-34	0.3%	11.4%	32.9%	25.1%	30.4%	**55.5%**
	35-64	0.1%	5.2%	23.2%	27.3%	44.2%	**71.5%**
	65-84	0.0%	2.0%	13.9%	30.0%	54.1%	**84.1%**
	>= 85	0.0%	1.8%	12.3%	39.2%	46.7%	**85.9%**
LTC status (65 years and over)							
	Home care	0.0%	1.6%	11.5%	40.8%	46.1%	**86.9%**
	MRS-MRPA	0.0%	2.8%	15.2%	50.7%	31.3%	**82.1%**
	no LT care	0.0%	1.7%	12.6%	29.3%	56.4%	**85.7%**
Major							
	No	0.1%	6.6%	24.8%	26.6%	41.9%	**68.5%**
	Yes	0.1%	5.2%	20.0%	30.8%	43.9%	**74.7%**
Region							
	Brussels region	0.3%	8.9%	25.6%	24.6%	40.6%	**65.2%**
	Flemish region	0.1%	6.8%	24.7%	27.6%	40.9%	**68.5%**
	Walloon region	0.1%	4.8%	22.0%	27.6%	45.5%	**73.1%**

Source: IMA data, KCE calculation

Analysis by demographic characteristics and socio-economic status

There are no major differences by sex concerning the proportion of patients with a high continuity index despite males appear to have more often an exclusive continuity with their usual GP than women.

The age group of 65-84 years has the higher proportion of exclusive relationship with their GP (54.1%). However, if we consider the threshold of UPC=0.75, the proportion of patients with high continuity increases continuously with age from 20 years old.

Among the 65 years old and plus, patients without long term care have the highest proportion of exclusivity with general practitioners, followed by patients with home care and finally patients in institution. The repartition of the high continuity index is not the same since the highest proportion of patients with high continuity is noticed among patients with home care (87%) followed closely by patients without long term care (86%). The lowest proportion of patients with high continuity is found in institution (82%).

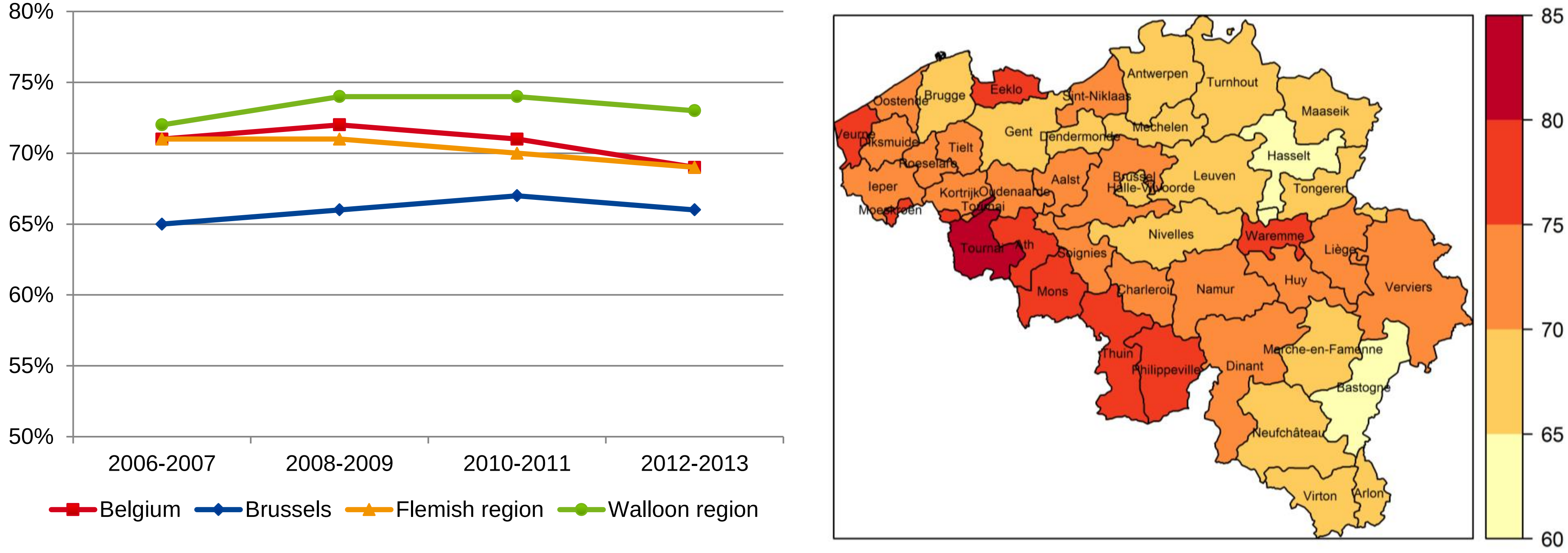
A higher proportion of patients with lower socio-economic level (measured by major coverage) has a high continuity (74.7%) or an exclusive relationship (43.9%) with their general practitioner compared with the group without major coverage (68.5% and 41.9% respectively).

Analysis by region and district

A difference in exclusivity and in high continuity is found by region with a higher proportion for both UPC indexes in Wallonia, followed by Flanders and then Brussels (Table 1)

An analysis by district (Figure 1) shows that Hasselt and Bastogne have the lowest proportion of patients with high continuity index (63% and 64%, respectively) while Tournai has the highest (80%).

Figure 62 – Proportion of individuals with high continuity index (UPC≥0.75), by region (2012-2013) and patient's district (2013)



Source: IMA data, KCE calculation

Trends over time

The proportion of patients having a high continuity with their general practitioner is quite stable since 2006 for Belgium and for each of the three regions.

Key points

- **In 2013, nearly 70% of patients have a high continuity index since they encounter minimum 3 times over 4 their usual general practitioner during a 2 years period. An exclusive relationship (encounter with the same general practitioner everytime) is observed for only 42% of patients.**
- **Higher is the number of encounters with a general practitioner during 2 years, higher is the proportion of high continuity. It is the opposite for the exclusive relationship.**
- **The proportion of patients having a high continuity with their general practitioner increases continuously with age from 20 years old. This regular increase with age is not observed for the exclusivity index: the lowest result concerns the 20-34 years age group and the highest result the group of 65-84 years old.**
- **A higher proportion of patients with lower socio-economic level (measured by major coverage) has a high continuity or an exclusive relationship with their general practitioner compared with the group without major coverage.**
- **A slight difference is noticed between the 3 regions with a higher proportion of patients having a high continuity index in Wallonia, followed by Flanders and then Brussels.**
- **The proportion of patients with a high continuity index is quite stable from 2006 to 2013 in Belgium, and in the 3 regions.**

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6.3. Encounter with GP for elderly patient after discharge of hospital (QC-3)

6.3.1. Documentation sheet

Description	Proportion of hospital discharge followed with a general practitioner's (GP) encounter within a 1-weeks period for senior patients (65+)
Calculation	**Numerator:** number of hospitalizations for elderly patients (65+) with at least one GP's encounter within the week (7 days) following the hospital discharge **Denominator:** number of hospitalisations for elderly patients (65+), alive 1 week after discharge and without new hospital admission in the week following the discharge.
Rationale	Being discharged from hospital is a pivotal moment in the care of an older person. As says the Commission on Dignity in Care for Older people (NHS Confederation, the Local Government, Association and Age UK), the objective of discharge is not simply to get the person out of hospital, but to ensure seamless clinical, physical and emotional support and the best possible return to their home or care home.[1] Recently, this Commission suggests that GPs arrange for a follow-up assessment around 1 week after an older person has been discharged from hospital (to check whether care arrangements put in place when the patient was discharged are still appropriate).
Primary data source	IMA/AIM database
Indicator source	KCE calculation
Technical definitions	**Nomenclature codes for GPs encounte**rs - all visits and consultations including after-hours visits and consultations were included in the selection of codes: 101010, 101032, 101076, 101091, 101113, 102410, 102432, 102454, 102476, 103110, 103132, 103213, 103235, 103316, 103331, 103353, 103412, 103434, 103515, 103530, 103552, 103913, 103935, 103950, 104112, 104134, 104156, 104215, 104230, 104252, 104274, 104296, 104311, 104333, 104355, 104370, 104392, 104414, 104436, 104451, 104510, 104532, 104554, 104576, 104591, 104313, 104635, 104650, 104672, 104694, 104716, 104731. **Nomenclature codes for hospital stays**: 761132, 761143, 761154, 761165, 761176, 761180, 761191, 761202, 761235, 761246, 768003, 768025, 768036, 768040, 768051, 768062, 768084, 768106, 768121, 768143, 768165, 768176, 768180, 768191, 768202, 768213, 768224, ,768235, 768246, 768250, 768261, 768272, 768283, 768294, 768305, 768316, 768320, 768331, 768342, 768353, 768364, 790020. Hospitalisation are directly identified in the IMA database. **Exclusion criteria:** • stays with a length lower than 24 hours (minimum length of stay); • stays followed, within 1 week after discharge, by death or re-hospitalization (for death: as the day of death is unknown, deletion of stays for which the month of death = month of discharge OR if the discharge date is the last week of the month preceding the month of death); • stays which are still ongoing for the period of investigation; • stays in patients <65 years in the year of the hospital discharge
Limitations	No information on the reason of encounter and the link with hospital stay; no information about who scheduled the appointment (was it scheduled by the hospital or a patient initiative); no information on the reason and duration of the hospitalization.
International comparability	Not applicable
Dimensions	Continuity (Management/Coordination); Link hospital-GP

6.3.2. Results

In 2013, around fifty five percent of elderly have at least one contact with a GP in the week after a discharge from the hospital. This result is an indication of continuity of care between the hospitals and the first line, even if we do not know if the GP's encounter followed a discharge plan from the hospital or from the patient's own initiative.

Table 42 – Proportion of hospitalizations for the elderly (aged 65 years or above) followed by a contact with a GP within 1 week after discharge, by patient characteristics (2013)

Characteristics		Number discharge followed by a GP contact within 1 week	Total number discharges	%
	Belgium	**298 906**	**547 003**	**54.6%**
Gender				
	Female	170 933	295 732	57.8%
	Male	127 973	251 271	50.9%
Age group				
	65-69	45 344	111 014	40.8%
	70-74	47 082	99 808	47.2%
	75-79	62 038	114 148	54.3%
	80-84	67 856	109 605	61.9%
	85-89	50 711	75 350	67.3%
	≥90	25 875	37 078	69.8%
LTC status			45 344	111 014
	Home care	50 507	74 659	67.7%
	MRS_MRPA	66 916	97 050	69.0%
	no LT care	181 483	375 294	48.4%
Major Coverage				
	No	170 947	336 897	50.7%
	Yes	127 959	210 106	60.9%
Region				
	Brussels region	15 703	40 681	38.6%

Flemish region	193 131	335 764	57.5%
Walloon region	90 072	170 558	52.8%

Source: IMA data, KCE calculation

Analysis by demographic characteristics and socio-economic status

There is a higher proportion of hospitalizations followed by a contact with a GP within 1 week after discharge in female elderly (aged 65 years or above) than in male (Table 1). There is also a difference according to age groups, the proportion of hospitalizations followed by GPs encounters increasing continuously with age from 41 % among the 65-69 years old to 70% among the ≥90 years old (Table 1).

Almost 70% of hospitalizations of patients living in institutions are followed by a GP encounter and this proportion is quasi similar in patients with home care. The proportion of hospitalizations followed by GP encounter is clearly lower among patients without long-term care (48%).

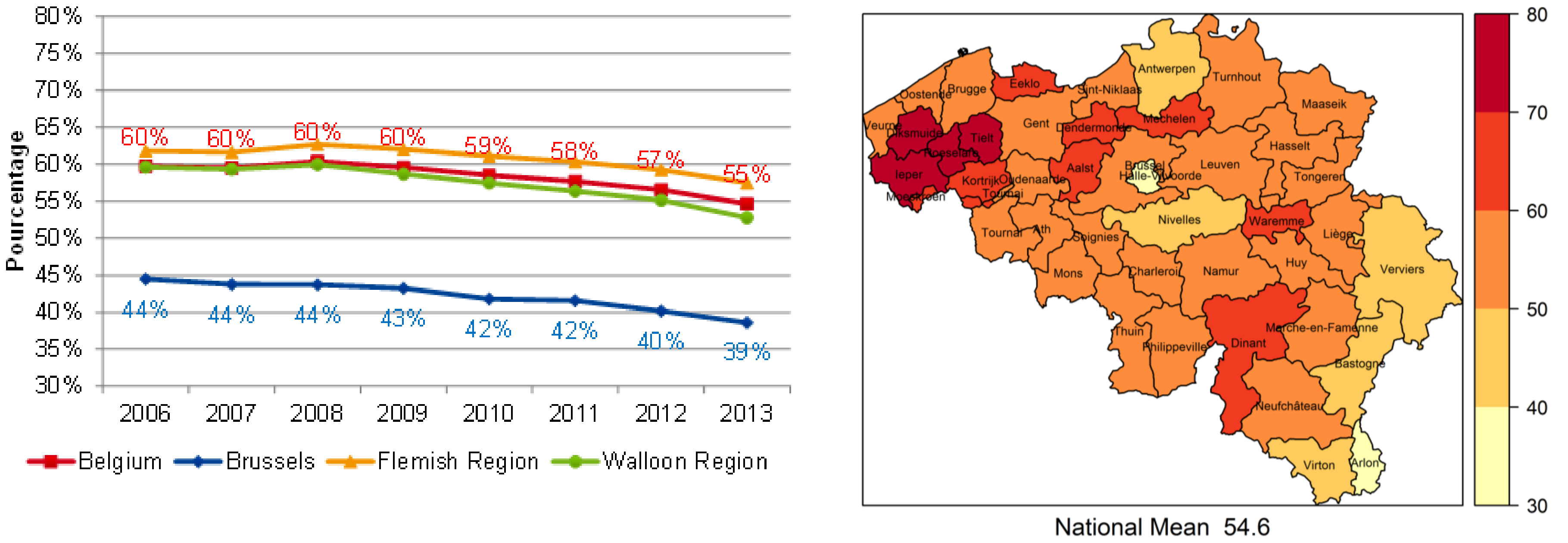
There is a difference by socio-economic level (measured by major coverage): a higher proportion of hospitalizations among patients with lower socio-economic level was followed by a GPs encounters within one week after a discharge compared with the group without major coverage (Table 1).

Analysis by region and province

The proportion of hospitalizations followed by a contact with a GP within 1 week after discharge is almost the same for Flemish and Walloon regions. However, it is lower for Brussels with a percentage falling around 39%.

An analysis by district (Figure 1) shows that Brussels and Arlon have the lowest proportion of GPs encounters within one week after a discharge (38.6% for each district) while the highest are in Ieper (78.3%), Diksmuide (74.7%), Roselaere (72.6%) and Tielt (70.3%).

Figure 63 – Proportion of hospitalizations for the elderly (aged 65 years or above) followed by a contact with a GP within 1 week after discharge, by region (2006-2013) and patient district (2013)



Source: IMA data, KCE calculation

Trends over time

The proportion of hospitalizations for the elderly (aged 65 years or above) followed by a contact with a GP within 1 week after discharge decreases slightly from 2006 to 2013 for Belgium and for each of the three regions.

Key points

- **Despite the supposed advantage of having a GP encounter within the week after hospital discharge, only 55% of the hospitalization for elderly (65 years old or above) are followed effectively by a GP's encounter in Belgium.**
- **There are factors that influences this percentage: sex (58% in females, 51% in males), longterm care (LTC) status (more than 65% for elderly in institution or with home care against 48% for elderly without long term care), age group which is directly linked to LTC status (>60% for the 80+ vs 41% for the 65-69 years old) and finally the socio-economic level (61% with major coverage and 51% without).**
- **This indicator is different between regions (57% for Flemish region, 53% for Walloon region and 39% for Brussels).**
- **The proportion of hospitalizations for the elderly (aged 65 years or above) followed by a contact with a GP within 1 week after discharge is decreases slightly from 2006 to 2013 in Belgium, and in the 3 regions.**

References

[1] Commission on Dignity in Care for Older People. Delivering Dignity. Securing dignity in care for older people in hospitals and care homes. A report for consultation. NHS Confederation, the Local Government, Association and Age UK; 2012.

6.4. Diabetic adults registered in a diabetes care trajectory, a diabetes convention or holding a diabetes passport (QC-4, QC-5)

6.4.1. Documentation sheet

Description	Proportion of adult diabetic patients registered in a care trajectory, a convention or holding a diabetes passport
Calculation	**Numerator**: number of diabetic patients (≥ 18 years) registered in a care trajectory, a convention or holding a diabetes passport **Denominator**: number of patients (≥ 18 years) with any type (I and II) diabetes identified through their drugs prescription.
Rationale	To optimize care provided to diabetic patients, several measures have been implanted in Belgium by the INAMI – RIZIV. • Diabetes passport: ○ Set up in Belgium in 2003 ○ Inclusion criteria: patients with diabetes type II under diet or oral antidiabetics; patients should have a global medical record followed by their general practitioner. ○ Aims: to improve the education of patients and those around them (information on treatment, management of complications…), to stimulate the patients involvement through information on periodic examinations and to support the communication between the patient and various care providers. ○ Advantages for patients: 2 consultations partially reimbursed by year with dieticians and 2 consultations partially reimbursed with podiatrist each year (only if the patient is at high risk of foot wound). • Care trajectorys for chronic care: ○ Set up in Belgium in September 2009. ○ Inclusion criteria: patients with diabetes type II under insulin or diabetes type 2 insufficiently controlled by oral antidiabetics or incretinomimetics; patient not be registered in a convention; patient should have a global medical record followed by their general practitioner and should undertake to consult their general practitioner at least twice by year and their endocrinologist at least one by year. ○ Aims: to improve follow-up and collaboration between patients, general practitioner and specialist physician. ○ Advantages for patients: all consultations totally reimbursed with general practitioner and endocrinologist; free access to consultations with nurses specialised in diabetes for education (information on lifestyle, treatments, follow-up); free self-control material (150 dipsticks/6 months, glucometer), 2 consultations partially reimbursed by year with dieticians and 2 consultations partially reimbursed by year with podiatrist (only if the patient is at high risk of foot wound). • .Convention for diabetes self-management:

	○ Set up in Belgium in 1986 (modified in 2008). ○ Inclusion criteria: patients with diabetes under at least 2 insulin injections by day; patient not registered in a care trajectorys for chronic care; patients not hospitalized; patients with a global medical record followed by their general practitioner. ○ Aims: to organize a multidisciplinary management of diabetic patients in specialised hospital centers in order to support the education of patients and those around them, the patient's involvement in their periodic examinations and the communication between the patient and various care providers. ○ Advantages for patients: integration in a full revalidation process including free self-control material and multidisciplinary consultations Because the registration in a diabetes passport, care trajectory or convention is volunteer, the percentage of patients registered in at least one of the three systems of registration is an indicator of the patient's participation in this public investment.
Primary data source	IMA data
Indicator source	KCE calculation
Technical definitions	**Numerator:** Adult diabetics (≥ 18 years) that had one of the following nomenclature code billed: • Diabetes passport : 102852. • Diabetes care trajectory : 107015, 107030, 107052, 107030. • Diabetes convention : 770033, 770055, 770070, 771573, 771595, 772450, 773113, 773231, 773253, 773275, 773393, 773496, 773592, 774115, 774130, 774152, 775456, 775471, 794076. **Denominator:** Adult diabetics (≥ 18 years) selected on Pharmanet: class ATC A10 drugs prescription. Two distinct subgroups are considered : 1) Diabetics under insulin (ATC=A10A): A10A prescription >80 DDDs. 2) Diabetics under oral antidiabetics (ATC=A10B): A10B prescription >=300 DDDs (and 0≤A10A<80DDDs). For this subgroup, 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.
Limitations	Underestimated denominator (only diabetic with medication); process indicator (which provide no information on outcome); risk of misclassification, notably risk that some patients under insulin since a few days were considered as patients under oral antidiabetics; risk of misclassification or omission of certain INAMI – RIZIV codes that refer to a passport, care trajectory or convention.
International comparability	Not applicable
Related indicators	Fiche 35 "Appropriate diabetes follow-up"
Dimensions	Continuity (Management/Coordination); Ambulatory care; Link specialist and GP; Chronic care

6.4.2. Results

A total of 307850 diabetic patients (≥ 18 years) were identified in 2013 through their drugs prescription: 41.6% under insulin and 58.4% under oral antidiabetics. This number does not consider the diabetic patients without medication (e.g. patients diagnosed with diabetes but only under diet or non-diagnosed patient) Globally, 90.8% of the identified diabetic patients **under insulin** have at least one registration (passport, care trajectory or convention). A large majority of these patients has a convention (89.2%) rather than a care trajectory (13.2%) or a passport (5.4%)[y].
The proportion of patients **under oral antidiabetics** having at least one registration is only 16.1%. Half has a passport (50.2%), while almost another half has a care trajectory (46.6%) and few (probably recently under insulin) have a convention (7.0%).[1]

Analysis by demographic characteristics and socio-economic status

No clear difference was noticed in the proportion of diabetic patients with at least one registration by sex, whatever they are under insulin or under antidiabetic oral (Table 1).

Table 43 – Proportion of diabetic patients with a diabetes passport, a care trajectory or a convention, by patient characteristics (2013)

		PATIENTS UNDER INSULIN					PATIENTS UNDER ORAL ANTIDIABETICS (50 years or more)				
Variable	Category	N=128157	Proportion of patients having a				N=179693	Proportion of patients having a			
			Passport	Care trajectory	Convention	At least one of the three		Passport	Care trajectory	Convention	At least one of the three
Data 2013 by categories											
Gender	Female	62 090	5.3%	12.4%	79.7%	**89.9%**	82 043	8.3%	7.3%	1.1%	**16.1%**
	Male	66 067	4.6%	11.7%	82.3%	**91.6%**	97 650	7.9%	7.7%	1.2%	**16.2%**
Age groups	00-24	5 469	1.9%	0.1%	96.6%	**96.5%**					
	25-49	19 273	3.8%	4.2%	91.7%	**94.5%**					
	50-74	67 517	5.5%	13.2%	82.0%	**92.4%**	122 156	8.3%	8.9%	1.2%	**17.6%**
	75-84	27 170	5.0%	16.4%	73.8%	**88.0%**	45 279	8.1%	5.3%	1.1%	**14.0%**
	85-94	8490	4.9%	13.9%	63.0%	**76.6%**	11 940	6.6%	2.5%	1.2%	**10.1%**
	95+	238	5.0%	7.6%	42.0%	**50.4%**	318	3.8%	1.3%	0.6%	**5.0%**
Long term care (65 years or +)	Home care	6575	4.5%	16.1%	73.1%	**87.3%**	6093	6.7%	5.6%	2.4%	**14.1%**
	Institutions	7867	3.9%	8.3%	62.8%	**70.8%**	6313	4.1%	2.2%	1.9%	**7.9%**
	No LT care	52 819	5.6%	16.4%	77.0%	**90.9%**	104 678	8.4%	6.6%	1.0%	**15.4%**
Entitlement to increased reimbursement (18 years or +)	No	78 936	4.4%	12.4%	81.8%	**91.7%**	125 131	8.0%	7.7%	1.0%	**16.1%**
	Yes	46 381	6.1%	12.1%	78.8%	**88.9%**	54 562	8.4%	7.2%	1.4%	**16.3%**

Source: IMA data. KCE calculation.

y Total is not 100% since some patients have more than one registration

The proportion of **diabetic patients under insulin** with at least one registration is the highest in the 0-24 years (96.5%) and remains superior to 90% until 75 years. Afterwards, this proportion decrease continuously to reach 53.5% in the 95-99 age group (Table 1).

The proportion of **diabetic patients under oral antidiabetics** who have at least one registration decreases regularly from 17.6% in the first 50-54 age group to reach 5% in the 95-99 age group (with an exception for the small group of ≥ 100 years old) (Table 1).

Among the 65 years old and plus, the proportion of diabetic patients with at least one registration is lower in institutions compared to home care and no long term care, **both for patients under insulin and under oral antidiabetics** (Table 1). This difference is particularly high for the registration in care trajectory.

Adult patients (18 years or +) **under insulin** with entitlement to increased reimbursement have slightly less often a registration than patients without this financial support. The difference is due to registration in conventions (Table 1).

No difference was noticed in the proportion of **diabetic patients under oral antidiabetics** with at least one registration by socio-economic level (measured by entitlement increased reimbursement).

Analysis by region and district

A slight difference was noticed between the three regions concerning the proportion of **diabetic patients under insulin** with at least one registration (Table 2). The use of care trajectory is clearly higher in Flanders (more than twice) compared with the two other regions while the use of convention is slightly lower.

The proportion of **patients under oral antidiabetics** with at least one registration is also higher in Flanders than in Brussels and Wallonia and this difference is found for both passport and care trajectory.

Table 44 – Proportion of diabetic patients with a diabetes passport, a care trajectory or a convention, by region (2013)

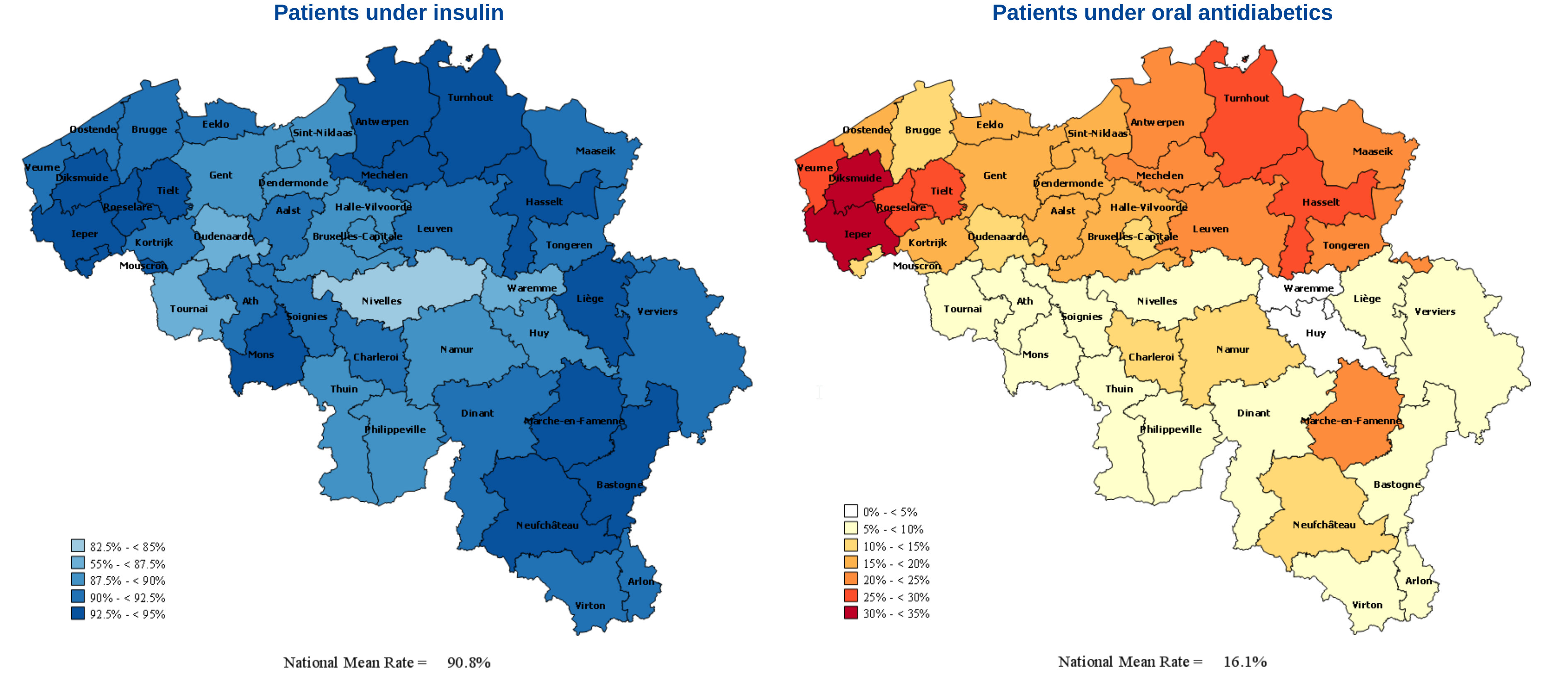
		PATIENTS UNDER INSULIN					PATIENTS UNDER ORAL ANTIDIABETICS (50 years or more)				
Variable	Category	N=128157	Proportion of patients having a				N=179693	Proportion of patients having undergone:			
			Passport	Care trajectory	Convention	At least one of the three		Passport	Care trajectory	Convention	At least one of the three
Data 2013 by categories											
Region	Brussels region	12574	6.1%	6.5%	82.6%	**87.7%**	15420	6.9%	5.3%	1.2%	**12.8%**
	Flemish region	73402	5.3%	16.7%	78.0%	**91.5%**	98486	10.9%	10.1%	1.1%	**21.3%**
	Walloon region	42181	4.0%	5.6%	85.8%	**90.6%**	65787	4.2%	4.2%	1.1%	**9.2%**

Source: IMA data. KCE calculation.

An analysis by district (Figure 3) shows that Nivelles has the lowest proportion of **diabetic patients under insulin** with at least one registration (83.4%) while Diskmuide and Mechelen have the highest (94.8% and 94.6% respectively).

For patient under oral antidiabetics, Waremme is the district with the lowest proportion of patients with at least one registration (3.4%) while Ieper and Diskmuide have the highest (33.2% and 33.0% respectively).

Figure 64 – Proportion of diabetic patients in a care trajectory, a convention or with a diabetes passport, by patient district (2013)



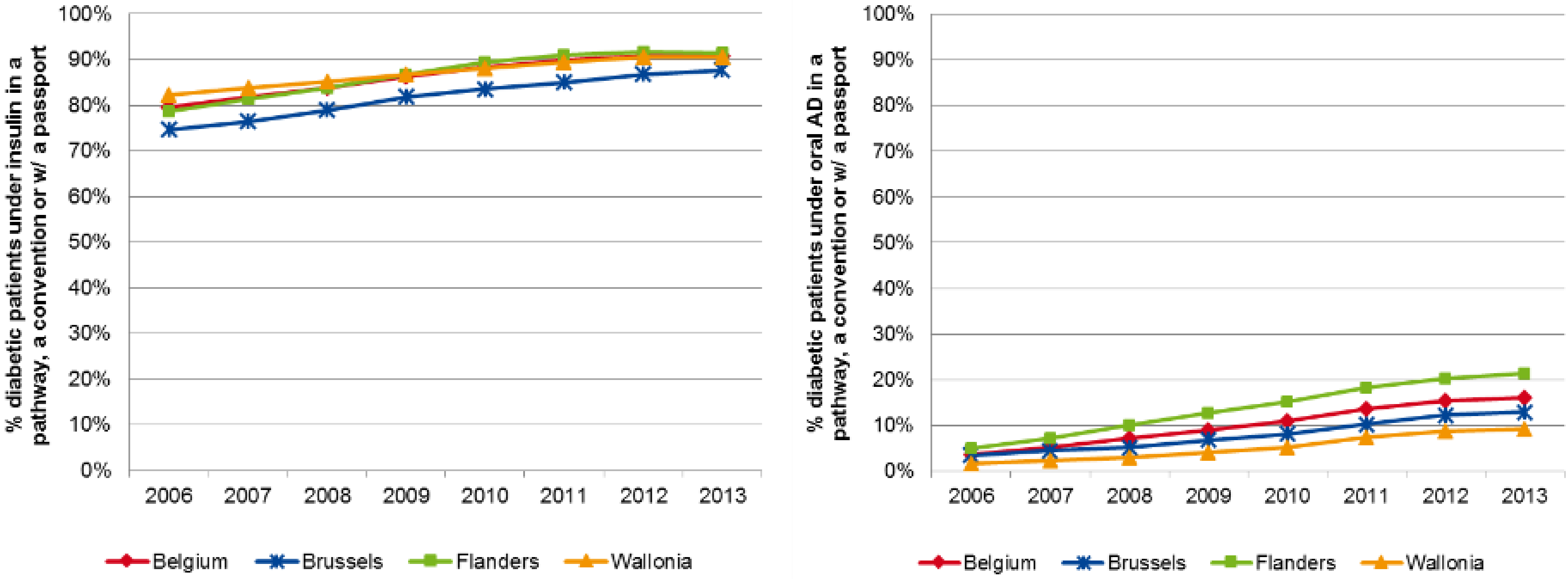
Source: IMA data, KCE calculation

Trends over time

The proportion of **diabetic patients under insulin** with at least one registration slightly increased between 2006 and 2011 to reach 91% but appears to remain similar afterwards (Figure 4). Conventions which exist since 1986 are the kind of registration more often used. Addition of care trajectory, started in September 2009, allows to reach 12% of patients under insulin in 2013. These two kinds of registrations increase continuously since 2006. Only diabetic passport decreases since a peak at 8% in 2009.

The proportion of diabetic patients **under oral antidiabetics** is low but slightly increases since 2006 (Figure 4). This increase is higher in Flanders and lower in Wallonia. Diabetic patients under oral antidiabetics are mainly concerned by diabetic passports which are developed in 2003. The additional value of care trajectory is not negligible in this group since it reaches almost 50% of the patients with at least one registration in 2013.

Figure 65 – Proportion of diabetic patients in a care trajectory, a convention or with a diabetes passport, by patient region (2006-2013)



Source: IMA data, KCE calculation

Key points

- **The proportion of diabetic adults with at least one registration in a diabetes care trajectory, a diabetes convention or a diabetes passport is relatively high among patient under insulin (91%). A large majority of these patients has a convention (89.2%) rather than a care trajectory (13.2%) or a passport (5.4%). In another way, a low proportion of patient under oral antidiabetics has at least one registration (16%), half having a passport and almost another half a care trajectory.**
- **No difference was noticed by sex, whatever they are under insulin or under antidiabetic oral.**
- **The proportion of diabetic patients with at least one registration decrease continously with age after 50 years both for patients under insulin and for patients under oral antidiabetics.**
- **Among the 65 years old and plus, the proportion of diabetic patients with at least one registration is lower in institutions compared to home care and no long term care, both for patients under insulin and under oral antidiabetics.**
- **Patients under insulin with lower socio-economic level (measured by entitlement increased reimbursement) have slightly less often a registration. No difference was found for patients under oral antidiabetics.**
- **The proportion of patient with at least one registration is higher in Flanders compared with the two other regions, both for patient under insulin and under oral antidiabetics.**
- **A positive trends over time can be noticed, both for patient under insulin and under oral antidiabetics.**

6.5. Cancer patients discussed at the multidisciplinary team meeting (QC-6)

6.5.1. Documentation sheet

Description	Proportion of patients with a new diagnosis of cancer who were discussed at the multidisciplinary team meeting (MDT, MOC-COM[z])
Calculation	Numerator: Number of patients diagnosed with cancer in a given year discussed at the MDT within 6 months after diagnosis. Denominator: Number of patients diagnosed with cancer in a given year.
Rationale	Multidisciplinary team meetings have been implemented in many countries as the predominant model of cancer care to ensure that all patients receive timely diagnosis and treatment, that patient management is evidence-based, and that there is continuity of care. In all cancer guidelines developed by the KCE and College of Oncology, multidisciplinary discussion is recommended to decide on the diagnosis, staging and treatment plan of cancer patients. They are financed in Belgium since 2003, and have been strongly encouraged by the National Cancer Plan since then.[1]
Target	None specified for Belgium. Nevertheless, EUSOMA recommended a target value of 90% for the multidisciplinary discussion of women with breast cancer.[2]
International comparability	No data are readily available from other countries. Data on multidisciplinary discussion are only sporadically published.
Data source	Belgian Cancer Registry (BCR), linked to IMA data.
Periodicity	Yearly
Technical definitions	The nomenclature codes for the coordination of a MOC-COM are the following: first MOC-COM (350372-350383), follow-up MOC-COM (350276-350280), additional MOC-COM (350291-350302), supplementary fees for oncologists (350453-350464). Only invasive tumours are reported (no in situ tumours). Only those patients that could be linked with the health insurance data are considered (=98% of the patients selected). To account for the fact that the date of diagnosis is sometimes slightly inaccurate and that small administrative mistakes in the health insurance data are possible, patients discussed at a MDT in the month preceding the date of diagnosis are also taken into account.
Limitations	No information is available on the quality of the discussion, and there are some financial incentives for hospitals to organise MDT meetings (the financing of extra manpower in oncological centres is directly linked to the number of yearly MDTs organized in a centre). Data from the last year (in this case 2012) may be slightly underestimated, as billing data for MOC – COMs are generally longer to bill than other data.[1]
Dimensions	Quality: Continuity-Coordination of care.
Related indicators	Cancer 5-year survival rate (breast, colon)

z COM consultation multidisciplinaire en oncologie, MOC multidisciplinair oncologisch consult.

6.5.2. Results

In 2004, the first full year after the reimbursement, only 50.6% of the patients with a cancer were discussed during a MDT. In 2012, 83.6% of the patients benefitted from this meeting, with differences between types of cancer still present, but smaller than in 2004. In 2012, patients with breast cancer are the most often discussed in MDT (94%) while this is the case for only 62% of the patients with a malignant melanoma (Table 45 and Figure 66).

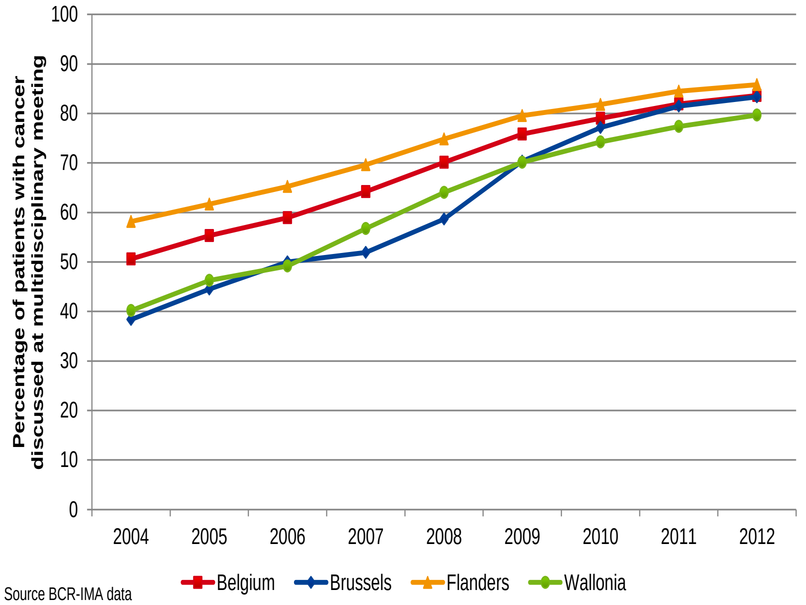
The clear regional differences that were observed at the introduction of the code in the nomenclature in 2004 tend to diminish. In 2012, patients with a cancer were more frequently discussed at the MDT in Flanders (85.8%), followed by Brussels (83.4%) and Wallonia (79.7%) (Table 46). Source: Belgian Cancer Registry data linked to data of the Intermutualistic Agency

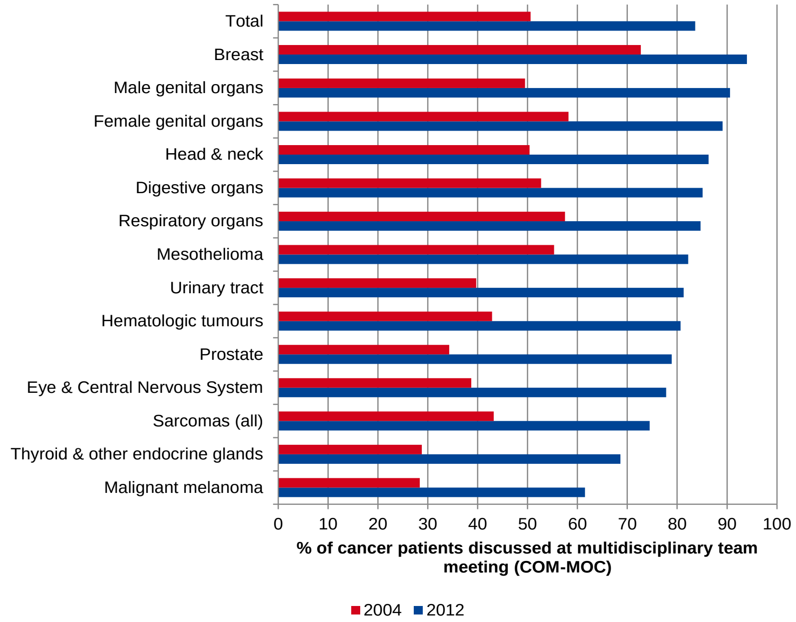
Table 45 – Proportion of cancer patients discussed at multidisciplinary team meeting, per tumour group (2004-2012)

	2004			2012		
Localisation	N of Patients	N of MOC	**% MOC**	N of Patients	N of MOC	**% MOC**
C00-C14,C30-C32 Head & neck	2363	1191	**50.4**	2523	2177	**86.3**
C15-C26 Digestive organs	11 182	5892	**52.7**	13 565	11 549	**85.1**
C33-C39 Respiratory organs	6812	3914	**57.5**	7863	6661	**84.7**
C40-C41,C46-C49 Bones, articular cartilage, soft tissue & Kaposi sarcoma	525	227	**43.2**	550	410	**74.5**
C43 Malignant melanoma	1335	379	**28.4**	2393	1471	**61.5**
C45 Mesothelioma	226	125	**55.3**	276	227	**82.2**
C50 Breast	9227	6712	**72.7**	10 664	10 026	**94.0**
C51-C58 Female genital organs	3023	1760	**58.2**	3166	2820	**89.1**
C61 Prostate	8890	3047	**34.3**	7892	6227	**78.9**
C60,C62,C63 Other male genital organs	295	146	**49.5**	434	393	**90.6**
C64-C68 Urinary tract	3403	1351	**39.7**	4174	3394	**81.3**
C69-C72 Eye & CNS	840	325	**38.7**	919	715	**77.8**
C73-C75 Thyroid & other endocrine glands	608	175	**28.8**	993	681	**68.6**
C81-C96 Hematologic tumours (incl MDS,MPD)	4558	1955	**42.9**	6254	5049	**80.7**
C76,C80 Unknown primary and ill-defined sites	1160	340	**29.3**	974	582	**59.8**
Total, excl.non-melanoma	54 447	27539	**50.6**	62 640	52 382	**83.6**

Source: Belgian Cancer Registry data linked to data of the Intermutualistic Agency
Note: Abbreviations:MDS: Myelodysplastic syndrome, MPD: Myeloproliferative Disorder

Figure 66 – Proportion of cancer patients discussed at multidisciplinary team meeting, per region and per tumour group (2004-2012)





Source: Belgian Cancer Registry data linked to data of the Intermutualistic Agency

Table 46 – Proportion of cancer patients discussed at multidisciplinary team meeting, per region (2004-2012)

	2004			2012		
	N Patients	N MOC	% MOC	N Patients	N MOC	% MOC
Belgium	**54 447**	**27 539**	**50.6**	**62 640**	**52 382**	**83.6**
Brussels	4,384	1683	38.4	4880	4068	83.4
Flanders	31 964	18 584	58.1	37 543	32 206	85.8
Wallonia	18 099	7272	40.2	20 217	16 108	79.7

Source: Belgian Cancer Registry data linked to data of the Intermutualistic Agency

Key points

- **Since the introduction of specific nomenclature codes for the multidisciplinary team meeting (MDT) in 2003, a rapid increase of its use is noticed for all cancer types. Overall, about 83% of cancer patients were discussed at the MDT in 2012 (compared to 50% in 2004).**
- **There are some variations in use of the MDT between types of cancer (highest 94% breast cancer, lowest 62% malignant melanoma).**
- **Although an increasing use is noticed for all three regions, cancer patients are still more frequently discussed at the MDT in Flanders (86% in 2012), followed by Brussels (83%) and Wallonia (80%).**

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7. QUALITY OF CARE: PATIENT CENTEREDNESS

7.1. Patients experiences with ambulatory healthcare service (QP-1, QP-2, QP-3, QP-4)

7.1.1. Documentation sheet

Description	Patients experiences with ambulatory care
Calculation	**Numerator**: number of respondents (≥ 15 years old) who answered to the HIS and who reported they had a good relational experience during the last contact with either a general practitioner (GP) or a specialist in ambulatory care (4 questions, GP or specialist depending on which ambulatory health care provider was contacted last). **Denominator**: number of respondents (≥ 15 years old) who answered to the HIS and who had a contact with either a GP or a specialist in the 12 months preceding the date of the interview:
Rationale	Patient-centered care is supported by good provider-patient communication so that patient's needs and preferences can be addressed and that patients understand and participate in their own care.[1-3] Unfortunately, a good communication is not easy and requires several competencies (listening, explaining, courtesy…) The measurement of these skills is a challenge and several institutes tackle this issue in their surveys.[1,4,5] In 2011 the OECD has edited a questionnaire on patient experiences with some questions related to the quality of the consultation.[4] On the request of the Federal Public Service Public Health, the Belgian Scientific Institute of Public Health included in the Health interview survey 2013 the OECD instrument dedicated to the patient experiences with ambulatory care.
Data source	HIS 2013
Technical definitions	Question based on the OECD module[4]: Now, refer to the last time you had a consultation either with a GP; either with a specialist: Q15. Did this doctor spend enough time with you? Q16. Did this doctor explain things in a way that was easy to understand? Q17. Did this doctor give you an opportunity to ask questions or raise concerns about recommended treatment? Q18. Did this doctor involve you as much as you wanted to be in decisions about your care and treatment?
Limitations	Subjective assessment of the "understandable" aspect of information provided by the physician while we do not know if this information was effectively understood; even if respondents without contact with a physician during the last 12 months were excluded, the delay between consultation and survey can be long; focus on ambulatory care only; home visits by GPs excluded.
International comparability	Yes, data based on an OECD module, questions are comparable in all countries but with cautious because the way in which the information in different countries is collected (special survey vs overall health survey, sampling scheme, survey organization, etc.) may have an impact on the outcome of the result.
Dimensions	Patient centeredness (Providers skill of communication/Explaining ability); Ambulatory care

7.1.2. Results

The following results are based on the Belgian Health interview survey (HIS) 2013.[6]

Q15. Did the doctor spend enough time with you?

According to the Belgian HIS 2013, 97.5% of patients mentioned their doctor spent enough time with them during consultation; this percentage equals 97.7% for general practitioners and 96.3% for specialists. This rate is similar at all ages, and for both sexes.

Analysis by socio-economic status

There are no significant differences by education level concerning satisfaction of time spent by general practitioners. The percentage of satisfied patients concerning the time spent by specialists is slightly higher in patients with higher education level than in groups with lower education level (between 94.7% and 96.5%). After standardisation for age and sex, the single remaining significant difference concerns patient with upper secondary education level.

Analysis by region

The percentage of satisfied patients concerning the time spent by specialists or general practitioners is lower in Brussels than in Flanders or Wallonia. After standardisation for age and sex, the single significant difference concerns the comparison Brussels-Flanders.

Table 47 – Proportion of satisfied patients (15 years old and plus) concerning the time spent by their physician during consultation, by region (2013)

	General practitioner	Specialist
Flanders	98.0	97.1
Brussels region	96.6	93.9
Wallonia	97.5	96.1

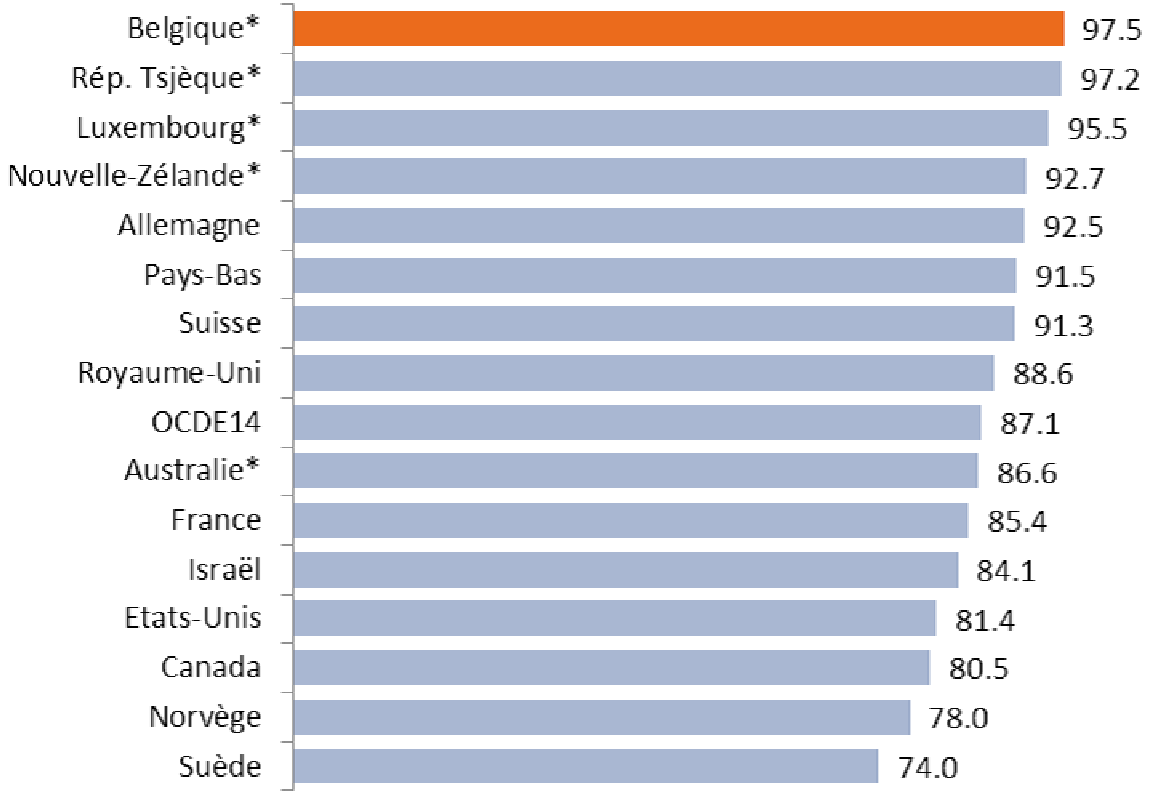
Source: Health Survey, Belgium, 2013.[6]

International comparison

The questionnaire used in the Belgian health interview survey is also used by other countries. This allows some comparisons such as performed by the OECD in the report ‘Health at a Glance” published in 2013.[7] Fourteen countries are compared after standardisation for age and sex (based on OECD population 2010). Data concern all physicians without distinction between general practitioners and specialists and comparisons are approximate as the years of data collection are not the same in all countries (years were as close to 2013 as possible).

Compared with 13 countries, Belgium ranks first for patient satisfaction related to the time spent by their physician during consultation.

Figure 67 – Proportion of satisfied patients concerning the time spent by their physician during consultation: international comparison (2013)



Sources: Health at a Glance, OCDE, 2013 – Health Survey, Belgium, 2013.[6]
**Countries with an asterisk related the experience of the patient with any physician, while for countries without asterisk it is the usual physician*

Q16. Did the doctor explain things in a way that was easy to understand?

In Belgium, 97.7% of patients considered that explanations provided by their physician were sufficiently clear. This percentage equals 98.2% for the general practitioner and 95.5% for the specialist. This high rate is found at all ages, and for both sexes.

Analysis by socio-economic status

There are no significant differences by education level concerning clarity of explanations provided by general practitioners. The percentage of patients indicating that the specialist provided a clear explanation is lower among patients with the lower education level (85.5%) compared to the higher education level (98.2%). This difference is significant after standardization for age and sex.

Analysis by region

The percentage of patients indicating that the general practitioner or the specialist has provided a clear explanation is lower in Brussels (96.4%) than in Flanders (98.0%) or Wallonia (97.6%). However these differences are not significant after standardisation for age and sex.

Table 48 – Proportion of patients (15 years old and plus) considering that their physician has provided a clear explanation, by region (2013)

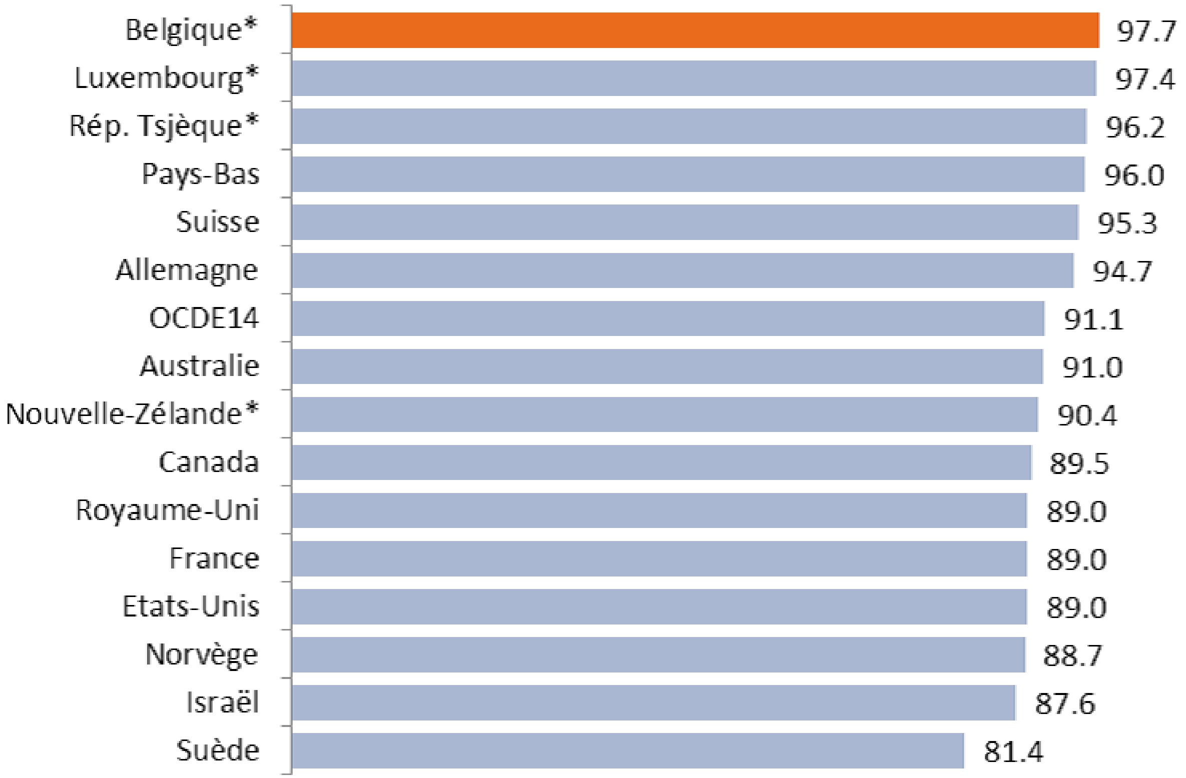
	General practitioner	Specialist
Flanders	98.3	96.0
Brussels region	97.4	93.2
Wallonia	98.2	95.7

Source: Health Survey, Belgium, 2013.[6]

International comparison

Compared with 13 countries, Belgium ranks first for the clarity of the physician’s explanation.

Figure 68 – Proportion of patients considering that their physician has provided a clear explanation: international comparison (2013)



Sources: Health at a Glance, OCDE, 2013 – Health Survey, Belgium, 2013.[6]
**Countries with an asterisk related the experience of the patient with any physician, while for countries without asterisk it is the usual physician*

Q17. Did this doctor give you an opportunity to ask questions or raise concerns about recommended treatment?

In Belgium, 97.6% of patients agreed they had the opportunity to ask questions to the doctor or to express their concerns about the treatment, where appropriate. This percentage equals 98.1% for the general practitioner and 95.3% for the specialist. This high rate is found at all ages, and for both sexes.

Analysis by socio-economic status

There are no significant differences by education level concerning the opportunity to ask questions to the general practitioner or to express concerns about treatment. The percentage of patients indicating that they had the opportunity to ask questions or to express their concerns about the treatment with the specialist is lower among patients with the lower education level (88.7%) compared to the higher education level (96.7%). This difference is significant after standardization for age and sex.

Analysis by region

The proportion of patients indicating that they had the opportunity to ask questions or to express their concerns about the treatment with the general practitioner is the same in the three regions. Concerning the specialist, the percentage of patients reporting this opportunity is lower in Brussels than in the other two Regions, but only the difference between Brussels and Wallonia is significant after standardization for age and sex.

Table 49 – Proportion of patients (15 years old and plus) considering that they had the opportunity to ask questions to their physician or to express their concerns about the treatment, by region (2013)

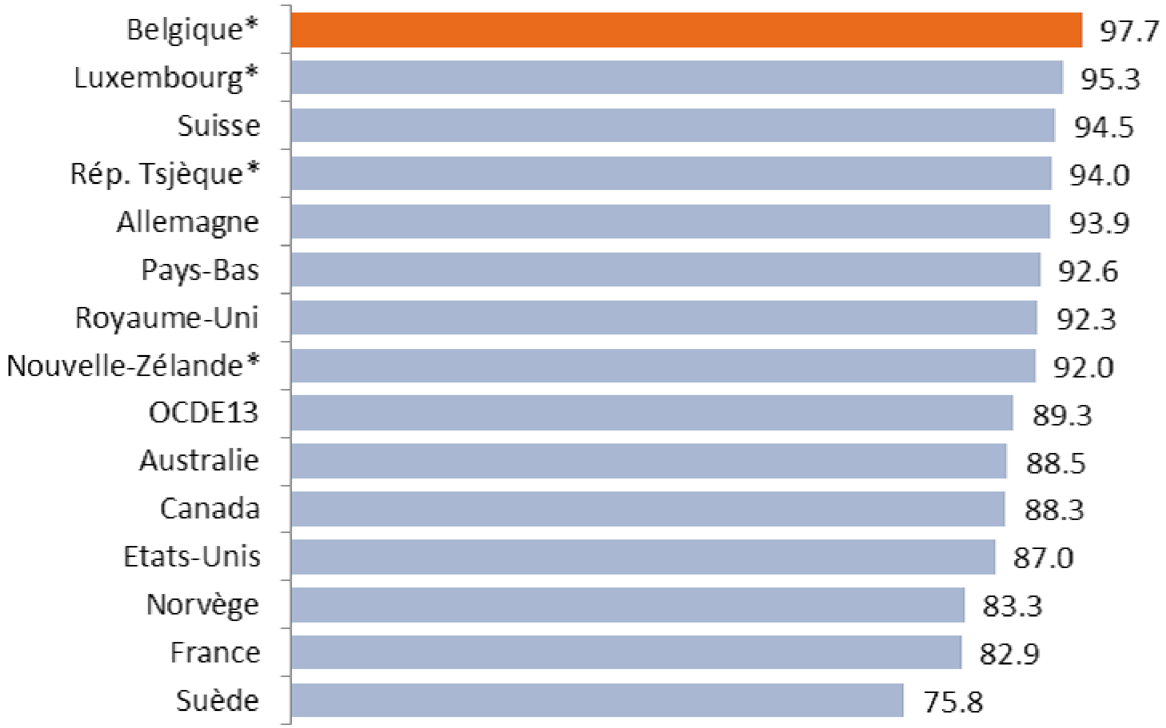
	General practitioner	Specialist
Flanders	98.6	95.4
Brussels region	96.9	91.9
Wallonia	97.4	96.4

Source: Health Survey, Belgium, 2013.[6]

International comparison

Compared with 13 countries, Belgium ranks first for the patient’s perception of their opportunity to ask questions to their physician or to express their concerns about treatment.

Figure 69 – Proportion of patients considering that they had the opportunity to ask questions to their physician or to express their concerns about the treatment: international comparison (2013)



Sources: Health at a Glance, OCDE, 2013 – Health Survey, Belgium, 2013.[6]
**Countries with an asterisk related the experience of the patient with any physician, while for countries without asterisk it is the usual physician*

<u>Q18. Did this doctor involve you as much as you wanted to be in decisions about your care and treatment?</u>

In Belgium, 95.2% of patients agreed they were sufficiently involved in decisions about their care or treatment, where appropriate. This percentage equals 95.8% for the general practitioner and 92.1% for the specialist. This high rate is found at all ages, and for both sexes.

Analysis by socio-economic status

There are no significant differences by education level concerning the feeling of involvement in the decision with the general practitioner. The percentage of patients indicating that they were sufficiently involved in decisions about their care or treatment with the specialist is lower among patients with the lower education level (87.1%) compared to the higher education level (93.5%). This difference is significant after standardization for age and sex.

Analysis by region

The percentage of patients indicating that they were sufficiently involved in decisions about their care or treatment is the same in the three regions, both for the general practitioner and the specialist.

Table 50 – Percentage of patients (15 years old and plus) considering that they were sufficiently involved in decisions about their care or treatment, by region (2013)

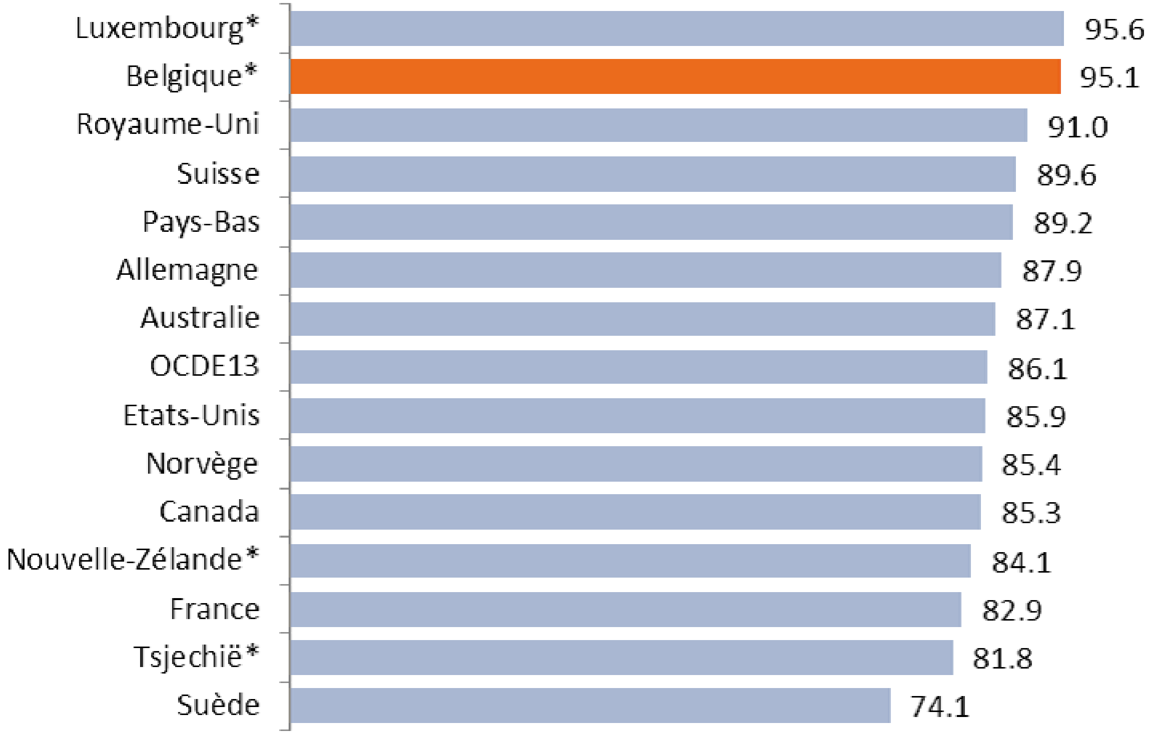
	General practitioner	Specialist
Flanders	96.0	91.8
Brussels region	95.0	92.0
Wallonia	95.8	92.5

Source: Health Survey, Belgium, 2013.[6]

International comparison

Compared with 13 countries, Belgium ranks second for the patients perception of their involvement in the decision about their care or treatment.

Figure 70 – Proportion of patients considering that they were sufficiently involved in decisions about their care or treatment: international comparison (2013)



Sources: Health at a Glance, OCDE, 2013 – Health Survey, Belgium, 2013.[6]
**Countries with an asterisk related the experience of the patient with any physician, while for countries without asterisk it is the usual physician*

Key points

- **Four items were considered to estimate the patient experiences for both general practitioners and specialists: time spent to the patient by the physician; clarity of explanation; opportunity to ask questions; patient involvement in the decision.**
- **The patient satisfaction is globally high regarding the four items, both for general practitioners and specialists. No difference was noticed by sex or age.**
- **Patients with higher education level appear to be slightly more satisfied than patients with lower education level regarding the four items provided by specialist. No difference was found for general practitioners.**
- **The satisfaction level is lower in Brussels for two items: the time spent to the patient by the general practitioner or specialist and the opportunity to ask questions to the specialist. No significant difference was noticed for the clarity of explanations and the patient involvement in decision.**
- **As it is the first time that these items were included in the Health interview survey, no trends over time can be currently estimated.**
- **Comparison with 13 European countries showed that Belgium ranks first for patient satisfaction related to the time spent by their physician during the consultation, the clarity of explanations and the opportunity to ask questions. Belgium ranks second for the patients perception of their involvement in the decision about their care or treatment.**

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8. MENTAL HEALTH CARE

8.1. Suicide rate (MH-1)

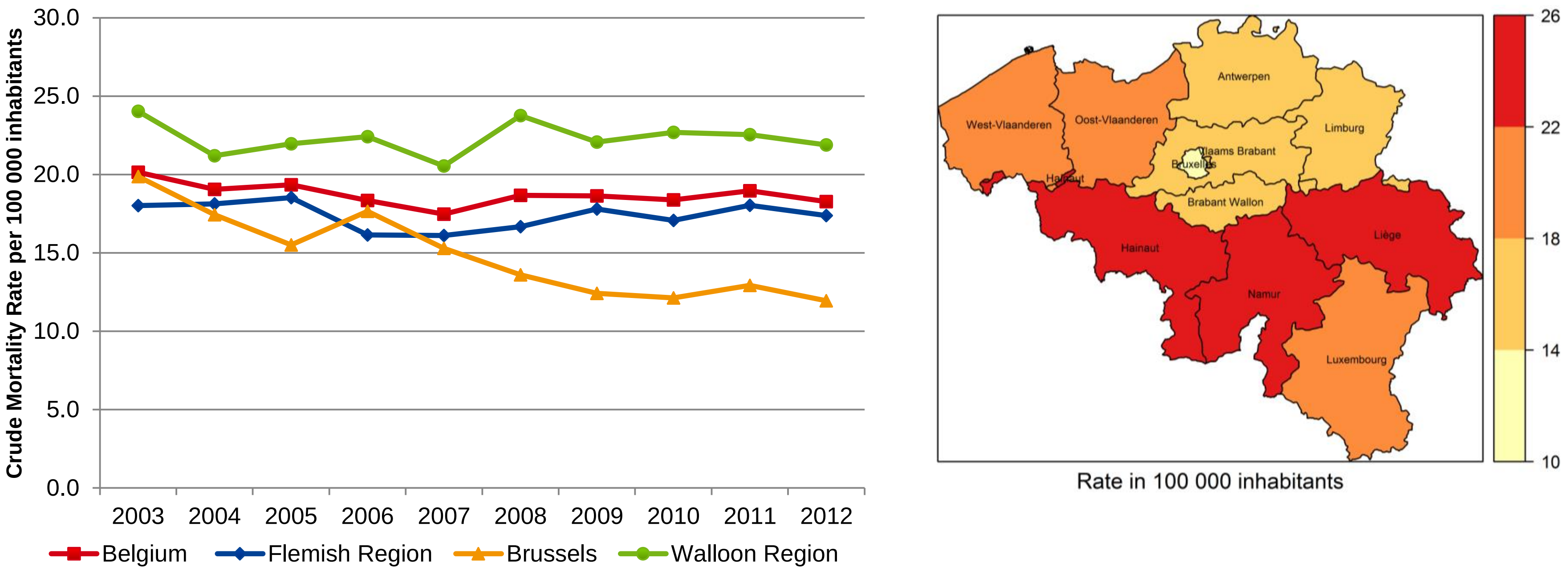
8.1.1. Documentation sheet

Description	Suicide, in the population per 100,000 inhabitants
Calculation	**Numerator**: number of deaths by suicide (x100 000) **Denominator**: total population
Rationale	Suicide may be the end-point of a combination of psychological, social and demographic factors. It is more likely to occur during crisis periods associated with upheavals in personal relationships, through alcohol and drug abuse, unemployment, clinical depression or other forms of mental illness. Because of this, suicide is often used as a proxy indicator of the mental health status of a population (including the lack of well-being). However, it remains a controversial indicator because of the instability of suicide rates, difficulty in data collection and the lack of association between suicide and quality of care provided.[1] Therefore, it is recommended to use suicide rates in combination with other mental health related indicators.[2]
Primary data source	SPMA (Standardized Procedure for Mortality Analysis – Scientific Institute of Public Health)
Technical definitions and limitations	Deaths by suicide are classified to ICD-10 codes X60-X84. This institute centralises the mortality information coded by the Flemish and French Communities (International Classification of Disease-9 (ICD-9)). From the year 1998, ICD-10 is used. These data are grouped in SPMA by age, sex, nationality and district.
International comparability	The World Health Organization defines suicide as an act deliberately initiated and performed by a person in the full knowledge or expectation of its fatal outcome. Standardised population suicide rates are available in OECD Health Data (extracted from the WHO Mortality database). Comparability of data between countries is affected by a number of reporting criteria, including how a person's intention of killing themselves is ascertained, who is responsible for completing the death certificate, whether a forensic investigation is carried out, and the provisions for confidentiality of the cause of death. Caution is required therefore in interpreting variations across countries. Some countries, for instance, also include the death certificates with the ICD-10 codes Y10 - Y34 and Y87(http://apps.who.int/classifications/icd10/browse/2010/en) in their suicide statistics. For this report we only include the codes specified by the OECD (ICD-10: X60-X84). Mortality rates are based on numbers of deaths registered in a country in a year divided by the size of the corresponding population.[3] OECD uses direct age-standardization methods to remove variations arising from differences in age structures across countries and over time and thus enhance international comparability. The source they use is the WHO Mortality Database (population year 1980).
Dimensions	Effectiveness of mental healthcare
Related indicators	Average daily quantity of medication (antidepressants /antipsychotics/ hypnotics and anxiolytics) prescribed

8.1.2. Results

Figure 71 illustrates that the number of suicides per 100 000 inhabitants in Belgium is relatively constant or even slightly decreased between 2003 and 2012 from 20.2 to 18.3. In addition it is shown that this figure is considerable higher in Wallonia compared with Flanders. In Brussels the suicide numbers decreased the most (from 19.9 in 2003 to 12 in 2012). In Flanders a policy plan was designed to reduce suicide rates. A second version of this plan aims to decrease the suicide rates by 20% between 2012-2012. This is far more ambitious than the slight observed decrease that was realised in the period 2003-2012 (from 18.02/100 000 inhabitants towards 17.42/100 000, while in the period 2006-2010 a 8% decrease was set as target).

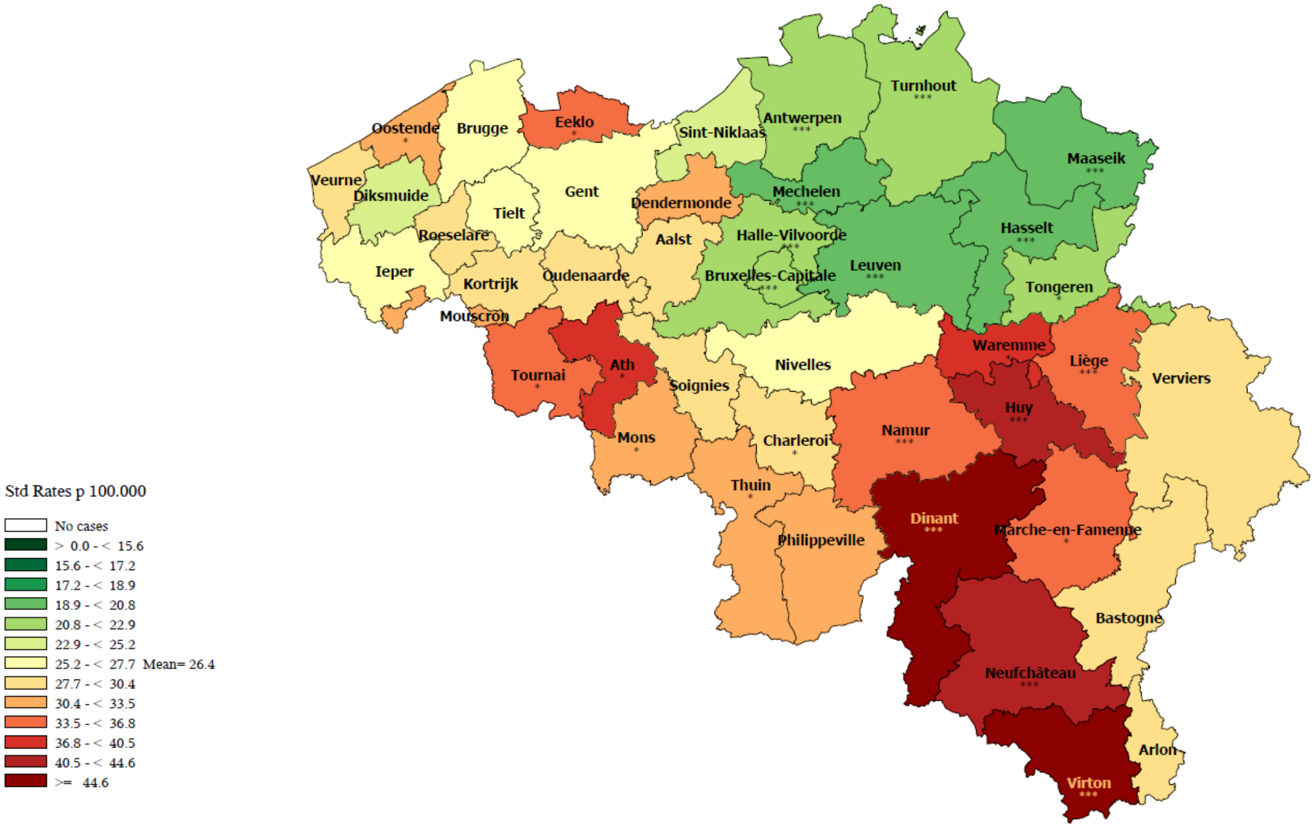
Figure 71 – Crude Suicide Rate per 100 000 inhabitants (2003-2012) and per province (2012)



Source: ISP – WIW (SPMA:standard Procedures for Mortality Analysis – Belgium)

An analysis of the national data of premature mortality among men aged 1-74 years due to suicide shows that results are highly variable across the Belgian territory. (See Figure 72 and Figure 72) In Flanders highest rates are observed for the provinces West- and East-Flanders. In Wallonia, highest rates are observed in the provinces Hainaut, Namur and Liège.

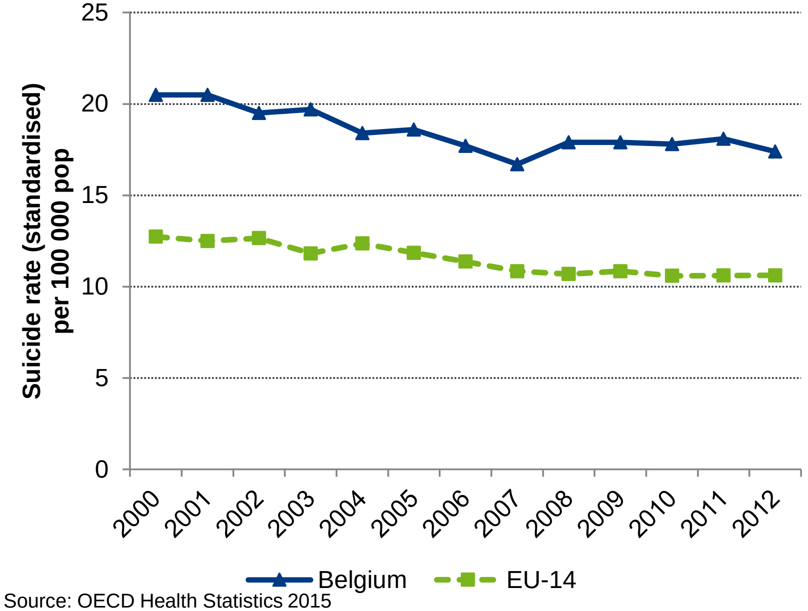
Figure 72 – Suicide Premature mortality in Men (1-74 year) (2003-2009)



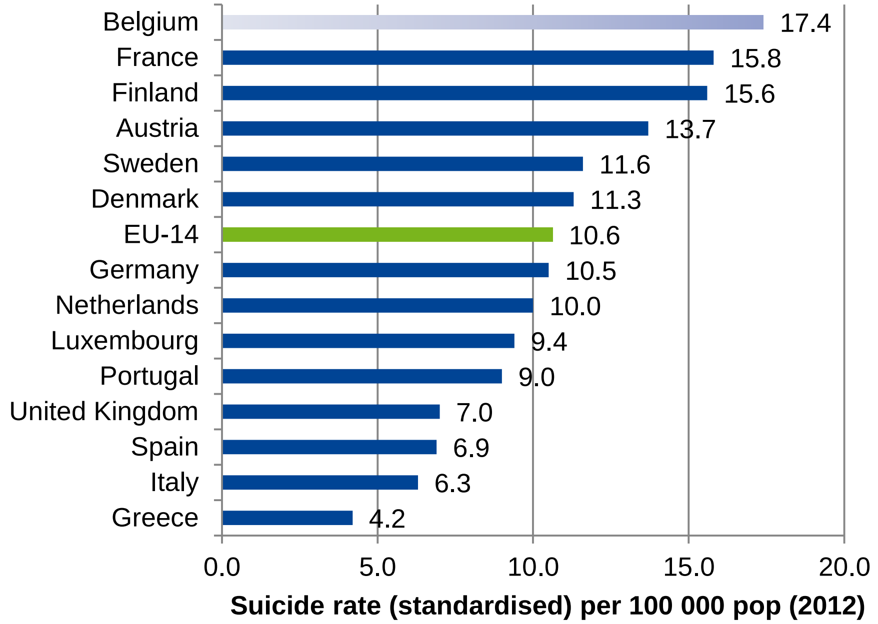
Source : [4]
Note: Age-adjusted mortality rates (standard Belgian population 2000)

It is clear from Figure 73 that the number of suicides per 100 000 inhabitants is remarkably higher in Belgium compared to the Benchmark countries. This was already reported in the previous performance report which stimulated the public authorities to take actions within the field of mental healthcare such as (1) improved support for primary care, (2) implementation crisis intervention teams, (3) better collaboration with emergency care services (e.g. in case of a suicide attempt) and (4) long-term follow-up (by mobile teams for chronic care) of persons with a history of suicide attempts.[5,6]

Figure 73 – Mortality rate due to suicide (per 100 000 inhabitant): international comparison (2000-2012)



Source: OECD Health Statistics 2015



Source: OECD Health Statistics 2015

Source: OECD source (2009)

Key points

- **Although a slight decrease in suicide rates can be observed in Belgium between 2003-2012, the rates are relatively stable**
- **Suicides rates are higher in Wallonia than in Flanders and Brussels, consistently over time. Large geographical variations exist, both within the Flemish and the Walloon region.**
- **Compared to other European countries, suicide rate in Belgium is relatively high**

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8.2. Number of practising psychiatrists per 1000 population (MH-2)

8.2.1. Documentation sheet

Description	Number of practising psychiatrists per 1000 population
Calculation	Numerator: Number of practising psychiatrists x 1 000 Denominator: Total mid-year Belgian population
Rationale	The number of care providers gives important information on the medical workforce and thus the accessibility of healthcare. Together with the number of graduates, this information can be used for health providers supply planning. People with mental health problems may receive help from a variety of professionals but international organisations [1] focus mostly on psychiatrists, as psychiatrists have a pivotal role in the mental health care system and the availability of comparable data on others, such as psychologists, is more limited. Therefore also in this report figures for psychiatrists are reported separately within the results-section.
Primary data source	RIZIV/INAMI: yearly statistics [2] Results from the PlanCAD (linkage data FOD VVVL - Datawarehouse AM&SB – RIZIV).[3] from Federal Public Service Public Health
Technical definitions	A care provider is considered to be practising (RIZIV – INAMI: “profiles”) if he/she provided more than 1 clinical service (i.e. consultations, visits, technical acts, but not prescriptions) during a given year or the 2 preceding years. Physicians still in training are not counted. Psychiatrists are medical doctors who specialise in the prevention, diagnosis and treatment of mental illness. They have post-graduate training in psychiatry and may also have additional training in a psychiatric specialty. [1] The Belgian data excludes non-practising physicians, retired professionals and professionals working abroad. Professionals who are of foreign origin are included. In the Plan Cad, the definition of psychiatrists includes adult psychiatrists, child and adolescent psychiatrists [3] Neuropsychiatrists and neurologists are not included.
International comparability	The OECD differentiates between practising physicians (doctors providing direct care to patients), professionally active physicians (including also doctors working in the health sectors as managers, educators, researches, etc) and physicians licensed to practise (i.e. having the required diploma). In addition, OECD countries use different methodologies to calculate the same indicator (such as different levels of activity). Moreover the role of psychiatrists varies across countries (e.g. collaboration with GPs. Comparisons are therefore potentially inadequate. Before 2009; data transferred to OECD for practising psychiatrists included all registered psychiatrists at the INAMI – RIZIV (all psychiatrists having a RIZV – INAMI code). Since 2009 (and data have been adapted retrospectively) these data are based on the number of practising psychiatrists, giving a better picture of the medical density in Belgium.
Performance dimensions	Accessibility, Health workforce
Related indicators	Medical graduates

8.2.2. Results

In 2013, the number of active psychiatrists in Belgium was 1 899, corresponding to a density of 0.17 /10 00 inhabitants. The number increased since 2000 (1671 in 2000), but the density remained stable. (Table 51)

Data from the PlanCad present the density of psychiatrists per region, (based on home address psychiatrists) per 10 000 inhabitants: 3.10 in Brussels, 1.33 in Flanders and 1.46 in Wallonia. (Table 52) It should be noted that this provides little information on the real available workforce per region, as the workplace address is not available and there is potentially a lot of professional mobility between the regions. [3] The total number of head counts are slightly different between the Plan Cad and the OECD results, because the specialities included are not exactly similar. (See differences between Table 51 and Table 52)

The conclusions from the PlanCad synthesis report are the following:[4]

“Psychiatry is a growing speciality (+22.6% from 2004 to 2012) in transformation. Since 2002, doctors cannot start a new training plan to obtain the title of psychiatrist: they need to choose between “adult psychiatrists” or “child and adolescent psychiatrists”. This change seems to be implemented differently between Flanders and Wallonia. In Wallonia, many psychiatrists have kept their initial title, which could partly explain the apparent deficits in Wallonia for the two sub-specialities.”

Table 51 – Data on practising psychiatrists (2004-2013)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Number of persons (head counts)	1671	1715	1748	1771	1797	1803	1840	1855	1891	1914	1932	1865	1890	1899
Density per 1 000 population (head counts)	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.18	0.18	0.18	0.17	0.17	0.17

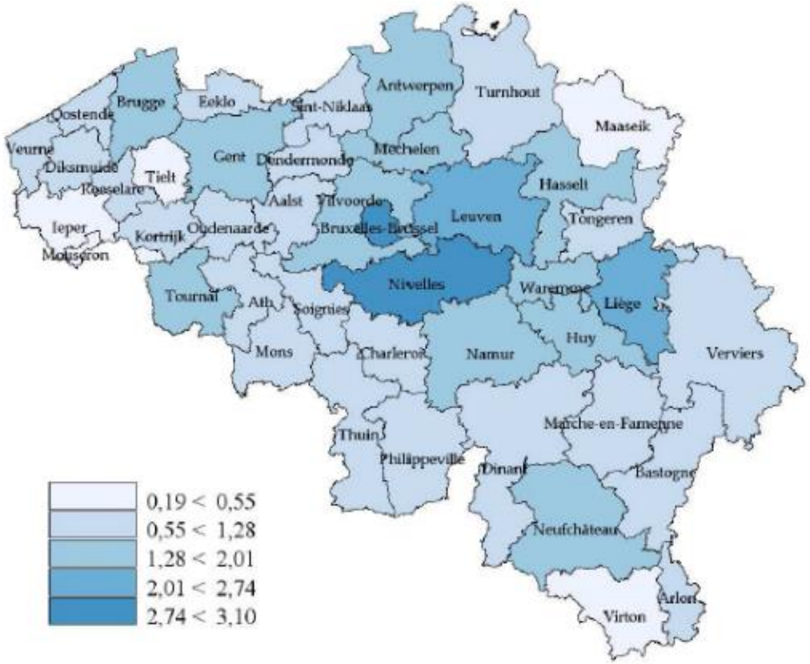
Source: [5]

Table 52 – Participation on the labour market per region where psychiatrists (3 titles): head counts (2012)

Region (based on home address psychiatrist)	Accredited	Active on the labour market	Psychiatrists in cadaster with active INAMI/RIZIV billing	Density of Active psychiatrists per 10 000 inhabitants
Brussels	399	369	358	3.10
Flanders	967	874	850	1.33
Wallonia	570	526	520	1.46
Total	1936	1769	1728	1.56

Accredited: Number of accredited psychiatrists (head count) in the FOD/SPF Cadaster
Active on the labour market: number of psychiatrists that is active on the Belgian labour market (as employee or with RIZIV – INAMI activity).
Active INAMI – RIZIV: Number of psychiatrists with a minimal activity (at least 0.1 FTE in the Social security context or at least 2 RIZIV/INAMI activities billed.
Source: [3]

Figure 74 – Density active psychiatrists: number of active psychiatrists per 10 000 inhabitants (2012)



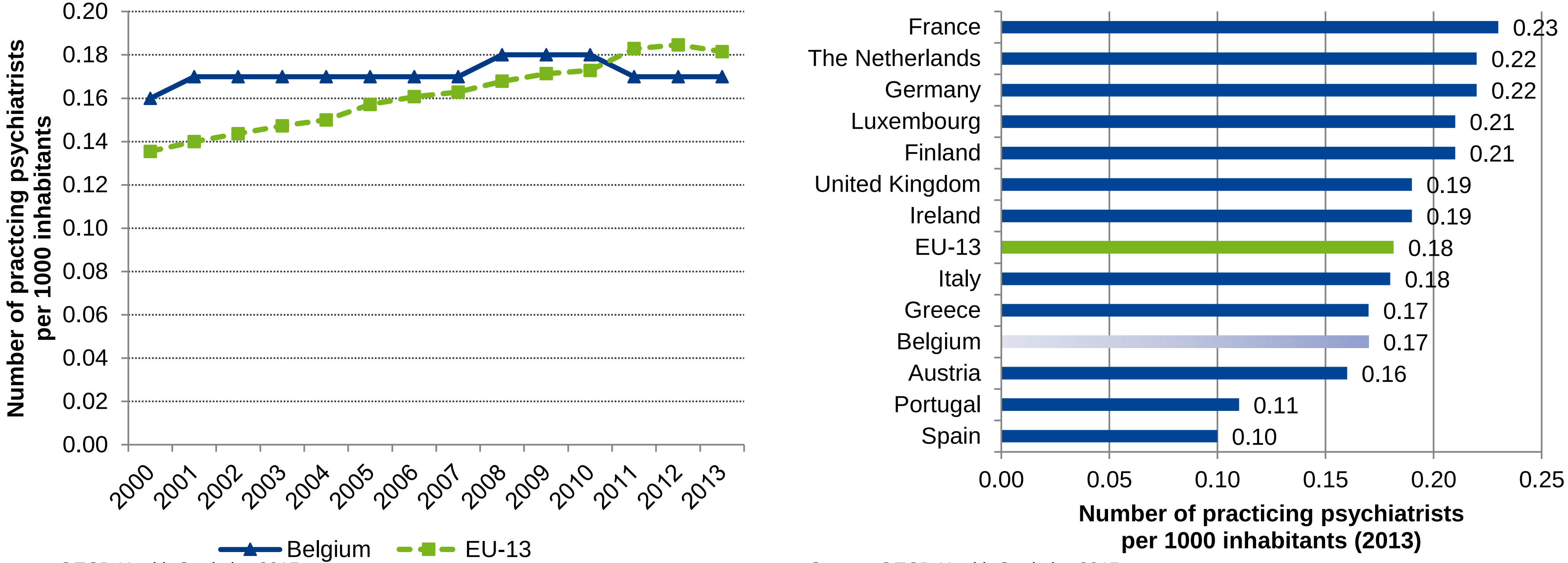
Source: [3], based on the home address of the psychiatrist
Note: artsen-specialisten in de Psychiatrie (3 titels), 2012

International comparison

The role of psychiatrists and other mental health service providers (e.g. psychologists) varies across countries. For instance, in the Netherlands, there is a high number of psychologists who are very active in providing services that are covered under health insurance systems. In other countries such as France, the number of psychologists is lower and the services that they provide are not covered under public health insurance.[6] An estimation on which types of care providers are consulted per country can be found in Eurobarometer.[7 8]

Contrary to what was observed in the PlanCad project (see Table 52 versus Table 51), data from OECD show no increase in terms of practising psychiatrists on the period 2000-2013, contrary to the other EU-15 countries.

Figure 75 – Number of practising psychiatrists per 1000 pop: international comparison (2000-2013)



Source: OECD Health Statistics 2015

Source: OECD Health Statistics 2015

Source: [5]

Key points

- **The number of practising psychiatrists is stable since 2000, aorund 0.17 / 1000 pop.**
- **Compared to the EU-15 European countries that report the number of practising psychiatrists to the OECD health data, Belgium has a density of practising psychiatrists just below the EU-15 average (year 2013).**
- **Data are available based on the home address of the medical doctor, but these date give little information on the effective work place (especially for specialists). The density of psychiatrists is higher in Brussels (3.10/ 10 000), compared with Flanders (1.33/ 10 000) and Wallonia (1.46/ 10 000).**

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8.3. Waiting time for a first face-to-face contact in a centre for ambulatory mental health (MH-3)

8.3.1. Documentation sheet

Description	Waiting time for a first face-to-face contact in a centre for ambulatory mental health
Calculation	• Number of days a patient has to wait for an intake assessment in a centre for ambulatory mental health; • Number of days a patient has to wait for a second contact with a centre for ambulatory mental health.
Rationale	Long waiting times are an important indication for accessibility problems. Moreover, excessive wait times may contribute to clinical deterioration and increased risk for suicide or hospitalization. [1] Furthermore, the longer the wait, the less likely patients and families are to attend appointments. [2] Therefore, timeliness of access to mental health services can be considered as a key indicator in calls for improvement of the mental health care system. In Belgium, the competencies for mental healthcare services, because of several political agreements about state reforms, are not homogeneously organised at the level of the public authorities (e.g. the federal government is responsible for the payment of psychiatrists and psychiatric wards in acute hospitals while the federated entities are responsible for the organisation and payment of centres for ambulatory mental health). Because of these scattered competencies no standardized data sources exist that cover the entire mental health services system. Moreover, the self-employed clinical psychologists are covered nor by the Federal nor by the federated competency levels. As such, problems arise when it is an objective to monitor waiting times for access to the mental healthcare systems. A second best option is to monitor the waiting times for one type of service. In this report we use the data published by the Flemish Agency of Care about waiting times for the centres for ambulatory mental health. There are 20 such centres in Flanders. They have to submit twice year a set of data based on their electronic patient records (Two different systems in use since 2007).
Data source	Agentschap voor zorg en gezondheid: “Hoe lang moet een cliënt wachten op een behandeling bij een CGG? [3]”
International comparability	No international comparison available
Dimension	Accessibility (accessibility mental health services)
Related performance indicators	Percentage of visits to the Emergency Rooms in general hospitals for mental health and/or substance- related problems Suicide rates

8.3.2. Results (Flanders)

The **waiting time for a first contact** with an ambulatory mental health centre was <1 month for 63% of all patients in 2013. Another 20% of the patients had to wait between 1 and 2 months meaning that 16% had to wait more than 2 months. In 2009, 70% of the patients were seen within a month and only 13% had to wait more than 2 months. In 2013 clients for child and adolescent mental health services had to wait, on average 2 weeks longer than other clients with 1 out of 4 clients waiting more than 57 days for a first contact. Yet, it is a decrease compared to previous years. [3]

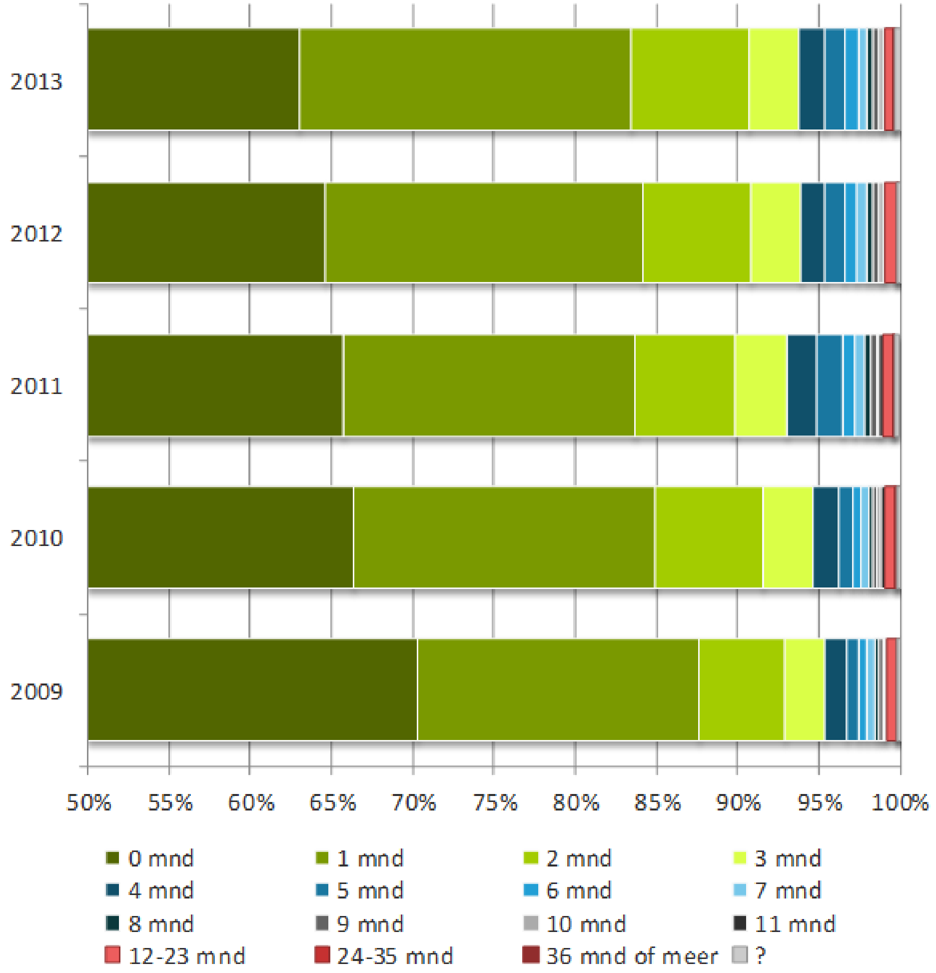
For the **second contact** (usually start of treatment), the percentage of patient seen within a month decreased from 65% in 2009 to 61% in 2013.

Table 53 – Waiting time for ambulatory mental health centres in Flanders (2009-2013)

Year of intake= year of registration	Waiting time until first contact					Waiting time after first contact				
	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013
unknown	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
0 months	70%	66%	66%	65%	63%	66%	65%	64%	61%	61%
1 month	17%	19%	18%	20%	20%	18%	19%	18%	20%	20%
2 months	5%	7%	6%	7%	7%	7%	7%	7%	7%	7%
3 months	2%	3%	3%	3%	3%	3%	3%	3%	4%	4%
4 months	1%	2%	2%	1%	2%	2%	2%	2%	2%	2%
5 months	1%	1%	2%	1%	1%	1%	1%	1%	2%	2%
6 months	1%	0%	1%	1%	1%	1%	1%	1%	1%	1%
7 months	0%	0%	1%	1%	1%	0%	1%	1%	1%	1%
8 months	0%	0%	0%	0%	0%	0%	0%	1%	1%	1%
9 months	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
10 months	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
11 months	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
12-23 months	1%	1%	1%	1%	0%	1%	1%	1%	1%	1%
24-35 months	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
36 months or more	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
All files	28475	28393	28582	29480	30061	21277	21182	21190	21679	21950

Source: EPD 2009-2013 [3]

Figure 76 – Waiting time for ambulatory mental health centres in Flanders, first contact (2009-2013)



Source: EPD 2009-2013 [3]

Table 54 – Waiting time to first contact in ambulatory mental health centres in Flanders, by type of care (2013)

Zorgsoort	Aantal zorgperiodes	Gemiddelde wachttijd	75% van cliënten moet maximaal … dagen wachten
Alle zorgsoorten	**21.950**	**46**	**48**
Kinder- en jeugdzorg	5.974	52	56
Volwassenenzorg	10.580	48	49
Ouderenzorg	1.005	32	31
Verslavingszorg	1.712	37	42
Forensische zorg	1.625	34	36
Bron:	EPD-registratiegegevens CGG, 2013		

Source: EPD 2009-2013 [3]

Key points

- **Data about waiting times for mental health services are not systematically collected for the entire Belgian mental healthcare system. Only data for waiting times to access Flemish ambulatory mental health centres are publicly available.**
- **A substantial percentage of patients have to wait 1 month or more on a first contact (37% in 2013), a percentage that slightly increased over time.**
- **On average waiting times are longest for the child and adolescent mental healthcare services, with a slight improvement noticed in the last year of registration (2013).**

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8.4. Involuntary committal in psychiatric hospitals (MH-4)

8.4.1. Documentation sheet

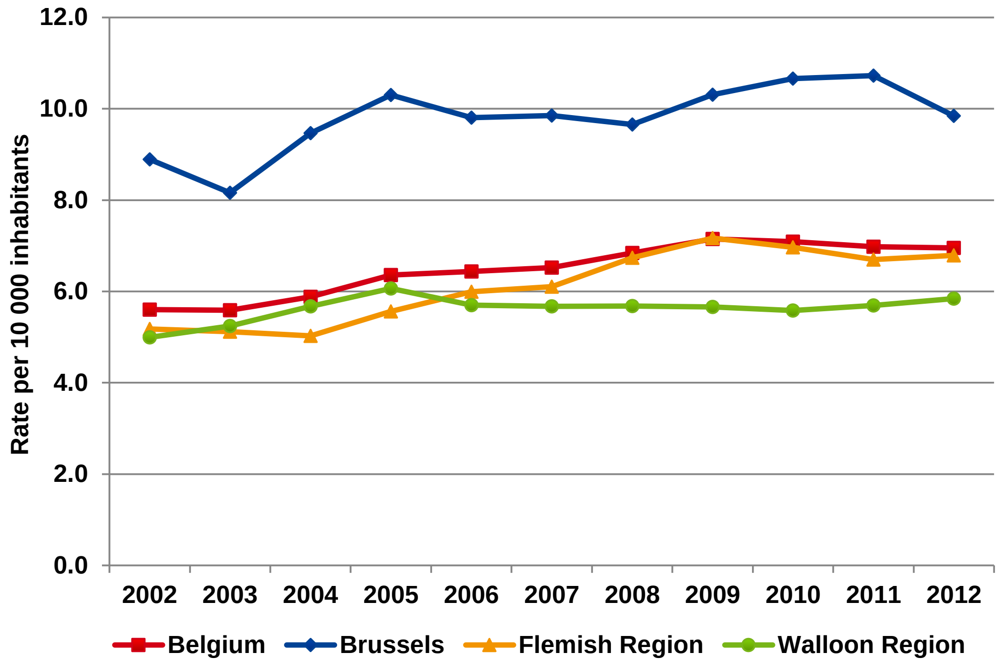
Description	Rate of involuntary committals in Psychiatric hospital or psychiatric services per capita
Calculation	Numerator: number of involuntary admissions per year Denominator: Midyear Belgian Population
Rationale	The need to minimize unnecessary involuntary admissions but provide appropriate treatment, supervision and protection for persons with serious mental illness is a key system goal.[1] An involuntary admission is indicative of a crisis episode but can also shed some insights into the availability and adequacy of inpatient resources and alternative forms of care for the group of more demanding patients.[2,3] In addition, this risk of involuntary admissions has been shown to be greater for ethnic minority groups.[2,4] In order to better protect psychiatric patients, most European countries have reformed their mental protection laws and reviewed their criteria for involuntary commitment.[2] Despite these reforms, there are international and intra-regional differences in the use of involuntary admissions with rates increasing in some western European countries that cannot be explained by increased prevalence of severe mental disorders.[3,5] While some authors have expressed concern that an increased number of forensic beds signals re-institutionalization,[5] this has not been accompanied by a consistent rise in forensic involuntary admissions.[6]
Primary data source	MPG
Indicator source	SPF – FOD, **own calculation**
Technical definitions	**Numerator**: All involuntary admissions identified in MPG by variable “MA09 Type of admissions” by the following response categories (21” admission for observation”; 22 “internment”; 23” continuation forced stay”; 24 “probation”; 29 “other legal conditions”). **Denominator**: All patient episodes included in MPG (except ‘Initiatives of sheltered living - Beschut wonen & PVT’) Psychiatric admissions admitted on general acute hospital units are excluded from the denominator. Calculation are based on patient’s residence.
International comparability	This is an OECD indicator. [7] It is also monitored by NHS Scotland.[8] The interpretation of this indicator in an international context requires investigation into the operation of legislation pertaining to such admissions in the countries under analysis. In Belgium a change in status from involuntary towards voluntary admission during the hospitalization period is not taken into account whereas this was usually done by other countries.[9]
Dimension	Quality(appropriateness of mental healthcare)

8.4.2. Results

The rate of involuntary committals in psychiatric hospitals slightly increased between 2002 and 2012: 5.6 per 10 000 inhabitants in 2002 to 7/1 000 inhabitants in 2012. It is higher for men (2012: 9.03/1 000) compared to women (2012: 4.95/1 000) and large differences can be observed between regions (in 2012):

Flanders 6.79/1 000; Brussels 9.85/1 000; Wallonia: 5.84/1 000). Several initiatives are taken to deal with this increasing trend. The umbrella organization of Flemish (psychiatric) hospitals (Zorgnet Vlaanderen), for instance, installed a working group which made propositions for legal changes. They plea for a further investment in the development of ambulatory capacity crisis capacity to avoid involuntary committals (and only use them as a last resort).[aa]

Figure 77 – Rate of Involuntary Committals per 10 000 inhabitants (2002-2012)



Source: SPF – FOD

Key points

- **The involuntary committal rate in psychiatric hospitals slightly increased from 5.6/10 000 in 2002 to 7/ 10 000 in 2012.**
- **Large differences between regions exist with much higher rates in Brussels compared with Flanders and Wallonia.**

[aa] http://www.zorgnetvlaanderen.be/Nieuws/Pages/Noodaanmodernkleedjevoorwetgedwongenopname.aspx

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8.5. Percentage of visits to the Emergency Rooms in general hospitals for mental health related problems (MH-5)

8.5.1. Documentation sheet

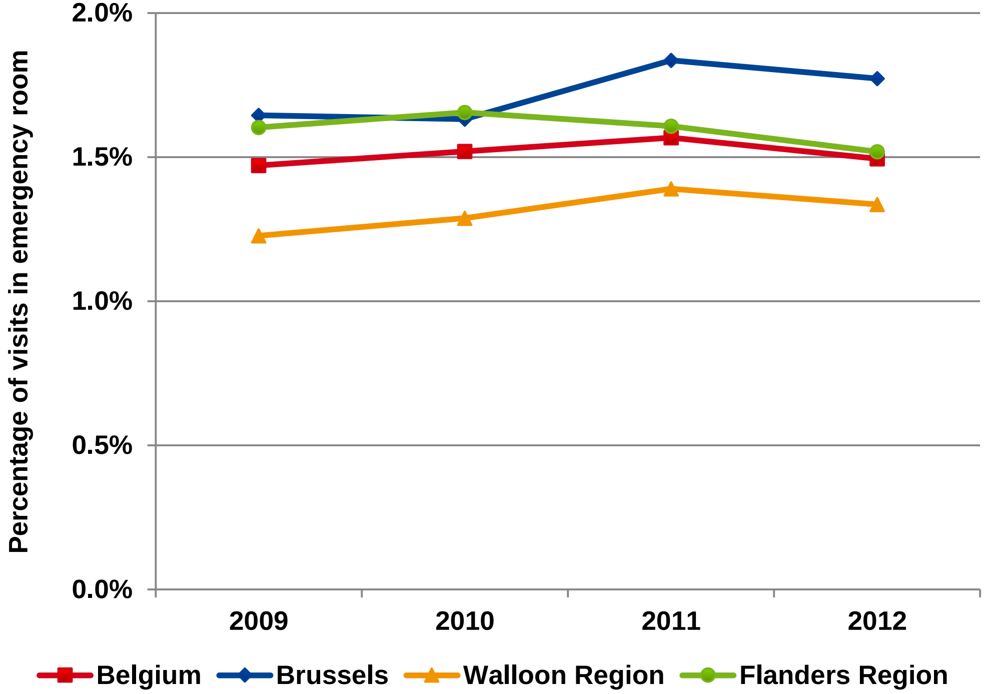
Description	Percentage of visits to the Emergency Rooms in general hospitals for mental health related problems
Calculation	Numerator: number of emergency room presentations with a mental health and/or social problem and/or suicide attempt
	Denominator: total emergency room presentations
Rationale	Although unforeseen and unavoidable emergencies do arise in mental health, mental health related emergency room use is used as an indicator of poor coordination of care and service failures.[1] The community treatment system to support services for people with mental health related problems is regarded as ineffective when utilization rates of emergency departments of general hospitals are high.[2] Highly accessible outpatient care is considered to help people to enter treatment before reaching the crisis stage and minimize the need for emergency room visits.[1] In addition, it is assumed that effective liaison between emergency rooms and mental health crisis resources reduce the use of emergency rooms for mental health services/clients. High rates of mental health related emergency room visits are not only a concern for members of the mental health community. It is also a concern that emergency department overcrowding results in decreased quality of care and increased likelihood of medical error.[2] In the US, it has been illustrated that mental health related emergency room visits are on the rise for more than one decade[3]. This stresses the importance of the availability of expertise in the field of mental health in emergency rooms to manage these crises. Depending on the number of visits for psychic problems, availability of a mental health specialist in every emergency room may not be practical. Still, there should be a minimum protocol by which mental health expertise is accessible for immediate care for every citizen[4]
Data source	RHM since 2008 (information not available in RCM – MKG)
Results source	National feedbacks emergency rooms[5]
Technical definitions	**Denominator = number of visit in emergency room.** **<u>Definition of visit in emergency room using the RHM</u>**: The admissions in emergency department can be identified in the RHM with the following codes: 1. Variable CODE_UNIT beginning with "URG" in dataset STAYUNIT (A5) 2. ORDER_UNIT = 1 in dataset STAYUNIT (A5) Excluding the long stays with A2_HOSPTYPE_FAC = N, M or L in STAYHOSP **Distinction between type of admission:** 1. Ambulatory emergency (A2_HOSPTYPE_FAC = U in dataset SAYHOSP (A2)) 2. ONE day (A2_HOSPTYPE_FAC = C & D in dataset SAYHOSP (A2))

	3. Classic hospitalization (A2_HOSPTYPE_FAC = H & F in dataset SAYHOSP (A2)) **Numerator = Number of visit in emergency room (see definition of denominator) with mental health/substance related problem records** **Definition of mental health/substance-related problem records in emergency room using the RHM**: we can identify the reason of admission for suicide attempt or mental/psychological reasons. These codes are, however, not specific enough as they also include non-mental health related problems (e.g. social problems). • M6_TYPE_INFO_URG = R and M6_CODE_INFO_URG = F or S in the dataset URGADMIN (M6)
Limitation	This indicator should be considered as a proxy indicator since it is based on the symptoms/complaints with which the patients arrives to the emergency care department. The flagged symptoms/complaints include besides suicide attempts, mental and psychic reasons also social reasons. A more detailed analysis with linkages with the verified admission diagnosis (or secondary diagnoses) via the Belgian hospital discharge dataset (MZG/RHM) is beyond the scope of this study.
International comparability	This indicator is not internationally standardized. The HCUP gives the most detailed description of this indicator and makes use of a similar data source and coding structure as the MKG – RCM.[2] Similar data are reported by NHS Scotland.[6]

8.5.2. Results

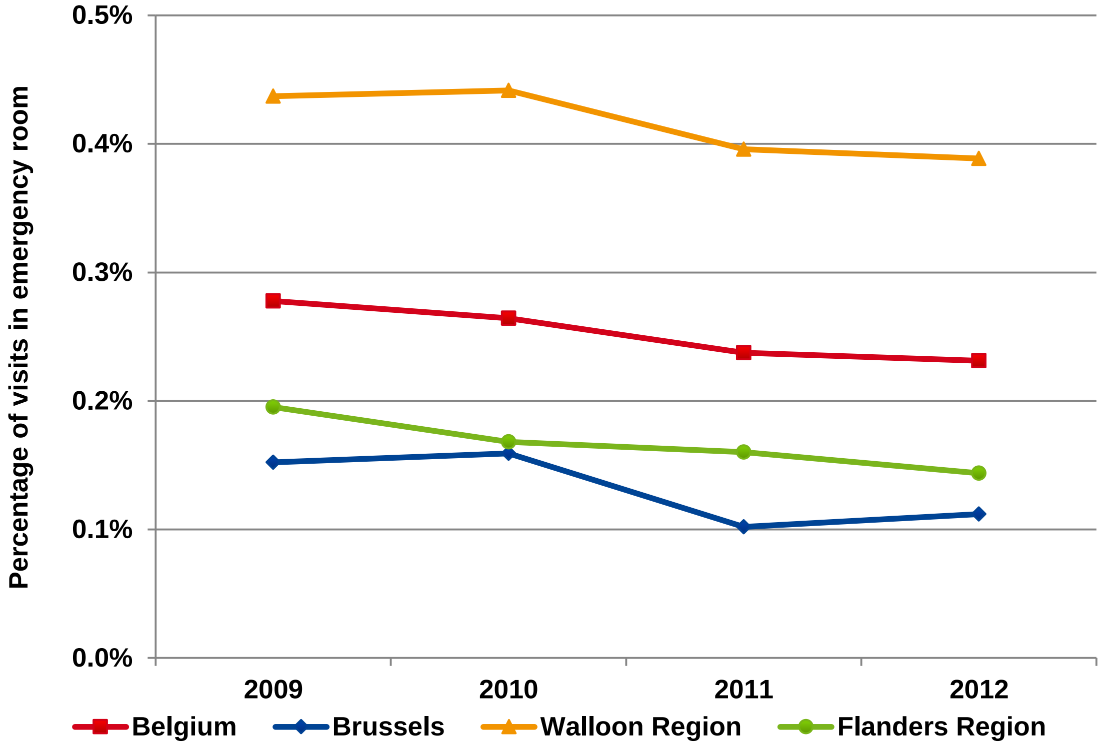
From the 3 188 911 emergency admissions in 2012 there are 7 374 admissions for suicide attempts (0.2%) and 47 673 admissions for social, mental or psychiatric reasons (1.5%). These percentages are relatively stable over time (2009-2012). The proportion of suicide attempts is higher in Wallonia (0.4%) compared to Brussels (0.1%) and Flanders (0.1%). The inverse can be observed for the proportion of patients with social, mental or psychic complaints which is the highest in Brussels (1.8%), followed by Flanders (1.5%) and Wallonia (1.3%).

Figure 78 – Percentage of visits in emergency rooms for social, mental or psychic reasons (2009-2012)



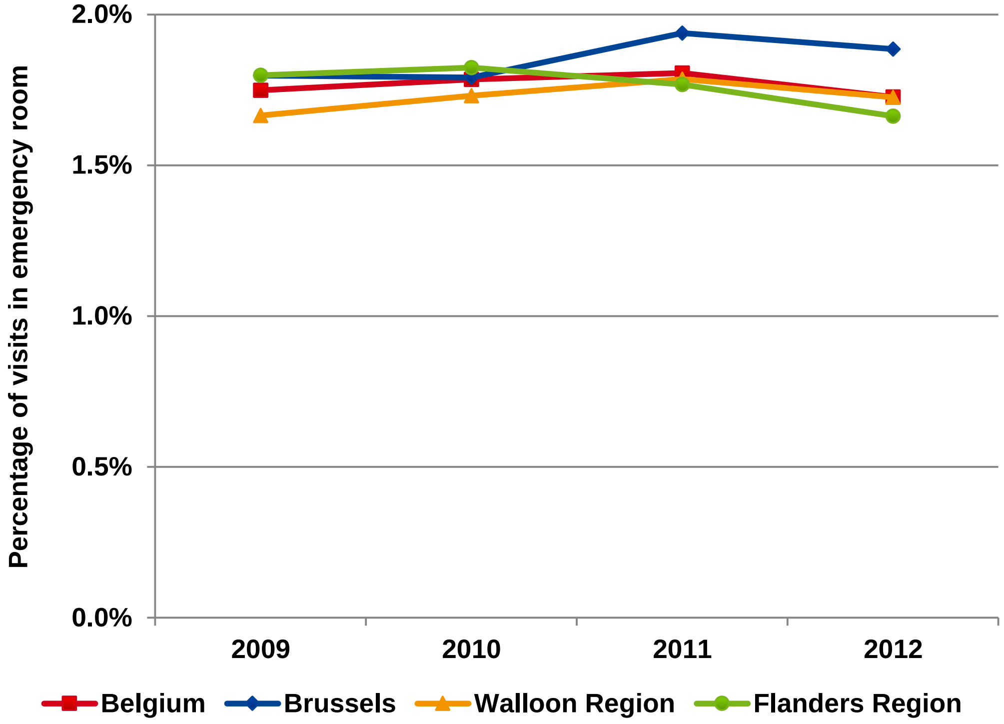
Source: National feedback on the use of emergency services [5]

Figure 79 – Percentage of visits in emergency rooms for suicide attempts (2009-2012)



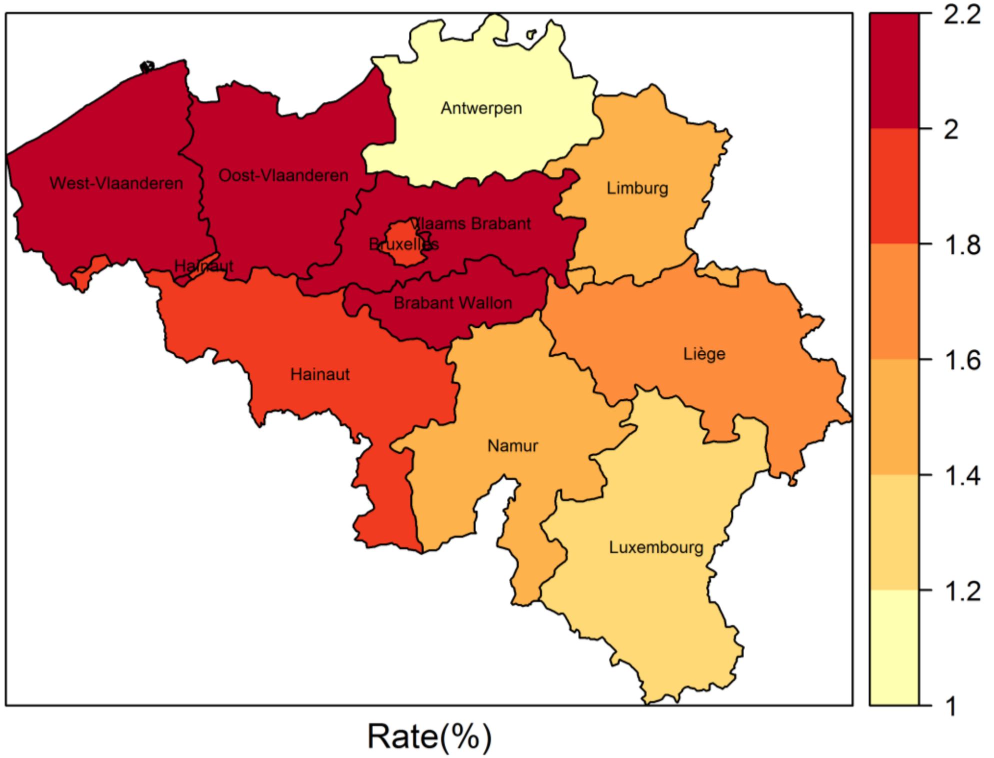
Source: National feedback on the use of emergency services [5]

Figure 80 – Percentage of visits in emergency rooms for social, mental or psychic reasons or suicide attempts (2009-2012)



Source: National feedback on the use of emergency services [5]

Figure 81 – Percentage of visits in emergency rooms for social, mental or psychic reasons or suicide attempts (2012)



Source: National feedback on the use of emergency services [5]

Key points

- **The percentage of visits to the Emergency Rooms in general hospitals for mental health related problems is relatively stable over time. There are relatively more admissions in Wallonia for suicide attempts while the percentage of admissions for social, mental or psychic problems is the highest in Brussels.**

References

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8.6. Antidepressant medication (MH-6, MH-7, MH-8)

8.6.1. Documentation sheet

Description	There are three indicators to assess the appropriateness of antidepressants prescription 1. The total volume prescribed per day (defined daily dosage of antidepressants per 1000 inhabitants per day); 2. Percentage of adult persons (18 or older) with antidepressants prescribed 3. Percentage of very short antidepressant treatment episodes for adult patients (18 years or older)
Calculation	**Number of Defined Daily Doses (DDD) of antidepressants (ATC code=N06A) per 1000 inhabitants per day** Numerator: Total DDDs of antidepressants per day (=total number of DDD on the year divided by 365 days); Denominator: Number of inhabitants. **Percentage of adult persons (18 or older) with antidepressants prescribed** Numerator: Number of adults (≥18 years) with at least 1 prescription of antidepressant; Denominator: Number of adults (≥18 years). **Percentage of very short antidepressant treatment episodes for adult patients (18 years or older)** Numerator: a. Number of adults (≥18 years) with at least 1 anti-depressant prescribed, for which the treatment episode is less than or equal to 3 months; b. Number of adults (≥18 years) with at least 1 anti-depressant prescribed, for which the treatment episode is less than or equal to 6 months. Denominator: Number of adults (≥18 years) with at least 1 anti-depressant prescribed. Both in case a and b, the percentage is measured each year, except in 2006 and 2013, which are considered “buffer years” to be able to measure 6 months treatments spreading over two years. A treatment is considered over if no prescription is found 6 months after the last prescription date.
Rationale	The use of antidepressant drugs increases year by year. The DDDs for antidepressants provided by community pharmacies, for instance, increased between 2001 & 2009, from 157 to 262 million [1]. The reasons for this and other increases (e.g. antipsychotics), however, are unclear. Several Belgian reports [2,3] have pointed out that there is an inappropriate use (wrong indication; wrong duration; wrong type of medication) of the psycho-pharmaceutical drugs which not only causes a risk for public health but also results in unnecessary societal costs. Antidepressants are indicated for the treatment of severe depression, panic and anxiety disorder and obsessive compulsive disorder. Yet, to be effective long-term use (at least 6 months), in combination with high-intensity psychological intervention, is required. [4] In this report we will use a proxy to measure adherence to this guideline. Since we have no data about the diagnosis we will consider all treatment episodes less than 3 or 6 months as inappropriate. The inappropriate use will as such include patient groups for which the use of antidepressants is not indicated (e.g. mild depression) and for whom the treatment episode is inappropriate (e.g. major depression with a treatment episode of 1 month). What is more the duration of use can only be estimated. It is assumed that patients to whom a package of drugs is delivered also take all doses included in the package at a uniform defined daily dose (DDD) regimen and at 100% adherence. [5]
Primary data source	RIZIV – INAMI for indicator 1, IMA data (KCE calculation) for indicators 2 and 3
Technical definitions	The medications studied are classified into the following ATC classes: Antidepressant: N06A
Limitations	Data do not include medicines provided by hospital pharmacies.
International comparability	Only for the DDD antidepressants per 1000 inhabitants international comparable data are available. [6]
Dimension	Quality(appropriateness in mental healthcare)

8.6.2. Results

8.6.2.1. DDD antidepressants

The daily consumption of antidepressants (N06A) increased from 42 DDDs/1000 inhabitant in 2002 to 74.1 DDDs per 1000 population in 2014, with large differences between regions (higher from Wallonia than in Brussels and Flanders), as shown in Figure 82. This trend of increasing use is also seen internationally (see Figure 83 right hand-side) but Belgium is consistently above the EU average (e.g. in 2011: 70 in Belgium compared to 64 for the EU-15). [6]

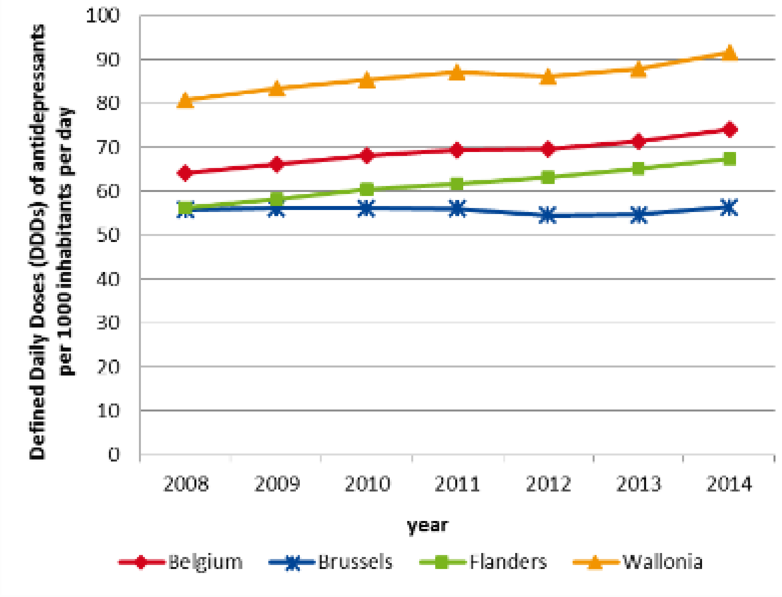
Table 55 – Defined Daily Doses (DDDs) of antidepressants per 1000 inhabitants per day, by patient characteristics (2013)

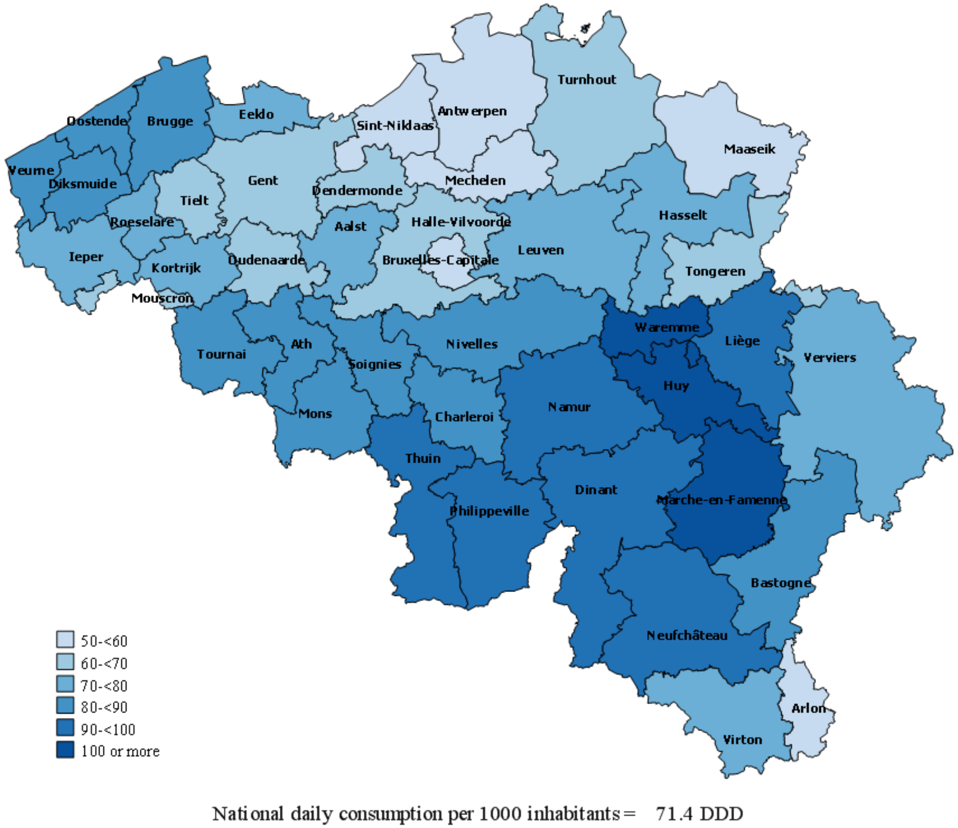
Variable	Category	Numerator	Denominator	Total DDDs/ 1000 inhabitants per day
Data 2013 by categories				
Age (years)	00-04	11 107	647 619	**0.05**
	05-09	35 562	632 419	**0.15**
	10-14	228 798	609 559	**1.03**
	15-19	1 601 285	629 408	**6.97**
	20-24	4 092 252	697 705	**16.07**
	25-29	6 777 691	700 693	**26.50**
	30-34	10 966 169	731 883	**41.05**
	35-39	15 669 648	719 020	**59.71**
	40-44	22 789 441	777 687	**80.29**
	45-49	28 526 974	813 708	**96.05**
	50-54	33 410 316	803 222	**113.96**
	55-59	33 524 531	732 485	**125.39**
	60-64	29 041 703	653 149	**121.82**
	65-69	25 217 628	566 584	**121.94**
	70-74	19 394 297	422 808	**125.67**
	75-79	20 368 414	394 617	**141.41**
	80-84	18 765 956	319 592	**160.87**
	85-89	12 848 930	187 485	**187.76**
	90-94	5 581 353	72 383	**211.26**
	95+	919 691	13 014	**193.62**
Gender	Female	198 850 158	5 664 137	**96.18**
	Male	90 921 589	5 460 899	**45.62**
Province	Antwerpen	36 790 655	1 798 048	**56.06**
	Brabant Wallon	11 481 490	389 746	**80.71**

Variable	Category	Numerator	Denominator	Total DDDs/ 1000 inhabitants per day
	Bruxelles-Capitale	23 149 931	1 159 061	**54.72**
	Hainaut	41 108 122	1 330 401	**84.65**
	Limburg	20 743 074	1 089 732	**92.16**
	Liège	36 657 141	854 760	**66.49**
	Luxembourg	8 160 459	276 220	**80.94**
	Namur	17 341 256	483 594	**98.24**
	Oost-Vlaanderen	35 106 162	1 464 938	**65.66**
	Vlaams Brabant	26 367 217	1 104 273	**65.42**
	West-Vlaanderen	32 866 239	1 174 264	**76.68**

Source: Pharmanet/Farmanet..

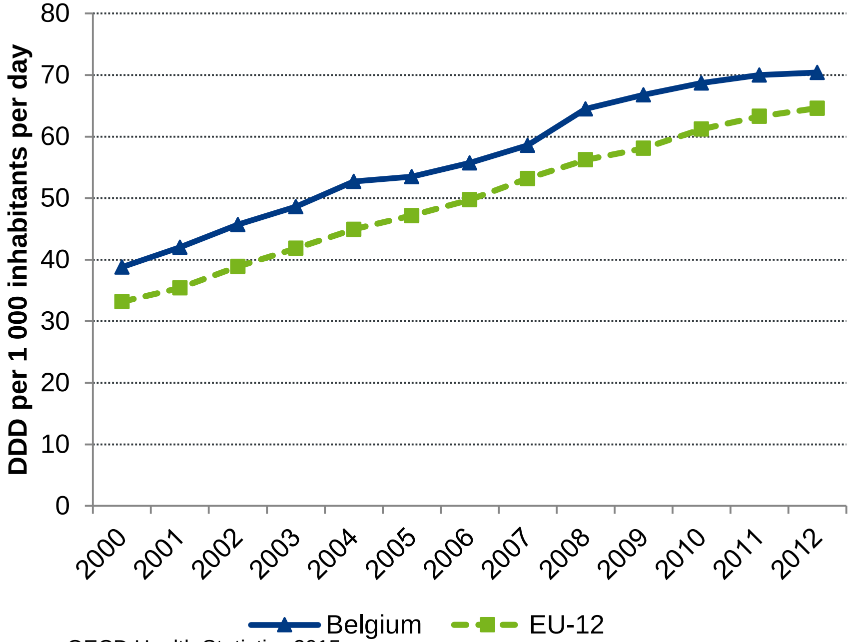
Figure 82 – Defined Daily Doses (DDDs) of antidepressants per 1000 inhabitants per day, by patient region (2008-2014) and district (2013)



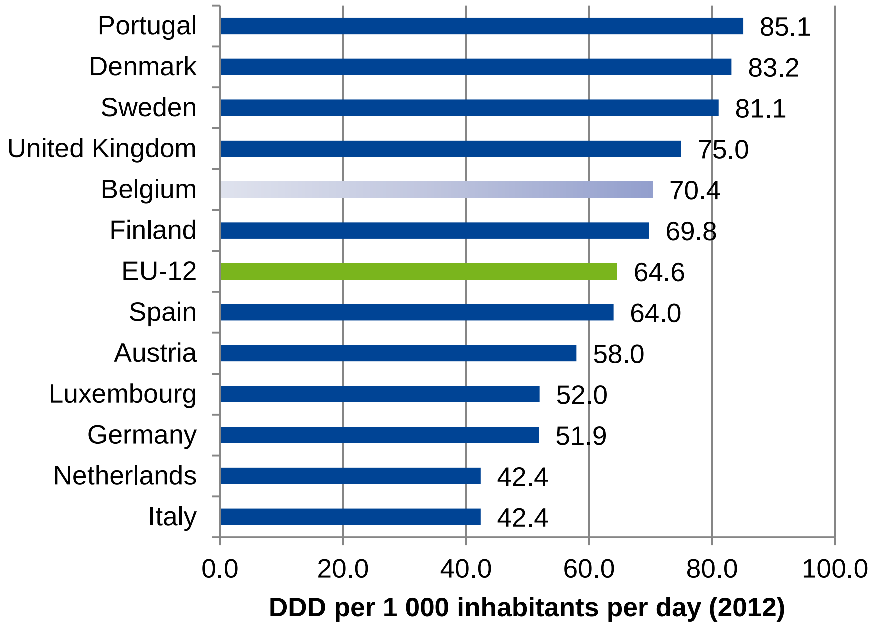


Source Pharmanet, RIZIV – INAMI

Figure 83 – DDDs antidepressants: international comparison (2000- 2012)



Source: OECD Health Statistics 2015



Source: OECD Health Statistics 2015

Source: OECD Health statistics 2015

8.6.2.2. Percentage of adults with antidepressants prescribed

In contrast with the DDD per 1 000 inhabitants the percentage of adults only slightly increased: from 12.3% in 2006 to 13.4% in 2013 (males: 9.2%; Females: 17.2%). There are, however, large differences between the regions: Flanders: 11.9%; Wallonia: 16.6%; Brussels: 11.7%). From Table 56, it is clear that this percentages increases with age with 20% of more of adults with prescribed antidepressants in the age groups of ≥75 years. There are also large differences for patients of 65 years or older regarding the type of care they receive: no long-term care (16.6%); home care (37.4%); nursing homes (46.8%).

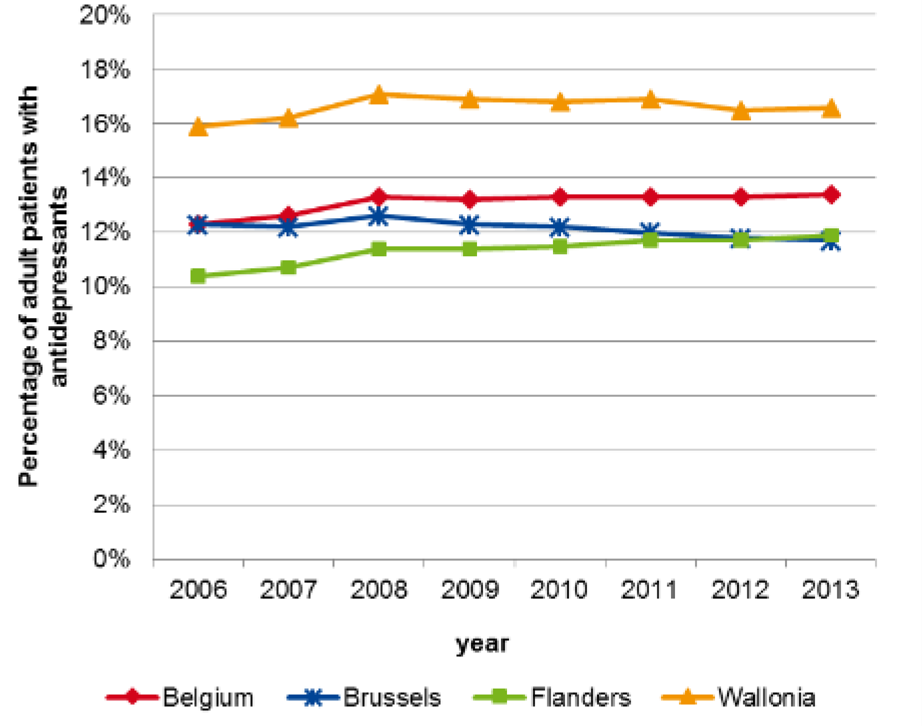
Table 56 – Percentage of adults with antidepressants prescribed, by patient characteristics (2013)

Variable	Category	Numerator	Denominator	Percentage with antidepressants
Data 2013 by categories				
Age (years)	18-19	6012	24 5462	2.4%
	20-24	24 949	668 279	3.7%
	25-29	36 774	670 958	5.5%
	30-34	53 325	698 846	7.6%
	35-39	69 459	684 046	10.2%
	40-44	92 403	738 481	12.5%
	45-49	110 374	774 225	14.3%
	50-54	124 142	780 268	15.9%
	55-59	121 547	720 372	16.9%
	60-64	106 071	644 652	16.5%
	65-69	94 869	575 026	16.5%
	70-74	75 458	423 622	17.8%
	75-79	81 801	403 799	20.3%
	80-84	77 196	335 776	23.0%
	85-89	54 580	207 445	26.3%
	90-94	25 095	89 911	27.9%
	95-99	3942	14 510	27.2%
	>=100	690	3019	22.9%
Gender	Female	771 144	4 479 968	17.2%
	Male	387 543	4 198 729	9.2%
Entitlement to increased reimbursement	No	826 891	7 151 072	11.6%
	Yes	331 796	1 527 625	21.7%
Long term care	Home care	37 740	100 800	37.4%
(65 years or +)	Institutions	80 810	172 546	46.8%
	no LT care	295 081	1 779 762	16.6%
Province	Antwerpen	150 481	1 423 655	10.6%
	Brabant Wallon	45 787	301 170	15.2%
	Bruxelles-Capitale	96 226	824 919	11.7%
	Hainaut	170 055	1 036 897	16.4%
	Limburg	83 157	672 889	12.4%

Variable	Category	Numerator	Denominator	Percentage with antidepressants
	Liège	139 657	848 516	16.5%
	Luxembourg	30 381	176 365	17.2%
	Namur	68 520	381 424	18.0%
	Oost-Vlaanderen	141 631	1 181 893	12.0%
	Vlaams Brabant	105 483	866 849	12.2%
	West-Vlaanderen	127 309	964 120	13.2%

Source: IMA data, KCE calculation.

Figure 84 – Percentage of adults (≥18 years) with antidepressants (2006-2013)



Source IMA data, KCE calculation

8.6.2.3. Percentage of very short antidepressant therapies

The percentage of adults with a very short term antidepressant therapy (<3 months) slightly decreased from remained stable between 2008-2012 (47.2% in 2008 to 47.4% in 2012). The percentage of short therapies is higher among men (<6 months: 61.7%; <3 months 49.4%) compared to women (<6 months: 57.7%; <3 months 46.1%). The highest percentages of short therapies (<6 months) can be observed among the younger age groups with ≥65% in the age groups younger than 30 years. There are no large differences for very short term therapy (<3 months) between regions: Flanders 47.1%; Wallonia (47.5%); Brussels (48.3%). There are large differences for patients of 65 years or older regarding the type of care they receive: no long-term care (48.6%); home care (41.8%); nursing homes (28.7%).

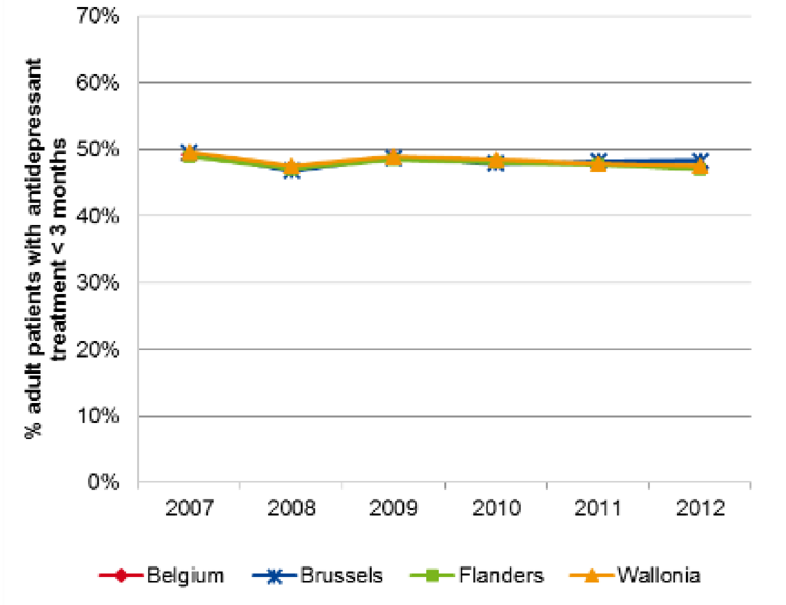
Table 57 – Percentage of adults with short-term antidepressants prescribed, by patient characteristics (2012)

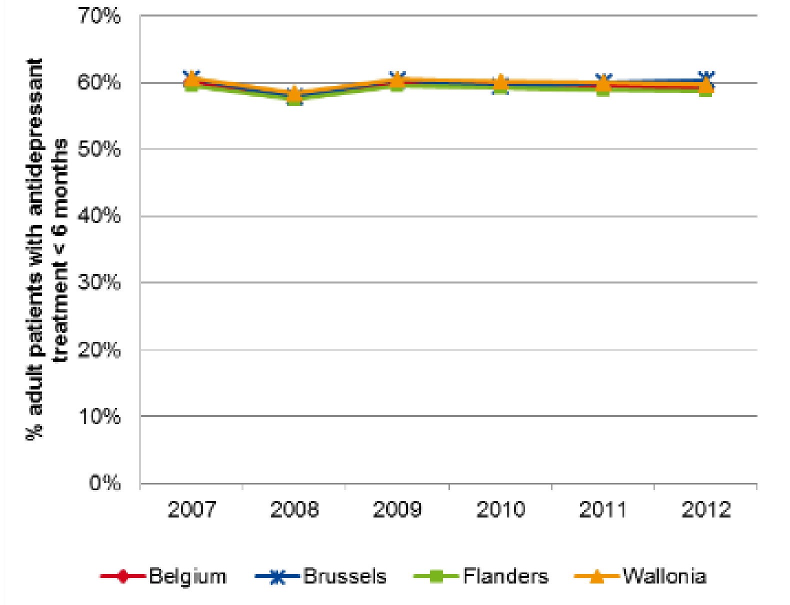
Variable	Category	Numerator (<3 months)	Numerator (<6 months)	Denominator	Percentage with antidepressants < 3 months	Percentage with antidepressants < 6 months
Data 2012 by categories						
Age (years)	18-19	2280	2900	4281	53.3%	67.7%
	20-24	8874	11 044	16 278	54.5%	67.8%
	25-29	11 478	14 347	21 858	52.5%	65.6%
	30-34	14 154	17 959	29 157	48.5%	61.6%
	35-39	15 833	20 106	33 520	47.2%	60.0%
	40-44	18 606	23 467	39 973	46.5%	58.7%
	45-49	20 429	25 649	43 212	47.3%	59.4%
	50-54	20 413	25 415	43 374	47.1%	58.6%
	55-59	18 211	22 514	37 989	47.9%	59.3%
	60-64	15 059	18 578	31 285	48.1%	59.4%
	65-69	12 924	15 949	26 901	48.0%	59.3%
	70-74	11 029	13 671	23 139	47.7%	59.1%
	75-79	11 188	13 955	24 781	45.1%	56.3%
	80-84	9874	12 252	22 649	43.6%	54.1%
	85-89	6127	7777	15 243	40.2%	51.0%
	90-94	2310	2986	5886	39.2%	50.7%
	95-99	400	534	986	40.6%	54.2%
	>=100	77	95	160	48.1%	59.4%
Gender	Female	120 272	150 477	260 770	46.1%	57.7%
	Male	78 994	98 721	159 902	49.4%	61.7%
Entitlement to increased reimbursement	No	150 882	188 796	316 457	47.7%	59.7%

Variable	Category	Numerator (<3 months)	Numerator (<6 months)	Denominator	Percentage with antidepressants < 3 months	Percentage with antidepressants < 6 months
	Yes	48 384	60 402	104 215	46.4%	58.0%
Long term care (65 years or +)	Home care	4266	5423	10 217	41.8%	53.1%
	Institutions	5149	7149	17 972	28.7%	39.8%
	no LT care	44 514	54 647	91 556	48.6%	59.7%
Province	Antwerpen	25 783	32 258	55 117	46.8%	58.5%
	Brabant Wallon	7190	9058	15 929	45.1%	56.9%
	Bruxelles-Capitale	18 526	23 170	38 395	48.3%	60.3%
	Hainaut	32 160	40 022	65 035	49.5%	61.5%
	Limburg	14 514	18 074	30 366	47.8%	59.5%
	Liège	22 291	28 351	48 213	46.2%	58.8%
	Luxembourg	4480	5699	9890	45.3%	57.6%
	Namur	11 410	14 333	24 110	47.3%	59.4%
	Oost-Vlaanderen	24 398	30 218	51 423	47.4%	58.8%
	Vlaams Brabant	17 256	21 447	37 533	46.0%	57.1%
	West-Vlaanderen	21 258	26 568	44 661	47.6%	59.5%

Source: IMA data, KCE calculation.

Figure 85 – Short-term antidepressant use per region: treatment < 3months and treatment < 6months (2006-2013)





Source: IMA data, KCE calculation.

Key points

- **The prescription of antidepressant medication increased from 42 DDDs/1000 inhabitant in 2002 to 71 DDD per 1000 inhabitant in 2012, with large differences between regions (higher in Wallonia than in Brussels and Flanders).**
- **The same increasing trend is observed in all European countries. With 71 DDDs / 1000 pop, Belgium is above the European average of 65 DDDs / 1000 inhabitants.**
- **Yet, the number of adults with antidepressant medication increased only from 12.3% in 2006 to 13.4% in 2012 but with the same large variation between regions (higher in Wallonia than Brussels and in Flanders, but decreasing in Wallonia and Brussels).**
- **Especially among the elderly receiving long-term care the percentage of persons with antidepressants is high: 37.5% in home care and 47% in nursing homes.**
- **A high percentage of adults receive only antidepressant therapy for very short periods (<3 months): 47.4% in 2012 which is stable since 2008 (47.2%).**

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8.7. Prescription of anti-cholinergic anti-depressant drugs among the elderly (MH-9)

8.7.1. Documentation sheet

Description	% of persons age 65+ years prescribed antidepressants using an anticholinergic anti-depressant drug
Calculation	Numerator: Number of persons aged 65+ prescribed an anti-cholinergic anti-depressant drug Denominator: Number of persons aged 65+ prescribed anti-depressants
Rationale	While elderly individuals can be treated effectively with antidepressant medications, they are at greater risk of adverse drug reactions due to the physiological changes associated with the aging process. In particular, anti-depressants with strong anti-cholinergic effects (e.g., imipramine, amitriptyline and doxepin) are not recommended for ongoing use in the elderly as they can cause orthostatic hypotension, sedation and confusion. Use of these agents has been associated with high rates of adverse effects, including falls, among elderly patients. The health system has considerable influence over this indicator, as it is treatment-based. The appropriateness of prescribing behaviours by clinicians within the health system can be increased through education and training and the use of guidelines.[1,2]
Data source	IMA data (KCE calculation)
Technical definitions and	The medications studied are classified in the following ATC classes (level 3 or 4): • Anti-depressant: N06A • Anti-cholinergic anti-depressant: IMIPRAMINE (N06AA02); CLOMIPRAMINE (N06AA04); AMITRIPTYLINE (N06AA09) ;NORTRIPTYLINE (N06AA10);DOXEPINE (N06AA12); DOSULEPINE (N06AA16);. • The following drugs have also also anti-cholinergic effects, but are not available in Belgium: DESIPRAMINE (N06AA01); IMIPRAMINE OXIDE (N06AA03);TRIMIPRAMINE (N06AA06);PROTRIPTYLINE (N06AA11) ;AMOXAPINE (N06AA17)
Limitation	Farmanet does not include hospital pharmacies.
International comparability	Included in set that is proposed by the OECD (not yet implemented). An OECD-survey [3] about information availability survey found that of the 18 countries where information availability for measuring and comparing quality of mental health care was assessed, 9 could provide this indicator. However, there is no consensus about an operational definition and data are not yet benchmarked. In a study about prescription behaviour in primary care highly anticholinergic drugs were defined as AMITRIPTYLINE (N06AA09); CLOMIPRAMINE (N06AA04); DOXEPINE (N06AA12); IMIPRAMINE (N06AA02); Maprotoline (polycyclic derivate).[4] Another study labelled anticholinergic antidepressants as AMITRIPTYLINE (N06AA09); IMIPRAMINE (N06AA02); DOXEPINE (N06AA12); TRIMIPRAMINE (N06AA06); NORTRIPTYLINE (N06AA10); PROTRIPTYLINE (N06AA11); AMOXAPINE (N06AA17); Maprotoline (polycyclic derivate) CLOMIPRAMINE (N06AA04).[5]
Dimension	Quality –appropriateness of prescribing medication in mental healthcare ; safety

8.7.2. Results

In 2013 15.7% of the persons aged 65+ under anti-depressants were prescribed anti-cholinergic anti-depressants, which is a substantial decrease since 2002 when this was still 20.5%. The percentages are highest for persons without long-term care (17.7%) compared to persons receiving care in nursing homes (8.6%) or home care (14.9%).

The percentages (year 2013) differ per region: Flanders (18.6%); Wallonia (12.2%); Brussels (12.4%). Brussels recently increased since 2011(11.5%).

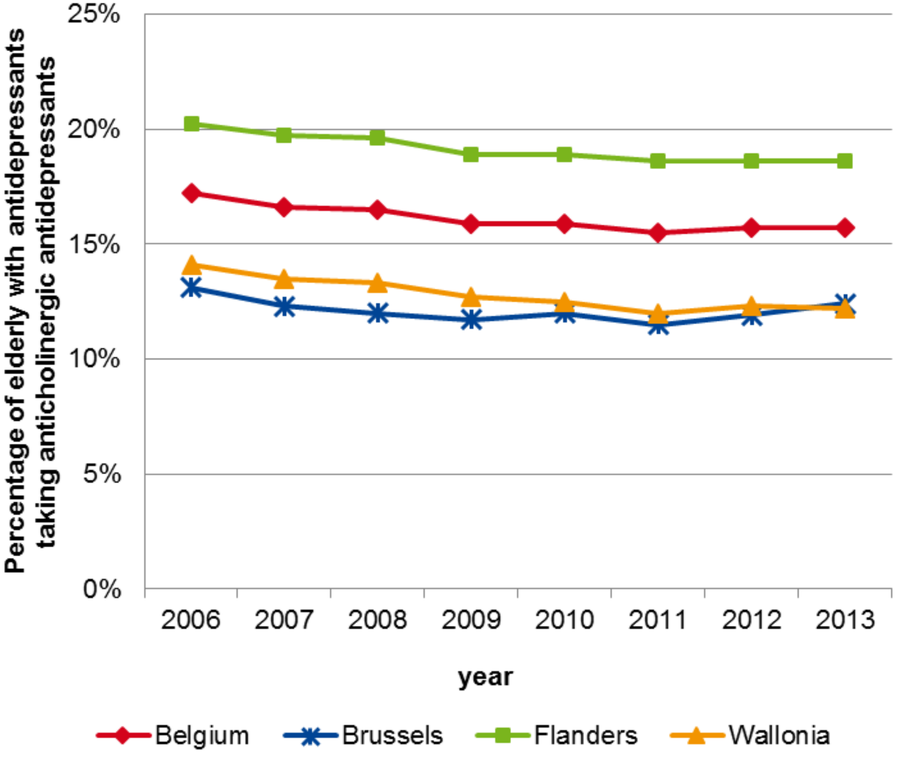
Benchmarking Belgian results with results presented in international papers is difficult due to differences in operational definitions. In the study of van Eijk et al. (2000), for instance, the prevalence of the prescription of anticholinergic drugs among elderly >69 years) was 4.13% and 3.68% in 1994 and 1995 respectively. However, the operational definition used by these authors was different than the definition used for the current report. [6]

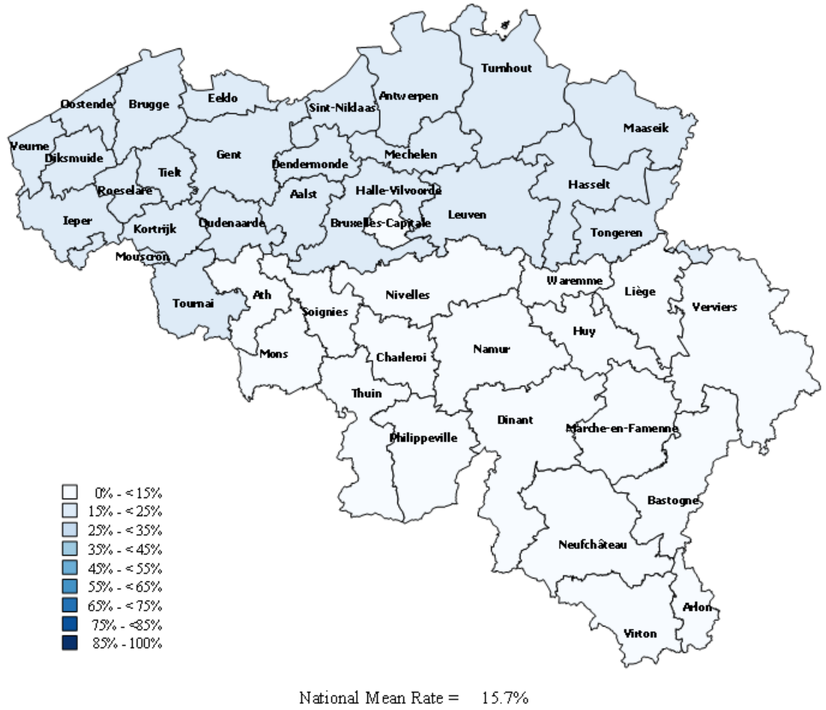
Table 58 – Percentage of elderly with antidepressants taking anticholinergic antidepressants, by patient characteristics (2013)

Variable	Category	Numerator (with N06AA)	Denominator (with N06A)	Percentage with anticholinergic antidepressants
Data 2013 by categories				
Age (years)	65-69	16 412	94 869	17.3%
	70-74	14 159	75 458	18.8%
	75-79	14 300	81 801	17.5%
	80-84	11 281	77 196	14.6%
	85-89	6110	54580	11.2%
	90-94	2222	25 095	8.9%
	95-99	299	3942	7.6%
	>=100	40	690	5.8%
Gender	Female	45 645	290 094	15.7%
	Male	19 178	123 537	15.5%
Entitlement to increased reimbursement	No	40 408	256 276	15.8%
	Yes	24 415	157 355	15.5%
Home care	Home care	5636	37740	14.9%
	Institutions	6950	80810	8.6%
	no LT care	52 237	295 081	17.7%
Province	Antwerpen	9042	53 398	16.9%
	Brabant Wallon	1995	16 827	11.9%
	Bruxelles-Capitale	4201	33 958	12.4%
	Hainaut	7858	56 910	13.8%
	Limburg	5250	28 044	18.7%
	Liège	5207	48 593	10.7%
	Luxembourg	1111	11 251	9.9%
	Namur	2947	23 056	12.8%
	Oost-Vlaanderen	9933	51 843	19.2%
	Vlaams Brabant	6712	38 755	17.3%
	West-Vlaanderen	10 567	50 996	20.7%

Source: IMA data, KCE calculation.

Figure 86 – Patients aged 65+ with antidepressants taking anticholinergic antidepressants per Region (2006-2013) and per district (2013)





Source IMA data, KCE calculation.

Key points

- **During the last 10 years the Belgian prescription of anti-depressants known for their anticholinergic side-effects for elderly (≥65 years) is decreasing (from 20.5% in 2002 to 15.7% in 2013, stabilizing the last 3 years).**
- **The percentages are higher in Flanders (18.6%) compared to Wallonia (12.2%) and Brussels (12.4%).**

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8.8. Number of hospitalisations days in psychiatric hospital wards per capita (MH-10)

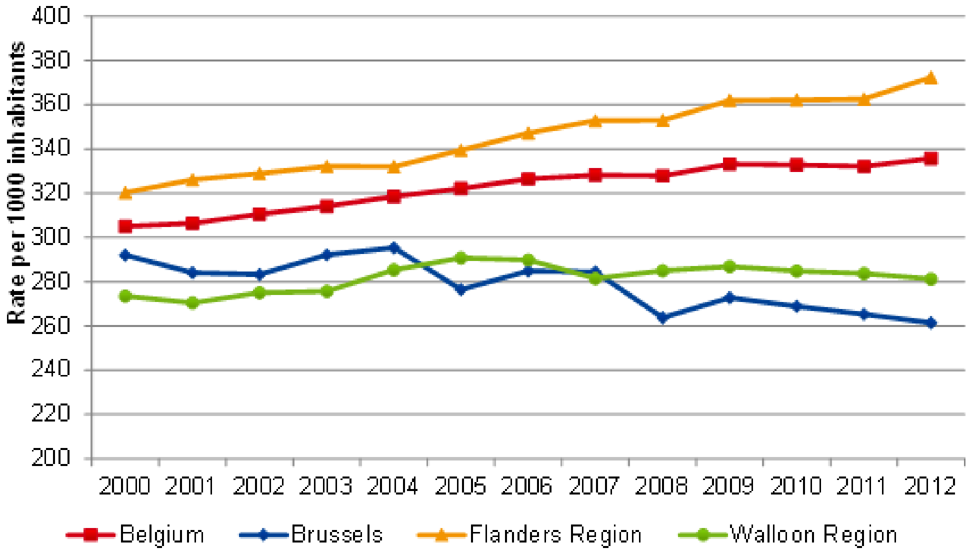
8.8.1. Documentation sheet

Description	Number of hospitalisations days in psychiatric hospital per capita
Calculation	**Numerator**: Number of hospitalisation days in psychiatric hospital or in psychiatric services of general hospital with at least one overnight. **Denominator**: Mid-year Belgian population
Rationale	This indicator provides contextual information on the utilization of mental healthcare services outside ambulatory setting. It may reflect differences between regions, such as the health of the population, differing health service delivery models and variations in the availability and accessibility of specialized, residential and/or ambulatory and community-based services. We acknowledge that monitoring psychiatric hospital service use captures only a relatively small proportion of individuals who require mental healthcare services. However, in Belgium (like in other Western countries) recent reforms (e.g. art 107 projects) in mental healthcare aim to shift the organisation of mental healthcare from a model that was based on 'large isolated institutions' towards a balanced care model. This implies that care is offered and delivered as close as possible to the patient's living environment, and only if necessary in an institution. As such, one may expect a decreasing trend of psychiatric hospitalisation days.[1]
Primary Data source	RPM from FPS Public Health Period 2000-2012
Periodicity	Yearly
Technical definitions and limitations	The **number of days** is calculated as the discharge date – admission date. This implies that one-day stays are not included in the calculation. Data is reported based on the region of the patient's residence.
International comparability	This indicator is not included in standardised international indicator sets. A similar indicator (mental Illness Patient Days rate) is also monitored by the Canadian Health Agency.[2]
Dimensions	Quality (Appropriateness)

8.8.2. Results

The number of psychiatric hospitalisation days per 1 000 inhabitants increased from 304/1 000 in 2000 to 336/1 000 in 2012. The increase is steepest for Flanders (from 320/1 000 in 2000 to 363/1000 in 2012 or +12%), while in Wallonia this increase is less pronounced (from 274/1 000 in 2000 to 284/1 000 in 2012 or +3.5%). In Brussels, the trend is even decreasing (from 292/1 000 in 2000 to 261/1 000 in 2012 or -11%).

Figure 87 – Number of hospitalization days in Psychiatric hospital or in Psychiatric services in general hospital per 1000 capita, by patient region (2000-2012)



Source: SPF Public Health Institute (MPG – RPM)

Key points

- **Despite recent reform efforts aiming to make a shift from inpatient mental health care towards ambulatory alternatives the number of psychiatric hospitalization days increased from 304/1 000 in 2000 to 336/1 000 in 2012. There are large differences between regions: a steep increase in Flanders; a slight increase in Wallonia and a decrease in Brussels.**

References

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9. LONG-TERM CARE FOR ELDERLY

9.1. Elderly population receiving long-term care, either in nursing/residential facility, either at home (LT-1 and LT-2)

9.1.1. Documentation sheet

Description	Proportion of population aged 65 years and over receiving long-term care, in institution or at home
Calculation	Numerator: total number of recipients of long-term care, in elderly or nursing homes, or at home Denominator: total population aged 65+
Rationale	Demographic ageing of the population in the coming decades is expected to have significant implications on the future needs and use of long-term care (LTC). According to the demographic projections made by the Belgian Federal Planning Bureau, the share of older persons in the total population (aged 65 or older) is expected to rise from around 17% in 2010 to 21% in 2025 and almost 26% in 2050. Unless radical shifts occur in the prevalence of age-related disability, these demographic trends will translate in growing numbers of older people in need of help with their activities of daily living, either at home or in residential care facilities.[1] Monitoring the evolution over time of the share of population being recipients of long-term care is thus an indicator of the sustainability of the long-term care component of the health system.
Data source	IMA data
Technical definitions	In the residential sector, **homes for the elderly**[bb] provide nursing and personal care as well as living facilities to older persons with mainly low to moderate limitations. Older persons who are strongly dependent on care but who do not need permanent hospital treatment are admitted to **nursing homes**[cc]. Each nursing home has to have a functional link with a hospital.[1] Eligibility for residential care, or more precisely the level of care covered by the public health insurance scheme, depends on the degree of care dependency, and is evaluated using the same criteria as in home nursing (6 activities of daily living (ADL) items and disorientation in time or space, see below). While medical costs and costs of care in residential care facilities are covered by public health insurance, board and lodging costs are to be paid by the resident.[1]

[bb] Dutch: **woonzorgcentra** (previously called rustoorden voor bejaarden -ROB)
French: **maison de repos pour personnes âgées** (MRPA)

[cc] Dutch: **rust-en verzorgingstehuis** (RVT)
French: **maison de repos et de soins** (MRS)

Table A6.1: Scale of disability used by Belgian NIHDI to determine dependency. Part B: Categories.

Category	Level of physical dependence*		Level of mental dependence*
O	No dependence	AND	No dependence
A	Dependent in washing and/or dressing	OR	Disoriented in time and space, but physically independent
B	Dependent in washing and dressing, AND dependent for moving and/or going to the toilet	OR	Disoriented in time and space, AND dependent in washing and/or dressing
C	Dependent in washing and dressing, AND dependent for moving and going to the toilet AND dependent for incontinence and/or eating	AND	No dependence
Cdement	Dependent in washing and dressing, AND dependent for moving and going to the toilet AND dependent for incontinence and/or eating	AND	Disoriented in time and space

** A score of 3 or 4 on an item is regarded as 'being dependent' or 'being disoriented'*
Source: Rijksinstituut voor Ziekte en Invaliditeitsverzekering (no date), Dienst voor geneeskundige verzorging, Richtlijnen bij het gebruik van de evaluatieschaal, van toepassing vanaf 2006, Brussels, document.

Source : [1]

The following lump sums are used in residential care: 763011-763571, 763711-763755, 764094-764190, 764315-764455, 764610-764794.

Home care per diem fees are based on the same dependency scale: :
- Lump sum A (425272, 425670, 426075)
- Lump sum B (426090, 425692, 425294)
- Lump sum C (426112, 425316, 425714)

International comparability	This indicator is reported by OECD Health Statistics. As several countries use slightly different methodologies, results are not completely comparable. No results were reported for Belgium in the 2013 edition of Health at a Glance.[2]
Dimensions	Sustainability of long-term care
Related indicators	Informal carers

9.1.2. Results

In 2013, a total of 13.3% of the population aged 65 years and over was receiving long-term care, either in residential care (8.4%), or at home (4.9%). In all regions a higher proportion of the elderly received residential care compared to home care, however the (proportional) share between both care services differed between the regions with the highest rates of residential care and the lowest rates of home care found in Brussels (see Figure 88). There are also differences within the regions (see Figure 90).

A slight increase in the use of long-term care can be seen between 2006 and 2013, in all regions and both for residential care and for home care (see Figure 89).

The proportion of the population aged 65 years and more receiving long-term care in residential care is, as one could expect, highly dependent on the age (1% in pop 65-69 years old, but above 40% in population aged 90 years old), the gender (11% of women, 5% of men), and the preferential reimbursement entitlement (15.8% of recipients) (see Table 59). The same trends are observed for recipients of long-term care at home, but with less pronounced differences (see Table 59).

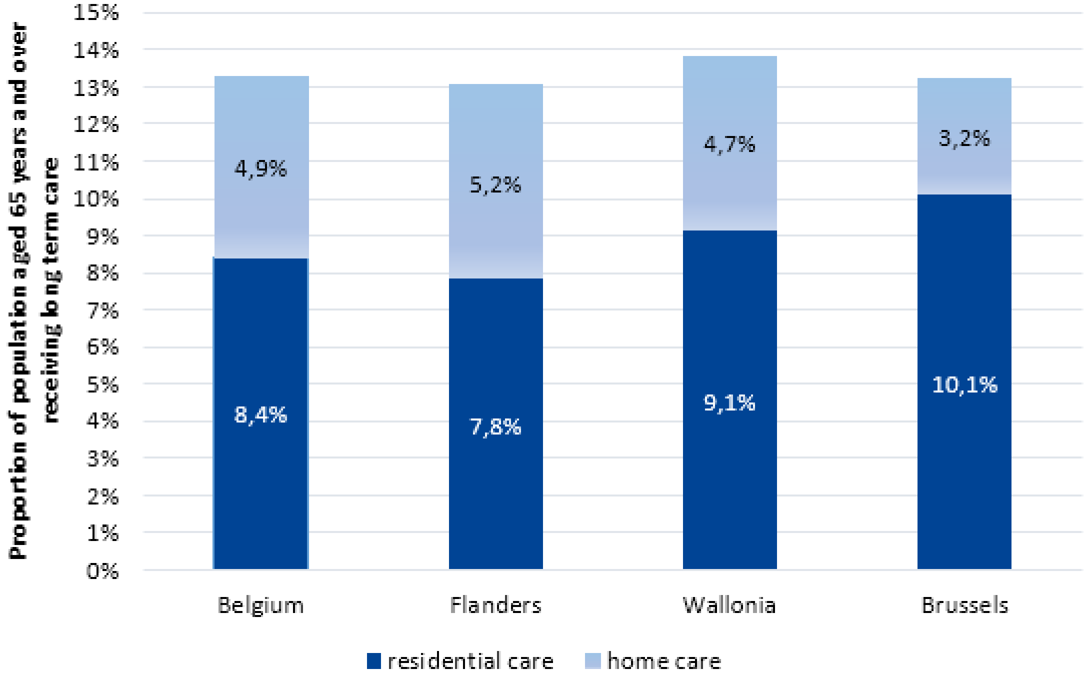
In the last edition of OECD 2013 Health at a Glance, no data were reported for Belgium (see Figure 91).[2] Comparison is thus misleading because of potential differences in methodologies.

Table 59 – Proportion of population aged 65 years and over receiving long-term care (residential care vs home care) by patient characteristics (2013)

Variable	Category	Numerator (institution)	Numerator (Home care)	Denominator	Proportion in institution	Proportion receiving home care
Data 2013 by categories						
Age (years)	65-69	5788	8132	575 026	1.0%	1.4%
	70-74	8473	10 641	423 622	2.0%	2.5%
	75-79	18 084	17 854	403 799	4.5%	4.4%
	80-84	37 710	25 995	335 776	11.2%	7.7%
	85-89	52 239	23 591	207 445	25.2%	11.4%
	90-94	39 185	12 127	89 911	43.6%	13.5%
	95-99	8925	2052	14 510	61.5%	14.1%
	>=100	2142	408	3019	71.0%	13.5%
Gender	Female	128 013	66 881	1 167 626	11.0%	5.7%
	Male	44 533	33 919	885 482	5.0%	3.8%
Entitlement to increased reimbursement	No	74 217	46 289	1 432 315	5.2%	3.2%
	Yes	98 329	54 511	620 793	15.8%	8.8%
Province	Antwerpen	26 982	12 579	340 131	7.9%	3.7%
	Brabant Wallon	5472	2268	69 733	7.8%	3.3%
	Bruxelles-Capitale	15 808	4931	156 497	10.1%	3.2%
	Hainaut	22 372	15 431	239 647	9.3%	6.4%
	Limburg	9754	13 051	155 668	6.3%	8.4%
	Liège	18 940	6426	198 216	9.6%	3.2%
	Luxembourg	3848	1646	44 808	8.6%	3.7%
	Namur	7670	4146	85 908	8.9%	4.8%
	Oost-Vlaanderen	24 823	15 212	287 147	8.6%	5.3%
	Vlaams Brabant	16 042	8872	209 530	7.7%	4.2%
	West-Vlaanderen	20 835	16 238	265 823	7.8%	6.1%

Source: IMA data, KCE calculation.

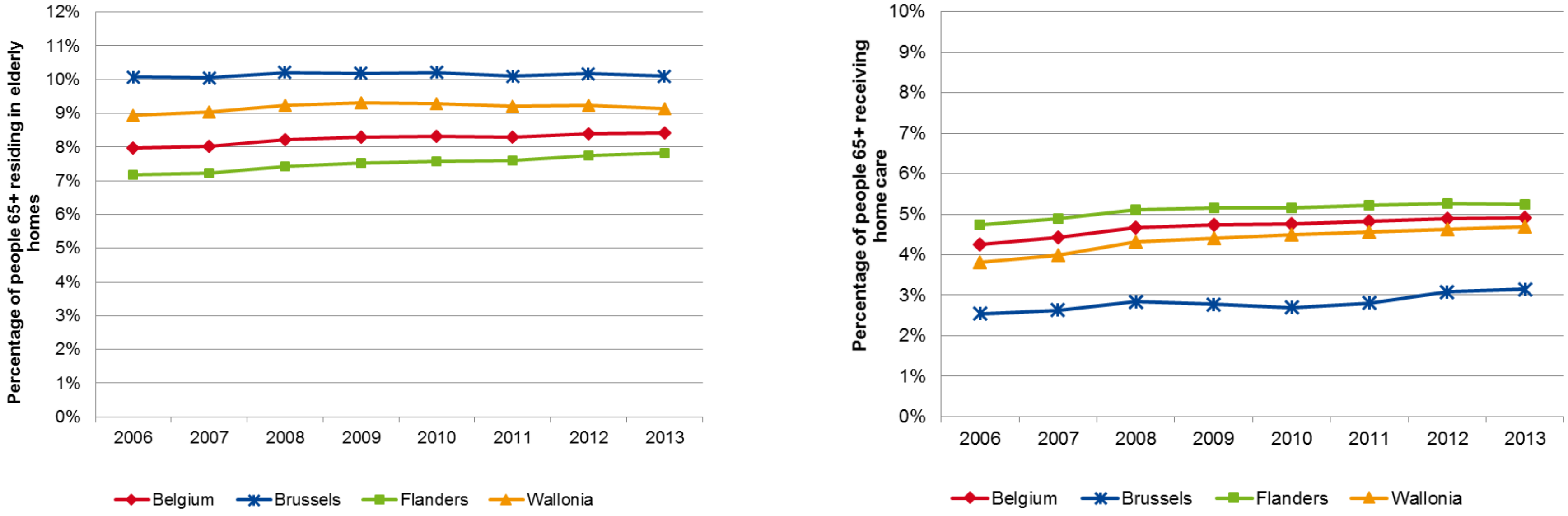
Figure 88 – Proportion of population aged 65 years and over receiving long-term care (residential care vs home care), by patient and by region (2013)



Source: IMA data, KCE calculation

Figure 89 – Proportion of population aged 65 years and over receiving long-term care (residential care vs home care), by region (2006-2013)

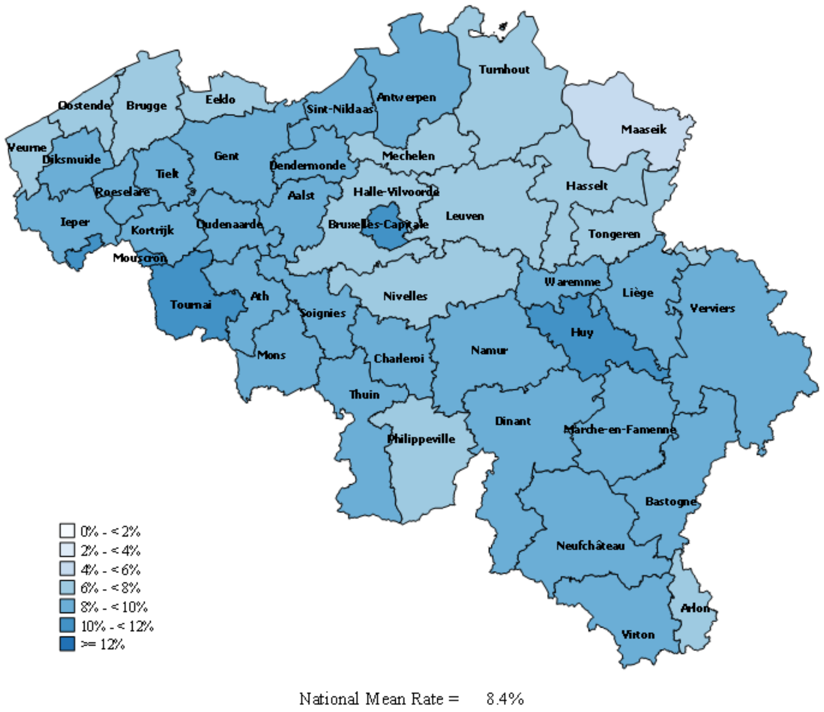
Long-term care in residential care (A) **Long-term care at home (B)**



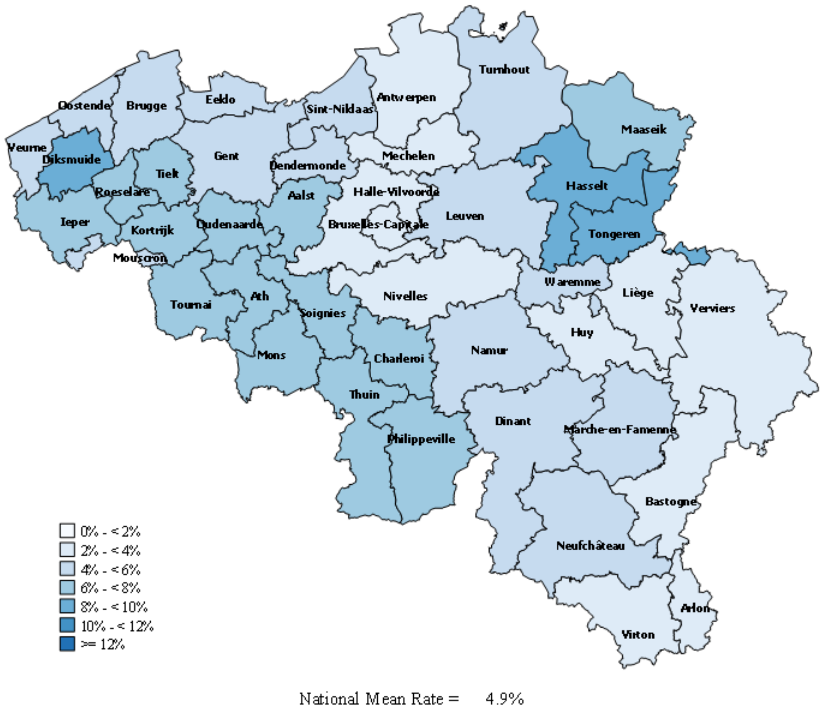
Source: IMA data, KCE calculation

Figure 90 – Proportion of population aged 65 years and over receiving long-term care (residential care vs home care), by patient district (2013)

Long-term care in residential care (A)

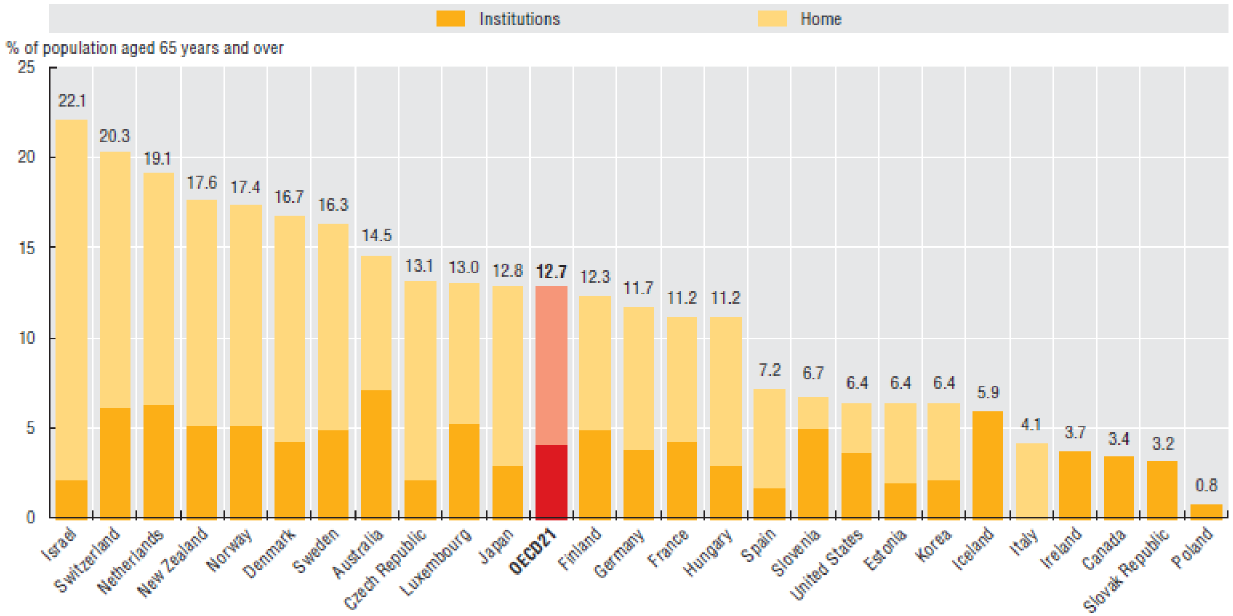


Long-term care at home (B)



Source: IMA data, KCE calculation

Figure 91 – Percentage of population (aged 65 years or older) recipient of long-term care in residential facilities: international comparison (2011)



Source: [2]
Note: no data for Belgium

Key points

- **A total of 13.3% of population aged 65 and over received long-term care in 2013: 8.4% in residential care and 4.9% at home.**
- **There is a rather wide gap between Flanders and Wallonia/Brussels concerning the number of beds in homes for the elderly, and consequently the share of population residing in a residential care service or at home. Percentages of elderly institutionalized are higher in Wallonia and Brussels than in Flanders.**

9.2. Informal carers (LT-3)

9.2.1. Documentation sheet

Description	Proportion of persons reporting to be informal carers
Calculation	In HIS Numerator: population aged 15 and over reporting to be informal carers Denominator: population aged 15 and over (included in HIS) In SHARE survey Numerator: population aged 50 and over reporting to be informal carers Denominator: population aged 50 and over
Rationale	Informal carers (or family carers) are an important component in the long-term care process. They are defined as people providing daily or weekly help to family members, friends and people in their social network living in their household or outside of the household who require help for Activities of Daily Living (ADL) and Instrumental Activities of Daily Living (IADL).[2] The number of working-age and older informal carers is estimated to decrease in the coming decades, as a result of declining family size, changes in residential patterns of people with disabilities and rising participation rates of women in the labour market. The provision of high-intensity care by a lower number of informal carers and the lack of support for these informal carers might exacerbate employment and health inequalities.[2]
Data source	There are two data sources for this indicator: • HIS 2013 for Belgian (and regional) data.[3] • SHARE surveys (Survey of Health, Ageing and Retirement in Europe)[4] for Belgian data and international comparison
Technical definitions	For the detailed questionnaire of the surveys, see references SHARE and HIS.
International comparability	This indicator was reported in the OECD Health at a glance, 2013[2] but not in the 2014 edition
Dimensions	Sustainability of long-term care
Related indicators	Proportion of elderly people receiving long-term care (residential care or home care)

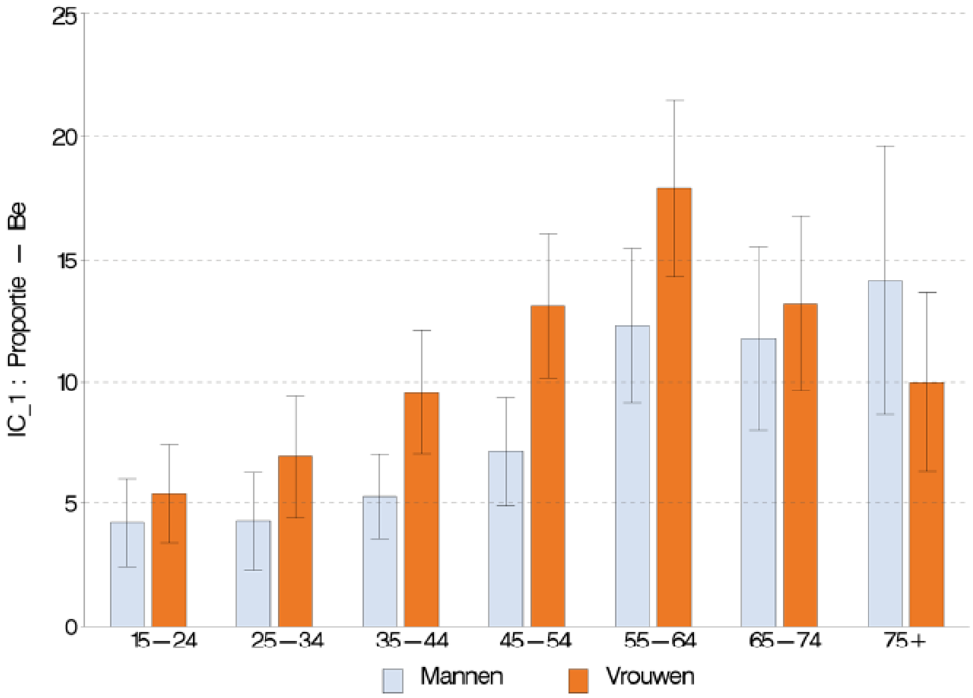
9.2.2. Results

HIS

In the most recent Health Interview Survey (HIS) of the Scientific Institute of Public Health[3] a chapter is for the first time dedicated to the number of informal caregivers and the time spent to informal care. In the survey the definition from the European Health Interview Survey is applied (i.e. the provision of help in ADL activities or personal care at least once a week). In contrary to the OECD data, the age limit is set on 15 years and older instead of 50 years and older. Overall, 9% of the Belgian population indicated to be informal carer. The percentage of informal carers increases over the ages until the age group of 55-64years (up to 15%) and is significantly higher in women (11%) compared to men (8%) (even after correction for age) (see Figure 92). No relationship could be found between educational level and the number of informal caregivers. The analysis per region revealed a higher percentage of informal carers in Brussels (18%)

compared to the Flemish region and French region (both 8%). In 4% of the informal carers the care is provided to a member of the same household or to a family member that is not part of the household, in 2% care is provided to a person that is nor a family member or member of the household. Questioning the time spent on informal care revealed that 63% of the informal carers spent less than 10 hours per week on the provision of informal care, 18% spent 10 to 19 hours per week and 20% spent more than 20 hours per week. The time spent on informal care increased significantly over the ages. Nevertheless the higher number of informal carers in Brussels compared to the two other regions, not more time is spent on the provision of informal care. The proportion of informal carers providing care at least 20 hours per week was the highest in the Flemish region.

Figure 92 – Percentage of the Belgian population (15 years and older) that provided at least once a week non-professional care differentiated for age and sex (2013)



Source: HIS 2013[3]

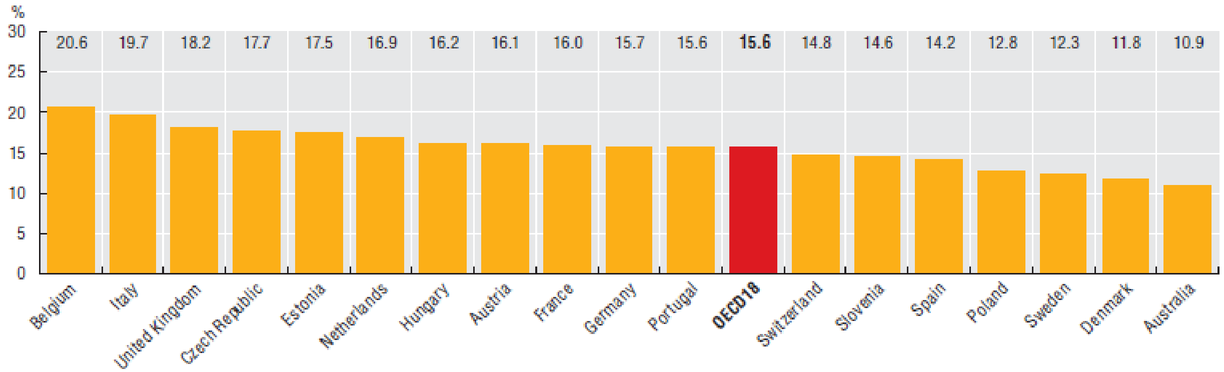
SHARE survey

Since 2007, the Belgian average proportion of informal carers, aged 50 and older, increased from 12.1% [5] to 20.6% (2010 data, based on SHARE survey). Whereas the Belgian average in 2007 was slightly higher than the overall average of the OECD-countries (12.1% vs 11.7%), in 2010 the Belgian proportion was the highest of the OECD-countries (20.6% vs 15.6%) (see Figure 93). The large variation between countries (ranging from 10.9% in Sweden to 20.6% in Belgium) can be explained by the provision of informal care by more formal long-term care providers: a more developed provision of formal care is associated with a lower rate of informal carers.

Most informal carers are women (59.8% in Belgium vs 62.3% average OECD-17) and the majority of the informal carers provide care on a daily basis (in Belgium 61% of carers on daily basis and 31% of carers on a weekly basis vs in OECD-16 66% of carers on daily basis and 34% on weekly basis).

The increase in proportion of informal carers in Belgium is a strength for the Belgian health system, however this kind of caregiving is also associated with a reduction in labour force attachment for caregivers of working age, higher poverty rates, and a higher prevalence of mental health problems.[5] One of the support measure in Belgium to encounter these potential barriers is the paid care leave. More information on the support measures for informal caregivers in Belgium can be found in a recent KCE report on the support for informal givers.[6]

Figure 93 – Population aged 50 and over reporting to be informal carers: international comparison (2010)



Source: OECD 2013[2].
Note: OECD estimates based on 2011 HILDA survey for Australia, 2009 BHPS survey for the United Kingdom and 2010 SHARE survey for other European countries.

A report by the European Commission on long-term care: need, use and expenditure in the EU-27[7] identified two dimensions which determine the future trend in the provision of informal care, i.e. the availability of potential informal carers and the propensity to provide care. An indication of a future potential shortage is the decreasing number of carers in contrast to the increasing numbers of dependents. This trend is also illustrated with the dependency ratios as measures of pressure on the economic productive population, calculated as an age-population ratio of the so-called “dependent” (i.e. not in the labour force) and the “productive”. The total ratio will increase by half between 2010 and 2060, will double in 65+y to the 20-64y and even triple in the 80+y to the 20-64y. Other key variables affecting the future availability of potential informal cares are the number of children living around the elderly and the future numbers of people living with their spouses. The propensity to provide care can also be affected by the increasing labour participation rates and labour supply, resulting in an expected decreasing availability for informal care. In contrary to the increased proportion of informal caregivers between 2007 and 2010 in Belgium, a shift towards more formal care is expected due to demographic and economic changes in society.

Key points

- **In the HIS 2013, 9% of the Belgian population aged 15 and older declared to provide informal care. The number of informal carers is the highest in the age group 55-64years (15%), which is slightly lower than the data from the 2010 Survey of Health, Ageing and Retirement in Europe (SHARE survey).**
- **In the 2010 SHARE survey, Belgium has the highest proportion of population declaring to be informal carer (20.6%, compared to OECD-18 average of 15.6%). In 2007, this proportion was only 12%.**
- **Significantly more women are informal carers (2010 SHARE survey and Health Interview Survey 2013).**
- **Nevertheless the higher number of informal carers in Brussels compared to the two other regions, not more time is spent on the provision of informal care.**
- **In the future, due to a decreasing number of informal carers versus an increasing number of dependents, a shift towards more formal care can be expected.**
- **Several policy initiatives are needed to counter this shift and to facilitate informal care, such as financial incentives, initiatives to counter the mental health problems in informal carers etc.**

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9.3. Fall incidents in the elderly (LT-4)

9.3.1. Documentation sheet

Description	Percentage of residents who had a fall during the last 30 days (data from Flemish quality indicators in homes for the elderly)
Calculation	Numerator: number of residents who had at least one fall during the month of May 2013 Denominator: total number of residents in the month of May 2013
Rationale	Fall incidents are a common cause of morbidity and mortality in elderly. Persons who fell once, have an increased risk on future fall incidents. It is estimated that one in 10 falls result in a hip fracture or other severe injury, which often lead to functional impairment and even death.[1-3] The recovery from a fall is strongly related to the functional status of the elderly before the fall.[4] The European Injury Database (IDB) showed that falls are a major cause of death (28%) in older people (60+y), particular in women. Fall injuries lead also to a higher than average hospitalisation rate and an excess share in medical costs due to injuries in this age group.[5] Due to the ageing of the population, the incidence of falls will increase with the related increase in injuries and costs for health care. The standardized assessment of risk factors related to fall incidents is part of the health promotion and fall prevention. Since the absence of Belgian data on this indicator during the elaboration of the KCE report of 2012, the results in this report are restricted to single measurements, performed in 2013. In the future the data collection on this indicator will be formalized and implemented, which will facilitate the analysis on evolution over time. In Belgium a pilot project (the BelRAI) is ongoing but is not yet nationally implemented in all care settings. (http://wiki.belrai.org/nl/)
Data source	HIS 2013[6] Flemish quality indicators in nursing homes also survey this indicator[7]
Technical definitions	See questionnaire from HIS and from Flemish quality indicator projects.
International comparability	In the OECD long-term care quality project the indicator on the incidence of falls and fall-related fractures is proposed as example of a quality outcome on user safety.[8]
Dimensions	Quality (safety)
Related indicators	Prevalence of malnutrition by elderly (BMI <19)

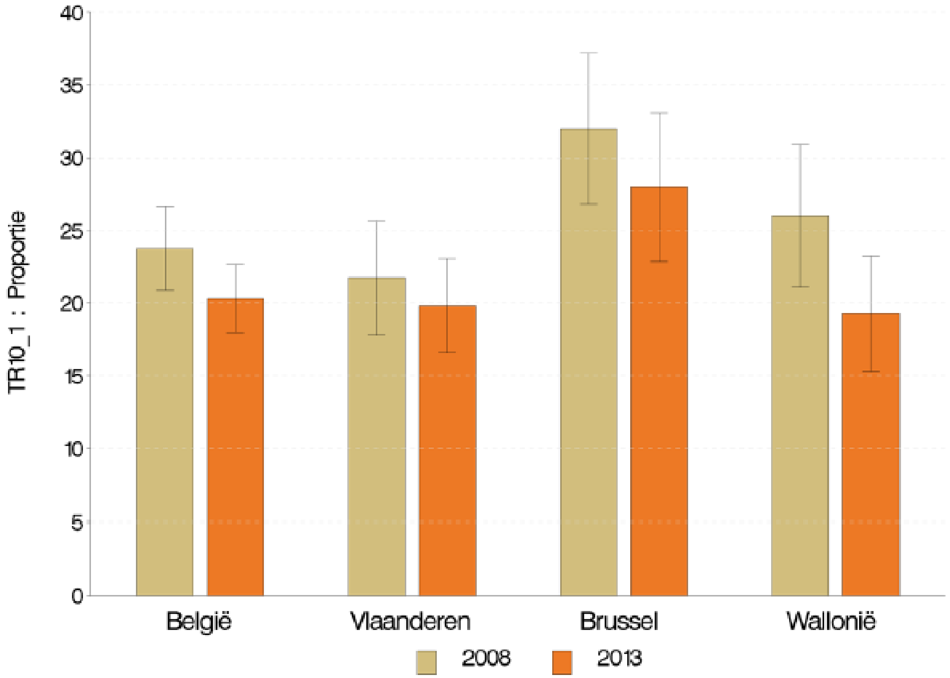
9.3.2. Results

Two sources of Belgian data on the number of fall incidents in the elderly were found, i.e. the Health Interview Survey 2013[6] and the Flemish project on quality indicators in homes for the elderly.[7]

The most recent Health Interview Survey of the Scientific Institute for Public Health reported that in the 12 months preceding the interview 20% of the elderly (65+ years) had a fall with an average frequency of two times during that year.[6] The following Figure 94 shows a slight but non-significant decrease in fall incidents between 2008 (24% previous version of the HIS) and 2013 overall in Belgium (and in all regions). The differences between the regions kept remained, with a significant higher incidence of fall incidences in the Brussels region (28% vs 19% in the Flanders and in Wallonia).

The average frequency has decreased (non-significantly) from 3 to 2 times. In 2013, no differences in number of fall incidents and frequency were found between men and women. In the HIS report more results are presented on socio-economic characteristics (education level, urbanization) related to fall incidents and which preventive measures are taken by the interviewees.

Figure 94 – Percentage of the Belgian population (65 years and older) with a fall incident in the past 12 months, by region (2008, 2013)



Source: HIS 2013[6]

The above-mentioned results are potentially biased by the methodology behind the HIS (self-reporting questionnaire on the past 12 months), which could imply an underestimation of the real prevalence of fall incidences.

Within the Flemish project on quality indicators in homes for the elderly, two indicators were identified on fall incidents in residents:

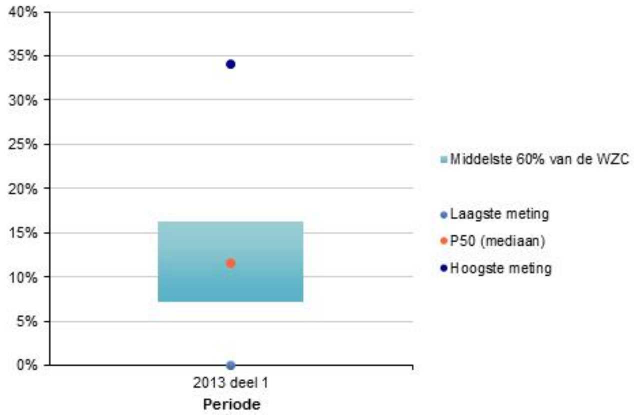
- Number of residents with at least one fall incident compared to total number of residents in nursing homes
  In May 2013, 733 nursing homes (95.8%) registered the number of falls during one month. On a total of 70 823 residents, 11.91% had a fall incident (see Figure 95).

- Number of residents with at least two fall incidents compared to the total number of residents in nursing homes
  In May 2013, this indicator was measured in 63 259 residents of which 3.02% had two or more fall incidents in the past month (see Figure 95).

Figure 95 – Percentage of residents with one or more fall incident or with two or more fall in the past month (2013)

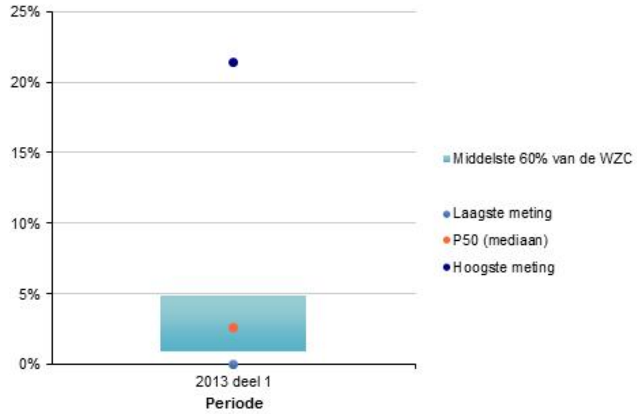
Residents with one or more fall incident

Gemeten in mei	2013
Laagste registratie	0,0%
P20	7,1%
P50 (mediaan)	11,5%
P80	16,3%
hoogste registratie	34,0%



Residents with two or more fall incidents

Gemeten in mei	2013
Laagste registratie	0,0%
P20	0,9%
P50 (mediaan)	2,6%
P80	4,9%
Hoogste registratie	21,4%



Source: Quality indicators in nursing homes[7]

Key points

- **The reported number of fall incidents decreased over time (24% in 2008 to 20% in 2013).**
- **Nevertheless a decrease in number of fall incidents in all regions, this number is still significanlty higher in the Brussels region.**
- **The number of fall incidents, measured by the Flemish project, is lower, but comparison with the Health Interview Survey data is not possible because the Flemish project focuses on elderly in nusging homes and reported fall incidents in the last month.**
- **Within the demographic evolution, more policy initiatives should be taken to prevent fall injuries in the elderly.**

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9.4. Pressure ulcers in long-term care facilities (LT-5)

9.4.1. Documentation sheet

Description	Incidence of pressure ulcers in residential care
Calculation	Numerator: number of residents with a pressure ulcer of category 2, 3, 4 or undetermined Denominator: total number of residents
Rationale	The occurrence of a pressure ulcer in a patient (hospitalized or in residential care) has a serious negative impact on the individual's health.[1] Pressure ulcers can be prevented with good quality nursing care.[2] Within the Flemish project on quality indicators in homes for the elderly, the occurrence of pressure ulcers is seen as an important quality indication for the nursing care.[3] In the future, the BelRAI will be nationally implemented and this indicator will be recorded in BelRAI-Long-term Care FacilitiesVerschuuren, 2012[4] and BelRAI-Home Care.[4]
Data source	One-time measurement within the Flemish project on quality indicators in homes for the elderly.[3]
Technical definitions	The severity of pressure ulcer can be categorized in: • Category 1: non- blanchable erythema • Category 2: partial thickness skin loss (blister/abrasion) • Category 3: full thickness skin loss (superficial pressure ulcer) • Category 4: full thickness tissue loss (deep pressure ulcer)
International comparability	This indicator is included in the set of OECD indicators in quality of long-term care. No results are currently available for Belgium.[5]
Related indicators	Incidence of pressure ulcers in hospitals.
Dimensions	Quality (Safety);

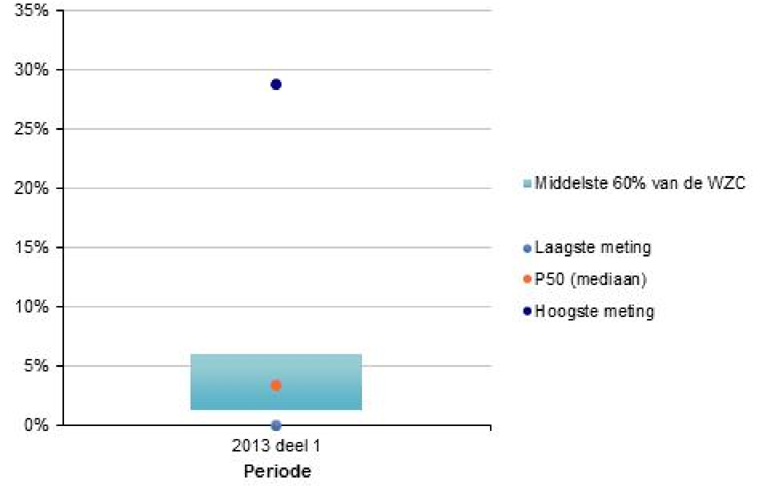
9.4.2. Results

In the Flemish Community, a registration of quality indicators in homes for the elderly has been set up and up to now the first registrations are analysed and presented on their website.[3] The registration of pressure ulcers is part of the set of quality indicators, with an optional measurement of the number of pressure ulcers which developed during a stay in a home for the elderly.

On the 20th of April 2013, 733 homes for the elderly (of the 765 homes for the elderly in total) registered the number of residents with a pressure ulcer category 2, 3, 4 or undetermined in 67 295 residents. In 3.97% of the residents a pressure ulcer of category 2, 3, 4 or undetermined was found (see Figure 96). This percentage is in line with the number of pressure ulcers in hospitals (see indicator on pressure ulcers in hospitals): a prevalence of 3-5% for categories 2 to 4.

Figure 96 – Percentage of residents with a pressure ulcer of category 2, 3, 4 or undetermined (2013)

Gemeten op 20 april	2013
Laagste meting	0,0%
P20	1,3%
P50 (mediaan)	3,3%
P80	6,1%
Hoogste meting	28,7%

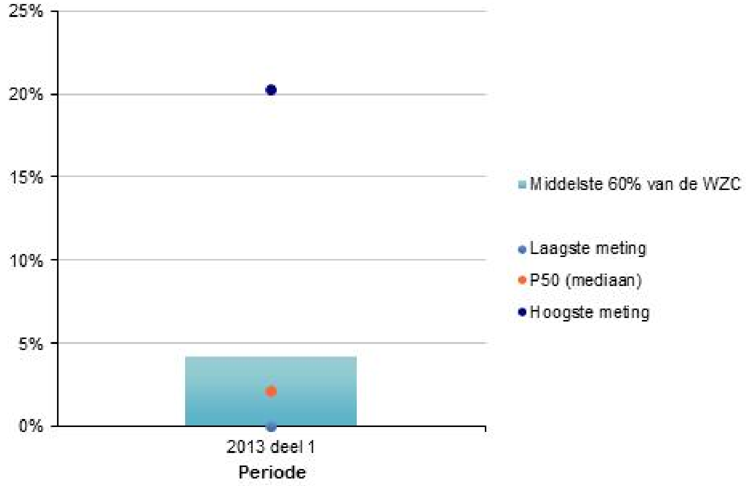


Source: Flemish quality indicators in homes for the elderly [3]

Next to the registration of the number of residents with a pressure ulcer, 658 homes for the elderly registered in 60 231 residents if the pressure ulcer was started during the stay in the home for the elderly. In 2.66% (with a range from 0% to 20.2%) of the residents, the pressure ulcers have been developed during their stay in a home for the elderly (see Figure 97).

Figure 97 – Percentage of residents with a pressure ulcer, occurred during the stay in a home for the elderly (2013)

Gemeten op 20 april	2013
Laagste meting	0,0%
P20	0,0%
P50 (mediaan)	2,1%
P80	4,2%
Hoogste meting	20,2%



Source: Flemish quality indicators in nursing homes [3]

The above-mentioned data should be interpreted with caution due to different reasons:

- The analysis is based on a one-time measurement, the next registrations were not yet available on the website
- No differentiation is made in the severity of the pressure ulcers (no data is mentioned on the percentage per category) nor in the location of the pressure ulcer or the number of ulcers on one person
- In the analysis all homes for the elderly are seen as one homogenous group but it would be more reliable to taken into account the care burden profile of each care facility (for example nursing homes for people with more severe care needs).

Key points

- **Only one survey on pressure ulcer in residential care was found with only data for elderly homes in Flanders.**
- **In approximately 4% of the residents a pressure ulcer of category 2, 3, 4 or undetermined was found.**
- **No differentiation is made in severity of the pressure ulcers, the location and number of ulcers on one person, nor the care burden profile of each care facility.**
- **More national and international data is necessary to describe the current situation and consequently to adapt further policy initiatives.**

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9.5. MRSA in long-term care facilities (LT-6)

9.5.1. Documentation sheet

Description	Prevalence of MRSA (Methicillin-resistant *Staphylococcus aureus*) colonisation in 60 Belgian nursing homes (NH) in 2011. Carriage of other resistant bacteria were also tested in the 2011-study: extended-spectrum beta-lactamase producing enterobacteriaceae (ESBL) and vancomycin-resistant enterococci (VRE).[1]
Calculation	Weighted prevalence referred to the prevalence adjusted for the participation rate in each NH. Weighted mean MRSA-prevalence: % MRSA carriers / screened residents
Rationale	Considering the important proportion of MRSA present at admission in acute-care facilities, especially among admitted NH-residents, it is important to investigate the extent and the evolution of the reservoir of MRSA carriers in long-term care facilities. The better understanding of the MRSA reservoir in nursing homes should allow the readjustment of the MRSA control policies in Belgian hospitals and in long-term care facilities.
Data source	Scientific Institute of Public Health - operational directorate public health & surveillance (service healthcare-associated infections & antimicrobial resistance) and the National Reference Centers for MRSA and for resistant enterobacteriaceae
Technical definitions	Dry screening swabs from anterior nares, throat, perineum and wounds were collected and sent for analysis to the National Reference Center. The swab collection in each nursing home was performed in one day.
International comparability	Comparison with other countries is difficult/impossible because of important differences in methodology, aims and study population of the few existing nationwide and representative NH-prevalence studies performed in European countries.
Dimensions	Quality (Safety)
Related indicators	Prevalence of healthcare-associated infections, Incidence of hospital acquired MRSA infections

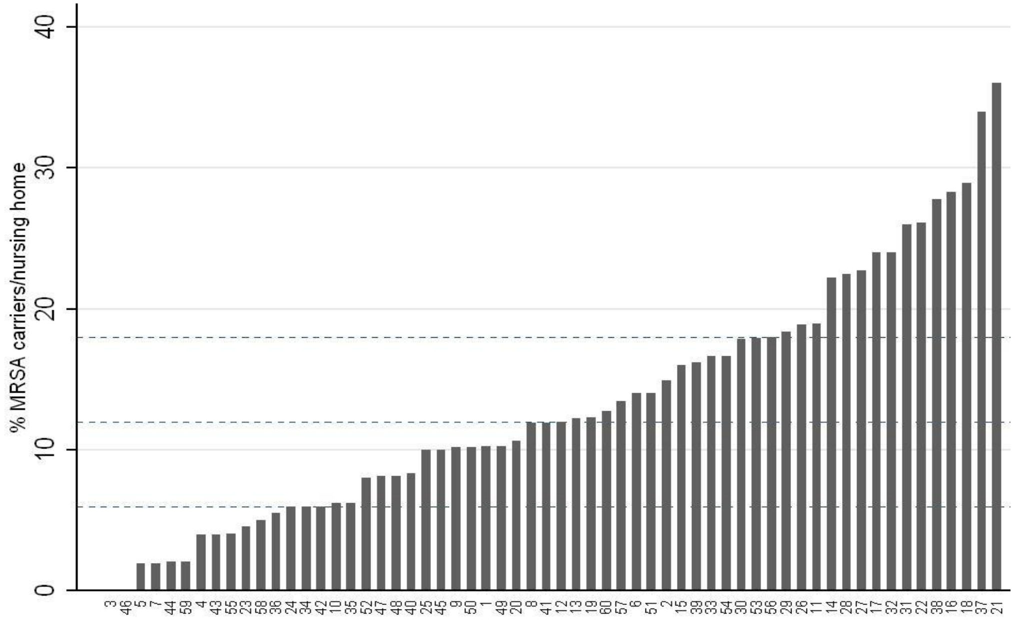
9.5.2. Results

The weighted mean MRSA-prevalence in Belgium was 12.2% [CI 95% 11.3-13.1]. The lowest prevalence rate by NH was 0%, the highest 36% (see Figure 98).

When comparing with the 2005 data (first national survey), a decrease in the prevalence of MRSA-carriage in nursing homes is observed (12,2% in 2011 vs 19% in 2005).

The most important determinants for MRSA carriage in nursing homes were: previously known MRSA carriage (Adj. OR: 3.6, p<0.001), recent hospitalisation for infection (Adj. OR: 2.30, p=0.001) and the presence of bedsores or chronic wounds (Adj. OR: 1.88, p=0.002). These determinants are identical to the three identified determinants in 2005.

Figure 98 – Percentage of MRSA-carriers in 60 participating nursing homes (2011)



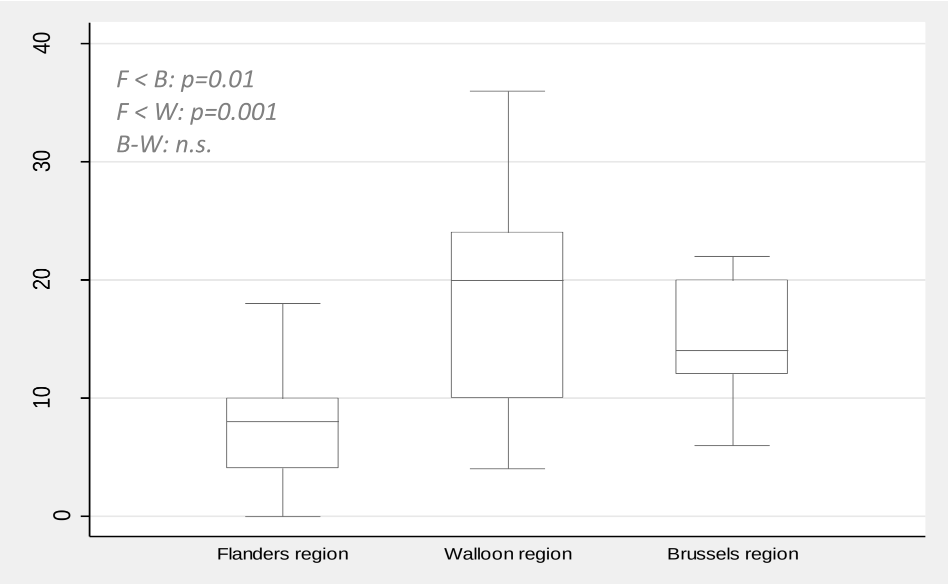
Source: [1]

The mean weighted MRSA-prevalence rate reached 18.3% [CI95%: 16.5-20.2] in the Walloon Region and 14.7% [CI95%: 11.8-18.1] in the Brussels Region. In the Flanders Region the prevalence was significantly lower (7.9% [CI95%: 7.0-8.9]) (see Figure 99).

When comparing with the 2005 data, the prevalence of MRSA carriers decreased in all Regions: Flanders Region: -10.2%, Walloon Region: -3.9% and in the Brussels Region: -2.5% despite an increase in:

- aging population in nursing homes (increase of 2 years of median age)
- level of dependency (ADL) of residents: incontinence, mobility, disorientation
- percentage of residents with comorbidity class ‘moderate-severe'(Charlson co-morbidity index: 2 or more).

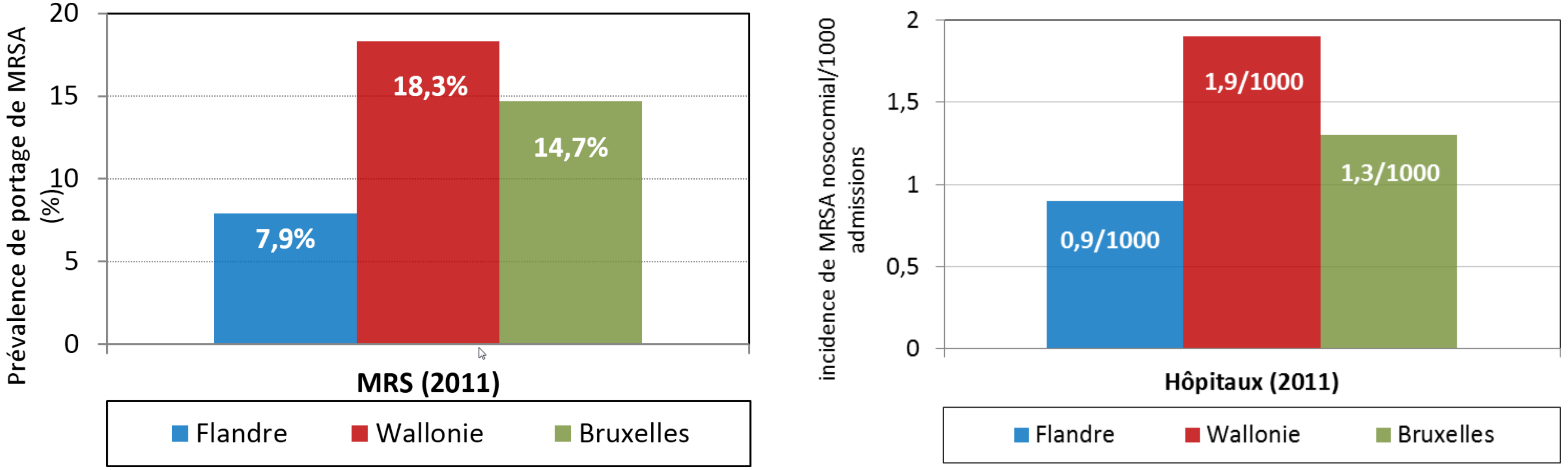
Figure 99 – Prevalence of MRSA-carriage (%), by region (2011)



Source: [1]

In 2011, no significant association was found between recent (3 months) antibiotic use and MRSA-carriage, a 10% decrease in the percentage of residents with recent antibiotic use was observed (21.5% in 2011 versus 33.2% in 2005).
The prevalence of MRSA-carriage measured in 2011 in nursing homes of the 3 Regions are the exact replica of the incidence of MRSA in acute hospitals in our country (see Figure 100).

Figure 100 – Prevalence of MRSA-carriage measured in nursing homes of the 3 Regions and incidence of MRSA in acute hospitals (2011)



Source: [1]
Note: MRS ('Maisons de repos et de soins')= nursing homes.

Previous studies performed in other European countries have reported a broad range of prevalence of multidrug resistant microorganisms. Variations in the screening sampling sites and in the microbiological methods, differences in the definitions of criteria for the targeted microorganisms, differences in the population case-mix and in local practices as well as true epidemiological variations may probably altogether explain this large variability across countries.

Key points

- **The weighted mean MRSA-prevalence of nursing home residents in 2011 was 12.2% [CI 95% 11.3-13.1]. National guidelines to prevent the spread of MRSA in nursing homes have been developed in 2006. When comparing with the 2005 data, when the weighted mean MRSA-prevalence was 19% [CI 95% 16.5-21.5], a decrease in the prevalence of MRSA-carriage in nursing homes of the 3 Regions is observed.**
- **The prevalence of MRSA-carriage measured in 2011 in nursing homes for the 3 Regions are the quasi exact replica of the incidence of MRSA in acute care hospitals in Belgium.**

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10. END-OF-LIFE CARE

10.1. Patients with terminal cancer who received palliative care (EOL-1)

10.1.1. Documentation sheet

Description	Proportion of terminal cancer patients who received palliative care at the end of their life.
Calculation	Numerator: Number of patients who received palliative care (in usual place of residence or in hospital) Denominator: Number of patients diagnosed with a cancer with poor prognosis and that died within the studied time period
Rationale	The 2002 WHO definition states that "palliative care (PC) is an approach that improves the quality of life of patients and their families facing the problems associated with life-threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems, physical, psychosocial and spiritual". Belgium has developed many structures and services for palliative patients. Palliative networks were created in 1997 e.g., to develop PC culture, to organize trainings for caregivers, to coordinate actions between organisations and services, to evaluate the palliative services. In home settings, palliative home care teams support caregivers and additional measures facilitate the care for the palliative patient who wishes to stay at home. First a "palliative lump sum" ("forfait") covers during two months the additional costs linked to PC. Furthermore, the palliative patient at home does not have to pay any personal contribution when treated by nurses, physiotherapists and general practitioners. Finally, palliative day centres give the families some respite. Two types of palliative care structures were set up in the hospitals. First, approximately 400 SP-palliative beds are clustered in small Palliative Care Units (PCU). Secondly, the palliative function has been developed in all hospitals to provide specific care support for palliative patients not staying in a PCU. A similar palliative function has been created in nursing homes (NH).[1]
Data source	Belgian Cancer Registry (BCR), linked with IMA data
Technical definitions	It is currently not possible to identify all palliative patients in administrative databases or in registries. Therefore, the indicator has been restricted to patients diagnosed with cancer having a poor prognosis and deceased during the study period. <u>Inclusion criteria</u> • Tumour selection based on the Pallcare project:[2] combination of topography and morphology according to Eurocare-4.[3 4] This project differentiates between "chronic tumours", defined as having a relative survival (RS) at 5 years lower than 50% (head and neck, nasal cavities and sinuses, small intestine, multiple myeloma, ovary and uterine adnexa, chronic myeloid leukaemia, acute lymphatic leukaemia) and "acute tumours", defined as having a 1 year RS < 50% (long, bronchus and trachea, pleura, oesophagus, stomach, gallbladder and biliary tract, liver (primary), pancreas, acute myeloid leukaemia, brain) • Age at diagnosis >=18 years • Study period: Incidence years: 2006-2012, Patients deceased before January 1st 2014, <u>Exclusion criteria</u> • Patients with more than one invasive tumour (until 2012) • Patients without an official Belgian residence • Patients without national social security number

	• Patients for whom no IMA data of the year of death were available (=2.5%) Palliative care as identified in billing data: this includes patients receiving lump sum for palliative care at the usual place of residence, patients reimbursed for visits of the general practitioner or nurse within a palliative setting, patients hospitalized in palliative units or hospitalized patients reimbursed for visits of multidisciplinary palliative care teams.
Limitation	Real proportion may be underestimated as patient may receive palliative care without nomenclature code being registered. Cause of death is unknown: we make the hypothesis that patients died from the cancer, and hence required palliative care at the end of their life, but this is probably not the case for 100% of the patients (patients dying from other causes, patients requiring euthanasia). No information on terminal patients without the diagnosis of cancer.
International comparability	This is not an international indicator. Some results are available in national reports or in specific scientific articles.
Dimensions	Accessibility

10.1.2. Results

Analysis of national data in cancer patients revealed that on average half (i.e. 49.2%) of the terminal cancer patients received palliative care. A slight increase in the use of palliative care services was seen between 2008 (48.1%) and 2012 (51.0%) (see Table 60). A subanalysis by tumour type showed a higher proportion of acute tumour cancer patients receiving palliative care compared to cancer patients with chronic tumours (50.4% vs 40.8% respectively). Similar to the overall results, an increase over time was seen in the group of acute tumour cancer patients, whereas a more steady-state situation was found in the group of chronic tumour cancer patients (see Table 60). Detailed results by tumour type showed substantial differences in the usage of palliative care within each broad category. For example, within the group of people with acute tumours, the proportion of patients who received palliative care ranged from 29.2% of patients with acute myeloid leukaemia to 64% of patients with brain cancer (see Table 62).

A higher proportion of cancer patients receiving palliative care was seen in the Flemish Region (55.9%) compared to the two other Regions (42.6% in Brussels-Capital Region and 44.9% in the Walloon Region) (see Table 61). The interpretation of the regional differences between the acute and chronic tumours is hampered by the large numbers of acute tumours in the selection (see Table 61).

Table 60 – Proportion of patients who received palliative care, by year of death (2008-2012)

	All Tumours			Acute Tumours			Chronic Tumours		
	Total	**Receiving palliative care**		**Total**	**Receiving palliative care**		**Total**	**Receiving palliative care**	
	N	**n**	**%**	**N**	**n**	**%**	**N**	**n**	**%**
2008	9575	4603	48.1	8352	4091	49.0	1223	512	41.9
2009	9461	4549	48.1	8232	4030	49.0	1229	519	42.2
2010	9876	4811	48.7	8604	4322	50.2	1272	489	38.4
2011	9936	4980	50.1	8743	4497	51.4	1193	483	40.5
2012	10 047	5128	51.0	8786	4608	52.4	1261	520	41.2
Total	48 895	24 071	49.2	42 717	21 548	50.4	6178	2523	40.8

Source: BCR linked to IMA data
Note: deaths in 2006, 2007 and 2013 excluded, maximum 3 years of follow-up

Table 61 – Proportion of patients who received palliative care, by region (2012)

	All Tumours			Acute Tumours			Chronic Tumours		
	Total	Receiving palliative care		Total	Receiving palliative care		Total	Receiving palliative care	
	N	n	%	N	n	%	N	n	%
Brussels-Capital Region	922	393	42.6	768	322	41.9	154	71	46.1
Flemish Region	6613	3697	55.9	5660	3246	57.3	953	451	47.3
Walloon Region	3901	1753	44.9	3275	1524	46.5	626	229	36.6
Total	11 436	5843	51.1	9703	5092	52.5	1733	751	43.3

Source: BCR linked to IMA data
Note: year of death=2012, incidence year 2006 excluded

Table 62 – Proportion of patients receiving palliative care, by tumour type (2006-2012)

	Total	Receiving palliative care	
	N	n	%
Acute	58 479	29 185	49.9
Oesophagus	3506	1637	46.7
Stomach	4979	2366	47.5
Liver, primary	2555	1248	48.9
Gallbladder and biliary Tract	1624	808	49.8
Pancreas	6820	3960	58.1
Lung, bronchus and trachea	33 091	15 978	48.3
Pleura	1181	729	61.7
Brain	3090	1982	64.1
Acute myeloid leukaemia	1633	477	29.2
Chronic	8352	3367	40.3
Head and Neck	3544	1444	40.7
Small Intestine	432	200	46.3
Nasal cavities and sinuses	260	138	53.1
Ovary and uterine adnexa	2189	1085	49.6
Multiple Myeloma	1399	386	27.6
Acute lymphatic leukaemia	176	40	22.7
Chronic myeloid leukaemia	352	74	21.0
Total	66 831	32 552	48.7

Source: BCR linked to IMA data
Note: maximum 3 years of follow-up

Discussion

In accordance with the law of 2002 which regulates palliative care in Belgium, different structures and services are set up to fulfil the needs of the palliative patient and his relatives. However, a clear definition to whom this kind of care needs to be delivered, is still lacking. The KCE recommends in its report on palliative care in Belgium [1] to enlarge the definition of palliative patients to all patients in an advanced or terminal stage of severe, progressive and life-threatening disease whatever their life expectancy. Also the needs assessments (considering all dimensions) should be initially performed and followed at regular intervals by the main physicians in collaboration with a palliative care team. It is important to identify on time all palliative patients, including the non-oncological patients, such as patients with advanced chronic conditions and patients with dementia. In line with these recommendations, the Federal Evaluation Commission for palliative care (Federale Evaluatiecel voor Palliatieve Zorg) [5] elaborated the definition of a palliative patient:

- The restriction of a maximum life expectancy of 3 months has been left out
- Differentiation based on objective criteria, such as pathology, functional assessment and care needs
- Differentiation within the lump sum for palliative care at home (“palliatief statuut”) towards a basic lump sum (“eenvoudig palliatief statuut”) for patients who are not yet in terminal phase of their disease, increased lump sum (“verhoogd palliatief statuut”) for patients not yet in terminal phase but with high spiritual and/or social, psychological and medical needs and the full lump sum (“volledig palliatief statuut”) for the patients in terminal phase.
- In certain patients, e.g. HIV-patients, it is necessary to consider a pre-palliative phase to ensure an appropriate follow-up.

The assessment of the patient should be performed based on the PICT tool. Based on this new definition the criteria for financing should be adapted. Currently a research project is ongoing on the validation of the tool and the prevalence estimation of the number of palliative patients within the different lump sums and the different care settings (project 2013-2014).

In the study of the Christian Sickness Funds [6,7] (n= 40 965 members, older than 40 years, who died between July 2005 and June 2006) a higher number of requests for palliative lump sums were found in cancer patients compared to non-cancer patients (1 on 3 cancer patients received a lump sum). This can be explained by the better estimation of life expectancy in cancer patients. In the analysis of the BCR only data on cancer patients are taken into account. It should be kept in mind that the proportion of patients receiving palliative care in this group is probably higher than the usage of palliative care in non-cancer patients.

Many studies have been performed by the End-of-Life Care Research Group (alliance between the Vrije Universiteit Brussel and Ghent University) in the domain of end-of-life care, palliative and supportive care and medical end-of-life decision making. They investigated factors influencing the use of palliative care services in Belgium (socio economic status of the patient, rural versus urban setting), the implication of the GP, the place of death, etc. These studies are cited in the indicators on place of death and use of chemotherapy in the last 14 days of life.

The research group is also embedded within the International Collaborative for End-of-Life Care Research (ICER), the European Association for Palliative Care Research Network (EAPC RN) and the European Palliative Care Research Centre (PCR). Currently a variety of national projects (e.g. the development of quality indicators on palliative care in the Flemish Region) and international projects (e.g. comparison of the effectiveness of palliative care for elderly people in long-term care facilities in Europe) are ongoing[dd].

[dd] http://www.endoflifecare.be/current_projects

Key points

- **Analysis of national data (2008-2012) showed that half of the terminal cancer patients received palliative care and that this percentage is slightly increasing over time.**
- **A higher proportion of cancer patients received palliative care in the Flemish Region compared to the Walloon and Brussels-Capital Region.**
- **Data from abroad is lacking for international comparability.**
- **Previous study from Christian Sickness Fund showed that patients dying from cancer more frequently used palliative care at home than other terminal patients.**

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10.2. Start of palliative care very close to death (EOL-2)

10.2.1. Documentation sheet

Description	Proportion of patients who started receiving palliative care and died within one week
Calculation	Numerator: Number of patients who started palliative care and died within the week. Denominator: Total number of patients who received palliative care services before their death
Rationale	The start of palliative care is sometimes delayed until patients are in terminal phase. This can denote either problems of accessibility of end of life care, either that the decision to start palliative care was taken too late.
Data source	Belgian Cancer Registry (BCR), linked with IMA data
Technical definitions	It is not currently possible to identify all palliative patients in administrative databases or in registries. Therefore, the indicator has been restricted to patients diagnosed with cancer having a poor prognosis and deceased during the study period. Inclusion criteria • Tumour selection based on the Pallcare project:[1] combination of topography and morphology according to Eurocare-4. [2] [3] This project differentiates between "chronic tumours", defined as having a relative survival (RS) at 5 years lower than 50% (head and neck, nasal cavities and sinuses, small intestine, multiple myeloma, ovary and uterine adnexa, chronic myeloid leukaemia, acute lymphatic leukaemia) and "acute tumours", defined as having a 1 year RS < 50% (long, bronchus and trachea, pleura, oesophagus, stomach, gallbladder and biliary tract, liver (primary), pancreas, acute myeloid leukaemia, brain) • Age at diagnosis >=18 years • Study period: Incidence years: 2006-2012, Patients deceased before January 1st 2014, Exclusion criteria • Patients with more than one invasive tumour (until 2012) • Patients without an official Belgian residence • Patients without national social security number • Patients for whom no IMA data of the year of death were available (=2.5%) Palliative care as identified in billing data: this includes patients receiving lump sum for palliative care at the usual place of residence, patients reimbursed for visits of the general practitioner or nurse within a palliative setting, patients hospitalized in palliative units or hospitalized patients reimbursed for visits of multidisciplinary palliative care teams.
Limitation	Real proportion may be underestimated as patient may receive palliative care without nomenclature code being registered. Cause of death is unknown: we make the hypothesis that patients died from the cancer, and hence required palliative care at the end of their life, but this is probably not the case for 100% of the patients (patients dying from other causes, patients requiring euthanasia). No information on terminal patients without the diagnosis of cancer
International comparability	This is not an international indicator. Some results are available in national reports or in specific scientific articles.
Dimensions	Accessibility
Key-words	End-of-life; palliative care service; timeliness

10.2.2. Results

In the previous performance report,[4] only data on the use of palliative care in members of the Christian Sickness Funds were available.[5,6] These data showed that the request of the palliative lump sum occurred for half of the patients in less than a month before death and that 20% of the patients died within the week of request.

The Belgian Cancer Registry analysed the proportion of cancer patients who received palliative care and their time of death and came to a similar result as the study of the Christian Sickness Fund:[5,6] 19.8% of the cancer patients died within one week after the start of palliative care (see Table 63). Analysis over time showed no change over time (between 2008 and 2012) (see Table 63). The BCR also performed a subanalysis by differentiating between acute and chronic tumours (see Table 64): the proportion of patients who died within one week after start of palliative care ranged from 11.4% in patients with brain cancer to 35% in patients with acute lymphatic leukaemia but on average no differences were found between acute and chronic tumours (19.6% vs 19.8% respectively). Also time-analysis per tumour type showed no change over time between 2008 and 2012 (see Table 63).

No major differences were found between the Regions (see Table 65) in which a slightly lower proportion of patients who died within one week after start of palliative care was found in the Flemish Region (17.4%).

Table 63 – Proportion of patients who died within one week after start of palliative care, by year of death (2008-2012)

	All Tumours			Acute Tumours			Chronic Tumours		
	Patients with palliative care	Died within one week		Patients with palliative care	Died within one week		Patients with palliative care	Died within one week	
	N	n	%	N	n	%	N	n	%
2008	4603	957	20.8	4091	838	20.5	512	119	23.2
2009	4549	894	19.7	4030	800	19.9	519	94	18.1
2010	4811	970	20.2	4322	871	20.2	489	99	20.2
2011	4980	950	19.1	4497	865	19.2	483	85	17.6
2012	5128	1003	19.6	4608	889	19.3	520	114	21.9
Total	24 071	4774	19.8	21 548	4263	19.8	2523	511	20.3

Source: BCR linked to IMA data
Note: deaths in 2006, 2007 and 2013 excluded, maximum 3 years of follow-up).

Table 64 – Proportion of patients who died within one week after start of palliative care, by tumour type (2006-2012)

	Patients with palliative care	Died within one week	
	N	N	%
Acute	29 185	5710	19.6
Oesophagus	1637	315	19.2
Stomach	2366	477	20.2
Liver. primary	1248	313	25.1
Gallbladder and biliary Tract	808	153	18.9
Pancreas	3960	778	19.7
Lung. bronchus and trachea	15 978	3193	20.0
Pleura	729	120	16.5
Brain	1982	226	11.4
Acute myeloid leukaemia	477	135	28.3
Chronic	3367	666	19.8
Head and Neck	1444	273	18.9
Small Intestine	200	44	22.0
Nasal cavities and sinuses	138	30	21.7
Ovary and uterine adnexa	1085	179	16.5
Multiple Myeloma	386	103	26.7
Acute lymphatic leukaemia	40	14	35.0
Chronic myeloid leukaemia	74	23	31.1
Total	32 552	6376	19.6

Source: BCR linked to IMA data
Note: all patients, maximum 3 years of follow-up

Table 65 – Proportion of patients who died within one week after start of palliative care, by region (2012)

	All Tumours			Acute Tumours			Chronic Tumours		
	Patients with palliative care	Died within one week		Patients with palliative care	Died within one week		Patients with palliative care	Died within one week	
	N	n	%	N	n	%	N	n	%
Brussels-Capital Region	393	79	20.1	322	64	19.9	71	15	21.1
Flemish Region	3697	644	17.4	3246	554	17.1	451	90	20.0
Walloon Region	1753	397	22.6	1524	357	23.4	229	40	17.5
Total	5843	1120	19.2	5092	975	19.1	751	145	19.3

Source: BCR linked to IMA data
Note: year of death=2012, incidence year 2006 excluded

IMA published (in collaboration with BCR) in June 2013 a report on healthcare utilization in terminal cancer patients (n= 24 972 cancer patients with a relative limited chance on survival after 5 years).[1] This study showed that 34.9% of the cancer patients requested a palliative lump sum. This number of requests was higher in patients who were not anymore admitted in an acute hospital (55.4%). In 11.3% of the patients who requested a palliative lump sum, the first request was submitted more than 6 months before time of death. However, 44.9% of the palliative patients who stayed at home, died within one month after request for a palliative lump sum. In 15.4% of these patients, the request for a palliative lump sum was submitted in the last week of life.

Table 66 – Number and proportion of patients with a palliative lump sum in function with the moment of request of the palliative lump sum (2006-2008)

Tijdstip van aanvraag eerste palliatief forfait	N	%	Cumulatief %
dag overlijden	322	3,7%	3,7%
]dag overlijden,laatste week]	1.022	11,7%	15,4%
]1 week,1 maand]	2.569	29,5%	44,9%
]1maand,3 maanden]	2.668	30,6%	75,5%
]3 maanden,6 maanden]	1.150	13,2%	88,7%
> 6 maanden	985	11,3%	100,1%

Source: IMA [1]

Discussion

The Belgian data on the start of palliative care show that 20% of the patients died within one week after the start of palliative care. Ideally, this number should be as low as possible, but the results show that already the majority of cancer patients received palliative care for more than one week.

The evolution of medical end-of-life practices in the Flemish Region has been monitored by large-scale repeat surveys in 1998, 2001, 2007 and the latest in 2013 [7]. The total percentage of deaths preceded by one or more possibly life-shortening end-of-life practices increased from 38.4% in 2001 to 47.8% in 2007 but remained stable in 2013 (47.8%), mainly due to the legalization of euthanasia in 2002. The most prevalent end-of-life practices were intensified alleviation of pain and other symptoms with the use of drugs (with possible shortening of life) (at all time, 24.2% in 2013) and withholding or withdrawing of life-prolonging treatment (17.2%). The rate of euthanasia increased significantly between 2007 (1.9%) and 2013 (4.6%), in consequence of an increased number of requests (from 3.5 to 6.0% of deaths) and a higher proportion of requests granted (from 56.3% to 76.8% of the requests made). The rate of hastening death without an explicit request from the patient remained stable (decreased from 3.2% in 1998 to 1.8% in 2007, 1.7% in 2013). The use of continuous deep sedation until death decreased to 12.0% in 2013 (after an increase from 8.2% in 2001 to 14.5% in 2007). The increased demand and granted requests for euthanasia indicates that this kind of end-of-life practice is increasingly considered as a valid option at the end of life in Belgium.

Pardon et al (2013) looked at the differences in end-of-life decision making (with possible or certain life-shortening effects) in patients with and without cancer (in the Flemish Region) and evolution over time (between 1998 and 2007)[8]. The main results show that in cancer patients more intensified symptom alleviation was provided (53.8% vs 31.7%, P<.001), more euthanasia occurred (6.8% vs 0.9%, P<.001) and these patients were less involved in the end-of-life decision-making process (69.7% vs 83.5%, P=.001). Evolution over time showed an increase in end-of-life decision making in both groups (+6.7% vs +14.9%), an increase in euthanasia rates and a decrease in life-ending acts without the patient’s explicit request.

A similar analysis has been performed on end-of-life decisions in patients with dementia.[9] Compared to cancer patients (n=1276), the following results were found in patients with dementia (n=361):

- a lower likelihood of an end-of-life decision (OR 0.61; 95%CI 0.46-0.82, P=.001)
- more non-treatment decisions (withholding or withdrawing potentially life-prolonging treatments) (OR 1.40; 95% CI 1.00-1.96, P=.048)
- a lower likelihood of drug treatment for intensified pain and symptom alleviation (OR 0.50; 95%CI 0.34-0.73, P<.001)
- a lower likelihood to receive opioid treatment in the final 24 hours before death (50% vs 80%, P<.001)
- no differences were found in life abbreviation without explicit request (OR 1.89; 95% CI 0.84-4.22, P=.12)
- euthanasia did not occur
- physicians reasons for reaching the end-of-life decision were less often to do with pain (OR 0.26; 95%CI 0.15-0.44, P<.001) or the patient wishes (OR 0.08; 95%CI 0.02-0.26; P<.001) but more often with their expected poor quality of life (OR 2.39; 95%CI 1.39-4.13; P=.002), no prospect of improvement (OR 1.35; 95%CI 0.74-2.48, P=.33), that life should not be prolonged needlessly (OR 0.93; 95%CI 0.55-1.57; P=.79) and that future suffering should be prevented (OR 1.14; 95%CI 0.67-1.95; P=.62).

The differences between cancer patients and patients with dementia, point to the lack (or underuse) of palliative services for patients with dementia.

Within palliative care services, continuous sedation until death (the act of reducing or removing the consciousness of an incurably ill individual until death) can be used to relief distress and to control refractory suffering. Rys et al (2014)[10,11] investigated the practice of continuous sedation in nursing homes in Flanders and found the following results: most patients were aged 85 and older, had cancer (33.6%) or dementia (32.8%) and in the majority of patients (64.9%) life expectancy was estimated to be less than 1 week. Frequently reported severe symptoms were pain (71.2%), fatigue (62.3%), loss of dignity (59%), anxiety (58.4%), longing for death (56%), loss of control (55.7%), loss of interest (54.5%), motor restlessness (52%) and hopelessness (51.7%). Pain (70.7%) and physical exhaustion (63.9%) were considered as the most decisive refractory symptoms for initiating continuous sedation. In most patients (60.1%) benzodiazepines were combined with opioids. In 92.3% of the patients, the nurses reported an adequately alleviation of the symptoms due to the administration of continuous sedation. The (potential) lack of competence of cancer and dementia patients could hamper their involvement in the decision-making process, which illustrates the importance of advance care planning in nursing homes.

Next to studies on the healthcare utilization in terminal patients, other studies focused more on sociodemographic determinants. These results were presented in the previous performance report.[12-14]

Key points

- **The start of palliative care very close to death is an indicator of the accessibility of palliative care.**
- **A minority of the cancer patients (20%) died within one week after the start of palliative care.**
- **A slightly lower proportion of patients who died within one week after start of palliative care was found in the Flemish Region.**

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10.3. Chemotherapy during the last 14 days of life of patients with cancer (EOL-3)

10.3.1. Documentation sheet

Description	Proportion of patients with cancer receiving chemotherapy in the last 14 days of their life
Calculation	Numerator: number of patients receiving chemotherapy in the last 14 days of their life. Denominator: number of patients diagnosed with cancer that died within the studied time period
Rationale	The main goal of palliative care is to improve or at least maintain quality of life in patients near death. The curative treatments, such as active cancer treatment are stopped and the focus is on pain and symptom control. This indicator is a measure of the aggressiveness of care in the last days of life.
Data source	Belgian Cancer Registry (BCR), linked with IMA data
Technical definitions	Inclusion criteria • Tumour selection based on the Pallcare project [1]: combination of topography and morphology according to Eurocare-4.[2] [3] This project differentiates between “chronic tumours”, defined as having a relative survival (RS) at 5 years lower than 50% (head and neck, nasal cavities and sinuses, small intestine, multiple myeloma, ovary and uterine adnexa, chronic myeloid leukaemia, acute lymphatic leukaemia) and “acute tumours”, defined as having a 1 year RS < 50% (long, bronchus and trachea, pleura, oesophagus, stomach, gallbladder and biliary tract, liver (primary), pancreas, acute myeloid leukaemia, brain) • Age at diagnosis >=18 years • Study period: Incidence years: 2006-2012, Patients deceased before January 1st 2014, Exclusion criteria • Patients with more than one invasive tumour (until 2012) • Patients without an official Belgian residence • Patients without national social security number • Patients for whom no IMA data of the year of death were available (=2.5%) Palliative care as identified in billing data: this includes patients receiving lump sum for palliative care at the usual place of residence, patients reimbursed for visits of the general practitioner or nurse within a palliative setting, patients hospitalized in palliative units or hospitalized patients reimbursed for visits of multidisciplinary palliative care teams.
Limitation	Real proportion may be underestimated as patient may receive chemotherapy within sponsored clinical studies. In this case, the chemotherapy may be provided by the company and therefore not reimbursed. Cause of death is unknown: we make the hypothesis that patients died from the cancer, and hence required palliative care at the end of their life, but this is probably not the case for 100% of the patients (patients dying from other causes). No information on aggressiveness of care for terminal patients without the diagnosis of cancer
International comparability	This is not an international indicator. Some results are available in national reports or in specific scientific articles.

Dimension	Quality (appropriateness)
Key words	End of life care; aggressiveness of care

10.3.2. Results

An average of 11.2% of the cancer patients who died in the period between 2008 and 2012, received chemotherapy in the last 14 days of their life (see Table 67). No major differences over time can be found (ranging from 10.9% in 2008 to 11.2% in 2012) (see Table 67). A slightly higher proportion of patients with chronic tumours received chemotherapy in the last 14 days of life (see Table 67). Within both tumour groups, more variation can be seen: the proportion of patients who received chemotherapy in the last 14 days of life ranged from 3.4% of patients with brain cancer to 37.8% of patients with chronic myeloid cancer (see Table 69).

A slightly higher proportion of patients received chemotherapy in the Walloon Region compared to the two other regions (12.6% vs 10.0% and 9.7%), mainly determined by the (slightly) higher proportion of patients with acute tumours who received chemotherapy in the last 14 days of life.

Table 67 – Proportion of patients who received chemotherapy in the last 14 days of life, by year of death (2008-2012)

	All Tumours			Acute Tumours			Chronic Tumours		
	Total	n with chemotherapy		Total	n with chemotherapy		Total	n with chemotherapy	
	N	n	%	N	n	%	N	n	%
2008	9575	1045	10.9	8352	896	10.7	1223	149	12.2
2009	9461	1033	10.9	8232	873	10.6	1229	160	13.0
2010	9876	1170	11.8	8604	990	11.5	1272	180	14.2
2011	9936	1115	11.2	8743	958	11.0	1193	157	13.2
2012	10047	1125	11.2	8786	924	10.5	1261	201	15.9
Total	48 895	5488	11.2	42717	4641	10.9	6178	847	13.7

Source: BCR linked to IMA data
Note: deaths in 2006, 2007 and 2013 excluded, maximum 3 years of follow-up

Table 68 – Proportion of patients who received chemotherapy in the last 14 days of life, by region (2012)

	All Tumours			Acute Tumours			Chronic Tumours		
	Total	n with palliative care		Total	n with palliative care		Total	n with palliative care	
	N	n	%	N	n	%	N	n	%
Brussels-Capital Region	922	92	10.0	768	75	9.8	154	17	11.0
Flemish Region	6613	642	9.7	5660	506	8.9	953	136	14.3
Walloon Region	3901	490	12.6	3275	400	12.2	626	90	14.4
Total	11 436	1224	10.7	9703	981	10.1	1733	243	14.0

Source: BCR linked to IMA data
Note: year of death=2012, incidence year 2006 excluded

Table 69 – Proportion of patients who received chemotherapy in the last 14 days of life, by tumour type (2006-2012)

	Total	n with palliative care	
	N	n	%
Acute	58 479	6275	10.7
Oesophagus	3506	251	7.2
Stomach	4979	261	5.2
Liver, primary	2555	133	5.2
Gallbladder and biliary Tract	1624	77	4.7
Pancreas	6820	686	10.1
Lung, bronchus and trachea	33 091	4171	12.6
Pleura	1181	51	4.3
Brain	3090	105	3.4
Acute myeloid leukaemia	1633	540	33.1
Chronic	8352	1153	13.8
Head and Neck	3544	402	11.3
Small Intestine	432	19	4.4
Nasal cavities and sinuses	260	11	4.2
Ovary and uterine adnexa	2189	264	12.1
Multiple Myeloma	1399	259	18.5
Acute lymphatic leukaemia	176	65	36.9
Chronic myeloid leukaemia	352	133	37.8
Total	66 831	7428	11.1

Source: BCR linked to IMA data
Note: all patients, maximum 3 years of follow-up

Discussion

Similar results were found in the IMA-BCR study on the healthcare utilization in terminal cancer patients (n= 24 972 cancer patients with a relative limited chance on survival after 5 years)[1]: 10.3% of the cancer patients received chemotherapy in the last 2 weeks of life and 4.4% received chemotherapy in the last week of life. This percentage on chemotherapy in the last 2 weeks of life ranged from 5.1% of patients residing at home (no hospitalisation in the last month of life) to 15.1% of patients admitted during the last month of life. A similar trend is seen in the proportion of patients who received chemotherapy in the last week of life: 2.1% of the patients residing at home still received chemotherapy compared to 6.7% of the patients admitted in a hospital in the last month of life. Within the subpopulation of patients who requested a palliative lump sum, 20.0% still received chemotherapy after the request.

More results on the healthcare utilization in the last months of life can be found in the same report, e.g. the number of GP visits and/or consultations in the last week, the proportion of patients who received radiotherapy in the last months of life etc.

Key points

- **The use of chemotherapy during the last days of life for patients dying from cancer is an indicator of the aggressiveness of care.**
- **A minority of cancer patients (11.2%) received chemotherapy in the last 14 days of life.**

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10.4. Patients dying in their usual place of residence (EOL-4)

10.4.1. Documentation sheet

Description	Percentage of patients dying in their usual place of residence (home or residential care)
Calculation	Numerator: number of patients deceased at home or in residential care Denominator: total number of patients diagnosed with cancer that died within the studied time period
Rationale	Place of death is considered an important indicator of quality of care. In Belgium: 75% of the population expressed a preference towards natural death, without resuscitation.[1] This change in attitude towards a more patient-centred approach will also be reflected in the preference of place of death. In the last period nearby death patients will prefer to die in their place of preference (mostly at home or in home-replacing environment, like a home for the elderly). The organization of palliative care services in Belgium is also oriented on a more home-based approach with a maximum of support to patient and relatives to stay at home.
Data source	Belgian Cancer Registry (BCR), linked with IMA data
Technical definitions	It is not currently possible to identify all palliative patients in administrative databases or in registries. Therefore, the indicator has been restricted to patients diagnosed with cancer having a poor prognosis and dying during the study period. <u>Inclusion criteria</u> • Tumour selection based on the Pallcare project [2]: combination of topography and morphology according to Eurocare-4.[3 4] This project differentiates between “chronic tumours”, defined as having a relative survival (RS) at 5 years lower than 50% (head and neck, nasal cavities and sinuses, small intestine, multiple myeloma, ovary and uterine adnexa, chronic myeloid leukaemia, acute lymphatic leukaemia) and “acute tumours”, defined as having a 1 year RS < 50% (lung, bronchus and trachea, pleura, oesophagus, stomach, gallbladder and biliary tract, liver (primary), pancreas, acute myeloid leukaemia, brain) • Age at diagnosis >=18 years • Study period: Incidence years: 2006-2012, Patients deceased before January 1st 2014, <u>Exclusion criteria</u> • Patients with more than one invasive tumour (until 2012) • Patients without an official Belgian residence • Patients without national social security number • Patients for whom no IMA data of the year of death were available (=2.5%) Palliative care as identified in billing data: this includes patients receiving lump sum for palliative care at the usual place of residence, patients reimbursed for visits of the general practitioner or nurse within a palliative setting, patients hospitalized in palliative units or hospitalized patients reimbursed for visits of multidisciplinary palliative care teams.
Limitation	Real proportion may be underestimated as patient may receive palliative care without nomenclature code being registered.

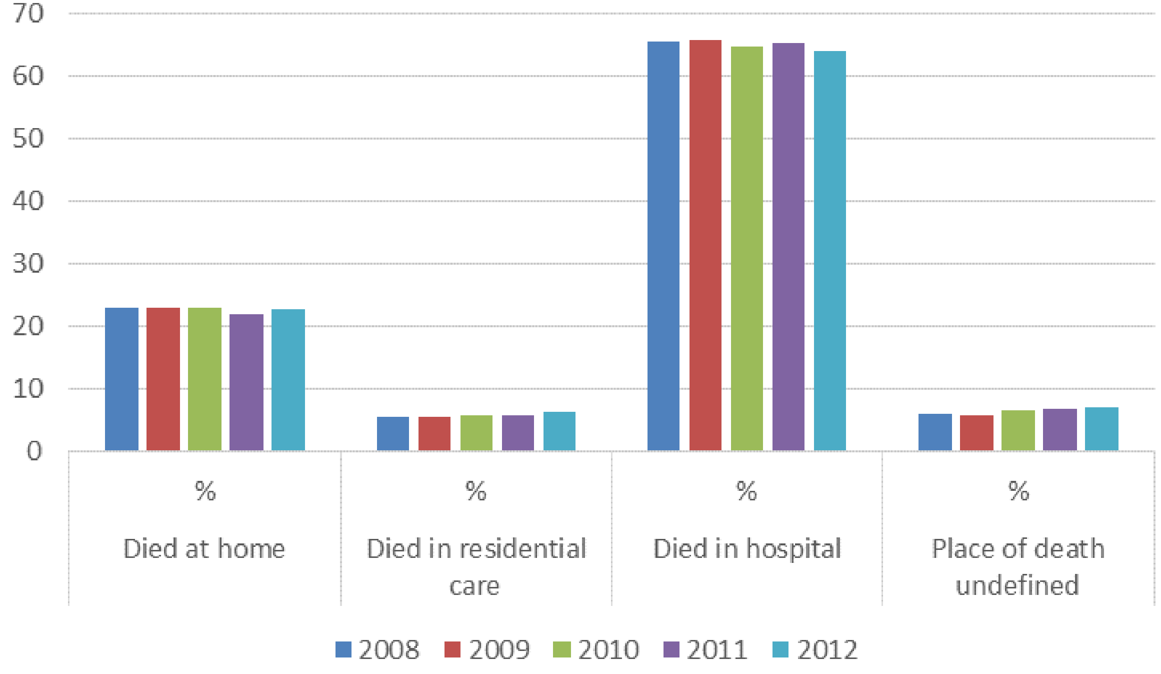
	Cause of death is unknown: we make the hypothesis that patients died from the cancer, and hence required palliative care at the end of their life, but this is probably not the case for 100% of the patients (patients dying from other causes, patients requiring euthanasia). No information on terminal patients without the diagnosis of cancer
International comparability	This is not an international indicator. Some results are available in national reports or in specific scientific articles.
Dimensions	Quality (patient centeredness); Quality (Effectiveness)
Keywords	End of life care, home setting, care environment

10.4.2. Results

The majority of cancer patients died in hospital (65.0%), only 22.7% died at home and a minority died in residential care (5.8%) (see Figure 101). No major differences were seen over time (between 2008 and 2012) (see Figure 101). A similar distribution is found in patients with acute tumours (see Table 70). The proportion of patients who died at home was lower in patients with chronic tumours of whom more patients died in residential care or in hospital (see Table 71). No major differences were found over time for both types of tumours (see Table 70 and Table 71).

Analysis of place of death per Region in 2012 showed a discrepancy between Brussels-Capital Region and the two other Regions: in Brussels-Capital Region, less people died at home (12.7% vs 24.5% and 21.4%) and more people were admitted in a hospital at time of death (74.3% vs 64.1% and 64.7%) (see Table 72).

Figure 101 – Place of death in cancer patients (2008-2012)



Source: BCR linked to IMA data
Note: deaths in 2006, 2007 and 2013 excluded, maximum 3 years of follow-up

Table 70 – Proportion of cancer patients, by place of death, acute tumours (2008-2012)

	Total	Died at home		Died in residential care		Died in hospital		Place of death undefined	
	N	N	%	N	%	N	%	N	%
2008	8352	1988	23.8	441	5.3	5443	65.2	480	5.7
2009	8232	1984	24.1	425	5.2	5370	65.2	453	5.5
2010	8604	2074	24.1	452	5.3	5531	64.3	547	6.4
2011	8743	1981	22.7	489	5.6	5681	65.0	592	6.8

2012	8786	2071	23.6	259	6.0	5578	63.5	608	6.9
Total	42 717	10 098	23.6	2336	5.5	27 603	64.6	2680	6.3

Source: BCR linked to IMA data
Note: deaths in 2006, 2007 and 2013 excluded, maximum 3 years of follow-up

Table 71 – Proportion of cancer patients, by place of death, chronic tumours (2008-2012)

	Total	Died at home		Died in residential care		Died in hospital		Place of death undefined	
	N	N	%	N	%	N	%	N	%
2008	1223	218	17.8	77	6.3	829	67.8	99	8.1
2009	1229	193	15.7	97	7.9	843	68.6	96	7.8
2010	1272	197	15.5	120	9.4	850	66.8	105	8.3
2011	1193	195	16.3	96	8.0	805	67.5	97	8.1
2012	1261	201	15.9	111	8.8	852	67.6	97	7.7
Total	6178	1004	16.3	501	8.1	4179	67.6	494	8.0

Source: BCR linked to IMA data
Note: deaths in 2006, 2007 and 2013 excluded, maximum 3 years of follow-up

Table 72 – Proportion of cancer patients, by place of death, by region (2012)

	Total	Died at home		Died in residential care		Died in hospital		Place of death undefined	
	N	N	%	N	%	N	%	N	%
Brussels-Capital Region	5425	690	12.7	301	5.5	4032	74.3	402	7.4
Flemish Region	38747	9484	24.5	2080	5.4	24 851	64.1	2332	6.0
Walloon Region	22659	4845	21.4	1401	6.2	14 656	64.7	1757	7.8
Total	66 831	15 019	22.5	3782	5.7	43 539	65.1	4491	6.7

Source: BCR linked to IMA data
Note: year of death=2012, incidence year 2006 excluded

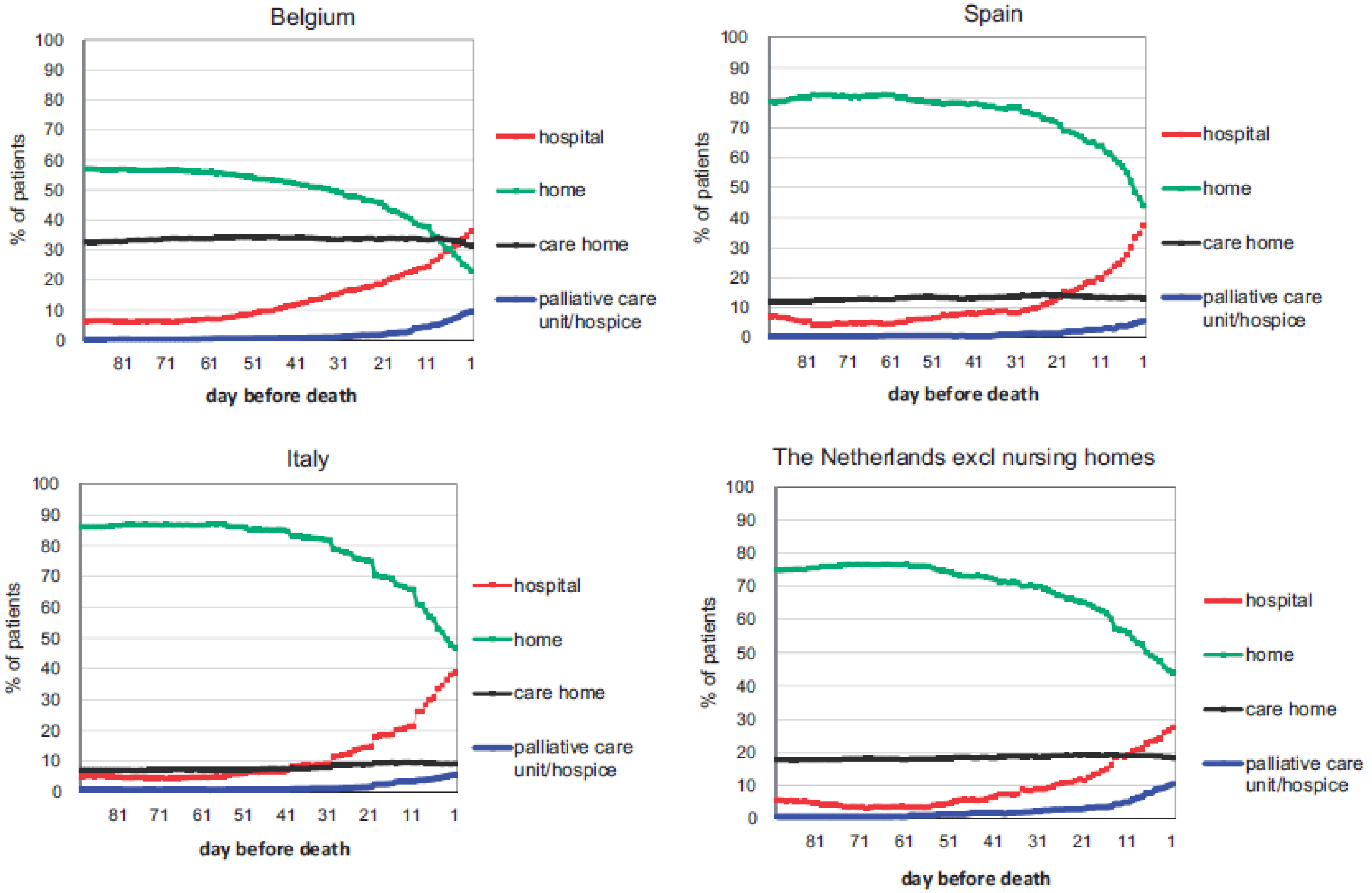
Discussion

Despite the current organization of palliative services with a maximum support to patient and relatives to stay at home, the majority of cancer patients still died in a hospital. Similar results on the number of hospitalisations and deceases in hospital were found in the IMA-BCR report on the healthcare utilization in terminal cancer patients (n= 24 972 cancer patients with a relative limited chance on survival after 5 years).[2] 73.7% of the patients stayed at least one day during their last month of life in a hospital, 58.4% were at least once admitted during their last month of life and 18.5% was admitted during the final week of life. The majority of cancer patients (51.6%) died in a hospital and only 28% died at home, or in a nursing home (5.5%) or in a palliative unit of a hospital (15.0%).

Next to place of death as an important indicator of quality of care, the transitions between care services in the final months of life can also be considered as an important indicator of quality of care and patient-centeredness. Researchers from the End-Of-Life Care Research Group (VUB-UGent) compared the transitions between care settings in Belgium, Netherlands, Italy and Spain in the final three months of life.[5] In 59% of the non-sudden deaths in Belgium, at least one transfer took place in the final 3 months of life, of which 10% in the final 3 days of life. Three or more transfers were noticed in 10% of the non-sudden deaths. No major differences were found with the other countries: at least one transfer in the final 3 months of life in 55% in the Netherlands, 60% in Italy, 58% in Spain; a transfer in the final 3 days of life in 8% in the Netherlands, 10% in Italy and 13% in Spain; three or more transfers in 5% in the Netherlands, 8% in Italy and 12% in Spain (P<0.001 in multivariate analyses adjusting for country differences in age, sex, cause of death, presence of dementia). In all countries, transitions were more frequent in patients residing at home (61-73%) compared to patients residing in a care home (33-40%). The number of patients in hospital increased from 5-7% at three months before death to 27-39% on the day of death. The transition from home to hospital is the most frequently occurring final transition in all countries. An explanation for these late hospitalizations in patients residing at home is the patient's wish to be transferred to a hospital (27% in Belgium, 39% in the Netherlands, 9% in Italy and 6% in Spain, P<0.001). The results are also graphically presented in Figure 102. However, details on the kind of transfer are lacking in the data, e.g. difference between avoidable and unavoidable transfers and difference between desired and undesired transfers.

Transitions between care settings may be related to poor quality in end-of-life care due to the risk of fragmented care from multiple caregivers and medical errors that impede the provision of high-quality palliative care. This international study shows that the hospitalizations increased considerably in the final phase of life (in some cases on request of the patient/family) and that patients residing at home were more likely to experience terminal hospitalizations. The wish of the patient to be transferred to the hospital seems to be in contrast to the consistent evidence that people prefer to die in their own home (or home-replacing environment) but this wish for a transition to a hospital is rather a wish to receive the best possible treatment or a life-prolonging treatment rather than a wish to die there. More research is needed on why end-of-life transitions occur and which ones are avoidable, especially in relation to patient and family wishes. Ko et al (2014)[6] found that in half of their sample of Belgian cancer patients (n=595) the patients expressed their preference for the place of death during a conversation with their general practitioner (49.3%). Compared to Belgium, patients in the Netherlands were more likely (OR 1.8) and patients in Italy less likely (OR 0.6) to die in their preferred place of death.

Figure 102 – Places of care in the final 3 months of life of non-sudden deaths per country (2009-2010)



Source: Van den Block et al, 2015
Note: 2009-2010 Belgium, the Netherlands and Italy; 2010-2011 Spain.

In the study of Cohen et al the place of death was compared between cancer patients and non-cancer patients in 14 countries across 4 continents.[7] The results for Belgium show a quite similar distribution in cancer patients as our results: the majority of the cancer patients died in a hospital (59.3%), almost 30% (28.9%) died at home. However, the authors found a higher percentage of cancer patients who died in a nursing home (11.2% versus 5.7% in our results). In non-cancer patients the proportion of persons who died in a nursing home was higher than the proportion of persons who died at home. The group of patients who died in a hospital is the still the largest group of patients. A large variation across the 14 countries were found for place of death at home (ranging from 12% to 57%) and place of death in hospital (ranging from 26% to 87%). Factors associated with death at home were: socio-demographic factors, healthcare supply, age, marital status, educational level, and urbanisation. However, the degree of association differed between countries and even the direction of association between the various factors and the chances of dying at home.

De Roo et al (2014) investigated the usefulness of the indicator on dying at home and dying at the preferred place of death.[8] Dying at home may be considered as an outcome of high qualitative palliative care, which implies that patients who were not able to die at home, only received less qualitative palliative care. This reasoning does not take into account the reason for hospitalization (e.g. justified medical needs) nor the patient preferences. Therefore the preferred place of death could be considered as a more appropriate indicator of quality of palliative care rather than the number of home deaths. The researchers compared both quality indicators (number of home deaths and preferred place of death) between Belgium (n=1036), the Netherlands (n=512), Italy (n=1639) and Spain (n=565):

- In Belgium less people died at home (35.3%) compared to the three other countries (ranging from 49.1% to 50.6%)
- 72.6% of the Belgian patients died in their preferred place, which is a lower percentage compared to the Netherlands (75.4%) and Spain (86.0%). Italy had the lowest scores (67.8%).
- In Belgium and the Netherlands the majority of patients who died at home were in accordance with the location of their preference (respectively 71% and 80%) (In Italy and Spain these percentages were lower).
- In the group of patients who did not die at home, the preferred place of death was not met in 17.2% of the patients and/or was unknown (in 73.7% of the patients).
- A positive association was found between receiving palliative care from the GP and dying at home (for Belgium OR 8.37).
- The importance of the care goal in determining the place of death: if cure is an important care goal in the last 2-4 weeks of life, people are less likely to die at home (OR 0.57 for Belgium).

Whereas the indicator on patients dying at home is easy to collect (by the GP), the indicator on the patient preferences is less feasible regarding to data collection. The researchers found that despite the high percentage of unknown preferences, the results indicate a strong overlap between home deaths and deaths in the preferred location. Also the care characteristics are strongly correlated with the scores on the quality indicators: patients receiving palliative care by the GP are more likely to die at home in contrast to the patients in who the care goals were curative or prolonging life. As the indicator on the preferred place of death becomes more important, GPs should pay more attention to communicate with their patients on the patient preferences.

A limitation of the current dataset for this indicator, is the focus on cancer patients and their place of death. Moens et al (2015) compared the place of death in patients with Parkinson's disease between 11 countries (including Belgium).[9] Different to cancer, the disease trajectory in Parkinson patients is longer and less predictable. Also the progressive decline in function often results in needing institutional long-term care. The results confirm the higher proportion of patients in long-term care facilities: the proportion of patients who died in a long-term care setting was the highest (51.7%), followed by dying in a hospital (26.9%) and at home (20.8%). Correlating sociodemographic characteristics to the hospital death, revealed only a positive correlation with being a man and younger than 80 years and dying in a hospital. Similar results were found in patients with dementia: they were more likely to die in a care home (compared to cancer patients).[10]

Key Points

- **Belgian data showed that the majority of cancer patients died in hospital.**
- **This proportion is higher in Brussels-Capital Region compared to the Walloon and Flemish Regions.**

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11. EFFICIENCY

11.1. Defining and measuring efficiency

11.1.1. What is meant by efficiency in healthcare?

Improving efficiency is a key policy objective to reconcile growing healthcare demand and costs with available public budgets. Numerous definitions of efficiency in healthcare can be found in literature. Hence, it is challenging to improve efficiency without a consensus on the definition of it.

Standard economics concepts

In standard economics, three concepts of efficiency can be distinguished:

- *Technical efficiency* refers to the ability of producing a maximum output from a given quantity of inputs (such as labour, capital and technology) or when a minimum quantity of inputs produces a given output. Technical efficiency cannot directly compare alternative interventions, where one intervention produces the same (or better) output with less (or more) of one input and more of another. When different combinations of inputs are being used, the choice between interventions is based on the relative costs of these different inputs.
- *Productive efficiency* refers to the production of maximum output with the optimal combination of inputs at the minimum cost. Hence, productive efficiency requires technical efficiency.
- *Allocative efficiency* refers to an optimal allocation of inputs between competing uses, taking into account consumer's preferences.

In these input/output-based definition of efficiency, quality is held fixed.

Translated to the healthcare sector

Palmer and Torgerson (1999)[1] translated the three concepts of efficiency in standard economics to healthcare allowing a notion of quality in their definition. Contrary to other products and services, the demand for healthcare is a derived demand for health. Healthcare can be seen as a means to the end of improved health. Therefore, efficiency in healthcare is concerned with the relation between inputs and intermediate outputs (e.g. number of patients treated, hospital discharges, waiting time) or final health outcomes (life-years gained, quality-adjusted life-years gained (QALYs)). Ideally, these final health outcomes should be the focus of economic evaluations.

Efficiency measures whether healthcare resources are being used to get the best value for money, or stated differently, it measures whether health outcomes gained from the resources allocated to healthcare are maximised.

- *Technical efficiency* refers to the physical relation between inputs and health outcome and is achieved when the maximum (improvement in) outcome is obtained from a given set of inputs or a minimum quantity of inputs is needed to obtain a given health outcome.
- *Productive efficiency* refers to the maximisation of health outcome for a given cost or the minimisation of cost for a given outcome. Productive efficiency enables assessment of the relative value for money of interventions for which outcomes are directly comparable.
- *Allocative efficiency* presupposes productive efficiency but also takes account of the efficiency with which health outcomes are distributed among society. Stated differently, in allocative efficiency the right mixture of healthcare programs and health systems that maximize the health of society overall is sought.

Ideally, efficiency in the healthcare sector should be defined in terms of attaining the highest level of health possible with the available inputs. In reality, however, health outcomes may take several years to materialise. Therefore, efficiency in healthcare is more often assessed in terms of intermediate outputs which are more easily measured over the shorter term and are unaffected by other factors that might influence health outcomes.[2,3]

Waste and fraud as definitions of inefficiency

Following the definition of Palmer and Torgerson)[1], inefficiency exists when resources could be reallocated in a way which would increase the health outcomes produced.

Although waste is only one possible cause of inefficiency,[2,4] in some publications (financial) waste is equated with inefficiency.[5] *Waste in production* (productive inefficiency) is then defined as the difference between the cost of producing an item or service under the current system and the cost of producing it in an efficient way. *Waste in misallocated outputs* (allocative inefficiency) is defined as the difference between the cost of the item or service and its actual value because of producing the wrong output.

11.1.2. Measuring efficiency in healthcare

Measuring at different levels

Efficiency can be measured at three levels: at health system level (macro), at sub-sector level (meso) or at disease-based/patient-based (micro) level.[6] Some examples of indicators for the three levels are given in Table 1. A brief overview of advantages and disadvantages of each level is given in Table 2.

Table 1 – Measurement of efficiency at different levels: some examples

Measurement level	Input	Output	Outcome
Health system level	Total health expenditure		• Life expectancy • Healthy life expectancy
Sub-sector level	Expenditure on hospital care, primary care, medicines, etc.	Discharges, average length of stay	In-hospital mortality for certain conditions
Disease-based/patient-based level	Expenditure by disease and care pathways		Cancer survival, survival/mortality after AMI or stroke

Source: OECD (2014)[6]

Table 2 – Measurement of efficiency at different levels: advantages and disadvantages

Measurement level	Advantages	Disadvantages
Health system level	Availability of aggregate data on key indicators of inputs or population health status	• Broad measures of population health are more determined by non- healthcare determinants (e.g. lifestyle factors and physical environment in which people live) than by healthcare factors • Results are difficult to translate to concrete policy actions • Alternative of avoidable mortality (broken down by cause of death) but no consensus on definition of "avoidable"
Sub-sector level	Focuses on more disaggregated activities (mainly on the hospital sector)	• Lack of outcome measures • Adjustment for patient case-mix is needed
Disease-based/patient-based level	Is based on health outcomes related to specific diseases or treatments	• Difficult to relate outcomes to inputs • Health outcomes are available only for a selection of diseases/treatments • Often data on inputs is lacking

Source: OECD (2014)[6]

Measurement techniques

Two common techniques for estimating efficiency at the healthcare system or sub-sector level (e.g. for hospitals) are stochastic frontier analysis or SFA (parametric approach) and data envelopment analysis or DEA (non-parametric approach).

In a recent report of the European Commission [7] the relative efficiency of healthcare systems across all European Union countries has been estimated by means of DEA, with SFA used for sensitivity analysis. Input indicators were total per capita health expenditure, per capita physical inputs (e.g. hospital beds) and environmental or lifestyle variables. Health outcomes indicators were (adjusted) life expectancy at birth and at age 65, (adjusted) healthy life expectancy at birth and at age 65 and standardized amenable mortality. To measure sub-sector level efficiency, inputs were also related to intermediate outputs in terms of hospital discharges and outpatient consultations. Belgium was one of the top 7 performers in most models.

11.1.3. Indications of (in)efficiency

Mainly at the sub-sector level, the lack of outcome measures makes the development of efficiency indicators challenging. Therefore, instead of focusing solely on well-defined indicators of efficiency, the efficiency of the healthcare system (and of sub-sectors within it) can also be assessed in terms of what we called "indications of (in)efficiency". These indications are based on the results of indicators that were developed to assess the performance of other dimensions of the health system, such as safety and appropriateness (which are sub-dimensions of quality), but that at the same time can be interpreted in terms of efficiency. Four such indications were selected: large geographic variation in the quantity of care or in healthcare costs, screening outside the target groups (breast cancer screening in women aged 40-49 years old; over-use of investigations/equipment (medical radiation exposure) and inappropriate treatment (percentage of adults with short-term antidepressants prescribed (< 6 months)).

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11.2. One Day surgical hospitalisations (E-1)

11.2.1. Documentation sheet

Description	Surgical day care admissions as a percentage of all hospital admissions for surgery
Calculation	Numerator: number of stays in surgical day care ('one day surgery') Denominator: number of surgical stays
Rationale	Carrying out elective procedures as day cases where clinical circumstances allow (e.g. inguinal hernia repair, circumcision, cataract surgery, etc.) saves money on bed occupancy and nursing care. It is therefore considered an indicator of efficiency. Since the surgical day case rate has an influence on the system's capacity to provide and maintain infrastructure, it is also considered an indicator of sustainability. The majority of Belgian hospitals have a dedicated one day surgical unit. The accreditation of these units is regulated by a Royal Decree. Two recent KCE reports examined the financing of one day surgical units, and proposed some recommendations, specifically for one day surgery[1] and as a whole in the financing system of hospitals.[2]
Primary data source	RHM – MZG (FPS Health, Food Chain Safety and Environment)
Technical definitions	Numerator: Surgical day care were selected using the type of hospitalisation. <u>Before 2008</u>, HOSPTYP1 (file STAYHOSP) = 'D' (for Day care) and the flag for surgical stay in APR-DRG, RPOFM (file STAYXTRA) = 'P' (for procedure). <u>From 2008</u>, A2_HOSPTYPE_FAC (file STAYHOSP) = 'D' or 'C' and MorS_15 (file STAYXTRA) = 'P' Denominator: Stays with a surgical APR-DRG were selected with the flag for surgical APR-DRG.
International comparability	OECD presents the % of day care cases for a selection of surgical interventions.[3] A *surgical day case* is defined as a patient who is given invasive surgical treatment (elective surgeries only) which is carried out in a dedicated surgical unit or part of a hospital and which leads to discharge on the day of the operation. Caution is needed when comparing results across countries, as not all OECD countries use the precisely the same definition to selected the surgical intervention. Another source for international comparison is the International Association for Ambulatory Surgery (IASS) which publishes surveys of day surgery rates across countries.[4]
Performance dimensions	Efficiency; Sustainability;
Related indicators	Number of acute care bed days per inhabitant.

11.2.2. Results

The Belgian surgical day case rate grew from 34.8% in 2000 to 48.5% in 2012 (Figure 103). Wallonia shows lower rates (43.2% in 2012), compared to Flanders (50.6%) and Brussels (50.8%). There is also a large variability per type of intervention: while some interventions almost reach 95% of cases performed in day surgery (such as cataract), some stay relatively low (compared other countries, for instance laparoscopic cholecystectomy).

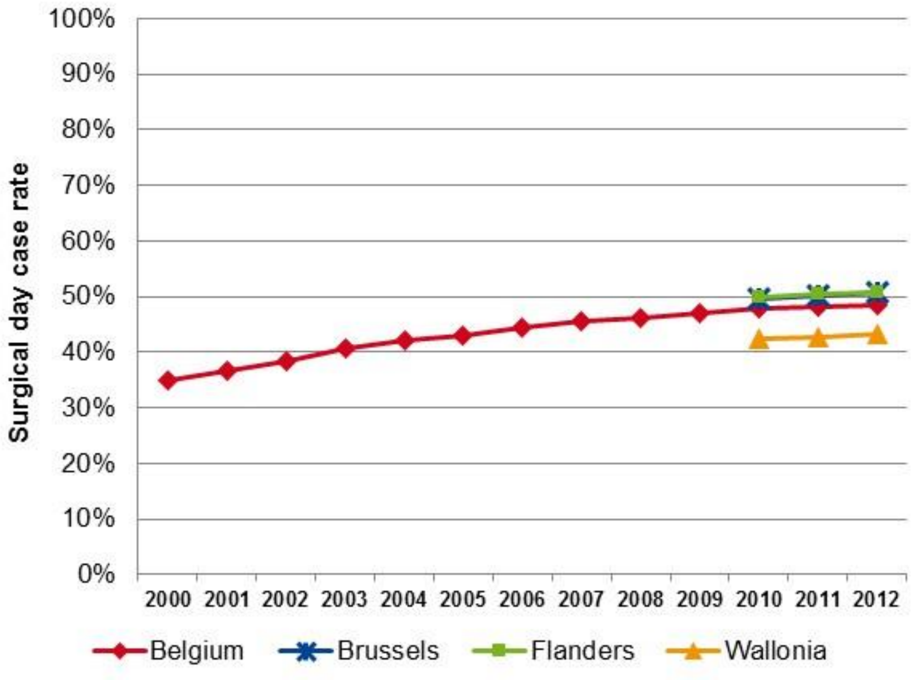
An international comparison has been performed in the recent KCE report on one day surgery.[1] This report concluded that Belgium has one day surgery rates comparable to other countries for a selection of interventions. It also showed that rates are highly dependent on which interventions are on the "A liste" and hence benefit from a one day lump sum. Laparoscopic cholecystectomy, for instance, which is not on the A list, has one day surgery rates much lower than other countries (see Table 75).

Table 73 – Percentage of surgical day cases amongst all surgical hospitalisations by year and hospital region (2012)

Variable	Category	Numerator: all surgical day cases	Denominator: all surgical cases	Percentage
Year	2000	349193	1003200	34.8%
	2001	381884	1041891	36.7%
	2002	411102	1068632	38.5%
	2003	445679	1092303	40.8%
	2004	476495	1131357	42.1%
	2005	488658	1139519	42.9%
	2006	515780	1164872	44.3%
	2007	543428	1195172	45.5%
	2008	567255	1227839	46.2%
	2009	588532	1252867	47.0%
	2010	613926	1286519	47.7%
	2011	631237	1308565	48.2%
	2012	638889	1317461	48.5%
Data 2012 by region				
Region	Brussels	63056	124019	50.8%
	Flanders	412097	814064	50.6%
	Wallonia	163736	379378	43.2%

Source: RCM-MKG and RHM-MZG

Figure 103 – Percentage of surgical day cases amongst all surgical hospitalisations by hospital region (2000-2012)



Source: RCM – MKG and RHM – MZG

Table 74 – Proportion of day care cases for selected surgeries (2005-2012)

	2005	2006	2007	2008	2009	2010	2011	2012
Cataract surgery	90.8	92	92.4	93.1	93.7	94.2	94.4	94.6
Tonsillectomy	66.1	66.5	68	67.8	69.8	70.8	70.8	70.6
Transluminal coronary angioplasty	6.1	6.9	6.9	8.2	8.6	8.7	9	9
Coronary artery bypass graft	0	0	0	0	0	0	0.1	0
Stem cell transplantation	3.8	2	0.7	0.6	1.2	2.1	2.9	1.6
Appendectomy	0.3	0.2	0.3	0.4	0.6	0.7	0.7	0.7
- Laparoscopic appendectomy	0.3	0.3	0.4	0.5	0.7	0.8	0.8	0.8
Cholecystectomy	1.2	1.4	1.6	2	2.2	3	3	3.5
- Laparoscopic cholecystectomy	1.3	1.7	1.8	2.2	2.5	3.3	3.3	..
Repair of inguinal hernia	19.8	22.3	23.9	25.5	26.8	29.6	30.4	33.7
- Laparoscopic repair of inguinal hernia	15.4	19.2	20.9	25.9	6.5	18.1	15.7	47.1
Transplantation of kidney	0	0	0	0	0.2	0.2	0	0
Open prostatectomy	0.4	0.4	0.6	0.5	0.6	0.5	0.4	0.6
Transurethral prostatectomy	0.5	0.6	0.4	0.3	0.4	0.3	0.3	0.5
Hysterectomy	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.4
- Laparoscopic hysterectomy	0	0	0	0.2	0.2	0.1	0.3	0.7
Caesarean section	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Hip replacement	0	0	0	0	0	0.1	0	0
- Secondary hip replacement	0.1	0	0.3	0.1	0.1	0.1	0.1	0.1
Total knee replacement	0	0.1	0	0.1	0.1	0.1	0	0
Partial excision of mammary gland	28.5	28	29.2	29.3	27.7	29.2	28.3	27.2
Total mastectomy	2.1	2.1	2.3	3	3.3	2.8	3.8	3.1

Source: OECD health statistics 2015 [3]

Table 75 – One day surgery rates, for a selection of procedures: international comparison (2009)

Procédure	Belgique	France	Angleterre	Pays-Bas	Danemark	U.S.A. (2007)
Myringotomie (drainage transtympanique prothétique)	96%	96%	87%	98%(2007)	75%	98%
Amygdalectomie	74%	63%	30%	32%	38%	90%
Chirurgie de la cataracte	93%	78%	97%	99%	99%	99%
Correction du strabisme	93%	33%	92%	97%	84%	84%
Stérilisation endoscopique de la femme	75%	57%	85%	94%	91%	92%
Dilatation + curetage	85%	63%	85%	70%	94%	86%
Méniscectomie arthroscopique	90%	74%	81%	93%	96%	98%
Libération du canal carpien	95%	84%	95%	94%	93%	98%
Cholécystectomie par laparoscopie	3%	1%	20%	6%	58%	53%
Réparation d'une hernie inguinale	35%	20%	59%	67%	81%	86%
Excision d'un kyste pilonidal	45%	19%	58%	91%	92%	91%
Circoncision	95%	90%	83%	95%	94%	91%
Panel IAAS*	78%	45%	77%	68%	86%	85%

** Liste de 37 procédures*

Source: International Association for Ambulatory Surgery (IASS), cited in report [1]

Key points

- **The percentage of surgical hospitalisations that were performed in one day hospital grew from 34.8% in 2000 to 48.5% in 2012.**
- **Belgium is in the European average for a series of interventions, except for some specific "low range" surgeries, which are not currently financed in day surgery, and hence are still performed in classic hospitalisation.**

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11.3. Length of stay for a normal delivery (E-2)

11.3.1. Documentation sheet

Description	Average length of stay for single spontaneous delivery
Calculation	Numerator: total length of stay of all hospitalizations for single spontaneous delivery.
	Denominator: total number of discharges for single spontaneous delivery
Rationale	The length of stay after a normal delivery is determined in a large part by factors of organisation and care provider characteristics and in a lesser extent by clinical patient characteristics (because the large majority of the women have a low risk pregnancy, and hence variability in care is very low). A recent KCE report proposed a new model of integrated care for the mother and the new-born, in which the care would occur mostly at home and hence would reduce length of hospitalisation.[1] Recent budgetary decisions will automatically shorten the LOS by half a day in 2015, while pilot projects are being started to test the feasibility of the different proposal for strengthening home care.[2,3] Average length of stay after normal delivery is an indicator to benchmark efficiency of health care systems, and is reported by the OECD.[4]
Data source	RHM – MZG (FPS Health, Food Chain Safety and Environment)
Technical definitions	Average length of stay (ALOS) is calculated by dividing the number of days stayed (from the date of admission in an in-patient institution) by the number of discharges. Diagnostic chapters (using principal diagnosis) have been defined according to the International Classification of Diseases, 9th revision and 10th revision. The OECD website offers a mapping list between both classifications. The OECD uses the ICD-9-CM code 650 'Normal Delivery':[5]
International comparability	The OECD definition of single spontaneous delivery was adopted. Several countries included in the OECD comparison use different methodologies to calculate the average length of stay. Some countries may include same day separations (counted either as 0 or 1 day), thereby resulting in an under-estimation of average length of stay compared with countries that exclude them. Also, some countries may only include data related to general hospitals, while others might include data also for specialised hospitals (generally involving higher length of stays than in general hospitals). Caution should be exercised when making international comparisons due to the possibility that countries may provide data for different types of institutions.
Performance dimensions	Efficiency
Related indicators	Acute care bed days, number per capita.

11.3.2. Results

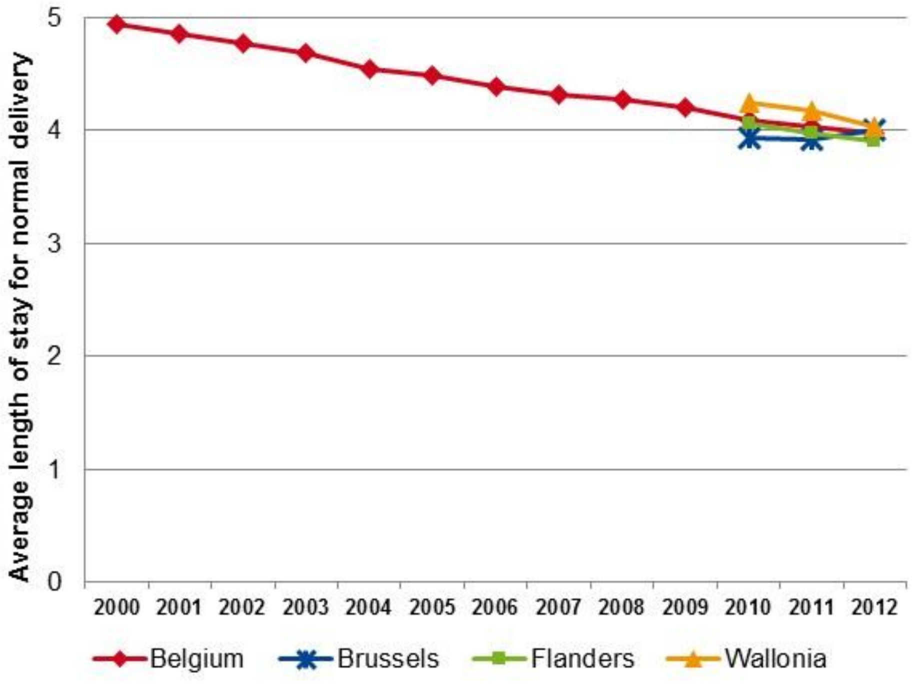
In Belgium, the duration of hospitalization for a normal delivery decreased from 5 days in 2000 to 4 days in 2012, with practically no differences between regions (3.9 in Flanders, 4 in Wallonia and 4 in Brussels) (Figure 104). This is almost 1 day above the EU-15 average of 3.1 days (Figure 105).

Table 76 – Average length of stay for a normal delivery, by year and hospital region (2012)

Variable	Category	Average length of stay (days)
Year	2000	4.94
	2001	4.85
	2002	4.77
	2003	4.69
	2004	4.54
	2005	4.48
	2006	4.39
	2007	4.32
	2008	4.28
	2009	4.21
	2010	4.09
	2011	4.03
	2012	3.97
Data 2012 by region		
Region	Brussels	4.01
	Flanders	3.90
	Wallonia	4.04

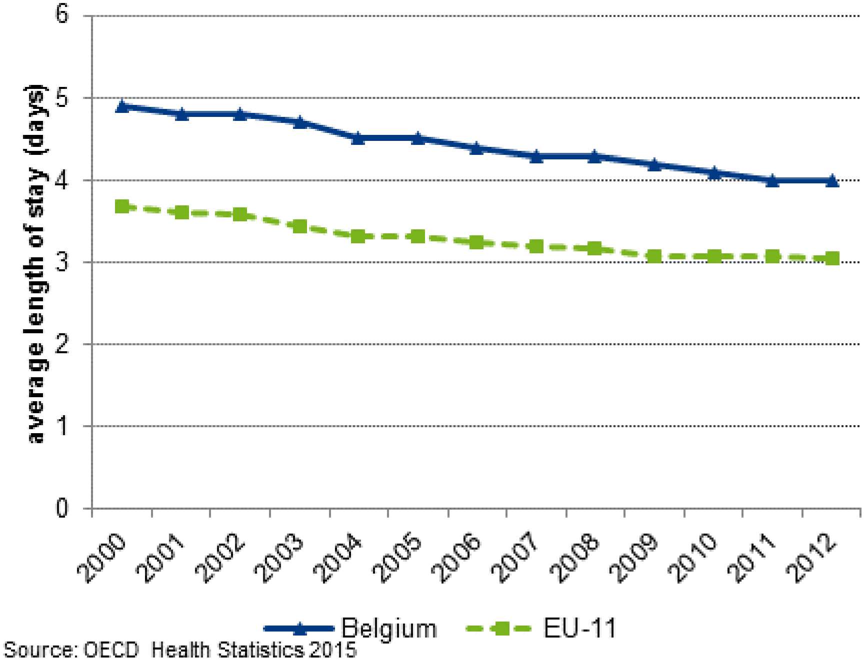
Source: RCM – MKG and RHM – MZG

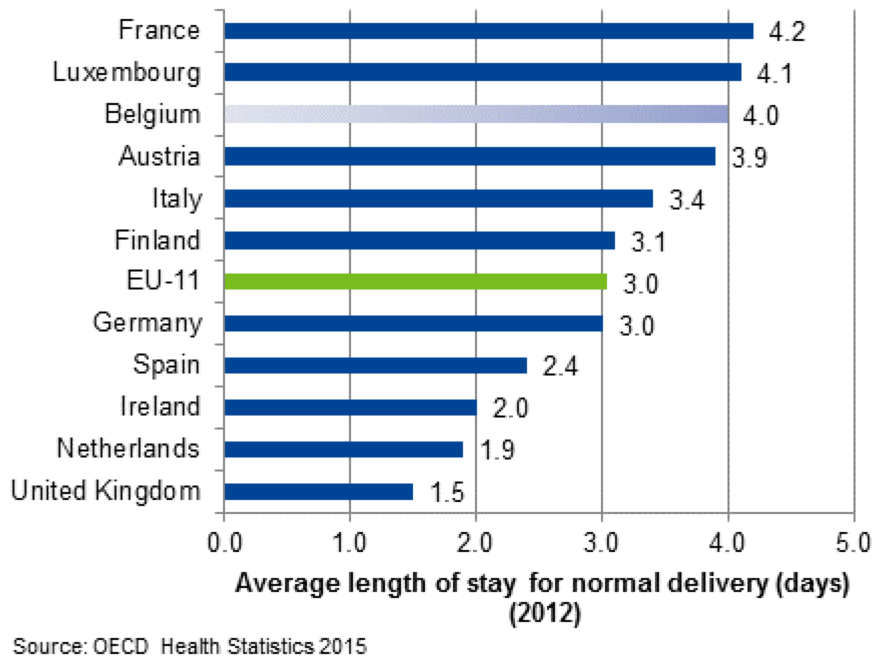
Figure 104 – Average length of stay for a normal delivery by hospital region (2000-2012)



Source: RCM – MKG and RHM – MZG

Figure 105 – Average length of stay for a normal delivery: international comparison (2000-2012)





Source: OECD Health statistics 2015

Key points

- **The duration of hospitalization for a normal delivery slightly decreased from 5 days in 2000 to 4 days in 2012, whith no differences between regions.**
- **This is almost 1 day above the EU-15 average of 3.1 days (but caution is needed with this comparison, as the method to calculate length of stay may differ between countries).**
- **Pilot projects are being started in Belgium in order to reduce this length of stay and to strengthen care at home.**

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11.4. Prescription of low-cost drugs in ambulatory setting (E-3)

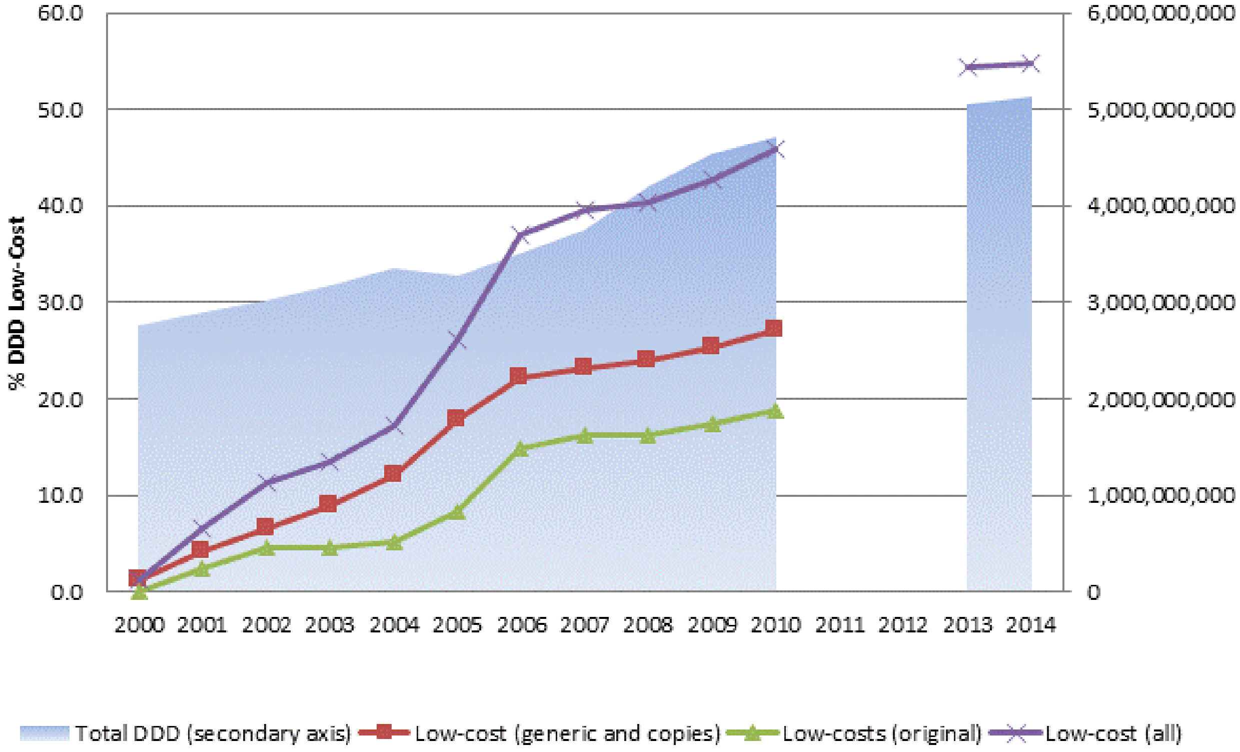
11.4.1. Documentation sheet

Description	Proportion of low cost drugs (DDD) prescribed in ambulatory setting
Calculation	Numerator: total DDD of low cost drugs delivered in ambulatory setting Denominator: total DDD delivered in ambulatory care
Rationale	Low cost drugs are at minimal 31% less expensive that original drugs. Promoting the prescription of low costs drugs is thus a good way to limit health expenditure, both for the third party payer and for the patient. In Belgium, a reference price system was implemented on 2001 and extended in 2005. With that system, patients have to pay a supplement when they are prescribed original drugs for which a generic alternative exist. As a consequence, several companies lowered the price of original drugs so that patients did not have to incur the financial penalty.[1] These drugs are thus also considered low cost. Depending on their specialty, physicians and dentists are require to prescribe a certain minimum percentage of low cost drugs, the so-called “quotas” since 2006, these quotas have been revised in December 2010, and again since 1st January 2015, to take into account biosimilar treatments.[2]
Data source	Pharmanet (RIZIV – INAMI)[3]
Technical definitions	Low cost prescriptions are defined as (1) generic drugs and copies (2) original drugs for which a generic alternative exists and which have lowered their public retail price to the reimbursement basis so that there is no supplement to be paid by the patient (3) drugs prescribed under the International Common Denomination (ICD or INN: International Non-proprietary Name) because the pharmacists delivers a low cost drug in priority Since 1st January 2015, a new definition has been set, including also biosimilar treatments, but this does not affect yet the results presented here (2014).
International comparability	Comparison with other countries is difficult since international comparison are based on the use of generic drugs (and not use of low costs drugs in general).[4]
Performance dimension	Efficiency

11.4.2. Results

Between 2000 and 2014, the total number of DDD prescribed in ambulatory setting increased from 2.76 billion to 5.1 billion. On the same period, the proportion of low cost DDD continuously increased to reach 54.8% in 2014. (Figure 106). Results by region are presented in Table 77 below.

Figure 106 – Percentage of low cost DDDs and total DDDs prescribed in ambulatory setting (2000-2014)



Source: RIZIV – INAMI, Pharmanet
Note: DDD= Defined Daily Dose

Table 77 – Percentage of low cost Defined Daily Doses (DDDs) prescribed in ambulatory setting, by region (2014)

Province	% DDD LOW COSTS DRUGS
Flanders	55.3
Wallonia	54,1
Brussels	54.7
Total Belgium	**54.8**

Source: RIZIV – INAMI, Pharmanet

Key points

- **The percentage of low cost drugs in ambulatory setting increased constantly (40.3% in 2008, 54.8% in 2014).**
- **Differences by region are small (Brussels 54.7%, Wallonia 54.1% Flanders 55.3%)**

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12. SUSTAINABILITY

12.1. Total healthcare expenditure (S-1, S-2, S-3)

12.1.1. Documentation sheet

Description	Total healthcare expenditure according to the System of Health Accounts (SHA, OECD), expressed for a given year: - As a whole (€ million) - Per healthcare sector (€ million) - Per capita (€ million/inhabitant) - As a percentage of the gross domestic product (GDP)
Calculation	All calculations are done by OECD on basis of data provided by experts from each country.[1]
Rationale	Trends in health expenditure are an important indicator of affordability, and thus sustainability. For international comparisons, the standard international definitions for healthcare and healthcare expenditure of the OECD's System of Health Accounts (SHA) are classically used. SHA aims at measuring consumption of health and long term care services. The total health expenditure is broken down by healthcare function, providers and funding agents for the purpose of monitoring healthcare consumption. The proportion of GDP devoted to healthcare and how this proportion changes over the course of time are also monitored.
Primary Data source	Total healthcare expenditure: FPS Social Security
Indicator results:	OECD Health Statistics 2015[2]
Technical definitions	See SHA technical manual[1] and specific technical note for Belgium (under information for country)
International comparability	OECD and EU Member countries are at varying stages of implementing the System of Health Accounts (SHA). Therefore, the data reported in OECD Health Statistics are at varying levels of comparability.
Related performance indicators	Out-of-pocket payments

12.1.2. Results

The total health expenditure amounted to 40.47 billion € in 2014. This represents 3620 €/inhabitant. The share of total health expenditure (THE) in Belgian Gross Domestic Product (GDP) accounts for 10.2%. The share financed by public sector amounts to 78% (Table 78).

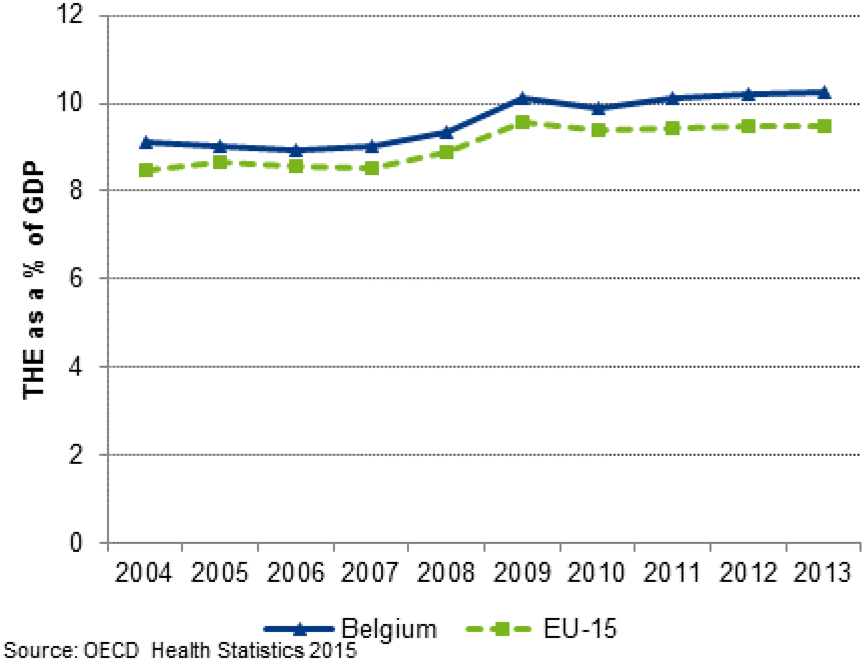
To allow comparisons between countries, these data are also expressed in 2005 US$ Purchasing Power Parities (PPP).

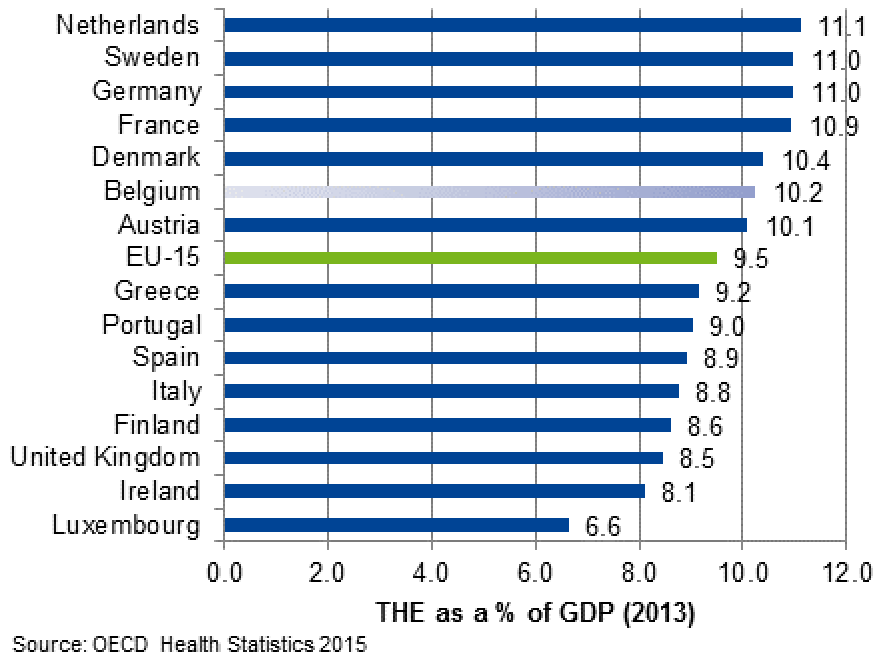
Table 78 – Total Health Expenditure, Belgium (2003-2013)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Absolute amounts (in millions €) OECD 2015	27150.94	28050.404	29240.216	31069.854	33246.55	35410.295	36168.435	38489.592	39613.861	40461.654
Per capita (in €) OECD 2015	2605.3721	2676.9185	2772.121	2924.0289	3104.2608	3279.796	3319.5493	3483.9322	3559.7579	3618.1987
Per capita (US$ PPP) OECD 2015	2907.16	2975.68	3141.26	3297.35	3553.80	3821.59	3886.36	4148.27	4224.69	4255.87
%GPD OECD 2015	9.10	9.02	8.93	9.00	9.36	10.13	9.89	10.13	10.21	10.24
% Public financing in THE OECD 2015	76.5	76.9	75.9	75.2	77.1	77.4	77.7	76.8	77.7	77.8

Source : System of Health accounts – SHA – OECD Health Statistics 2015

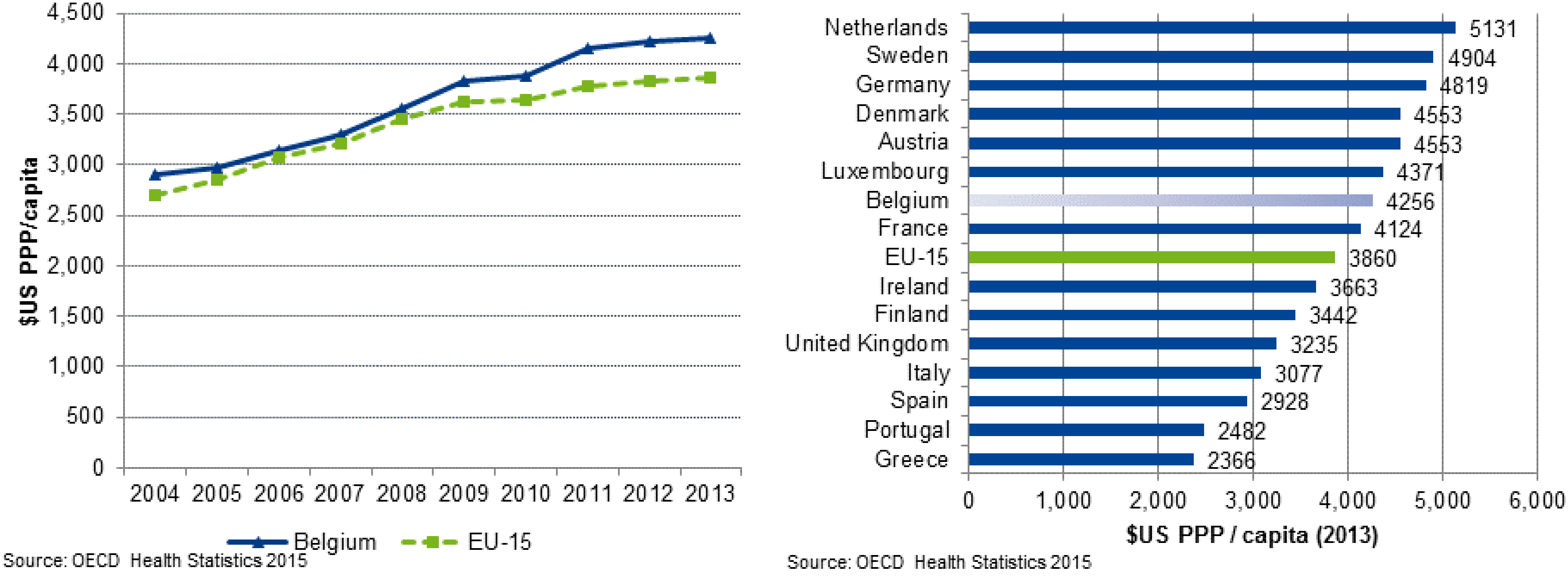
Figure 107 – Total health expenditure as a percentage of GDP: international comparison (2004-2013)





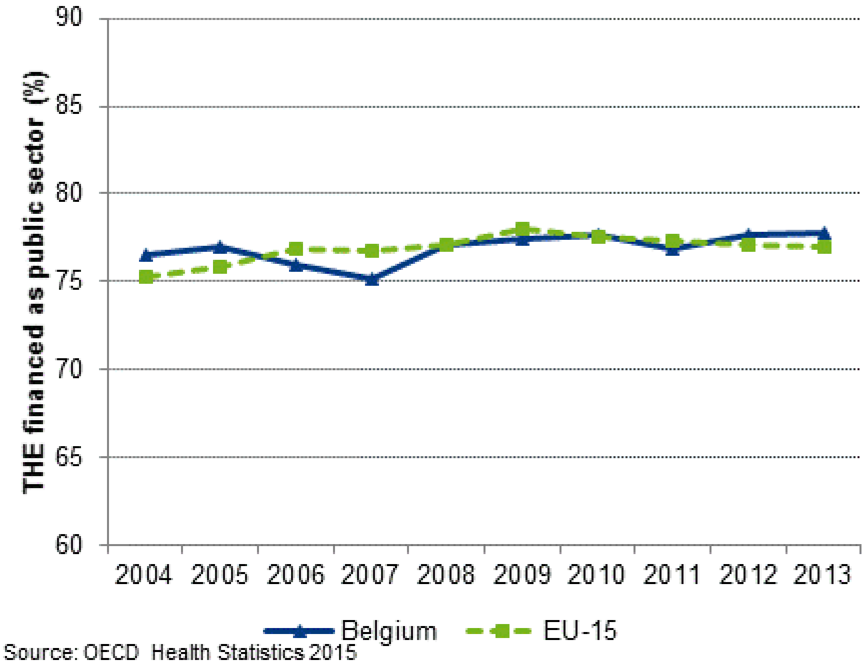
Source: OECD Health data 2015

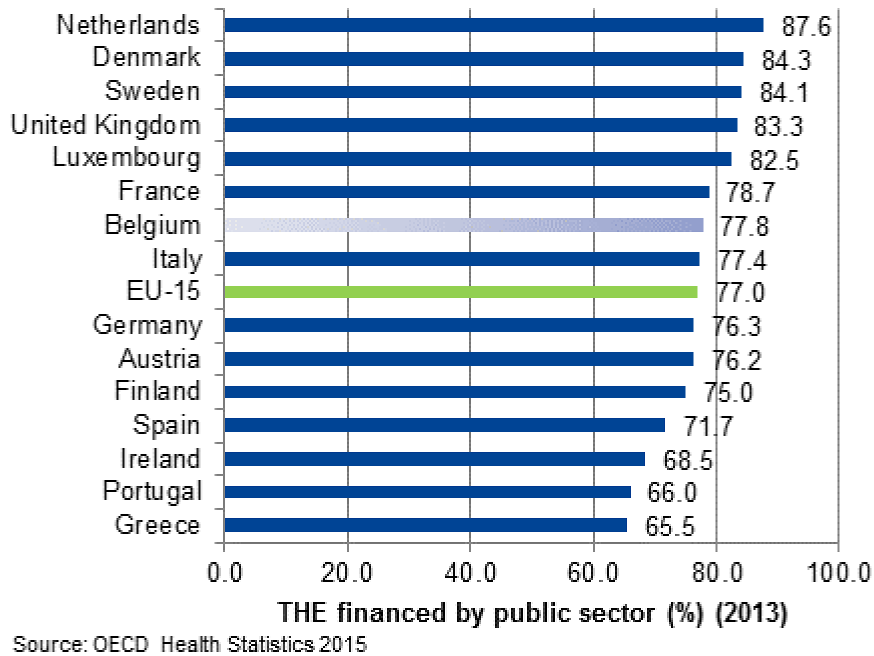
Figure 108 – Total health expenditure expressed per capita in PPP US dollars: international comparison (2004-2013)



Source: OECD Health data 2015

Figure 109 – Total health expenditure, percentage financed by public sector: international comparison (2004-2013)





Source: OECD Health data 2015

Key points

- **The total health expenditure amounted to 40.47 billion € in 2014. This represents 3620 €/inhabitant. The share of total health expenditure in Belgian Gross Domestic Product (GDP) accounts for 10.2%. The share financed by public sector amounts to 78%**
- **The total health expenditure, expressed as share of GPD or per capital, is very close to the European average.**

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[1] OECD, EUROStat, WHO. A System of Health Accounts. Organisation for Economic Co-operation and Development; 2011.

[2] OECD. Health Statistics 2015 [Web page]. Organisation for Economic Co-operation and Development; 2015. Available from: http://www.oecd.org/els/health-systems/health-data.htm

12.2. Medical graduates (S-4)

12.2.1. Documentation sheet

Description	Medical graduates per 100 000 population
Calculation	Numerator: number of students graduating every year from medical faculties in Belgium. Denominator: total population
Rationale	Maintaining the number of doctors requires investment in training new doctors, taking into account that it takes about ten years to train a doctor. Some European countries also opt for strong recruitment strategy to recruit trained physicians from abroad.[1] The number of medical graduates (in-flow), taken together with the number of practising physicians (current situation) and the proportion of practising physicians above 55+ years old (a proxy of the out-flow in ten years) are thus important indicators of the sustainability of the health system. <u>Medical training</u> Medical training is a six-year university course[ee] (Bachelor's degree 3 years, Master's training 6 years). After these 6 years, students receive their physician's diploma, and are granted a "licence to practise" (visa/visum) by the Federal Ministry of Public Health. <u>Post graduate training</u> New graduates wishing to become specialists follow additional training from three to six years, depending on the specialty. Those wishing to practise general medicine undergo three extra years of training. Specialization is restricted to a limited number of candidates (numerus clausus), who have to submit a training plan. There are 36 recognized specialties, including general medicine.[2] [3] The federal government decided in 1997 on a numerus clausus to limit the number of medical practitioners in the health care sector. The numerus clausus became effective in 2004, that is, after all students who had enrolled before the government decision could complete their training. The objective was to limit the total number of physicians working in the curative sector and gradually to reduce the existing discrepancy in medical density between the communities.[4] A system of "smoothing numbers" was also put in place, allowing the universities to dip into the pile of future quotas to provide agreements for current students. This smoothing method, valid until 2018, also allowed to postpone unfilled quotas to the following years.[5]
Data source	Federal database of health care professionals ("Cadastre/Kadaster"), Federal Public Service Public Health
Results source	OECD Health statistics
Technical definitions	The number of medical graduates is based on the number of "visa/visum" delivered by the Federal Public Service Public Health, which are registered in the federal cadastre.

[ee] 6 years since 2012, 7 years before 2012. In 2018 there will thus be a "double" promotion of medical graduates.

Limitations	This indicator also counts medical graduates from foreign countries, completing their medical training (and post graduate training) in Belgium, but leaving Belgium afterwards.[6]
International comparability	International comparability is partially limited, as two countries (Austria and the United Kingdom) exclude foreign graduates, while other countries, such as Belgium, include them (in the Czech Republic, foreign graduates account for about 30% of all medical graduates).[1]
Dimension	Sustainability of the health system
Related indicators	Number of practising physicians Number of practising physicians above 55+ years old

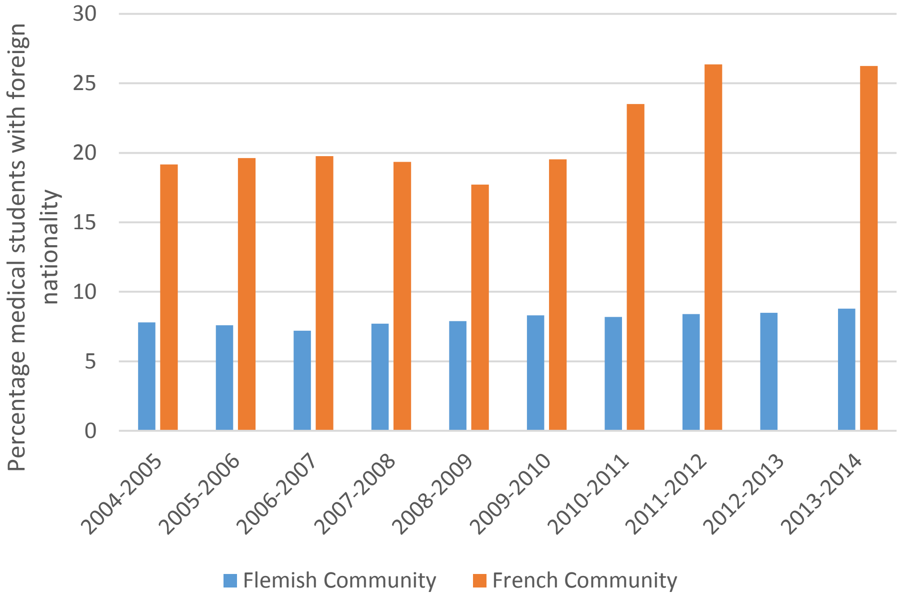
12.2.2. Results

In 2014, a total of 1289 students graduated from medical school in Belgium. Compared to the density of other European countries of 12.3 medial graduates per 100 000 pop, Belgium is slightly below (9 medical graduates per 100 000 pop, data 2012).

The decrease in 2004 is the effect of the numerus clausus which was decided in 97, and implemented for the first time in 2004.[3] Due to the use of the smoothing possibility (see rationale documentation sheet), the numbers of medical graduates has gradually increased to surpass in 2014 the numbers of 2003 (see Table 11). The density is a bit lower, due to the increase in population in this period.

The pattern of foreigner students differs by community: a stable 8% for the Flemish Community, and an increasing 25% in the French Community. In the French Community, a ceiling of 30% of foreigner students has thus been set.[6]

Figure 110 – Percentage medical students with foreign nationality, by Community (2004-2013)



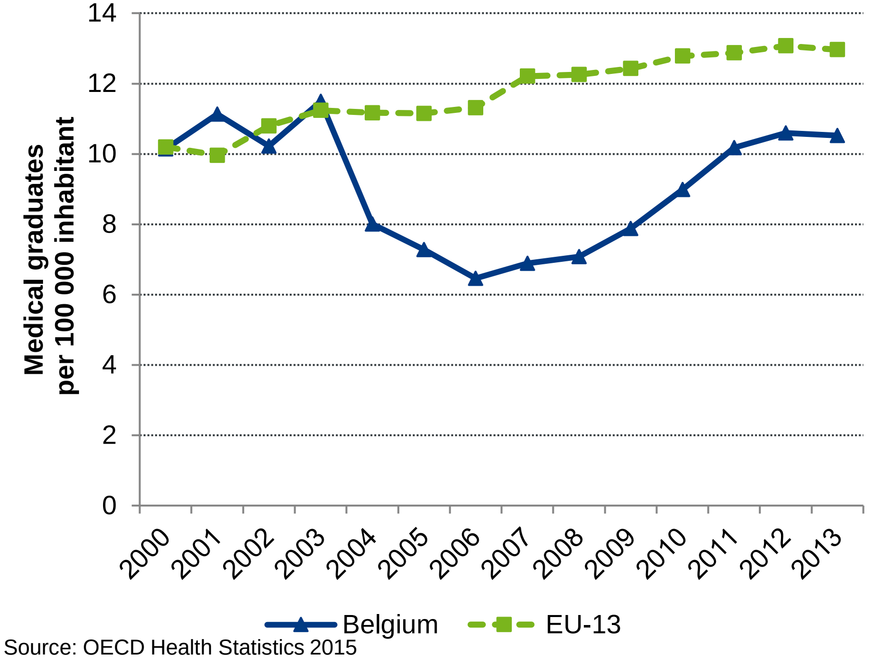
Source : Mobility report [6]

Table 79 – Number of medical graduates (2000-2014)

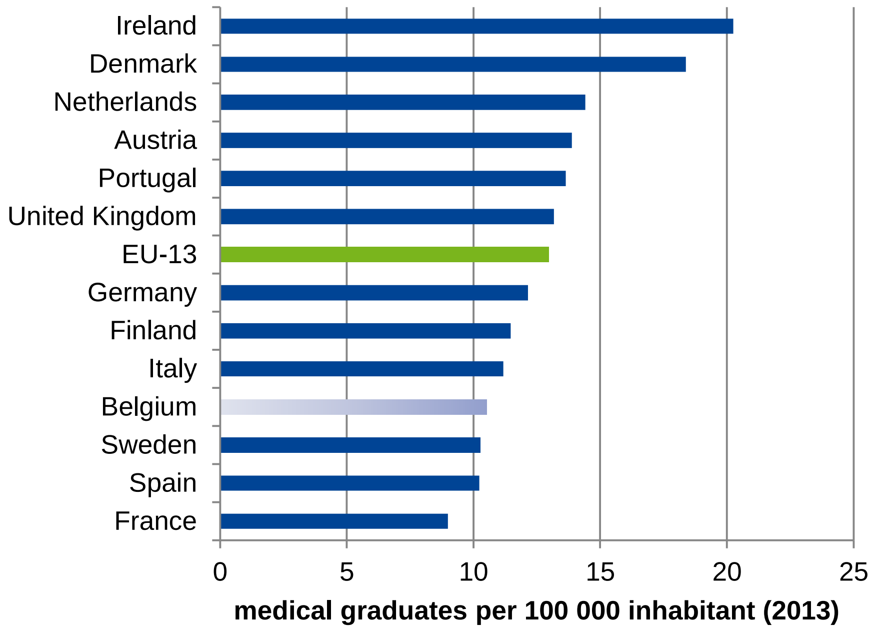
Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Medical graduates	1039	1145	1056	1193	835	763	681	732	758	851	980	1125	1180	1176	1289

Source : [7] and Cadastre (RAPAN 2014 à paraître en 2015)

Figure 111 – Medical graduates per 100 000 population: international comparison (2000-2013)



Source: OECD Health Statistics 2015



Source: OECD Health Statistics 2015

Source: OECD 2015

Key points

- **In 2014, a total of 1289 students graduated from medical school in Belgium.**
- **The density of 10 medical graduates per 100 000 pop is below the EU average of 13 /100 000 pop (based on 2013 data).**
- **In 1997 a numerus clausus was installed, which showed first effects in 2004 (835 graduates in 2004 versus 1193 in 2003). As the smoothing technique allowed overtaking from the numerus clausus, the numbers of medical graduates has gradually increased to surpass in 2014 the numbers of 2003.**
- **The pattern of foreigner students highly differ by community: a stable 8% for the Flemish Community, and an increasing 25% for the French Community (with a legal maximum of 30%).**

References

All publications from the “Cellule de planification de l’offre médicale” are available on their website: http://www.health.belgium.be/hwf

[1] OECD. Health at a Glance 2013. OECD Publishing; 2013.

[2] Cellule de Planification de l'Offre des Professions des Soins de Santé. Schéma du parcours des professionnels des soins de santé pour exercer en Belgique (après la 6 ième réforme de l'état). SPF santé publique, sécurité chaine alimentaire et environnement, DG soins de santé; Juillet 2014. Report PU2014_02

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[4] Gerkens S, Merkur S. Belgium: Health system review. Health Systems in Transition. 2010;12(5):1-266.

[5] Cellule de Planification de l'Offre des Professions des Soins de Santé. Rapport annuel 2013 de la commission de planification - offre médicale. SPF santé publique, sécurité chaine alimentaire et environnement, DG soins de santé; 2014.

[6] Cellule de Planification de l'Offre des Professions des Soins de Santé. Médecins, mobilités internationales. Service Public Fédéral Santé Publique, sécurité de la chaine alimentaire et environnement, DG soins de santé; 2014. Report PU2014_08

[7] OECD. Health statistics 2014 [Web page].2014. Available from: http://www.oecd.org/els/health-systems/health-data.htm

12.3. Medical graduates becoming GPs (S-5)

12.3.1. Documentation sheet

Description	Percentage of medical graduates becoming GP.
Numerator	Number of diploma practising as GP in the second year after diploma registration
Denominator	Total diploma with medical specialisation (GP and other specialists) in the second year after diploma registration
Rationale	The proportion of medical graduate enrolled in GP specialisation in the second year after diploma in comparison with all medical specialisation type is an indicator of attractiveness of GP practice
Data source	NIHDI
Results source	GPs performance report
Technical definitions and limitations	*Numerator : professional code 10, competence code 005-006* or 003 or 004 within the *2 year after diploma* *Denominator : code professional 10, code competence 0xx or 1xx behalf 000 or 009 <> 0 within the second year after diploma* The % of GP specialisation 2 years after diploma is calculated in comparing the number of diploma in GP specialisation to all type specialised medical doctor 2 years after diploma. Foreign diplomas are included, which explain the differences observed with the number of medical graduates registered by the SPF-FOD. Belgian diploma not registered by NIHDI are excluded from the calculation. N.B. The choice of '2 years' is explained with following reason: after 1 year only 40 % of diploma are registered in specialisation. 3 years would be too long to monitor the problematic.
International comparability	This is not an international indicator
Related performance indicators	Number of physicians and nurses, medical graduates, mean age of medical specialist

12.3.2. Results

GP's attraction is fundamental to renew the cohort t soon will be retired. New recruitment of GPs is a challenge in comparison with other specialities. The percentage of GP among other specialists was about 40% in the year 1990, and slowed down below 25% in the years 2000-2010 when numerous clausus began.

In 2010 with the GPs performance report a strong signal was send to improve the situation. Planification commission proposed a minimum quota since several years (2002) but this minimum quota was never reached. Anyway a slightly improvement was observed and the percentage grew above 25 % to reach 30% in the Dutch speaking community. But the number still remains too low to replace the GPs who are going to retire soon.

Table 80 – Graduates in medicine per type of specialisation 2 years after their diploma (2000-2013)

All diploma

Year of diploma	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
GP specialisation after 2 year	290	296	261	275	225	206	197	229	213	251	272	321	346	331
other specialisation after 2 year	653	780	722	829	615	561	562	618	663	725	755	859	899	871
no specialisation after 2 year	167	156	108	93	108	108	86	152	172	125	119	114	139	124
total number of diploma by year	**1110**	**1232**	**1091**	**1197**	**948**	**875**	**845**	**999**	**1048**	**1101**	**1146**	**1294**	**1384**	**1326**
% total specialisation after 2 year	85%	87%	90%	92%	89%	88%	90%	85%	84%	89%	90%	91%	90%	91%
% GP specialisation after 2 year among all specialisation after 2 year	31%	28%	27%	25%	27%	27%	26%	27%	24%	26%	26%	27%	28%	**28%**

French speaking

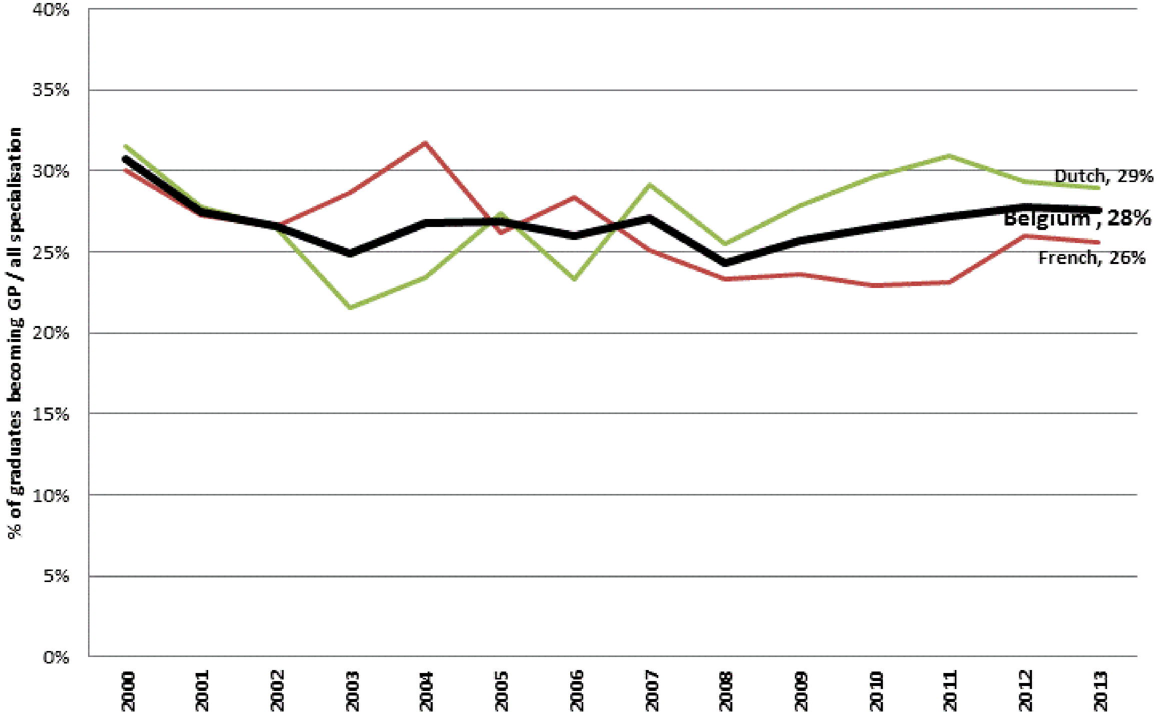
Year of diploma	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
GP specialisation after 2 year	141	144	125	150	107	89	113	109	110	118	110	129	146	128
other specialisation after 2 year	329	385	345	373	230	251	286	326	362	381	370	430	417	372
no specialisation after 2 year	81	68	58	45	46	58	38	101	123	94	91	76	95	72
total number of diploma by year	**551**	**597**	**528**	**568**	**383**	**398**	**437**	**536**	**595**	**593**	**571**	**635**	**658**	**572**
% total specialisation after 2 year	85%	89%	89%	92%	88%	85%	91%	81%	79%	84%	84%	88%	86%	87%
% GP specialisation after 2 year among all specialisation after 2 year	30%	27%	27%	29%	32%	26%	28%	25%	23%	24%	23%	23%	26%	**26%**

Dutch speaking

Year of diploma	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
GP specialisation after 2 year	149	152	136	125	118	117	84	120	103	133	162	192	200	203
other specialisation after 2 year	324	395	377	456	385	310	276	292	301	344	385	429	482	499
no specialisation after 2 year	86	88	50	48	62	50	48	51	49	31	28	38	44	52
total number of diploma by year	**559**	**635**	**563**	**629**	**565**	**477**	**408**	**463**	**453**	**508**	**575**	**659**	**726**	**754**
% total specialisation after 2 year	85%	86%	91%	92%	89%	90%	88%	89%	89%	94%	95%	94%	94%	93%
% GP specialisation after 2 year among all specialisation after 2 year	32%	28%	27%	22%	23%	27%	23%	29%	25%	28%	30%	31%	29%	**29%**

Source: RIZIV – INAMI

Figure 112 – Graduates in medicine per type of specialisation 2 years after their diploma (2000-2013)



Source: RIZIV – INAMI

Key points

- **The number of graduates who specialize either in general medicine or in another specialty is still growing.**
- **Form these graduates, the % of graduates in general medicine was 39% in 1996 and is actually (2013) 28 % despite efforts to improve GP's attraction. According to the commission of planification, the number should be around 40 %**

12.4. Age of GPs compared to other specialists (S-6)

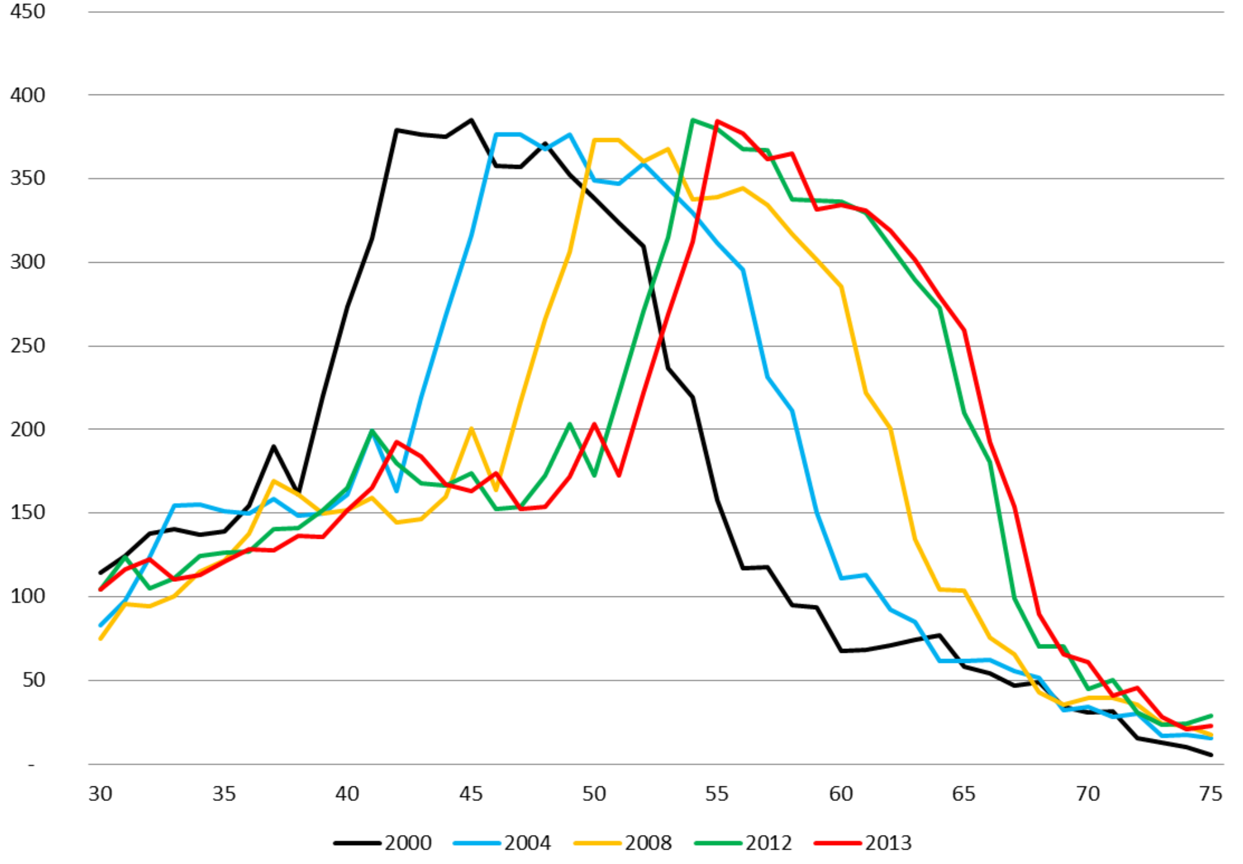
12.4.1. Documentation sheet

Description	Mean age of GPs compared to other specialists.
Rationale	Mean Age of Full time equivalent GP is a sensitive indicator to monitor the replacement of an aging GP cohort and attractiveness of GP practice in comparison with other specialities
Numerator	Total ages of active GP standardized by FTE
Denominator	Total FTE GPs
Data source	RIZIV – INAMI
Results source	GPs performance report[1]
Technical definitions and limitations	FTE is calculated by dividing individual NIHDI revenue by the median of revenue from their speciality for age 45-54. If the result of this division is above “1”, the result will be indicated as “1”. If it is below one, the percentage indicates the % of one FTE
International comparability	This is not an international indicator
Related performance indicators	Number of practising medical doctors, number of medical graduates, % of GP aged more than 55

12.4.2. Results

There is a huge cohort of GP aged from 60 to 65 who will nearly retired. It should be replaced by young graduates to maintain status quo of primary care. The cohort from 55 - 64 represent 40% of the GPs activity. There is a threat that this cohort will not be replaced in time. Since 2000 the % of activity produce by 65+ grew up from 13 %. For the first time, in 2013, the total number of FTE shows a (slight) decrease.

Figure 113 – Distribution of the GPs age (in Full Time equivalent) (2000, 2004, 2008, 2012, 2013)



Source: RIZIV – INAMI

Table 81 – Percentage of activity by age class of GPs (2000-2013)

Age group (years)	2000	2004	2008	2012	2013
35-	10%	8%	7%	8%	8%
35-44	33%	22%	18%	18%	17%
45-54	41%	44%	36%	25%	23%
55-64	12%	21%	32%	38%	39%
65-74	4%	5%	6%	9%	11%
75+	0%	1%	1%	2%	2%
total FTE	**7895**	**8093**	**8160**	**8721**	**8693**

Source: RIZIV – INAMI

Another way to monitor this evolution is to calculate the mean age of Full time equivalent by type of health worker. This indicator is a proxy to monitor the replacement of an aging GPs cohort in comparison with other specialities.

In comparison with other specialties, the GPs are the oldest ones.

Mean age of GP is currently 52.8 versus 46.6 in 2000. It means that new graduates are not enough to replace older GPs.

Moreover, in 2000, the mean age for other specialists and GPs was the same (46.6). In 2013 GPs are 2.2 years older than other MD specialists.

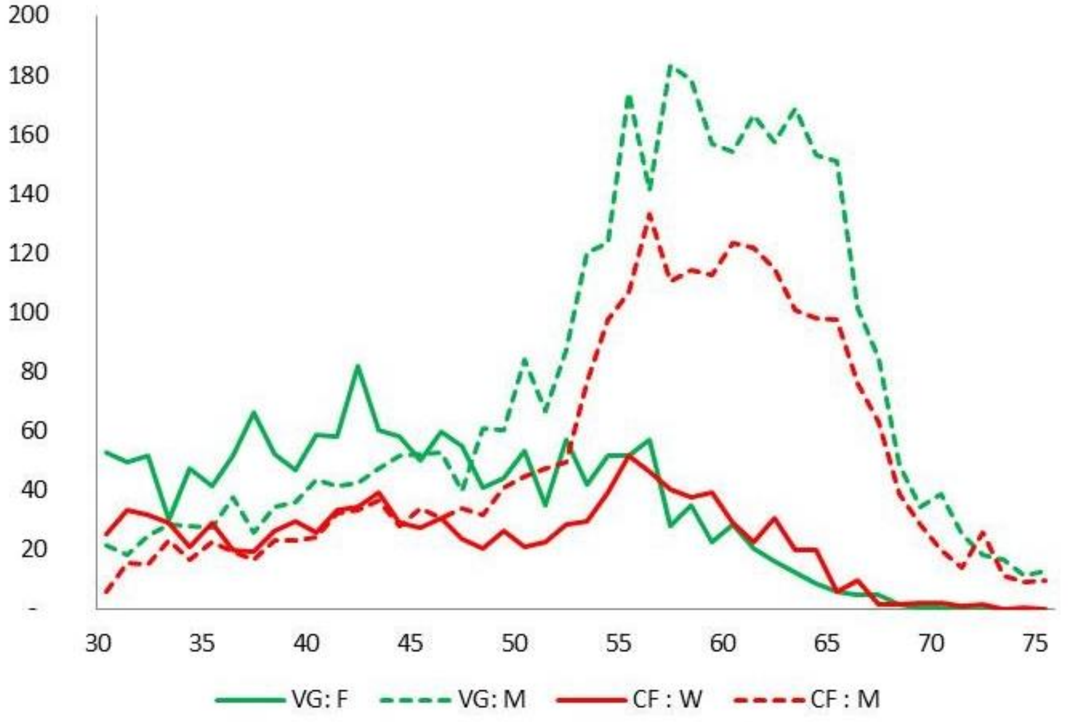
Table 82 – Mean age of GPs compared to other specialists (2000-2013)

mean age FTE	2000	2004	2008	2012	2013	growth 2000-2013
GPs	46.6	48.8	51.1	52.4	52.8	13%
specialists behalve GPs	46.6	47.6	48.6	49.4	49.6	6%
paediatricians	47.3	47.9	48.3	49.0	49.2	4%
obstetric gynecologists	46.5	47.4	48.4	49.1	49.3	6%
psychiatrists	49.2	50.4	51.3	51.3	51.3	4%
medical group	46.2	47.4	48.6	49.6	49.8	8%
surgical group	46.2	47.1	47.9	48.7	48.9	6%

Source: RIZIV – INAMI

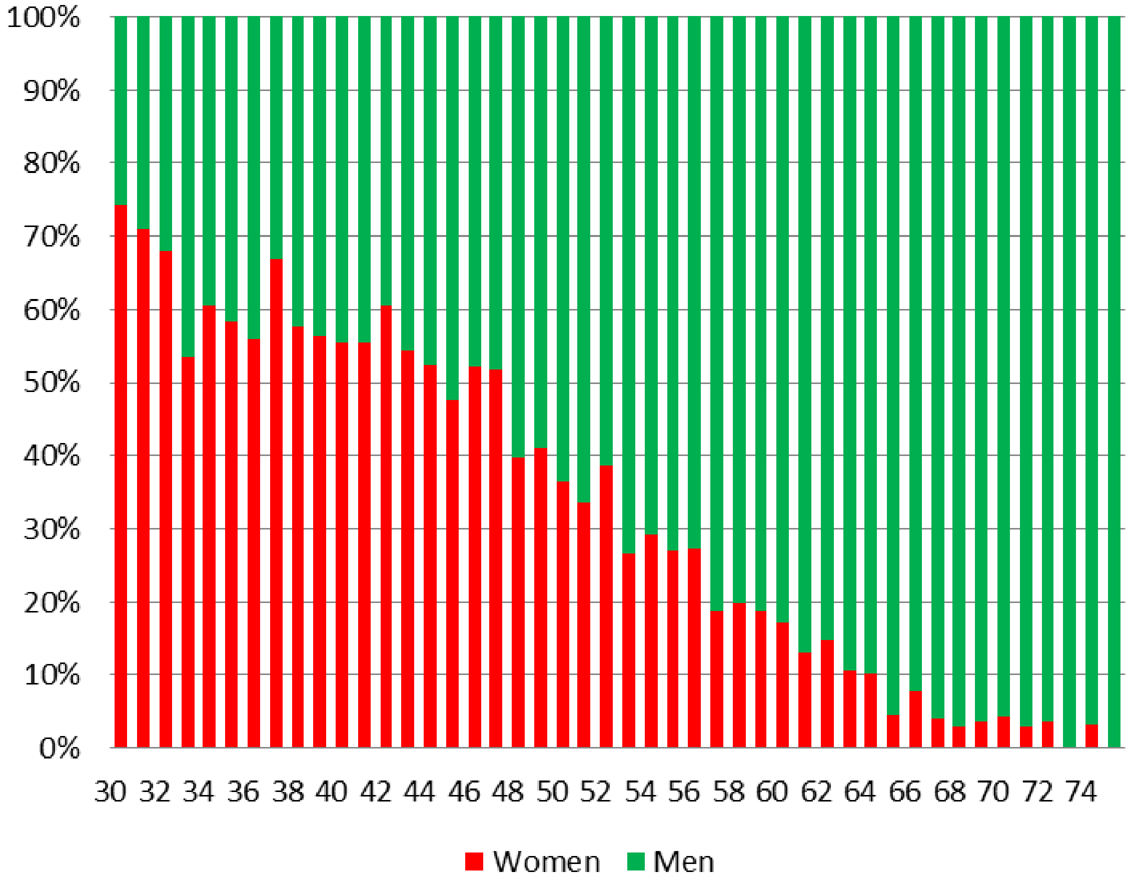
Gender distribution by age is also changing quickly: feminization in GP practice is growing because a large cohort of men is going to be retired.

Figure 114 – Distribution of GPs FTE by age, by community and gender (2013)



Source: RIZIV – INAMI
Note: VG: Vlaamse Gemeesnchap (Flemish Community), CF: Communuaté Française (French Community), F or W: :Female, M: Male

Figure 115 – Feminization of GP (FTE by age, by gender) (2013)



Source: RIZIV – INAMI

Younger GPs are not working in the same way as older GPs: they are visiting their patients quite less often and prefer to develop group practices.[1] Penetration of electronic medical files is also greater in younger GPs (see coverage of electronic medical record in GP practice).

Key points

- **The mean age of Full time equivalent GPs is actually 52.8 years. This increases rapidly: in 2000 mean age of GPs was 46.6 years. From all medical specialities, GPs have the oldest mean age, while in 2000 it was similar to other specialities.**
- **This situation is essentially linked to the fact that older GPs are working longer and to the lack of new graduates becoming GPs to replace the retired workforce. For the first time in 2013, the total number of Full time equivalents shows a (slight) decrease**
- **Youngest GPs are mainly women which explain the feminisation of GPs. The kind of work done by younger GPs is slightly different than that done by older GPs (informatisation, group practice, type of activity).**

References

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12.5. Proportion of practising physicians aged 55 years and over (S-7)

12.5.1. Documentation sheet

Description	Proportion of practising physicians aged 55 years and over
Calculation	Numerator: number of practising physicians aged 55 years and over Denominator: number of practising physicians
Rationale	Beyond the overall number of doctors, the age and gender composition of the medical workforce and the mix between different categories of doctors also have important implications on the current and future supply of medical services. The ageing of doctors in OECD countries has, for many years, raised concerns that there may not be sufficient new recruits to replace them, although there is evidence in several countries that the retirement of doctors often only occurs gradually and that their retirement age is increasing.[1] This is indicator gives a rough estimation of the share of physicians that will retire within 10 years (although a significant number of doctors continues to practise after 65 years old).[1] It should be analysed together with the current number of practising physicians, and the number of medical graduates (input). At the European level, there is currently a “Joint action on health workforce planning and forecasting” which is coordinated by Belgium. The general objective of this action is a platform for collaboration and exchange between Member states to prepare the future of the health care workforce. This will support Member states and Europe in their capacity to take effective and sustainable measures. Also, various tools will be developed to enable Member states to implement health care workforce planning and/or to enhance the current planning processes.[2]
Data source	INAMI – RIZIV (annual statistics)[3]
Results source	OECD Health statistics[4]
Technical definitions	All practising physicians are included, even those with very low volume of activity. A care provider is considered to be practising (RIZIV – INAMI: “profiles”) if he/she provided more than **1** clinical service (i.e. consultations, visits, technical acts, but not prescriptions) during a given year or the 2 preceding years. This information is also available by specific speciality in the PlanCad reports, in addition with the computation of the FTE (full time equivalent) by age and speciality.[5]
International comparability	This is an OECD indicator. The level of activity to define practising physicians may not be the same across countries, but this should not affect evolutions over time.
Related indicators	Number of practising physicians Number of medical graduates

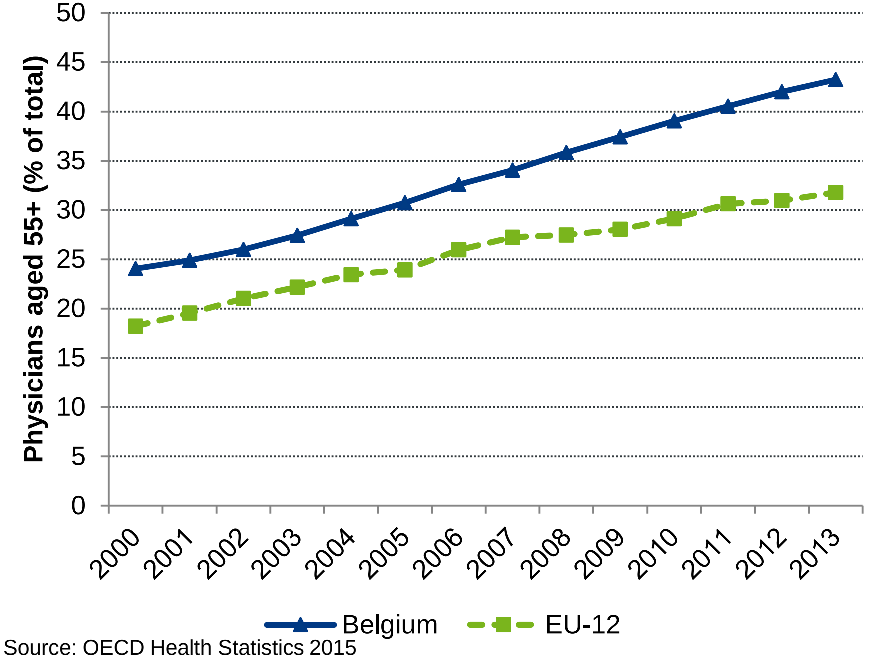
12.5.2. Results

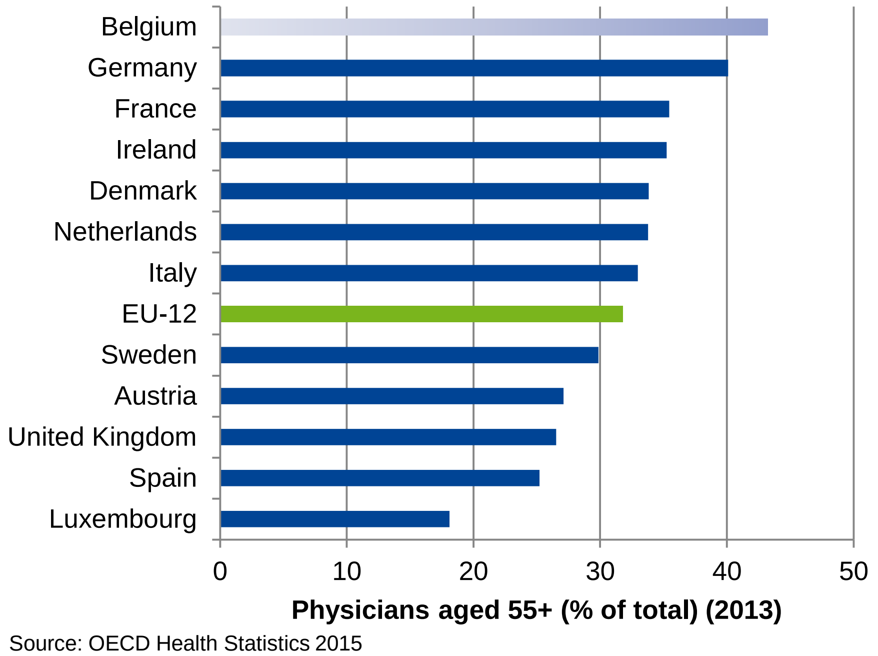
In 2013, 43.2% of the practising physicians in Belgium were over 55 years of age, compared to 24% in 2000.

Results from the PlanCad also show that the number of hours effectively worked decreased with age: above 65 years old, the FTE is 0.11 for women and 0.21 for men (Table 4, Plan Cad Total Doctors).[5]

This evolution is observed in all other European countries (Figure 4) and corresponds to the ageing of population, but Belgium has the highest share of physicians above 55 years old (compared to 12 countries).

Figure 116 – Share of doctors aged 55 years and over: international comparison (2000-2013)





Source: OECD 2015

Key points

- **In 2013, 43.2% of the practising physicians in Belgium were over 55 years of age, compared to 24% in 2000.**
- **The evolution is observed in all European countries, but Belgium has the highest share of physicians above 55 years and older among 12 countries.**
- **A current European joint action, coordinated by Belgium, promotes collaboration and exchange between Member states to prepare the future of the health care workforce.**

References

[1] OECD. Health at a Glance 2013. OECD Publishing; 2013.

[2] Joint action on health workforce planning and forecasting. Joint action on health workforce planning and forecasting [Web page].2014. Available from: http://euhwforce.weebly.com/

[3] INAMI-RIZIV. Rapport annuel d'activité 2014. 2015.

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12.6. Nursing graduates (S-8)

12.6.1. Documentation sheet

Description	Nursing graduates per 100 000 population
Calculation	Numerator: number of students graduating every year from nursing schools (both Bachelor and non-Bachelor: all nursing students who have obtained a recognised qualification required to become a licensed or registered nurse are counted) in Belgium. Denominator: total population
Rationale	Maintaining the number of nurses requires investments in training new nurses as well as investments in the attractivity of the nursing profession to attract students to these educational programmes. Many industrialized countries have taken measures to expand the number of students in nursing education programmes in response to concerns about current or anticipated shortages of nurses. Increasing investment in nursing education is particularly important as the nursing workforce is ageing in many countries and the baby-boom generation of nurses approaches retirement.[1] Also in Belgian several policy measures were taken to increase the number of nursing graduates such as Project 600 which offers employees of the healthcare sector the opportunity to study nursing with maintenance of their salary[ff].
Data source	eCad, Federal Public Service Public Health
Results source	ecad; OECD Health statistics
Technical definitions	The number of nursing graduates is based on the number of “visa” delivered by the Federal Public Service Public Health, which are registered in the federal cadastre.
Limitations	This indicator also counts nursing graduates from foreign countries, completing their nursing training in Belgium, but leaving Belgium afterwards. The educational level was encoded in another database and imported into e-cad resulting in a relatively high number of ‘unknown’ cases for diploma level.
International comparability	International comparability is partially limited, as educational pathways to become a nurse differ and registration practices for new graduates may differ between countries (e.g. Sweden does not include graduates from lower level nursing programmes, Germany does not include graduates from three-year education programmes focusing on elderly care). (OECD health at a glance 2013)
Dimension	Sustainability of the health system
Related indicators	Number of practising nurses Number of practising nurses above 50+ years old

[ff] http://www.vlaanderen.be/nl/onderwijs-en-wetenschap/onderwijsaanbod/verpleegkunde-studeren-met-behoud-van-loon

12.6.2. Results

In 2014, a total of 5 325 students graduated from nursing schools in Belgium which is an increase of 1 637 (or 30.7%) in ten years (Table 83). This increase is more pronounced for the Flemish Community (+1 057 or 32.5%) than in the French community (+580 or 27.9%) Compared to the density of other European countries of 34.44 nursing graduates per 100 000 pop, Belgium is clearly above this figure (41.05 nursing graduates per 100 000 pop, data 2012). After a drop in the nursing graduates in per 100 000 pop 2006/2007/2008, the number of nursing graduates per 100 000 population is increasing again.

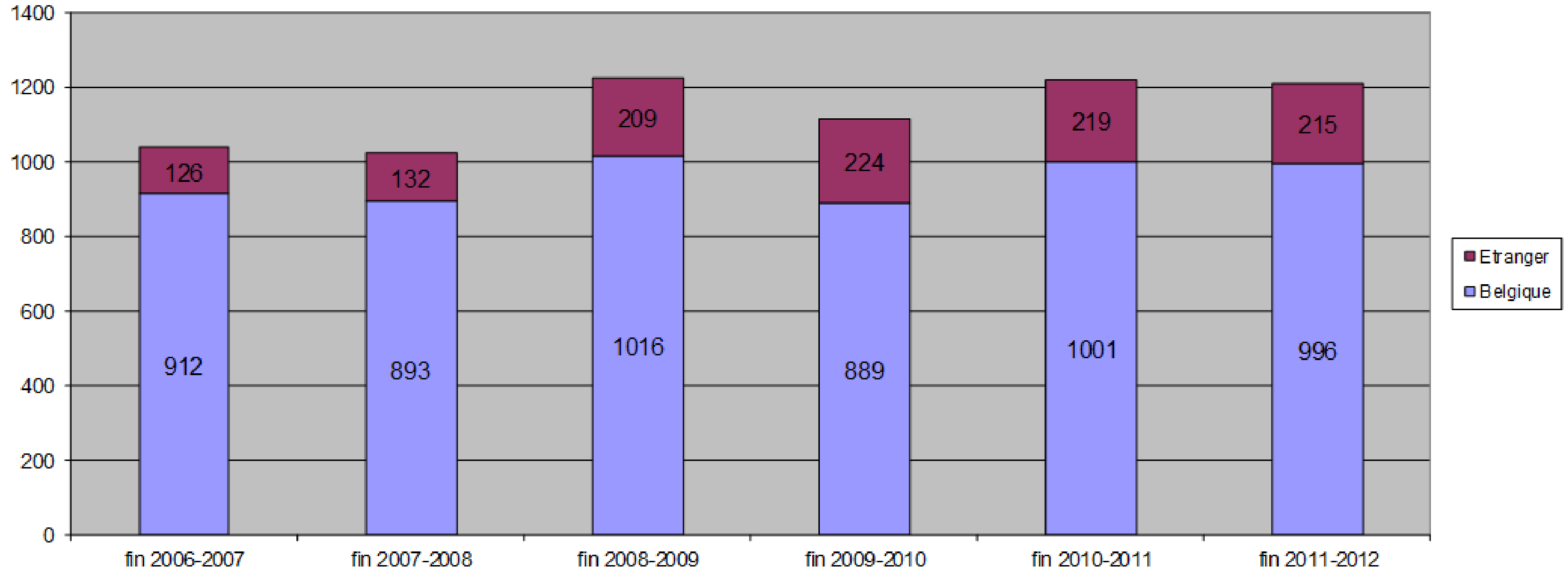
The pattern of foreign nursing graduates (i.e. based on place of residence) is only available for the Bachelor level for the French community. Figure 12 illustrates that 17.8% (215 on 1211 cases) of the Bachelor students in the French community are foreigners. Based on nationality this figure is much higher (31% in 2012 or 386 on 1211 cases) (data not shown).

Table 83 – New nursing graduates (2004-2014), per community and per diploma level (2004-2010)

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Flemish Community	Bachelor	1317	414	364	1128	701	1185	1417	1511	1791	1922	1.737
	Lower level nurses	854	12	18	24	38	66	823	956	1138	1382	1.511
	Unknown	20	965	1079	989	569	251	17	3			.
	Total	2191	1391	1461	2141	1308	1502	2257	2470	2929	3304	3.248
French-speaking community	Bachelor	794	228	110	106	1052	1278	1050	1161	1153	1237	1.273
	Lower level nurses	590	1374	1377	1411	1349	1296	517	561	654	773	804
	Unknown	113	664	893	144	19	11	19	13	2		.
	Total	1497	2266	2380	1661	2420	2585	1586	1735	1809	2010	2.077
Total		3.688	3657	3841	3802	3728	4087	3843	4205	4738	5314	5325

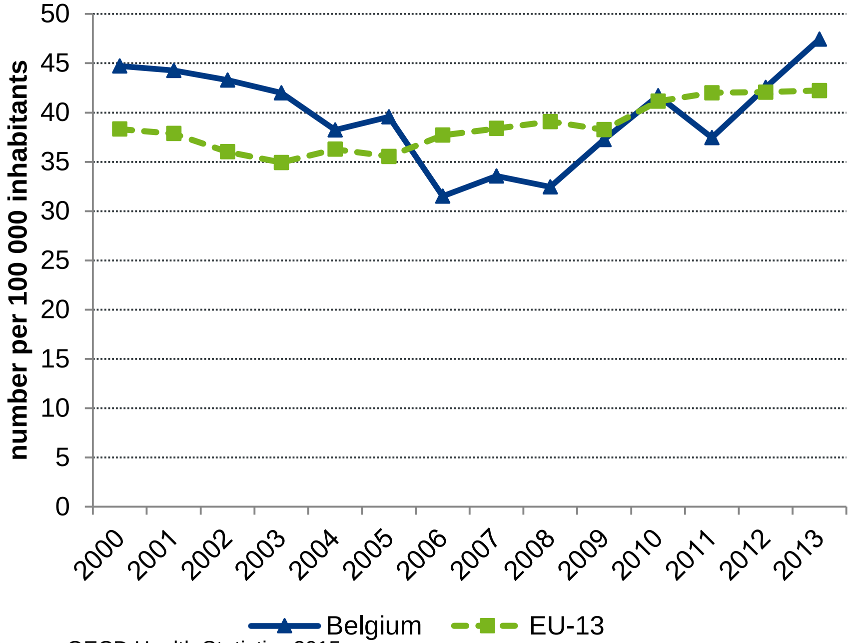
Source : ecad [2]

Figure 117 – Nursing graduates with a place of residence abroad, French Community (2006-2012)

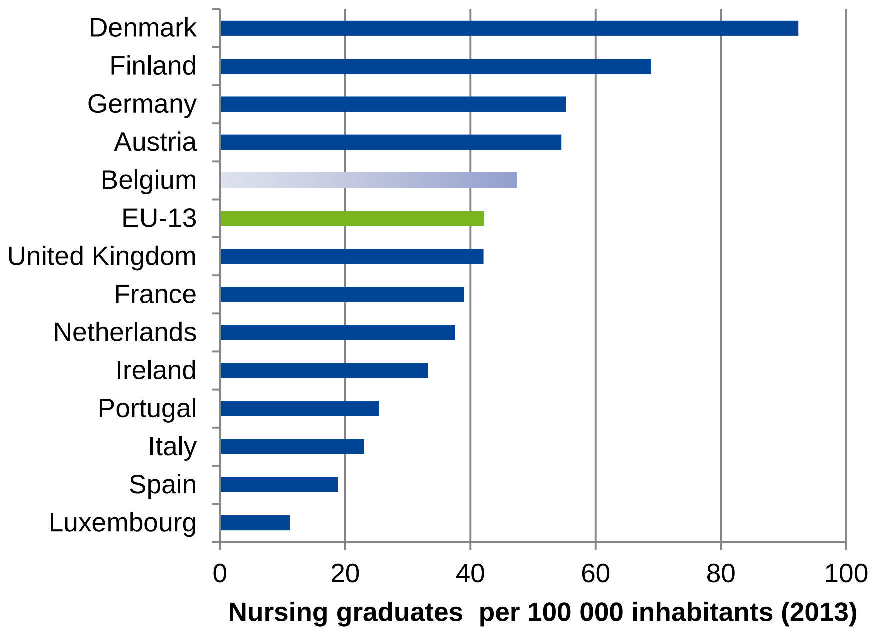


Source : [2]

Figure 118 – Nursing graduates per 100 000 population: international comparison (2000-2013)



Source: OECD Health Statistics 2015



Source: OECD Health Statistics 2015

Source : OECD Health statistics 2015

Key points

- **In 2014, a total of 5325 students graduated from nursing schools in Belgium.**
- **The density of 47.5 (47.1) nursing graduates per 100 000 pop is above the EU average of 42.2/100 000 pop (based on 2013 data).**
- **The proportion of foreign students in the French Community is substantial. No data were available for the Flemish community.**

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12.7. Percentage of nurses with a Bachelor's degree (S-9)

12.7.1. Documentation sheet

Description	Percentage of nurses active on the Belgian labour market with a bachelor's degree OR Percentage of nursing graduates holding a bachelor's degree
Calculation	Numerator : Number of nurses active on the Belgian labour market with at least a Bachelor's degree *100 Denominator: Number of nurses active on the Belgian labour market
Rationale	In many countries, including Canada, Australia, New Zealand, Norway, Spain, Philippines, and many in South America, standardized entry into professional nursing at the baccalaureate level. In other countries such as the United States, Belgium,[1] The Netherlands, the United Kingdom, Sweden other (lower educational) entry levels coincides besides the Bachelor degree entry-level. Nevertheless, a solid evidence base shows that better patient outcomes are associated with better educated nurses. A landmark US-study showed that each 10% increase in the proportion of Bachelor-degree trained nursing staff was associated with 5% lower odds on patient mortality after taking into account how sick the patients were and other characteristics of hospitals that had been shown to be associated with mortality rates, including physician qualifications.[2] Replications in other countries with differently organized and financed health care (among which a multi-country European study) yielded remarkably similar findings. (Aiken et al. Lancet 2014).[3] These study finding back up policy recommendations & measures aiming for a sufficiently educated nursing workforce. In the US, for instance, the Institute of Medicine (IOM) recommended in its report on 'The Future of Nursing' [4] to move to a nurse workforce comprising 80% of nurses with a Bachelor's degree by 2020 (compared to slightly more than 50% in 2010). In Belgium, policy makers did not (yet) formulated such targets but the cited evidence suggests the importance of at least monitoring the educational level of nurses over time.
Data source	Data about the educational level of nurses at the national level are available via PlanCAD Gegevenskoppeling Verpleegkunde 2004-2009, Cel Planning Aanbod Gezondheidsberoepen, Dienst Strategische Coördinatie Gezondheidszorgberoepen, FOD Volksgezondheid, Veiligheid van de Voedselketen en Leefmilieu.[5] In addition, via the same data source, data available about the influx of nurses (and their educational degree) on the Belgian labour market based on the year of their last obtained diploma. In addition to this national data source, data about the percentage of nursing student following the Bachelor track are available for Dutch-speaking nursing schools via the 'Boordtabellen ik ga ervoor'.
International comparability	No recurrent systematic data collection exist. Nevertheless, the RN4CAST study holds data about the educational level of nursing staff from 488 general acute care hospitals in 12 European countries, including Belgium.[6]
Dimension	Quality of care
Related indicators	Number of practising nurses per 10 000 population Number of nursing graduates

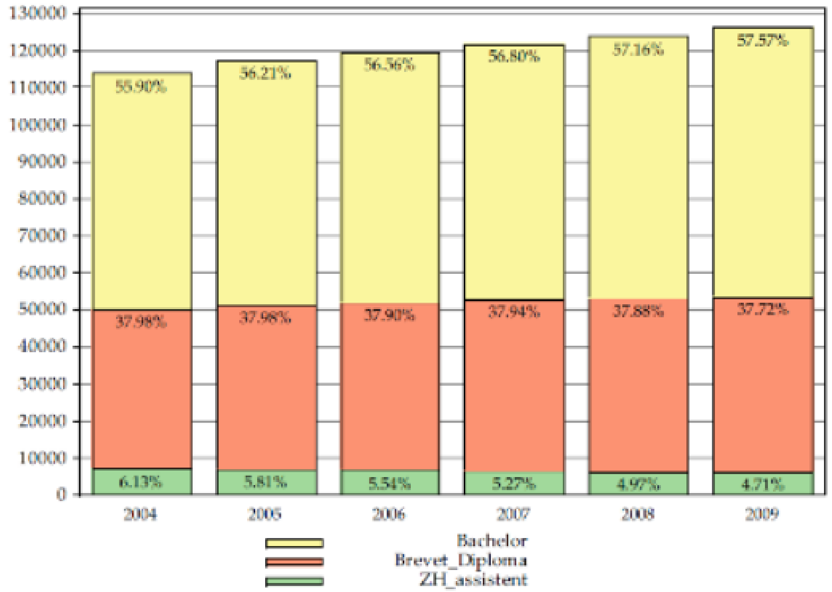
12.7.2. Results

From 2004 to 2009 a slightly increase in the percentage of nurses (active on the Belgian labour market) with a Bachelor's degree can be observed (from 55.9% in 2004 to 57.57% in 2009). (The same type of information is also available for the Flemish and French communities, by year of diploma. In 2014, respectively 53.5% and 61.3% of the nursing graduates in Flemish community and French community had a bachelor diploma. (Table 13) (Figure 13)

The Plan Cad nurse report also presents the type of diploma for new nursing graduates (Figure 14). The report concludes that the trend of Bachelor degree nurses entering the labour market follows the trend of diploma level nurses entering the labour market. This parallel trend reflects demographic evolutions of the population (e.g. peak in the 70s can be explained by the high number of people aged 18 year old caused by the baby boom after WOII). Moreover, since 1995 no more diplomas at the level of 'hospital assistant' were obtained (this educational pathway was abandoned).[5]

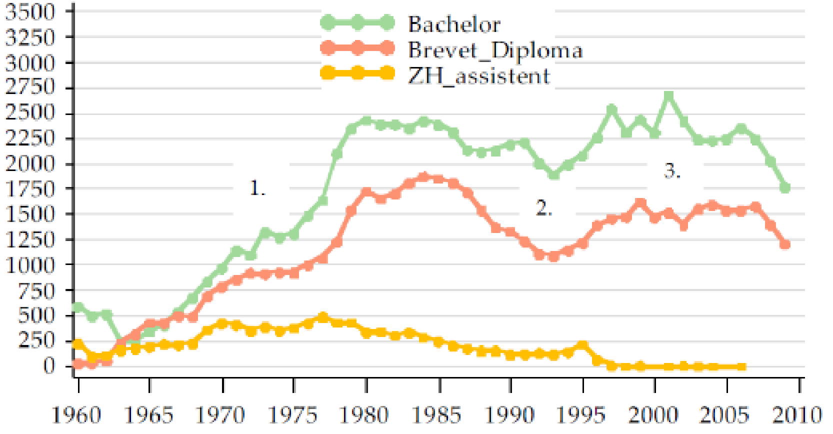
The same type of information is also available for the Flemish and French communities, by year of diploma. In 2014, respectively 53.5% and 61.3% of the nursing graduates in Flemish community and French community had a bachelor diploma. (Table 13)

Figure 119 – Educational level of nurses active on the Belgian labour market (2004-2009)



Source : Plan Cad Nurses [5]

Figure 120 – Influx of nurses on the labour market by type of diploma (Year of entry on the labour market = year of latest obtained diploma)



Source : Plan Cad Nurses [5]

Table 84 – New nursing graduates (2004-2014), per community and per diploma level (2004-2010)

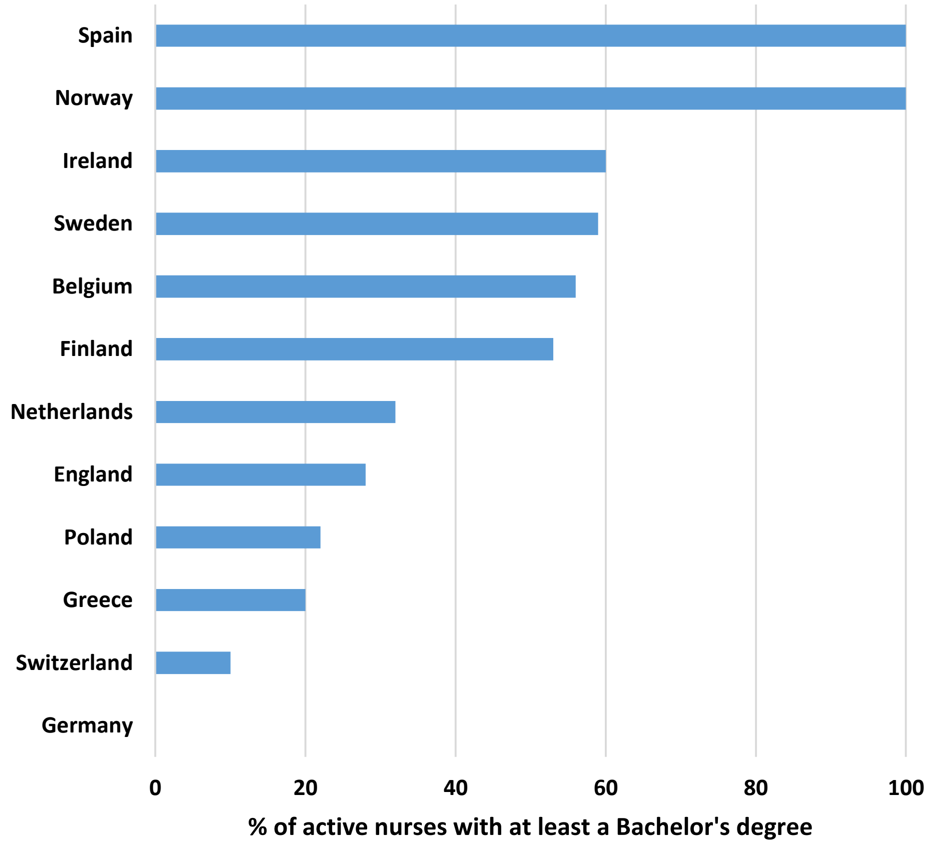
		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Flemish Community	Bachelor	1317	414	364	1128	701	1185	1417	1511	1791	1922	1.737
	Lower level nurses	854	12	18	24	38	66	823	956	1138	1382	1.511
	Unknown	20	965	1079	989	569	251	17	3			.
	Total	2191	1391	1461	2141	1308	1502	2257	2470	2929	3304	3.248
French-speaking community	Bachelor	794	228	110	106	1052	1278	1050	1161	1153	1237	1.273
	Lower level nurses	590	1374	1377	1411	1349	1296	517	561	654	773	804
	Unknown	113	664	893	144	19	11	19	13	2		.
	Total	1497	2266	2380	1661	2420	2585	1586	1735	1809	2010	2.077
Total		3.688	3657	3841	3802	3728	4087	3843	4205	4738	5314	5325

Source : ecad [7]

The RN4CAST results suggest that the countries studied are at quite different stages of implementing standardization of nursing education as measured by the proportion of hospital nurses with bachelor's degrees. In Norway and Spain, all hospital nurses surveyed held a bachelor's degree. None of the nurses in

Germany reported having a bachelor's degree. The other countries varied substantially from 10% of nurses with bachelor's degrees in Switzerland to close to 60% in Ireland and Sweden. Belgium is ranked at the 5th place with 56 of the nurses being educated at the Bachelors' degree level.[6]

Figure 121 – Percentage of nurses with at least a Bachelor's degree: international comparison (2009-2010)



Source: RN4CAST study [6]

Key points

- **The percentage of nurses that are active on the Belgian labour market that are educated at the Bachelor's degree slightly increased between 2004-2009. With 56% of the hospital nurses having a Bachelor's degree, Belgium is ranked 5th out of 12 European countries for which data were available.**
- **Based on the new nursing graduates, more nurses are educated at a bachelor degree in the French community (61.3%) than in the Flemish community (53.5%)**
- **Since recent years there are indications that the proportion of nursing students at the Bachelor's degree is slightly decreasing: a trend that needs to be carefully monitored to ensure a well-educated nursing workforce for the forthcoming years.**

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12.8. Proportion of professionally active nurses aged 50 years and over (S-10)

12.8.1. Documentation sheet

Description	Proportion of professionally active nurses aged 50 years and over
Calculation	Numerator: number of professionally active nurses aged 50 years and over Denominator: number of professionally active nurses
Rationale	Beyond the overall number of nurses, the age and gender composition of the nursing workforce also have important implications on the current and future supply of healthcare services. The ageing of nurses in industrialized countries has, for many years, raised concerns that there may not be sufficient new recruits to replace them. An additional concern is that nurses quit their job before the retirement age (see limitations for this indicator). This is indicator gives a rough estimation of the share of nurses that will retire within 10 years (although a significant number of nurses may have already quit their job before the official retirement age). It should be analysed together with the current number of practising nurses, and the number of nursing graduates (input).
Data source	PlanCAD Nurses 2014 [1], Federal Public Service Public Health
Limitation	A high score for this indicator can be interpreted in two ways: first, a high need to invest in new recruits, but also a sign of longer availability on the labor market (retirement at later age) which is a good sign.
International comparability	No standardized data collection available. Data for individual countries available: synthesis of these data reports is beyond the scope of this report. This indicator is also monitored in UK[gg], US[hh] and New Zealand[ii].
Related indicators	Number of practising nurses, Number of nursing graduates

12.8.2. Results

In 2009 (31/12/2009), 108 810 female and 17 663 male nurses were economically active on the Belgian labour market. From Figure 1, it is clear that the largest share of active nurses is aged 45-50 years. In addition, it is clear that the group of 55+ is less represented on the labour market compared to other age categories:

25.4% of the practising nurses in Belgium were over 50 years of age in 2009, while 10.7% is aged 55 years or above (Table 1).

From figure 2 it is clear that in the Walloon region the age groups 40-45 and 45-50 are overrepresented. In the Flemish region a greater share of the youngest as well as the oldest age categories can be observed. For Brussels no clear results can be observed.[1]

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gg http://www.jrf.org.uk/publications/nurses-over-50-options-decisions-and-outcomes

hh http://bhpr.hrsa.gov/healthworkforce/reports/nursingworkforce/nursingworkforcefullreport.pdf

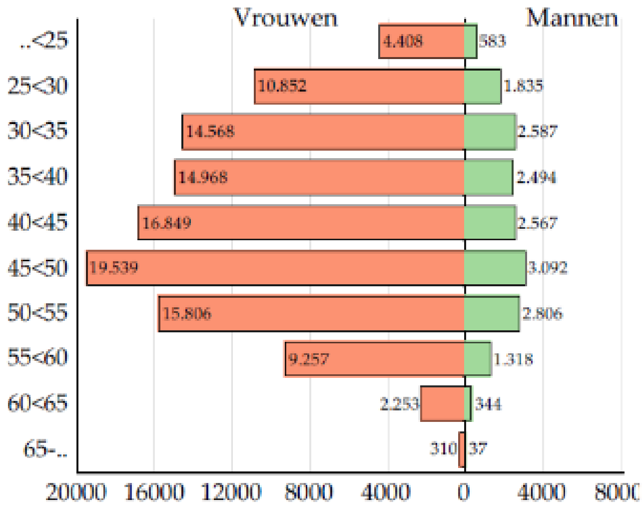
ii http://ojs.victoria.ac.nz/LEW/article/view/1972

Table 85 – Age distribution of nurses active on the labour market (2009)

	Female	Male	Total
<25	4408	583	4991
25<30	10852	1835	12687
30<35	14568	2587	17155
35<40	14968	2494	17462
40<45	16849	2567	19416
45<50	19539	3092	22631
50<55	15806	2806	18612
55<60	9257	1318	10575
60<65	2253	344	2597
65-	310	37	347
total	108810	17663	126473
AGED 50 OR ABOVE	25.39%	25.51%	25.41%
AGED 55 OR ABOVE	10.86%	9.62%	10.69%

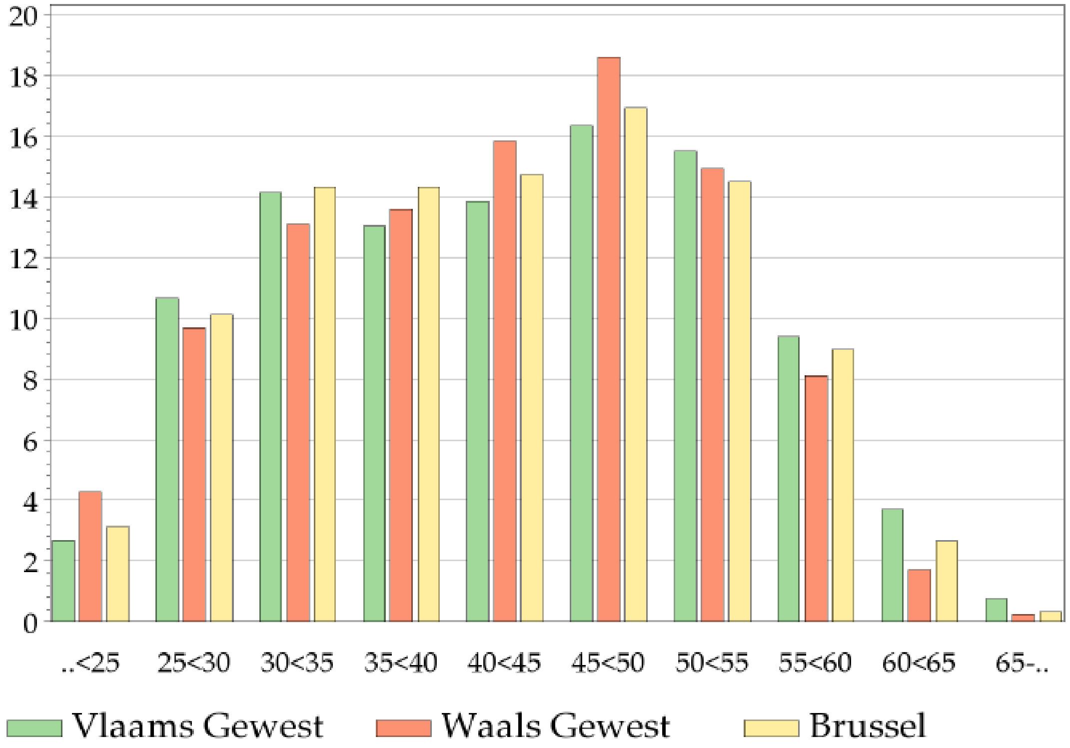
Source Plancad Nurses [1]

Figure 122 – Age pyramid active nurses (2009)



Source Plancad Nurses [1]

Figure 123 – Active nurses per age group and region of residence (2009)



Source: PlanCad 2014 [1], Figure 3

Table 86 – Active nurses per age group and region of residence (2009)

	Total Belgium		Flanders		Wallonia		Brussels	
	N pers.	% pers.	N pers.	% pers.	N pers.	% pers.	N pers.	% pers.
…<25	4979	4.14%	3520	4.50%	1144	3.24%	151	2.76%
25<30	12595	10.46%	7918	10.11%	3712	10.53%	604	11.03%
30<35	16900	14.04%	10618	13.56%	5225	14.82%	795	14.52%
35<40	16965	14.09%	10848	13.86%	5171	14.66%	727	13.28%
40<45	18567	15.42%	12438	15.89%	5243	14.87%	761	13.90%
45<50	21297	17.69%	14374	18.36%	5932	16.82%	891	16.27%
50<55	17315	14.38%	11409	14.57%	5000	14.18%	836	15.27%
55<60	9610	7.98%	6048	7.73%	3021	8.57%	500	9.13%
60<65	1949	1.62%	1013	1.29%	747	2.12%	185	3.38%
65<…	201	0.17%	102	0.13%	73	0.21%	25	0.46%
Total	120378	100.00%	78288	100.00	35268	100.00%	5475	100.00%
% > 50 years	**29075**	**24.15**	**18572**	**23.72**	**8841**	**25.07**	**1546**	**28.24**

Source: PlanCad 2014 [1]
Note : this data are computed on the population of nurses on whom it was possible to compute a ETP (120 378).

Key points

- **In 2009, 25.4% of the active nurses in Belgium were over 50 years of age. (23.7% in Flanders, 25% in Wallonia, 28% in Brussels)**
- **The age composition of the nursing workforce is different in the Belgian regions: Flanders characterised by overrepresentation of the youngest and oldest age categories, Wallonia by an overrepresentation in the age group 40-50.**

References

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12.9. Number of days spent in curative beds in acute care hospitals (S-11)

12.9.1. Documentation sheet

Description	Curative care bed days, number per capita.
Calculation	Numerator: total number of days of inpatient stays spent in acute care beds Denominator: total Belgian population.
Rationale	The number of acute care bed days per capita gives an idea about the population's need for acute care beds, and thus about the needed infrastructure. This indicator gives an idea about how this need is met (sustainability). This indicator combines results from two other indicators: number of hospital admission per capita, and average length of hospitalisation.
Data source	RHM-MZG (FPS Health, Food Chain Safety and Environment)
Technical definitions	One day stays are not counted.
International comparability	The OECD definition is adopted (curative care bed days). Several countries included in the OECD comparison use different methodologies to calculate the number of acute care bed days (e.g including or not geriatric beds, specialised hospitals…). Comparison is therefore potentially biased.[1]
Dimensions	Sustainability;
Keywords	Hospital (acute care) ;Generic
Related indicators	Average length-of-stay after normal delivery. Surgical Day Case Rates.

12.9.2. Results

In 2012, there were 12.4 million days spent in acute care hospitals (classic hospitalisation only, excluding one day). Per capita, this represents 1.12 acute care bed days in 2012.This figure is stable since 2003. Brussels has the lowest figure (1 day), data for Flanders and Wallonia are respectively 1.1 and 1.2. (Figure 124)

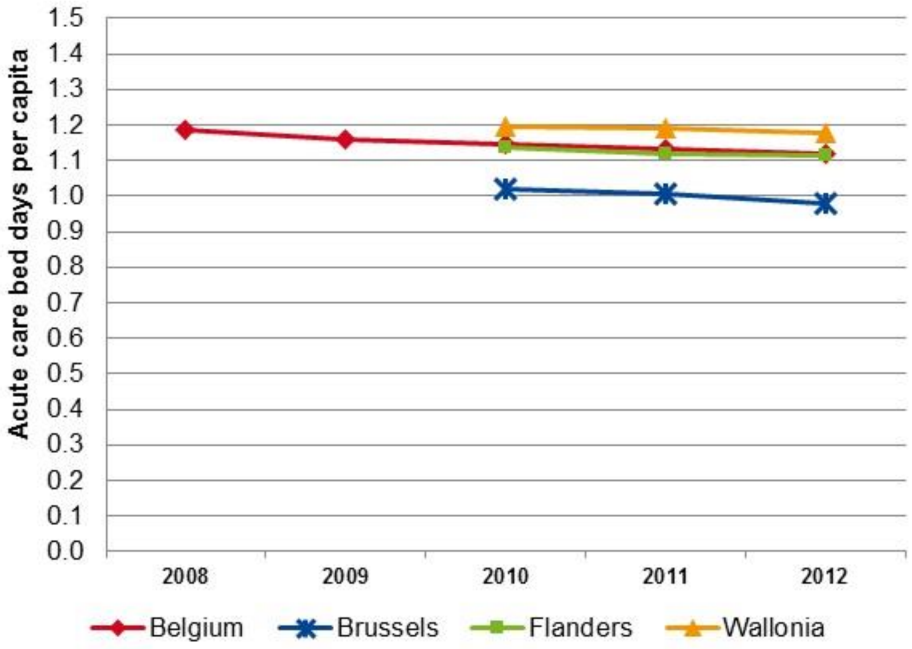
Compared to other European countries, Belgian as a similar rate of utilisation of curative bed days. (Figure 125)

Table 87 – Acute care bed days per capita, per year and hospital region (2012)

Variable	Category	Numerator: Acute care bed days	Denominator: Belgian population (mid-year)	Acute care bed days per capita
Year	2000	12961781	10251250	1.3
	2001	12742759	10286570	1.2
	2002	12516134	10332785	1.2
	2003	12364623	10376133	1.2
	2004	12235347	10421137	1.2
	2005	12160952	10478617	1.2
	2006	11960020	10547958	1.1
	2007	11902397	10625700	1.1
	2008	12706630	10709973	1.2
	2009	12500811	10796493	1.2
	2010	12470704	10895586	1.1
	2011	12437771	10993607	1.1
	2012	12401075	11067751	1.1
Data 2012 by region				
Region	Brussels	1123598	1146745	1.0
	Flanders	7085291	6366312	1.1
	Wallonia	4192186	3554695	1.2

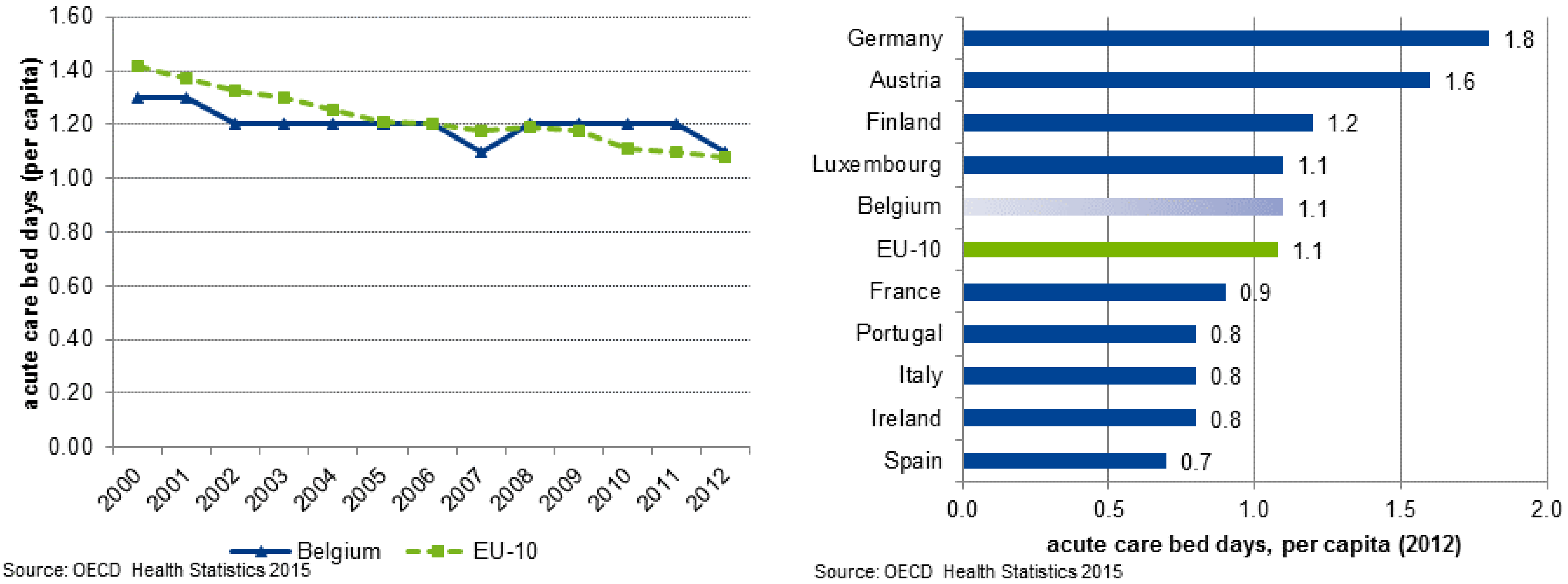
Source: RCM – MKG and RHM – MZG

Figure 124 – Acute care bed days per capita, per hospital region (2008-2012)



Source: RCM – MKG and RHM – MZG

Figure 125 – Acute care bed days per capita: international comparison (2000-2012)



Source: OECD Health statistics.

Key points

- **In 2012, the number of days spent in acute hospitals was 1.12 /inhabitant. This figure is rather stable across the years.**
- **Compared to other European countries, Belgian as a similar rate of utilisation of curative bed days.**

Reference

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12.10. Patients Waiting to Access Innovative Therapies (W.A.I.T. Indicator) (S-12)

12.10.1. Documentation sheet

Description	The Patients W.A.I.T. Indicator (Patients Waiting to Access Innovative Therapies) shows, for new medicines with first EU marketing authorisation (MA): C. The rate of availability, measured by the number of medicines available to patients in European countries, compared to the number of medicines with EU MA granted in the reference period; D. The average time between marketing authorisation and patient access, measured by the number of days elapsing from the date of EU marketing authorisation (MA) to the day of completion of post-marketing authorisation administrative processes.
Rationale	In 2012 the European Commission enacted the EC Transparency Directive 89/105/EEC mandating no more than 120 days of delay for national pricing and reimbursement decision. Monitoring this delay ensures that Belgium fulfils this criteria, and that patients get timely access to innovative medicines. However, this period should not necessarily be interpreted as an undue delay: the time between the MA and patient access reflects the pricing and reimbursement procedure necessary to evaluate e.g. the therapeutic value, therapeutic and societal needs, the budgetary impact for the health insurance and the cost-effectiveness of the new medicine.[1]
Indicator source	European Federation of Pharmaceutical Industries and Associations (EFPIA) reports Similar reports have been prepared for cancer drugs, innovative treatments in rheumatoid arthritis, and multiple sclerosis.[2] EFPIA reports have also recently been updated by IMS[3] and show similar conclusions.
Technical definitions	*Methodology from EFPIA reports:*[2] Data collection is limited to medicines with an EU marketing authorisation from the European Medicines Agency (EMA) (i.e. “centrally” approved medicines). Selected medicines have an active substance that was not authorised before in the EU (initial marketing authorisation); prior marketing authorisation outside the EU dates no more than 10 years back. The database is based on information available on the EMA and Europeans Commission websites. For each medicine, the database includes: (i) the application date; (ii) the Committee for Medicinal Products for Human Use (CHMP) opinion date; (iii) the marketing authorisation date; (iv) the date of notification of the Commission’s decision; (v) the active review time; and (vi) the “orphan status”, where applicable, as well as any other category (including: “advanced medicines” / “paediatric” review”). The database also includes information about the label (therapeutic class and therapeutic indications), and conditions or restrictions with regard to the safe and effective use of the medicinal product. Member Associations have added the “accessibility” dates for their respective countries. They refer primarily to information available from official sources. Where information is not available from official sources, Member Associations take the information from other sources (mostly directly from their member companies). Information relevant to the situation in the countries provided by Member Associations includes: (i) the “accessibility” date, i.e. the first date when doctors can prescribe the medicine to patients, who will be able to benefit from reimbursement conditions applicable in the country; (ii) access to the medicine reserved to patients staying in / visiting a hospital[jj]; (iii) any additional comment (such as: special reimbursement conditions,

[jj] In a majority of countries, these medicines are not submitted to pricing and reimbursement processes, as is the case for medicines available in ambulatory care. However, in some countries, these products are subject to pricing discussions and / or HTA processes.

	application for reimbursement rejected, pending negotiations, etc.). Member Associations have also provided additional comments considered useful for further analysis and interpretation of outcomes.
Limitations	This indicator has two limitations: • First, innovative treatments are defined in a very broad sense as all new medicines that received marketing authorization (new substances). This definition does not differentiate new compounds filling important therapeutic gaps, for which delay of access is crucial, from the new compounds very similar to already existing medicines, for which delay of access is of less importance. • Second, because in Belgium the time between the request for reimbursement and the answer of the authority is legally limited to 180 days, delays above that legal limit are probably due to the company itself (because it did not ask directly the reimbursement in Belgium) • Third, this indicator is limited to centrally approved medicines, but this is the case of the large majority of the medicines.[4]
International comparability	International comparability is achieved by ensuring the same source of information across countries in a centralized database at EFPIA. For the purpose of the "Patients W.A.I.T. Indicator", it is considered that Germany and the UK allow access to new medicines upon marketing authorisation; in these countries, no pricing / reimbursement process needs to be completed before new medicines can be prescribed to patients.
Dimensions	Innovation (sustainability of the system) and accessibility of the health system

12.10.2. Results

Reports on the W.A.I.T. indicator are published by EFPIA since 2008 and allow to compare the evolution of results over time.
In general, 1 or 2 years after European market authorisation, between 40% and 60% of medicines are available on the Belgian market. The somewhat better results of the last report (63%) can be explained by the longer time frame between market authorization (MA) and status update. The average time elapsed between MA and reimbursement on the Belgian market tends to decrease (412 days for medicines approved in 2005-2007, 368 days for medicines approved in 2010-2012), but is still longer than in other European countries (see Figure 126).

Table 88 – W.A.I.T Indicator for Belgium (2008-2015)

	EU market authorisation, years in scope	Status Update	Number of medicines within scope	% of medicines available at time of status update	Average elapsed days between MA and availability
Report 2008	2005-2007	October 2008	63	57%	412
Report 2009	2006-2008	March 2009	65	55%	403
Report 2010	2007-2009	March 2010	84	43%	392
Report 2011	2008-2010	April 2011	66	43%	371
Update 2013	2010-2012	January 2015	70	63%	368

Source and details of calculations in EFPIA report [2]

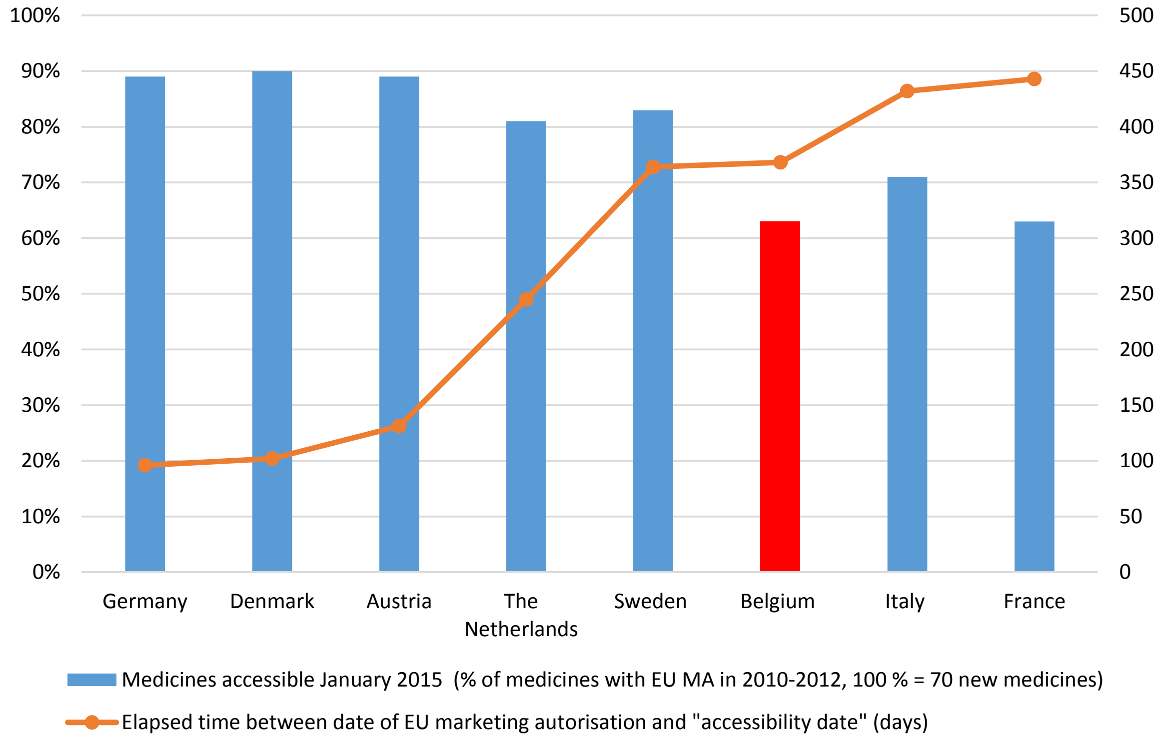
The international comparison is based on the last EFPIA report (update 2015) and includes eight EU-15 countries with a similar number of medicines.

The accessibility rate, as measured at the beginning of 2015, ranged from 63% in France and Belgium to 90% in Denmark (see Figure 126). Hence, from 63% to 90% of new medicines with an EMA marketing authorization, granted between 1 January 2010 and 31 December 2012, were accessible to the inhabitants of the respective countries. The average time elapsing between the date of EU market authorization for these medicines and the accessibility date (i.e. date of completion of pricing / reimbursement procedures) ranged from 96 days for Germany to 443 days for France.

For both measures (accessibility rate and average delay) Belgium scores lower than the seven countries included in the comparison:

- 63% of medicines accessible compared to 79% for EU-8 average
- 368 days compared to 273 days for the EU-8 average

Figure 126 – W.A.I.T. Indicator: international comparison (2010-2012)



Note: data for Finland, Spain, Portugal and Greece are excluded from this figure because of the limited number of medicines in the scope. Data for the UK and Ireland are not available.
Source and details of calculations in EFPIA report [2]

Key points

- **The delay between EU marketing authorisation and national accessibility of innovative medicines is an important indicator to monitor: it reflects on the one hand accessibility of the health system, in the sense that the shorter the delay, the more rapid patients get access to innovative treatments, but it also reflects general sustainability of the health system, in its capacity to integrate innovation.**
- **Based on an analysis of 70 new medicines granted with EU market authorisation between 2010 and 2012, Belgium scores poorly for the two access indicators: the % of medicines available (63%) is lower than the EU-8 average (79%) and the delay to access these new medicines is longer than the EU average (368 days compared to 273 days). This delay has, however, decreased since the first measures of this indicator (2005-2007).**

References

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[2] EFPIA. Market Access Delays [Web page].2015. Available from: http://www.efpia.eu/documents/33/64/Market-Access-Delays

[3] Lostrand S, Anon Y, Senya L. Trends in time to market access in Europe. In: ISPOR 17th Annual European Congress, . Amsterdam, The Netherlands; November 2014.

[4] Cour des comptes. Remboursement des médicaments, Performance de la gestion publique. 2013.

12.11. Coverage of electronic medical record in GP practice (S-13)

12.11.1. Documentation sheet

Description	Percentage of GP using electronic medical record (EMR)
Calculation	Numerator: number of GP with a prime of money for keeping electronic medical record Denominator: all practising GP
Rationale	Since 2002, GPs receive a prime of money by NIHDI for buying a medical soft to keep an electronic medical record for their patients. This allocation is attributed if the GP asks for it and can prove that he has bought the medical software. By registering electronic records, coordination, continuity and quality of care are expected to increase. Referral to and communication with other care providers could become more efficient, and double investigations or contrasting treatments could be avoided. EMR can also improve quality of care by facilitating reminders (scripts)
Data source	NIHDI (reimbursement data base of EMR)
Results source	GPs performance report[1]
Technical definitions and limitations	NIHDI reimbursement. This system is a proxy to measure penetration of electronic records among GPs. Each GP can receive the premium on demand. Without request, the GP is not considered to work with electronic medical record. Results are standardized on activity through the FTE calculation. The result of the calculation is also a proxy to calculate the percentage of GP's contact who can benefit from EMR. Early adopter are usually younger GPs. Since 2012, reimbursement can only occur on electronic request, which can explain a decrease in the registration. In 2013, some GPs despite call back from NIHDI, did not ask for reimbursement despite the fact that they receive allocation the year before and the year after. A correction was made to take this phenomenon into account. In the future, this indicator should be replace by measuring volume of electronic exchanges.
International comparability	Limited (specific to the Belgian system)
Performance dimension	Quality (continuity); Quality (effectiveness); Efficiency
Related indicators	GMR coverage and type of contacts

12.11.2. *Results*

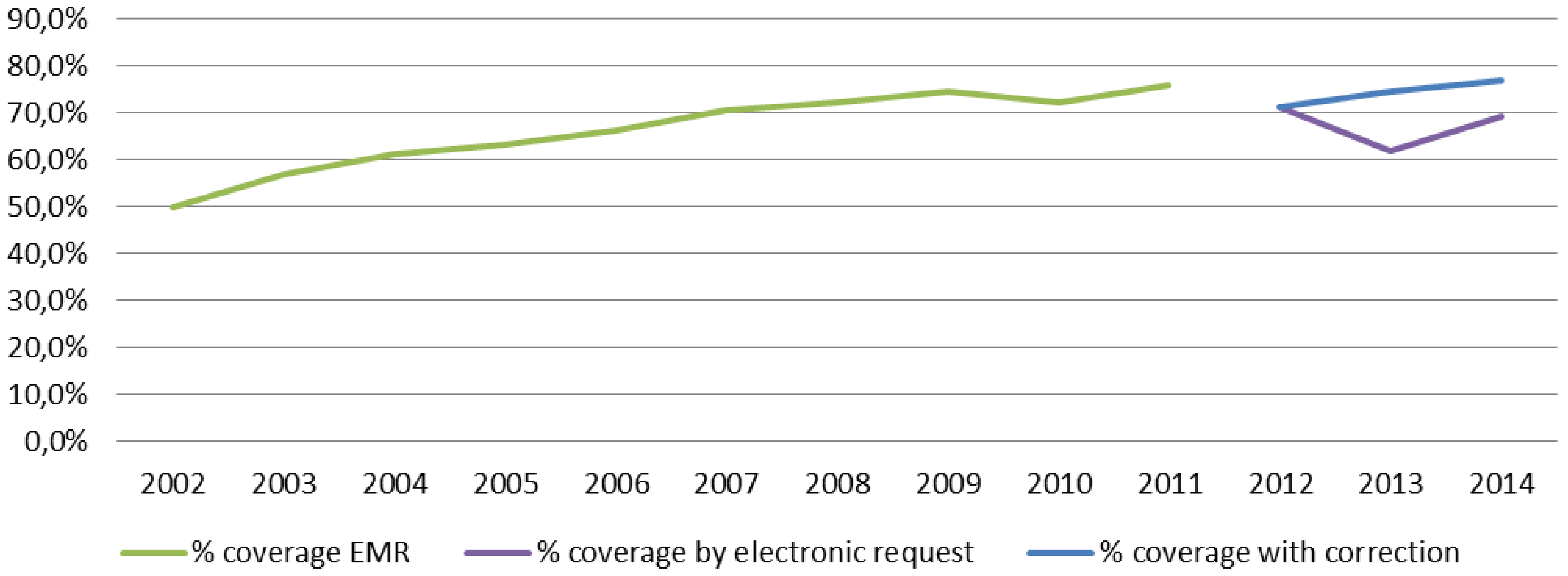
In 2002, the percentage of persons with an electronic medical record (EMR) was 50%, and reached 75% in 2011. In 2012 the coverage lowered to 71% because of new rules for reimbursement.

Table 89 – Percentage of GPs with an EMR (2002-2014)

% EMR	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
% coverage EMR	49.7%	57.0%	61.3%	63.2%	66.1%	70.4%	72.1%	74.4%	72.0%	75.9%			
% coverage by electronic request											71.2%	62.0%	69.2%
% coverage with correction											71.2%	74.5%	76.7%

Source: RIZIV – INAMI

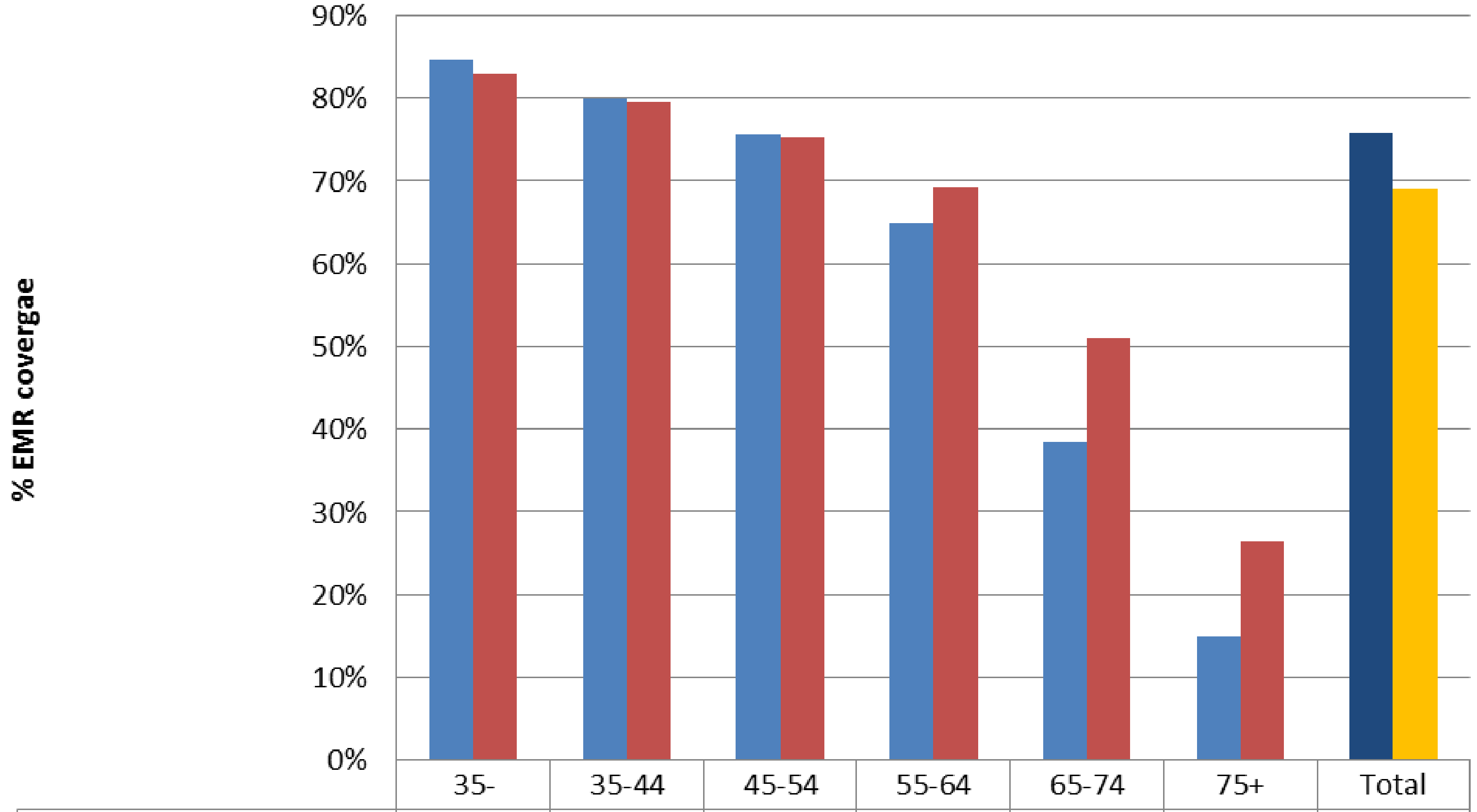
127 – Percentage of GPs with an EMR (2002-2014)



Source: RIZIV – INAMI

Differences are high between gender (women: 76%; men: 69%) but this phenomenon is directly linked to the fact that younger (predominantly female) GPs are mostly connected with new technologies. Differences by gender disappear per age class.

Figure 128 – Percentage of GPs with an EMR (2012) by age class and gender (2012)

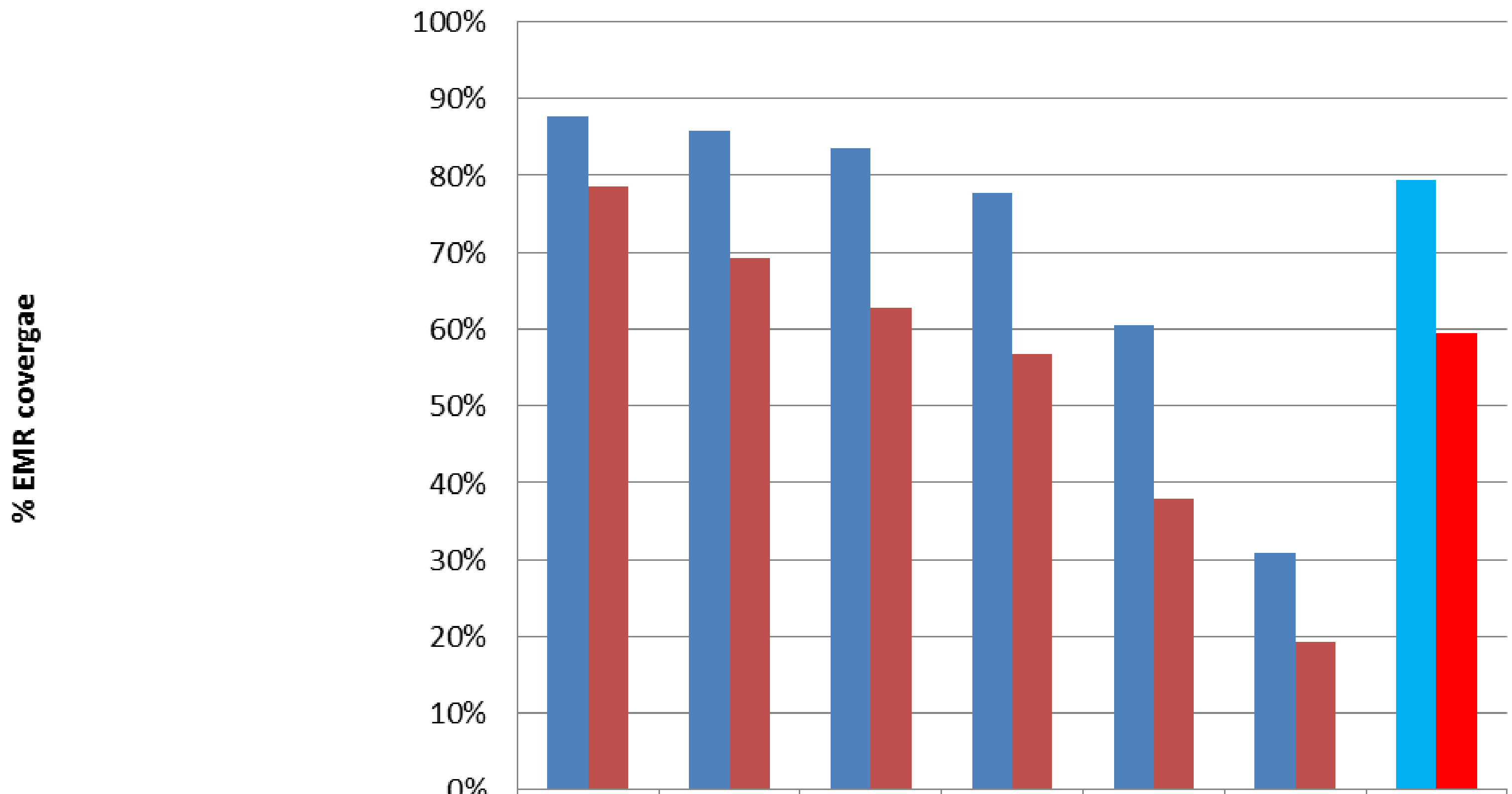


	35-	35-44	45-54	55-64	65-74	75+	Total
EMR coverage (Women)	85%	80%	76%	65%	38%	15%	76%
EMR coverage (Men)	83%	80%	75%	69%	51%	26%	69%

Source: RIZIV – INAMI

Differences are large between regions (Dutch-speaking GPs: 79% in 2012, French-speaking: 59%).

Figure 129 – Percentage of GPs with an EMR by age class and language (2012)



	35-	35-44	45-54	55-64	65-74	75+	Total
EMR coverage (Dutch speaking)	88%	86%	83%	78%	61%	31%	79%
EMR coverage (French speaking)	79%	69%	63%	57%	38%	19%	59%

Source: RIZIV – INAMI

Key points

- **In 2002, the percentage of GPs with an EMR was 50%. The evolution over time shows and increasing trend. It reaches 75 % in 2011.**
- **Since 2012 a new electronic reimbursement methodology creates a dip in the coverage, reflecting more realistic numbers: ¾ of practising GPs have an electronic medical record in 2014.**
- **The penetration of new technology is more important in younger GPs (85%) and in the Dutch-speaking community (80%).**
- **In the future, this indicator should be calculated on volume of electronic exchanges.**

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13. HEALTH STATUS

13.1. Life expectancy at birth (HS-1)

13.1.1. Documentation sheet

Description	Life expectancy at birth is the average number of years expected to be lived by a new-born.
Calculation	Life expectancy at a given age, and in a given calendar year, represents the (average) number of years remaining to be lived by the persons of that age if they were to experience the mortality rates of that particular calendar year. Life expectancy at birth is a summary measure of the age-specific all-cause mortality rates in an area in a given period. To study the socio-economic differences(based on educational level) in Life expectancy, the life-expectancy at age 25 is usually preferred (because the study course is then completed)
Rationale	It is a basic indicator for population health. It reflects the cumulative effect of the impact of risk factors, occurrence and severity of disease, and the effectiveness of interventions and treatment. It is one of the indicators recommended by ECHI.[1]
Primary Data source	Statistics Belgium (DGSIE/ADSEI) http://statbel.fgov.be/fr/statistiques/chiffres/population/deces_mort_esp_vie/tables/
Indicator source	Statistics Belgium for national comparisons EUROSTAT for international comparison ; the EU also produced an interactive tool allowing a visual comparison of the data: the “Heidi” tool.[2] The results are also published and commented in the OECD publication “Health at a glance”.[3]
Periodicity	Yearly
Technical definitions and limitations	The indicator can be calculated from slightly different ways. The difference in the calculation comes mainly from how to calculate the mortality in the first year. National methods differ slightly between countries; Therefore, calculations made by EUROSTAT, that are harmonized, are best suited for international comparisons. Life expectancies are calculated using (abridged) life tables presenting age specific mortality rates. Life expectancy tables are calculated based on death probabilities according to Farr's death rate method: qx = Mx / (Bx + (Mx/2)) where Mx = the number of deaths at the age of x to under x+1 years in the reported period; Bx = average population aged x to under x+1 in the base period; qx = death probability from age x to x+1. Farr's method of calculation of abridged life-tables assumes that there is a constant mortality within the age intervals and thus the years of life lived by a person dying in the interval is (on average) half of the length of the interval. To measure the Life Expectancy by socio-economic level, the data from the Census 2001 were matched to the mortality data (DGSIE). The calculations made on the whole population were made by Deboosere and all.[4]
International comparability	Yes
Dimension	Health Status
Related indicators	Health expectancy (healthy life years)

13.1.2. Results

13.1.2.1. Belgium

In 2013, the life expectancy at birth in Belgium was 80,47 years (Statistics Belgium), and was 5 years higher in women than in men (Table 90). The Life expectancy **is higher in Flanders** than in Wallonia (2,78 years in men, 1.91 year in women).

The evolution of life expectancy since 1999 by region and by sex is shown in Figure 130:

- Life expectancy **has almost continuously increased**, in men as well as in women (except in year 2012).
- The difference in life expectancy between men and women decreased from 6.5 to 5 years during this period.
- During the whole period, life expectancy was the highest in Flanders and the lowest in Wallonia, for both genders.

Life expectancy by Socio-economic status (SES): calculating the LE by SES necessitates the follow up of the vital status of a cohort from which the SES is known. The best way to measure this indicator is to work with whole population data, like a census. An alternative option, when no census data is available, is to follow up a smaller and representative cohort. Currently, in Belgium, the last analyse was made on the Census 2001, and no update has still be made with data from the whole population. Charaffedine[5] has explored the possibility to use alternative options, it was concluded that there were two acceptable alternative solutions: the follow up of data from the HIS and from the SILC. The practical arrangements to merge the databases are currently on-going, so new results will be available soon.

Table 91 shows the life expectancy by Socio-Economic Status, calculated from the census 2001 data. This indicator is measured at 25 years (because the socio-economic status was measured by the educational level reached by the person). **A clear gradient in life expectancy is observed in function of the educational level** in both sexes. It is more pronounced in men, with a life expectancy of men without diploma being 7.47 years lower than in men with a superior diploma; in women, the difference is 5.42 years.

13.1.2.2. International comparisons

Life expectancy in Belgium **is slightly lower than the EU-15 average, as well in males as in females** (Figure 131 and Figure 132). It ranks on the 3rd worst position in males (3rd lowest Life expectancy among the EU-15 countries), on the 4th in females.

In summary, the life expectancy in Belgium:

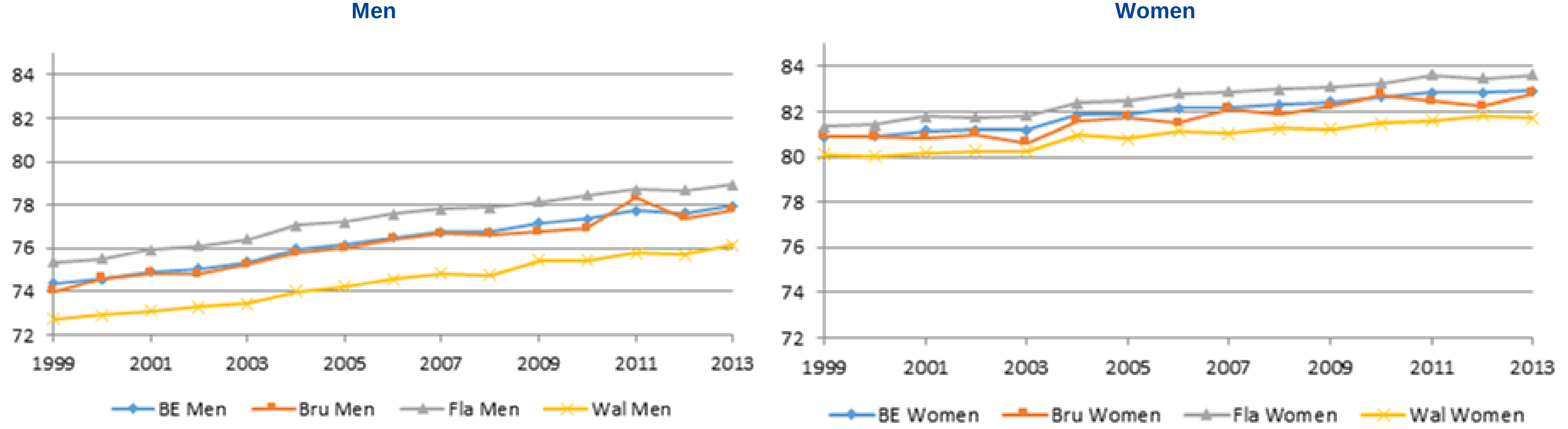
- is higher in women
- is higher in Flanders
- is linked to the SES level
- is increasing over time
- is slightly lower than the EU-15 average

Table 90 – Life expectancy at birth, by sex and region (2013)

	Belgium	Brussels	Flanders	Wallonia
Men	77.94	77.76	78.92	76.14
Women	82.93	82.79	83.62	81.71
Total	80,47	80,42	81,30	78.97

Source: DGSIE

Figure 130 – Life expectancy at birth, by region (1999-2013)



Source: DGSIE

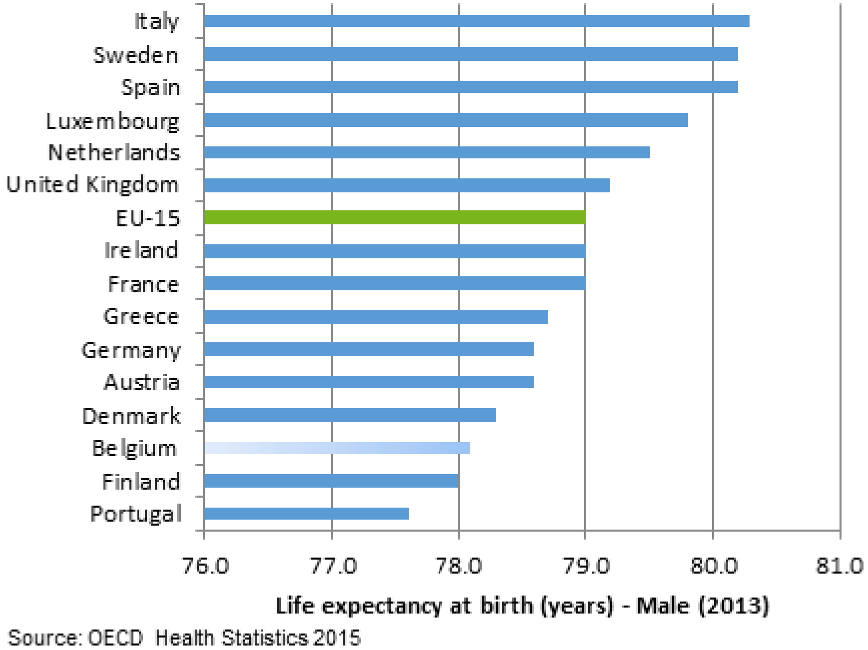
Table 91 – Life expectancy (at 25 years), by sex and socio-economic status (2011)

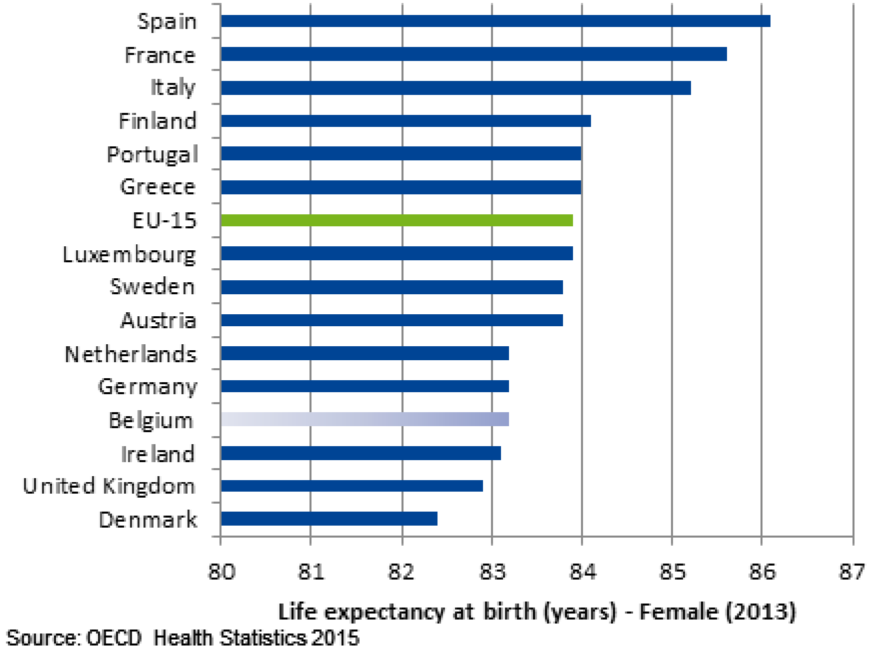
	MEN		WOMEN	
Diploma	LE at 25	Difference with Highest Educ.level	LE at 25	Difference with Highest Educ.level
No	47.56	-7.47	53.98	-5.92
Primary	49.29	-5.74	56.17	-3.73
Sec.inf.	51.33	-3.7	58	-1.9
Sec.sup.	52.52	-2.51	58.52	-1.38
Sup.high	55.03		59.9	

Note: Census 2001 with follow up

13.1.2.3. International Comparison

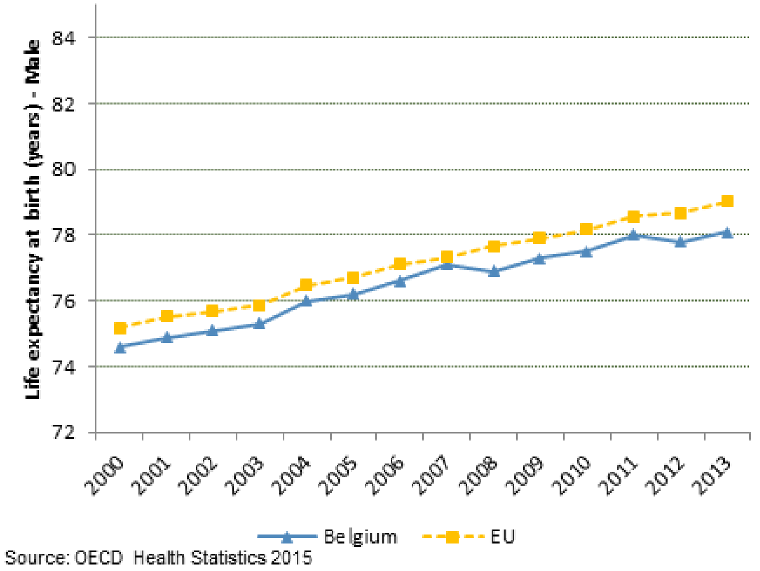
Figure 131 – Life expectancy at birth by sex: international comparison (2000-2013)

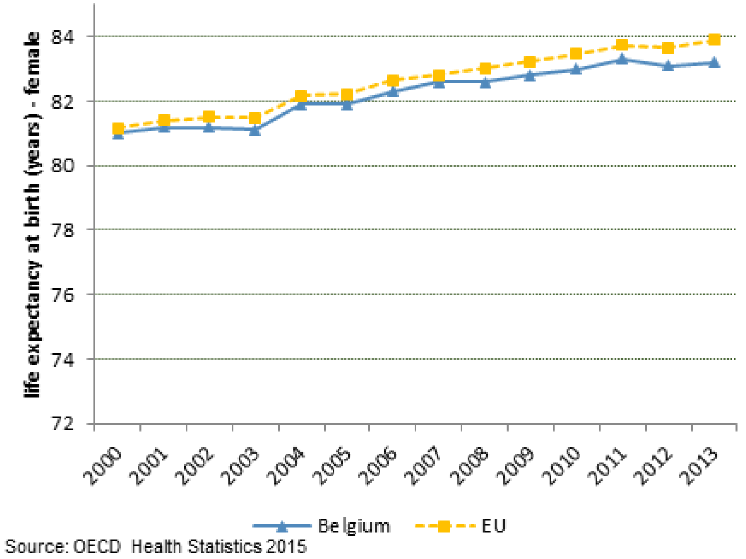




Source: OECD Health Statistics 2015

Figure 132 – Life expectancy: international comparison (2000-2013)





Source: OECD Health Statistics 2015

Key points

- **In 2013, the life expectancy at birth in Belgium was 80.5 years, and is increasing over time.**
- **Life expectancy is higher in women, higher in Flanders, and higher for persons with a higher socioeconomic status.**
- **Life expectancy ranks quite poor among the EU-15 countries, and remains slightly lower than the EU-15 average.**

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[2] DG SANCO. Heidi Data tool: the European Community Health Indicators: http://ec.europa.eu/health/indicators/indicators/index_en.htm. DG SANCO; 2012.

[3] OECD. Health at a Glance: Europe 2014. OECD Publishing; 2014.

[4] Deboosere P, Gadeyne S, Van Oyen H. The 1991–2004 Evolution in Life Expectancy by Educational Level in Belgium Based on Linked Census and Population Register Data. European Journal of Population. 2008;25(2):175-96.

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13.2. Premature mortality (HS-2)

13.2.1. Documentation sheet

Description	Mortality before 70 years, expressed as potential years of life lost (PYLL)
Calculation	Potential years of life lost (PYLL) before the age of 70 years. The indicator is expressed per 100 000 females and males.
Rationale	- Reducing the mortality occurring too early (defined as any age lower than the life expectancy) is a key public health objective (1): indeed, much of the premature mortality is avoidable (2). Moreover, in terms of social and economic loss, it is important to prevent citizen dying before having achieved their potential contribution to the society. Therefore, **the all-causes premature mortality** is a classical global indicator of health status. - The **cause specific premature mortality** is a useful tool to establish public health priorities, target prevention programs and planning health care (3;4). - The conventional mortality rates (which are the number of cases divided by the population), do not fully account for the burden of premature mortality, because they are mostly influenced by the deaths occurring in older ages. An alternative indicator, better suited to reflect the mortality burden at younger age groups, has been proposed, namely the "PYLL". This indicator weights the deaths occurring at younger age groups more heavily than the ones occurring in older people (3;5).
Primary data source	Statistics Belgium (national data) Eurostat (EU data)
Indicator source	*For all-causes premature mortality:* Own calculation for national/regional data (based on the Statistics Belgium database) OECD Health Data for EU comparisons *For cause-specific premature mortality* Published article(6;7)
Technical definitions	The calculation of PYLL involves adding age-specific deaths occurring at each age and weighting them by the number of remaining unlived years up to a selected age limit, defined here as age 70. For example, a death occurring at 5 years of age is counted as 65 years of PYLL. The indicator is expressed per 100 000 females and males. It is then standardised for age to allow for comparisons between regions, countries or over time (8). For the Belgian comparisons, the Belgian 2000 population is used; the OECD makes a standardisation based on its own standard population. The upper cut-off is variable across the authors, and usually situated between 65 and 80 years. Also the lower cut-off has been a matter of debate, many authors arguing that the age group 0-1 should be excluded from the PYLL calculations

	because deaths in this class would get an excessive weight as compared to other age classes(8). In this work, we used the OECD 0-70 range for the all-cause PYLL calculation. When we go on cause-specific mortality, we used the available results published in a Belgian study, which were calculated on a 1-75 age range.
Limitations	Premature mortality can be influenced as well by advances in medical technology (especially in relation to infant mortality and deaths due to heart disease), as by prevention and control measures, reducing untimely or avoidable deaths from injuries and communicable diseases(9). When expressed as all-cause mortality, this indicator is a global health indicator, with a limited operational utility. At the contrary, when expressed by specific cause of death, it is a very useful tool to orient public health priorities. The impact of the health system on the decrease of premature mortality is limited to some causes of death, so this indicator is not a direct measure of the effectiveness of the health system. The part of the premature mortality that could be avoided/diminished by the health system is called 'amenable mortality' and is discussed in section 13.3.
International comparability	Availability: yes (in OECD Health data) Comparability: taken as a whole, the indicator is internationally comparable. The cause-specific premature mortality is more delicate to compare because of the well-known between countries variations in the coding of the causes of deaths.
Dimensions	General effectiveness of the whole system (health and outside health)
Related indicators	Infant mortality, amenable mortality

13.2.2. Results

The premature mortality (<70 years) in Belgium is 1.8 times higher in men than in women (Table 92). Large regional disparities are observed, with respectively 45% and 29% excess PYLL for males and females, in the Walloon region as compared to the Flemish region (calculated from Table 92). The excess of PYLL in Brussels as compared to the Flemish region was respectively 8% and 13% for males and females. Looking at a smaller geographical level (Figure 133), we observe that most of the Flemish district have, for both sexes, a lower PYLL rate than the Belgian average (except Oostende and Aalst in men), while almost all Walloon districts have higher than average PYLL rates except Nivelles for both sexes, and Neufchateau for women. The highest rates are observed in the province of Hainaut, which is also the most deprived province of Belgium.

The Table 93 displays the ranking of the specific causes of deaths by sex, expressed in PYLL(6). The causes with the highest burden are suicide, lung cancer and road accidents in men, breast cancer, suicide and lung cancer in women. This ranking is different from the one resulting from the use of classical rates (that is the number of deaths divided by the total population), because deaths due to external causes mostly occur in younger people than the deaths due to chronic diseases, and get a higher weight in the PYLL calculation.The premature mortality decreased continuously since a few decades in the EU countries (Figure 134); in Belgium it has been cut by 25% since 1993(6). However, as observed in Figure 134, Belgium ranks poor, in males and in females qua premature mortality. Belgium ranks very high in both sexes for suicide, transport accidents, lung cancer and COPD mortality in men, breast cancer in women (data not shown). The interpretation of the between countries disparities in all-cause premature mortality is not straightforward. The ranking does not seem to follow the usual economic indices (GDP, unemployment rate).This issue would deserve further research.

Table 92 – Premature mortality (<70 yr), by sex and region (2012)

Potential Years of Life Lost (PYLL)				
	Belgium	*Flemish Region*	*Brussels*	*Walloon Region*
Males	**4893**	4270	4610	6187
Females	**2789**	2521	2868	3252
Both	**3842**	3403	3719	4710

Source: Renard, F.: own calculation (currently unpublished) (based on statistics Belgium database)
Note: Age-adjusted rates per 100.000 inhab. (ref pop= Belgium 2012)

Table 93 – Top 10 of causes of premature death by sex, ranked by PYLL (2008-2009)

Males

Rank	*Cause of Premature Death*	*PYLL, age-adjusted rate per 100.000*
1	Suicide	760
2	Lung cancer	630
3	Road accident	527
4	Ischemic heart diseases.	512
5	Other circulatory diseases.	455
6	Non transportation accidents.(pois/fall/envir.)	358
7	Digestive system diseases	356
8	Mental and neurological diseases	345
9	Respiratory system diseases.	315
10	Lip, oral, pharynx, larynx and oesophageal cancer	219

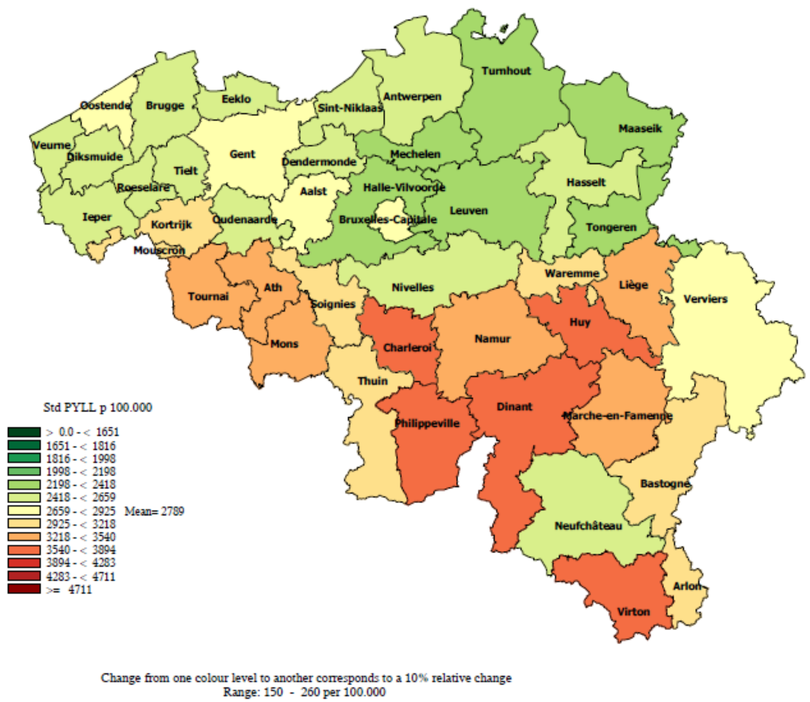
Females

Rank	*Cause of Premature Death*	*PYLL, age-adjusted rate per 100.000*
1	Breast cancer	364
2	Suicide	266
3	Lung cancer	248
4	Other circulatory diseases.	218
5	Digestive system diseases	185
6	Mental and neurological diseases	184
7	Respiratory system diseases.	173
8	Female genital organs cancer	171
9	Cerebrovascular diseases & HTAa	150
10	Ischemic heart diseases	142

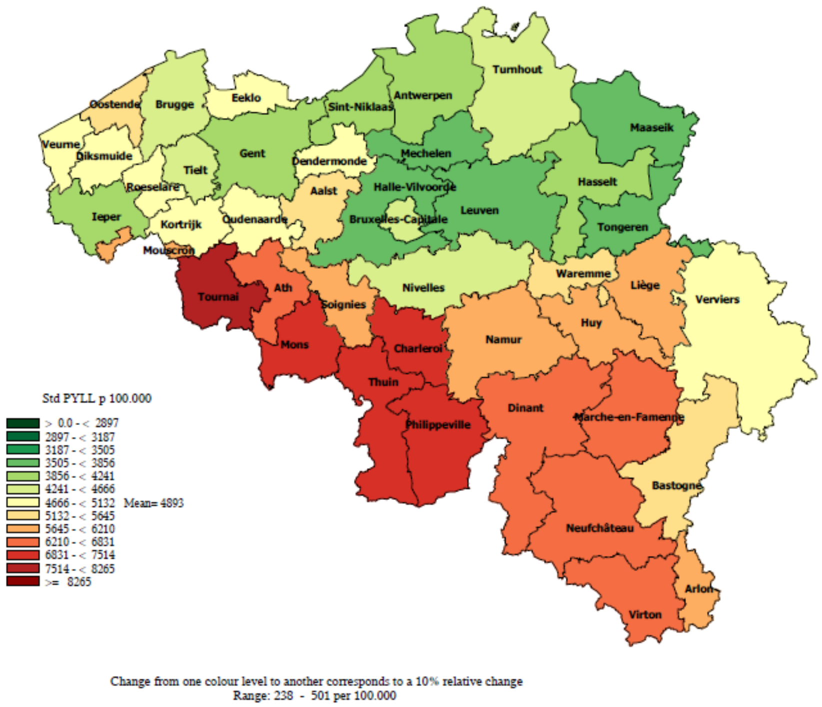
Source: Renard, F.: own calculation (currently unpublished) (based on statistics Belgium database)

Figure 133 – Premature mortality (0-69 years) by sex and district (2010-2012)

Males



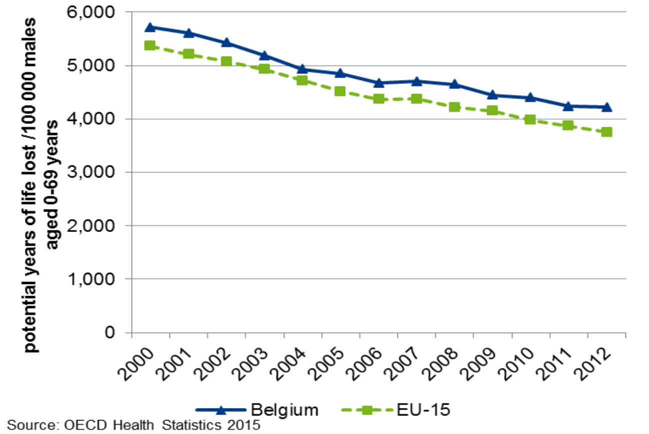
Females

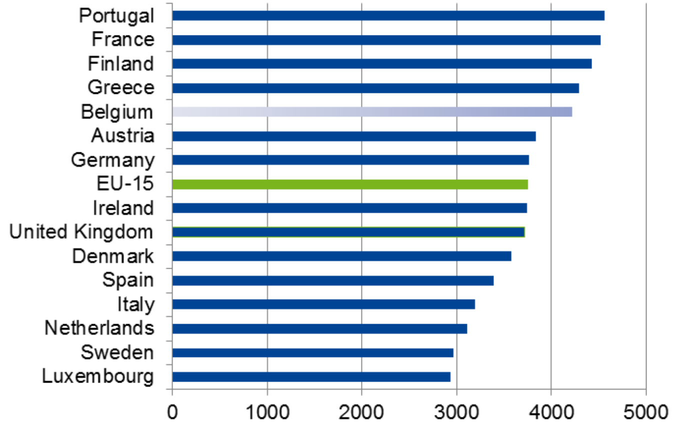


Source: Renard, F.: own calculation (currently unpublished) (based on statistics Belgium database)

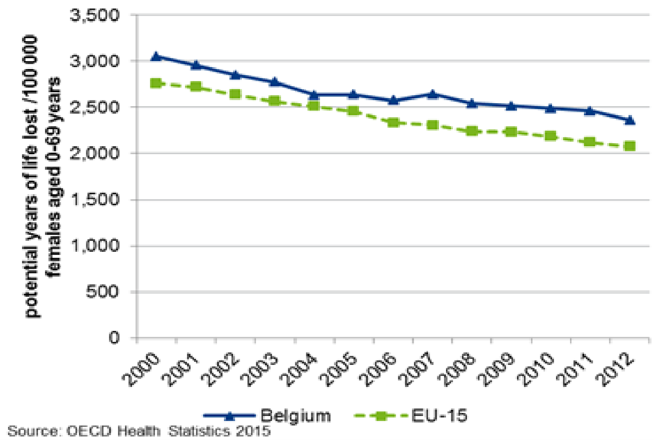
Figure 134 – Potential years of life lost (0-69 year) per 100 000 individuals: international comparison (2000-2012)

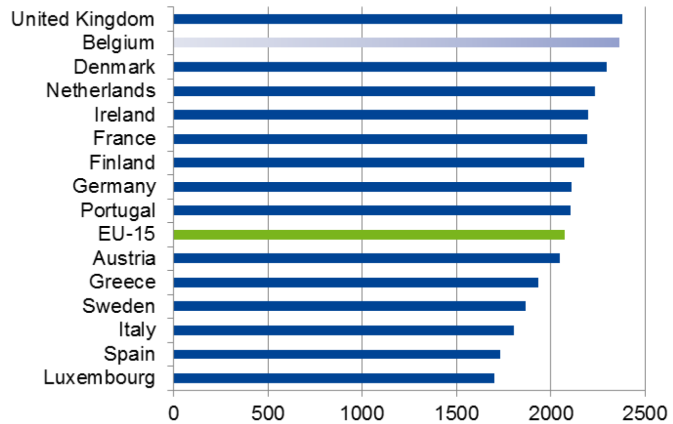
Males





Females





Source: OECD Health Statistics 2015

Key Points

- **The Premature mortality rates have decreased by 25% in Belgium over 15 years. It is also decreasing overall in Europe**
- **The Potential years of Life Lost (PYLL) are almost twice as high in men than in women**
- **There are important regional disparities in favour of the Flemish region.**
- **The main causes are suicide, road accidents, lung cancer in men and breast cancer and suicide in women.**
- **Belgium ranks poor for premature mortality among the EU-15 countries, as well in males as in females.**

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13.3. Amenable and preventable mortality (HS-3 and HS-4)

13.3.1. Documentation sheet

Description	This sheet describes two indicators constituting the “avoidable mortality”: 1. The amenable mortality 2. The preventable mortality The concept of **avoidable mortality**[1] is based on the idea that certain deaths (for specific age groups and according to specific causes of death) could be 'avoided' or that their number could be reduced, if there had been more effective medical and public health interventions in place. • A death is said **amenable** if, in the light of medical knowledge at the time of death, all or most deaths from that cause could have been avoided through good **quality health care**. Deaths from appendicitis, pneumonia, peptic ulcus are three examples of cause of death that are said to be amenable. • A death is said **preventable** if, in the light of understanding the determinants of health at the time of death, it could have been avoided by **public health policies** focusing on wider determinants of public health, such as lifestyles, socioeconomic status and environmental factors. Deaths from road accident, lung cancer, and alcohol-related diseases are three examples of deaths that are said to be preventable. These two types of avoidable mortality are not mutually exclusive: some causes of death are considered to be both amenable <u>and</u> preventable: for instance, Tuberculosis or breast cancer are causes of death considered to be both amenable and preventable.
Calculation	Numerator: Avoidable deaths are all those defined as preventable or amenable (or both), where each death is counted once. Where a cause of death falls within both subcategories (amenable and preventable), all causes of deaths from that cause are counted in both subcategories when they are presented separately. Due to the overlap between the categories, the avoidable death cannot be computed by summing up the subcategories amenable and preventable deaths. Age-specific rates are then calculated by dividing the number of case in each age-group by the population of the same age-group. These age-specific rates are weighted according to the chosen standard population, then summed up and divided by the total standard population to obtain age-standardized rates that allow for regional or between countries comparisons.
Rationale	In the framework of HSPA, the all-cause premature mortality is not a very suited outcome, because many other factors than the health system influence the mortality rate. There was a need for an indicator that might be more legitimately attributed to health care intervention.

	The amenable mortality is an aggregated indicator pooling the causes of premature deaths that are supposed to be influenced by the health care system; as such, it is supposed to be an indicator of the health system effectiveness. The preventable mortality is an aggregated indicator pooling the causes of premature deaths that are supposed to be influenced by public health policies; as such, it is supposed to be an indicator of health promotion (late) outcomes. There is a quite large overlap between the subcategories of avoidable mortality, meaning that many causes of deaths are considered to be both amenable and preventable.
Primary data source	Statistics Belgium, causes of deaths (COD) database
Indicator source	For Belgium: own calculations (based Statistics Belgium COD database) For international comparisons : Eurostat This can lead to slightly different results in national calculations versus the Belgian results in the EU calculations
Technical definitions	The EU has adopted the ONS-UK definition.[1] In this definition, for most causes, the upper age limit is 75 years. For accidents there is no upper age limit.
Limitations	**Amenable mortality:** - The validity of the amenable mortality to measure the health system performance assessment has not yet been shown.[2] Nolte points out that "it was never intended to be more than an indicator of potential weaknesses in health care that can be investigated more in depth. It was not intended to be a source of evidence in differences in effectiveness in health care",[3] meaning that this indicator is probably used to tell more than it actually can do. - It is an aggregate measure that will only provide global information, but does not indicate what needs to be done when there is evidence of suboptimal quality. This needs a more in-depth analysis (including a specific cause mortality analysis and a qualitative assessment of the process).[4] - The amenable mortality indicator does not take into account all the benefits of the health care interventions that are not only preventing death but meanwhile improving the quality of life. **Preventable mortality**: the same limitation as for amenable mortality with respect to the aggregated nature of the indicator can be made for preventable mortality.
International comparability	Availability: yes (Eurostat) Validity: the validity of the comparison are hampered by (at least) two major causes: 1. Differences between countries can be partly due to differences in certification and coding of the cause death; moreover there are important differences between the countries in the quality of coding. Countries with a large proportion of poorly determined causes of deaths will have consequently fewer specified causes of deaths, those latter only constituting the avoidable deaths. 2. The 'avoidable mortality' takes no account for differences in the underlying prevalence/incidence of the disease
Dimensions	Amenable mortality: effectiveness of the health care system

	Preventable mortality: effectiveness of the health promotion
Related indicators	Premature mortality

13.3.2. Results

1. Amenable mortality:

The amenable mortality rate represented 30% of all the mortality before age 75 in 2012. This means that the health care system can have an impact on maximum 30% of the premature deaths; it does not mean, however, that all those deaths can be avoided, but that deaths due to those causes can be reduced.

Gender disparities: Amenable mortality is a moderately higher in men than in women (38% excess in men). However, the sex ratio is lower than the all-cause mortality or the preventable mortality. This means that, while more men than women die prematurely, this is less the case for causes amenable to the health care system.

Regional disparities:

In men, there is an excess of 41% and 36% in the amenable mortality rate respectively in Wallonia and Brussels as compared to Flanders. It is noteworthy that the regional disparities in men are quite similar for all types of mortality under the age of 75 in men (we observe disparities of the same magnitude for preventable deaths and for the all-cause mortality before age 75).

The amenable mortality in men ranks quite well among the EU-15 rates.

In women, the excess in amenable mortality rate in Wallonia and Brussels is only 10%. In contrast to what is observed in men, the regional disparities are much lower than those observed in men. These regional disparities in amenable mortality in women are less pronounced than for the other types of mortality occurring before age 75.

The amenable mortality rate in women is close to the EU-15 average.

2. Preventable mortality:

The preventable mortality rate represented 57% of all the mortality before age 75 in 2012. This means that public health policies can have an impact on maximum 57% of the premature deaths; it does not mean, however, that all those deaths can be avoided, but that deaths due to those causes can be reduced.

Gender disparities:

Preventable mortality is twice as high in men as in women. The sex ratio is much higher than the one observed for amenable mortality. The mortality related to unhealthy lifestyle (lung cancer, alcohol related deaths) and accidents is much higher in men than in women.

Regional disparities:

In men, there is an excess of 42% and 15% in the preventable mortality rate respectively in Wallonia and Brussels as compared to Flanders. The regional ratio is quite similar for all types of under 75 mortality in men.

The preventable mortality in men ranks quite poor among the EU-15 rates (3d worst position). Particularly, lung cancer, road accidents and suicide mortality rates are among the highest in the EU.

In women, the excess of preventable mortality is respectively 28% and 24 respectively in Wallonia and Brussels as compared to Flanders. The regional ratio is higher than the one observed in amenable mortality.

The preventable mortality in women ranks also poorly among the EU-15 rates (4th worst position).

Table 94 – Amenable mortality (0-75 year) (A) and preventable mortality (B) by region and by sex (2012)

(A) Amenable

Age-adjusted rate per 100.000

	Belgium	Flemish Region	Brussels	Walloon Region
Males	109	94	128	132
Females	79	77	84	83
Both	93	85	104	106

(B) preventable

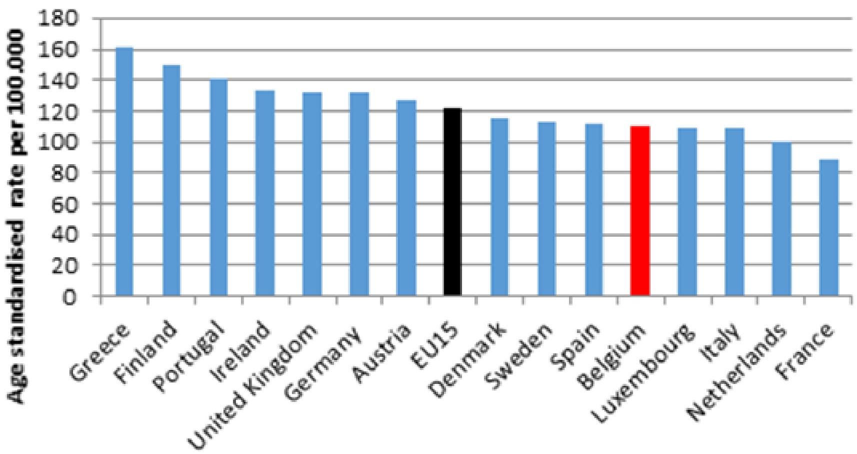
Age-adjusted rate per 100.000

	Belgium	Flemish Region	Brussels	Walloon Region
Males	272	237	273	341
Females	142	126	160	168
Both	204	179	212	248

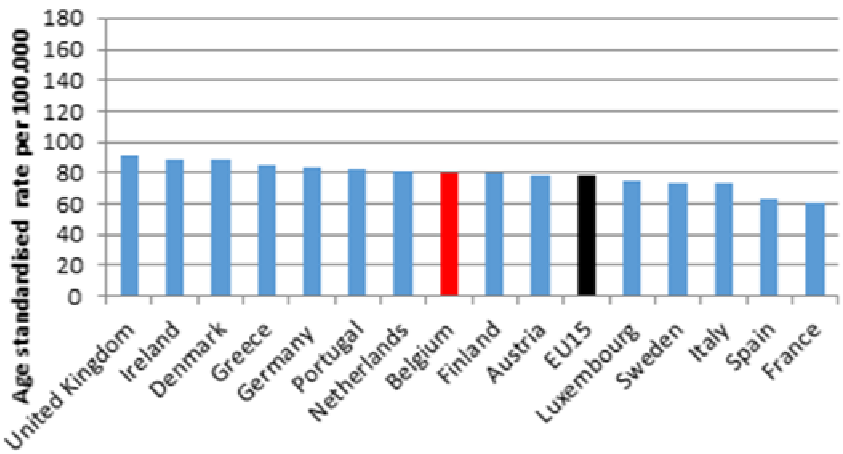
Source: own calculations based on Statistics Belgium COD database
Note: Based on European new standard population.

Figure 135 – Amenable Mortality by sex: international comparison (2012)

Males

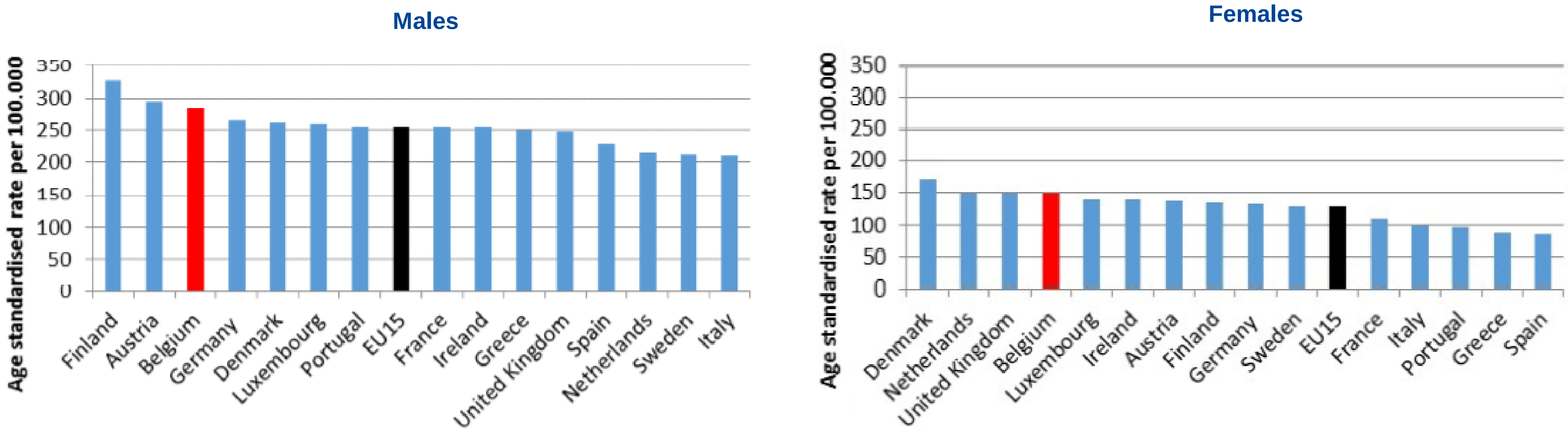


Females



Source: Eurostat database.

Figure 136 – Preventable Mortality by sex: international comparison (2012)



Source : Eurostat database

Key points

- **The amenable mortality rate represented 30% of all the mortality before 75 years in 2012, meaning that the health system could have an impact on (maximum) 30% of the premature deaths. The preventable mortality rate represented 57% of all the mortality before 75 years in 2012 meaning that the health policies/health promotion could have an impact on (maximum) 57% of the premature deaths. This shows that public health policies can play a larger role than the health care system in reducing premature mortality.**
- **As compared to the EU-15 countries, the amenable mortality in Belgium ranks favourably (especially in men), but the preventable mortality ranks poor.**
- **The amenable and preventable deaths are unequally distributed in Belgium: important sex disparities (in favour of women) and regional disparities (in favour of Flanders) are observed. Those observations show some room for improvement, since these type of death are by definition partly vulnerable to interventions (from the health system or the health policies). However, since the social determinants play a major role in the mortality patterns, a global approach is needed to tackle those disparities.**

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13.4. Infant mortality (HS-5)

13.4.1. Documentation sheet

Description	The number of infant deaths (day 0-364) after a live birth in a specific year, expressed by per 1000 live births occurring in the same year. This is the 'Annual infant mortality rate' (by opposition to the Cohort infant mortality rate, resulting from the follow up of the newborns in a specific year).
Calculation	The infant mortality rate (IMR) can be calculated either on all live birth (=overall IMR), either on some specific subgroups of newborns (specific IRM). The overall IMR= any infant death (0-364) in a year divided by the number of live births in the same year. In this report we did not use the specific IMRs (those are discussed in the international comparability section).
Rationale	The IMR is one of the ECHI indicators.[1] It is a basic indicator for population health and quality of health care services; it is highly correlated to the country's level of development. An important part of the infant mortality rate measures the consequences of perinatal events (low birth weight, prematurity) or births defects. Above this, the infant mortality also comprises the deaths in the post-neonatal period; those include accidents and infections, sudden infant death syndrome and lack of the essentials of life (adequate food, water, maternal care). Those post-neonatal deaths are often preventable and are highly influenced by social factors. This indicator can thus serve as a measure of the quality of medical care, preventive services and health promotion interventions
Sources of the indicator	**Primary data source**: Infant deaths and births are collected at regional level. The data are then centrally pooled at Statistics Belgium, which computes national rates and regional rates with a same definition. **Indicator data source:** The indicators values are computed by several instances, regional, national and international. Depending on the data availability and the calculation way, some minor differences can exist in the rates values and in the last available year. For national and regional rates, we used the values provided by Statistics Belgium. Overall IMR are available until 2012; the 1000g+ specific rates are available with some delay. http://statbel.fgov.be/fr/modules/publications/statistiques/population/downloads/population_-_statistique_de_mortalite_foeto-infantile_1998_-_2012.jsp Eurostat collects and publishes values of the overall IMR for the EU countries. The Eurostat data are currently available until 2013, and presented on the EU Heidi tool (http://ec.europa.eu/health/indicators/indicators/index_en.htm) and by OECD in Health at a Glance.[2]
Periodicity	Yearly
International comparability	Availability: yes, the overall infant mortality rates are published by Eurostat, OECD and WHO HFA ; Comparability: the comparability of the overall infant mortality rate is hampered by the differences between countries in: a) the recording rules of extremely low birth weight newborns, and b) the ethical attitudes of neonatologists in case of extremely low

	births weight. This can lead to bias in comparisons of infant death rates including the lowest birth weight categories. This bias is particularly important for the early component of the infant mortality (neonatal mortality). While several restricted IMR have been proposed for international comparisons purposes - based either on a gestational age threshold,[3] (usually >= 22 or 28 weeks), either on a minimal weight[4] (usually 500g+ or 1000g+) – international comparisons based on the weight specific indicators are still seldom published. The European “Euro-Peristat” project compared data for 22 weeks + IMR in 2010 for some European countries.[5] However, this study was only performed twice, and data for Belgium were not pooled but displayed by region, according to the place of death (instead of place of residence), which is not appropriate to compare rates for public health purposes. Therefore we did not use the Euro-Peristat weight-specific data in this report.
Dimension	Health Status

13.4.2. Results

Belgium and regions

The infant mortality has regularly decreased over the last decade until year 2009, then stabilized (Figure 137, Figure 138). Like in all industrialized countries, [6] infant mortality in Belgium has been trending downwards during the 20th century. Between 2000 and 2009, this downing trends has continued, then seemed to stabilize afterwards around 3.5 to 4 for 1000 live births.

The figures were quite similar in the 3 regions for the year 2012.

All components of the infant mortality decreased since 2000 (early and late neonatal mortality as well as post-neonatal mortality). In its report “Naitre Bruxellois”(7), the Brussels Observatory of health mentions several hypothesis to explain this decreasing trends: progress have been made in the health care system with respect to the management of perinatal pathologies and the extreme prematurity, and in the surgical approach to congenital defects; the number of beds for neonatal intensive care has increased, and on the other hand, the accessibility of care to the most deprived mothers has improved, for instance through the mechanism of the ‘Emergency Medical Aid’.

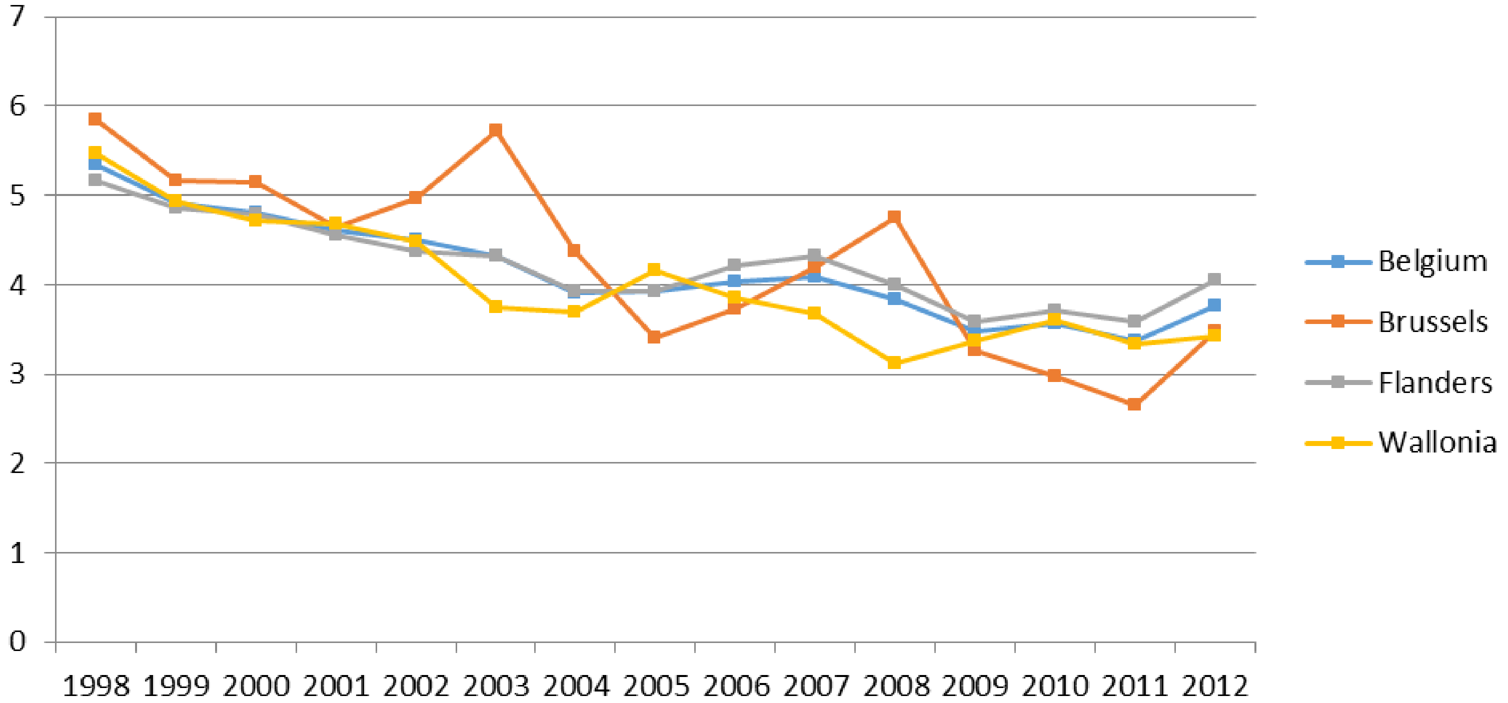
Infant mortality is closely related to a social gradient. Even if the average infant mortality rate has improved and is quite good, social differences persist. This has been showed for instance in the Brussels Region,[7] where the IMR rate are 70 to 80 % higher in the household having no working income as compared to households with 2 working incomes. The reports also describes the complex relationship between infant mortality and the origin of the mother.

International comparisons (Figure 138).

At the exception of Finland (outlier?), the IMR among the EU-15 countries in 2013 ranged from 2.7 (Spain) to 3.9 (Luxemburg).

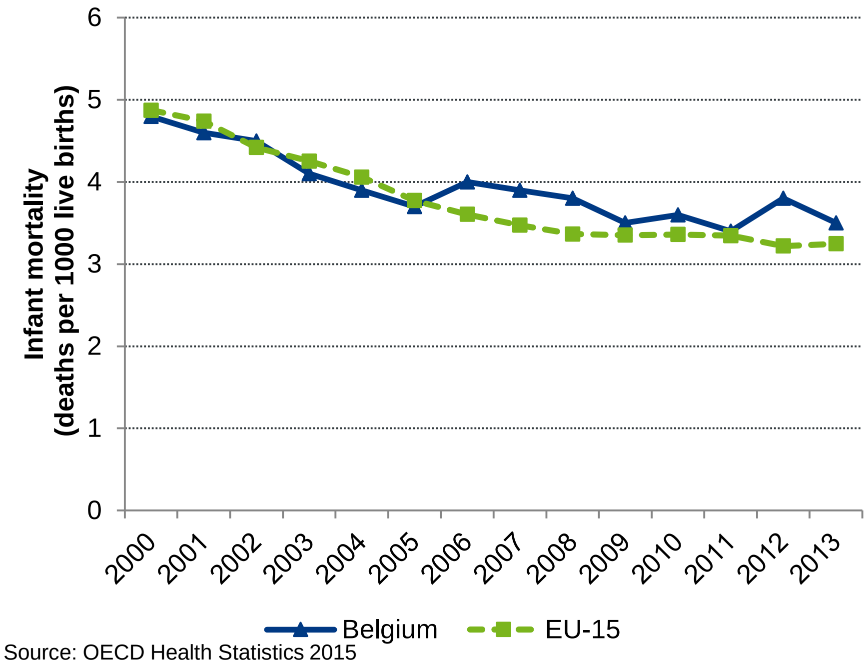
Infant mortality rates in Belgium are close to the average EU-15 rates, and better than in many neighbouring countries.

Figure 137 – Infant mortality rate per 1000 live births, by region (1998-2012)

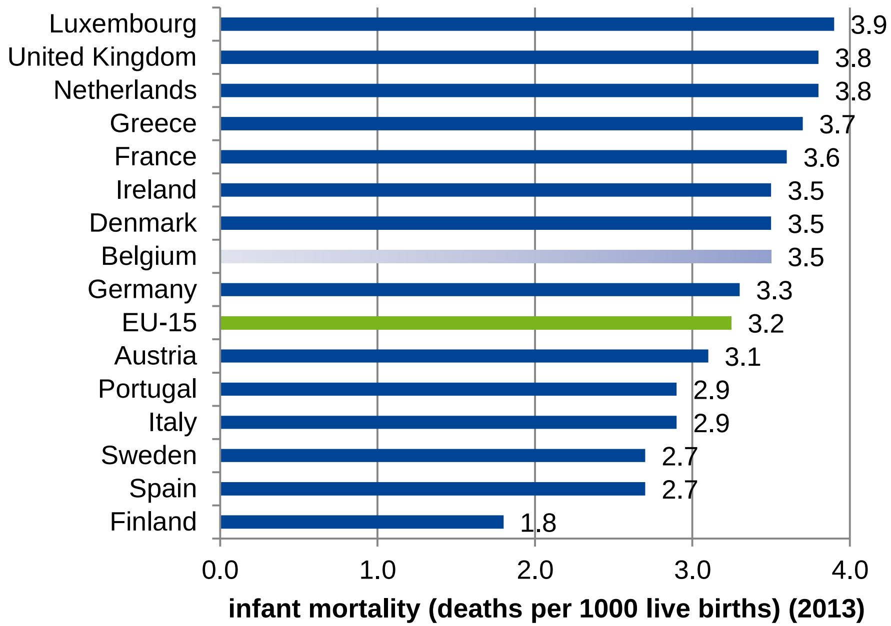


Source: Communities + Statistics Belgium

Figure 138 – Infant mortality rate: international comparison (2000-2013)



Source: OECD Health Statistics 2015



Source: OECD Health Statistics 2015

Source: OECD Health Statistics 2015

Key points

- **The infant mortality has regularly decreased over the last decades, and seems to have stabilized since 2009, with a rate situated around 3.5 to 4 for 1000 live births.**
- **The figures are similar in the 3 regions.**
- **All components of the infant mortality have decreased; this can be as well a consequence of technical medical progress, as of the increase of the number of neonatal beds, and of a better accessibility to the most deprived.**
- **A social gradient persists in infant mortality, that reinforce the necessity to tackle social determinants of health**
- **Infant mortality rates in Belgium are close to the average EU-15 rates, and better than in the neighboured countries.**

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13.5. Health expectancy at 65 years (HS-6)

13.5.1. Documentation sheet

Description	The "Healthy Life Years (HLY)" indicator -also called Disability-free Life expectancy- measures the number of remaining years that a person of a certain age is expected to live without disabilityhttp://ec.europa.eu/health/indicators/healthy_life_years/hly_en.htm#fragment0. It is a "Summary Measure of Population Health", pertaining to the family of "Health Expectancy" indicators that bring together data on both the length and the quality of life.[1,2]. They are considered important population health outcome measures.[3] The Health Expectancy indicators extend the concept of life expectancy (LE) to account for morbidity and disability in order to assess the quality of years lived, providing more information on the burden of diseases in the population than LE alone. The most commonly used indicators of this family are 1.Healthy Life Years (HLY) or Disability-Free-Life-Expectancy, 2.LE in good self-reported health and 3.LE without chronic morbidity.
Calculation	HLY is computed as LE at a particular age, from which the expected number of years lived with long-term activity limitations is subtracted. It is calculated using the Sullivan method[4,5] based on life table data and age-specific period prevalence data on long-term activity limitation (according to the Euro-REVES Global Activity Limitation Indicator (GALI)). The indicator can be calculated at any specific age. This composite indicator requires two data sources: 1. A data source providing mortality data by sex and age groups. From this mortality data source, Life Tables are computed; this step can be done either at national or international (Eurostat) level, each producing slightly different results. 2. A data source providing the prevalence of activity limitation by age and sex. Generally those data originates from surveys (HIS or SILC; the census 2001 also included those data). The calculation of the years lived with and without disability is done integrating those 2 data sources. Computing the HLY by socioeconomic status(SES) is more complex : as life table by SES are not routinely produced in Belgium, we have to resort to more complex approaches to obtain such, like the mortality follow up of cohorts (ideally census-based, however, survey-based follow up of cohorts revealed to be an acceptable alternative[6]).
Rationale	Monitoring time trend of LE and HLY together allows assessing whether the years of life gained are healthy years or not. HLY was included as the Lisbon Structural Indicator on health,[7,8] with the main purpose to monitor health trends and health gaps in Europe. It is also an indicator of the ECHI short list.[9]
Primary Data source	For comparisons of HLY between Belgian regions, the following steps are undertaken: a) Statistics Belgium provides mortality data by region, sex and age-group; b) Statistics Belgium computes the life tables; c) The prevalence of long-term "Global activity limitation" (GALI) by region, sex and age-group is obtained from the Health Interview Survey (which is nationally and regionally representative). For the HLY by SES, no recent figures have been computed. We mention here a previous analysis that was made on the 2001 census.

	For comparisons between the European countries the following steps are undertaken: a) Statistics Belgium provides mortality data by sex and age-group; b) Eurostat computes the life tables; c) The prevalence of long-term "Global activity limitation" (GALI) by sex and age-group is obtained from the EU-SILC that is a nationally representative survey. For the HLY by SES, no international figures are available.
Indicator source	WIV-ISP, for regional comparisons https://stats.wiv-isp.be/SASStoredProcess/guest?_program=%2FEhleis%2FStored+Process%2FHealth+Expectancy+Statistics&_action=properties EUROSTAT for international comparisons;[10] those are also published and commented in the OECD "Health at a glance" reports. No recent data exist for the HLY by SES, but in the future, it is foreseen to calculate them routinely through a mortality follow up of the SILC cohort. Available data are either census-based (follow-up of the census 2001[11]), or survey-based (follow-up of the SILC 2004 [6]). Other ages have been chosen by the researchers for the indicators by SES (respectively HLY at 25 years and at 50 years).
Periodicity	For Belgium at the regional level, every 3-5 years (according to the HIS periodicity). At Eurostat: annually since 2004
Technical definitions and limitations	For the HLY indicator, disability is measured through the global activity limitation indicator (GALI) which is a single survey question capturing long-standing limitations in usual activities.[12]The GALI question is worded as follows in the HIS and the SILC: "For at least the past 6 months, to what extend have you been limited because of a health problem in activities people usually do?" (Answering categories; yes strongly limited, yes limited, no not limited). People answering "yes strongly limited" or "yes limited" are grouped into a category "Limited". There is some concern about the GALI question. It is thought that the complexity of this question makes it difficult to be understood, and very small changes in the formulation (e.g. place of the words) have consequences on the prevalence.
International comparability	International comparisons are available. However, comparability is limited given that some countries changed the wording of the GALI question and that question wording was not included in the translation guidelines of the EU-SILC survey. The complexity of the question can also hampers the validity of the indicator in a way that can vary across the countries. Consequently, not all countries have comparable question for measuring long-term activity limitation. The comparability improved since the revision of the translation of the GALI in 2008.
Dimension	Health Status
Related indicators	Life expectancy

13.5.2. Results

13.5.2.1.Belgium

In 2013, the HLY at age 65 in Belgium were 11.2 years for men and 12.3 for women (Table 95). In the period 2001-2013, it is noteworthy that, **although women live longer than men, they do not live much longer in good health**. Women live more years than men with activity limitation.

There are regional differences in the Healthy Life Years, with Flanders having the highest HLY (for both sexes) and Wallonia the lowest (Figure 139). Although this is true at each age, these regional differences have been found to decrease with age (data not shown). At age 65, the difference between Flanders and Wallonia in HLY is 2.4 years in both sexes, and the difference between Flanders and Brussels is 2.3 years for men and 1.8 for women.

The HLY at 65 has increased by about 2.4 years for both sexes during the considered period: for men, it was 8.8 HLY in 2001 and increased to 11.2 in 2013. For women, it increased from 9.7 HLY in 2001 to 12.1 HLY in 2013.

There are substantial socio-economic inequalities in HLY (Figure 140**)**: between the extreme levels of educational level (people with no diploma and people with a post-secondary diploma) the difference in HLY reached 18 years in both sexes in 2004.

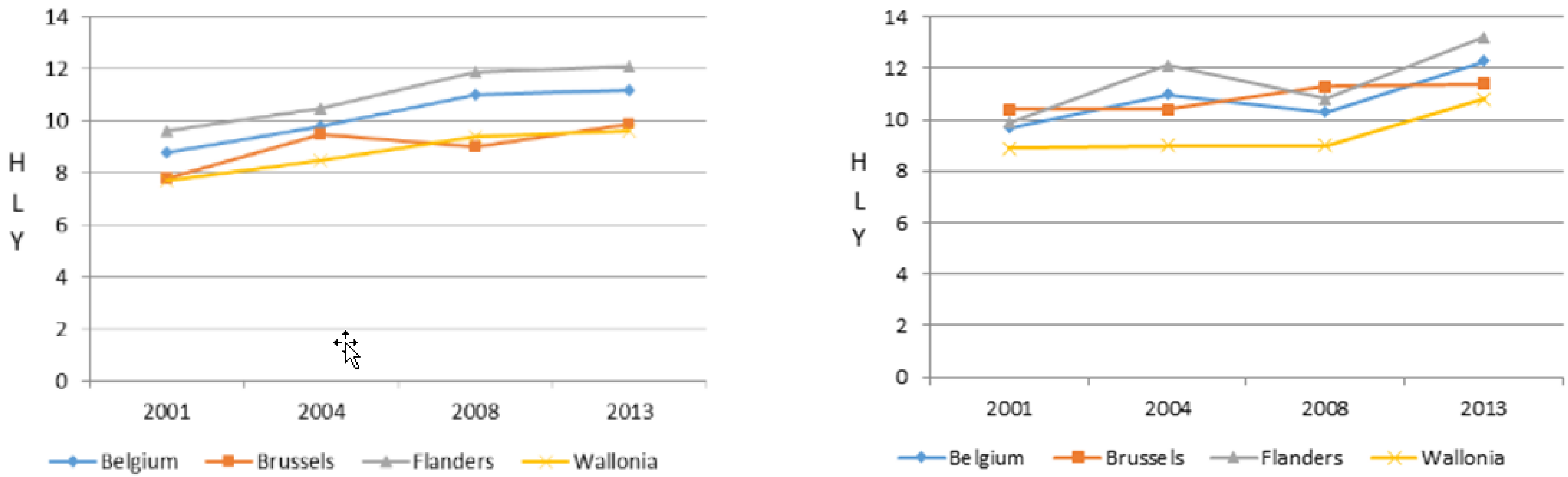
Table 95 – Healthy Life Years (HLY) and Years with activity limitation at age 65, by sex (2001, 2004, 2008, 2013)

	Males			Females		
Year	**HLY**	**Years with activity limitation**	**Life expectancy**	**HLY**	**Years with activity limitation**	**Life expectancy**
2001	**8.8**	7.1	15.9	**9.7**	10.1	19.8
2004	**9.8**	6.6	16.4	**11**	9.2	20.2
2008	**11**	6.2	17.2	**10.3**	10.4	20.7
2013	**11.2**	6.4	17.6	**12.3**	8.7	21

Source: WIV-ISP, SPMA

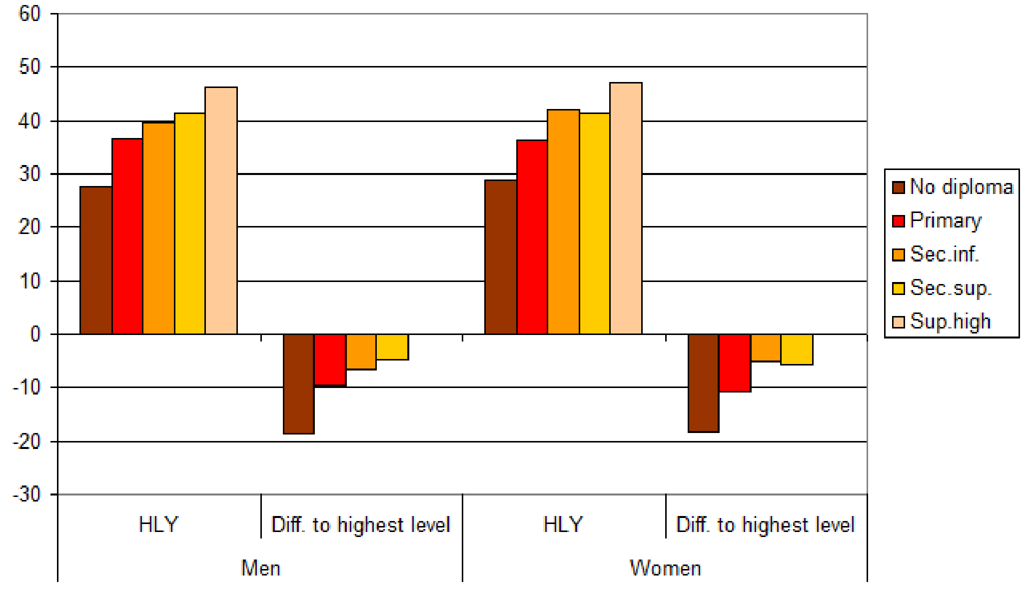
Figure 139– Healthy Life Years at age 65, by sex and region (2001-2013)

Males **Females**



Source= WIV – ISP, SPMA

Figure 140 – Healthy Life Years at age 25, by sex and educational level, 2004, Belgium

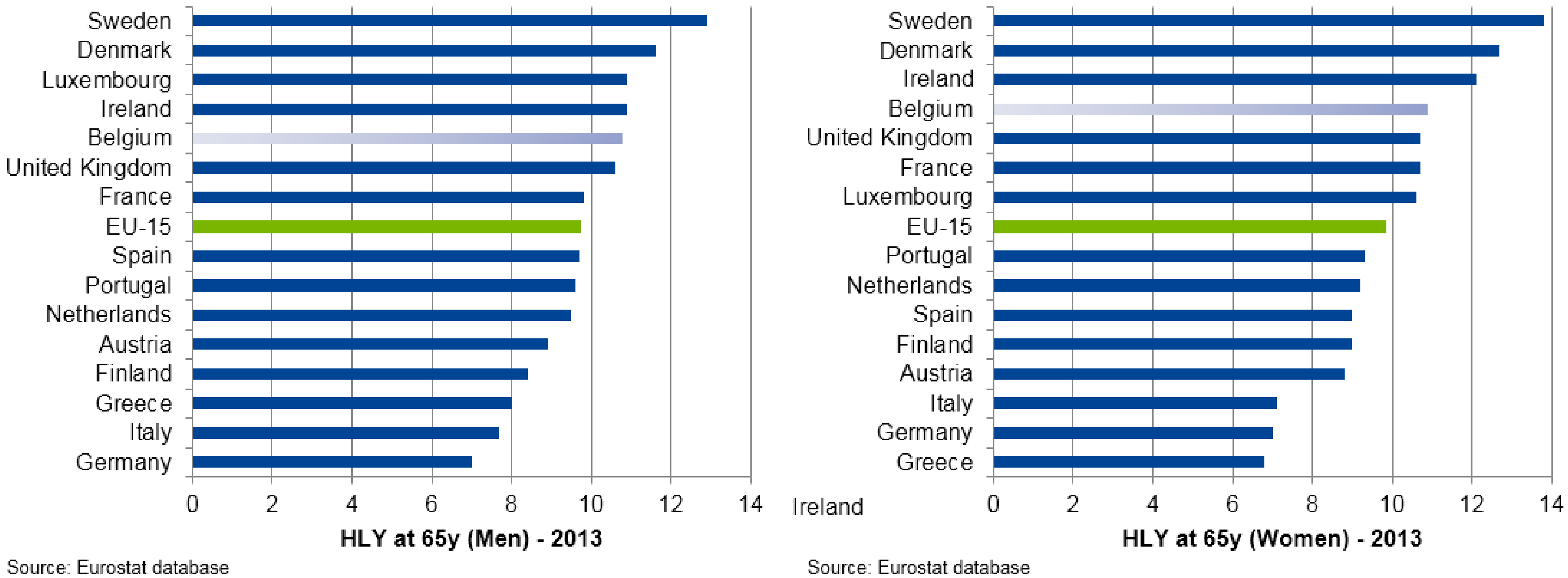


13.5.2.2.International comparisons

Figure 141 and Figure 142 show international comparison in HYL at 65. Belgium is ranking good on average as compared with the EU-15 average and with the neighbouring countries.

Figure 141 – Health expectancy at 65 years by sex: international comparison (2013)

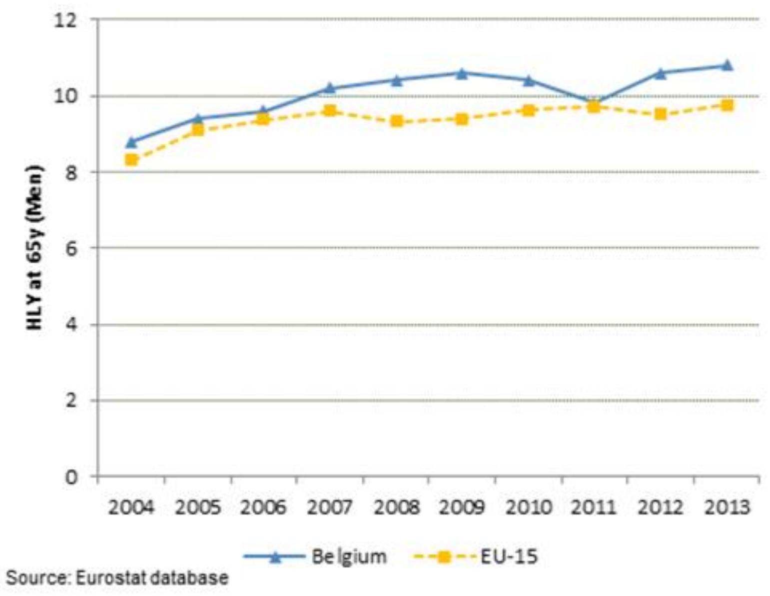
Males **Females**



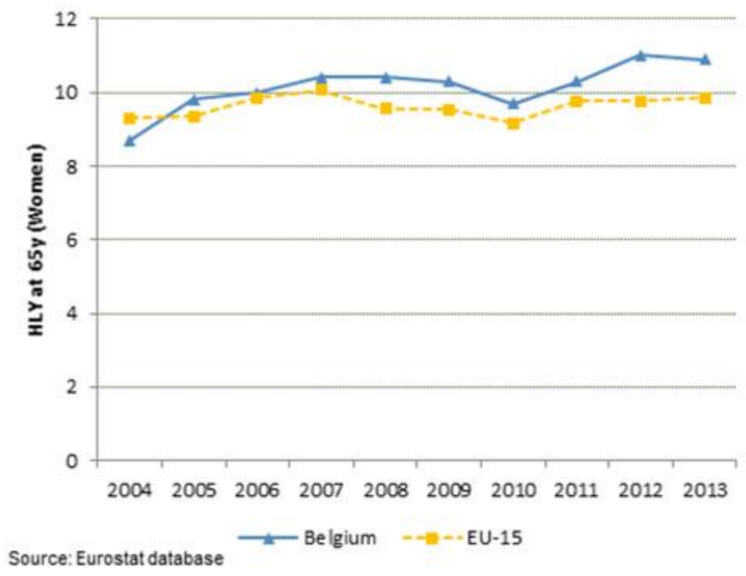
Source: Eurostat database

Figure 142 – HLY at 65 years by sex: international comparison (2004-2013)

Males



Females



Key points

- **In 2013, the Healthy Life Years at age 65 in Belgium was 11.2 years for men and 12.2 years for women.**
- **It is noteworthy that, although women live longer than men, they do not live much longer in good health (in 2008, the number of HLY in both sexes was exactly the same). Women live more years with activity limitation.**
- **There are regional differences in the number of Healthy Life Years, with a higher number of Healthy Life Years in Flanders (for both sexes) than in the other regions. Wallonia has the lowest number of Healthy Life Years.**
- **There has been an increase in Healthy Life Years at 65 by about 2 years during the period 2001-2013**
- **There are very important socio-economic inequalities in Healthy Life Years: In 2004, between the extreme levels of educational level (people with no diploma and people with a post secondary diploma) the difference in Healthy Life Years reached 18 years in both sexes.**
- **Belgium has a good ranking as compared with the EU-15 average and with the neighbouring countries.**

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13.6. Self-perceived health (HS-7)

13.6.1. Documentation sheet

Description	Proportion of persons aged 15 years or more who assess their health as good or very good
Calculation	The indicator is based on Health Interview Survey (HIS) question (SH01): 'How is your health in general?' which contains five answering categories; 1) very good, 2) good, 3) fair, 4) bad, 5) very bad. The numerator is the number of people assessing their health either as very good or good; the denominator is the number of respondents to this question in the HIS. Results are weighted to account to the survey design.
Rationale	Subjective health measurement is contributing to the evaluation of the health status, the burden of diseases and health care needs at the population level. Perceived health status is not a substitute for more objective indicators but rather complements these measures. Studies have shown perceived health to be a good predictor of functional disability,[1] an indicator of the health care needs[2] and of subsequent mortality.[3] This indicator is recommended by ECHI[4] and is also an European indicator of the health and long term care strand.[5]
Primary Data source	HIS Belgium 1997-2001-2004-2008-2013[6] EU-SILC http://ec.europa.eu/eurostat/cache/metadata/en/hlth_silc_01_esms.htm
Indicator source	For regional comparison: HIS For international comparison: EUROSTAT (from EU-SILC)
Periodicity	Every 3-5 years in the HIS Every year at EU-level (SILC)
Technical definitions	See calculation
International comparability	Availability: Yes, the values of the indicator are available in Eurostat EU-SILC). Standardization: The harmonization of this health question between the MS was problematic until 2007 (different wordings and categories). Since then some efforts were made but the process is still on-going and the comparability of the results is to be further improved for some countries. The major progress was reached between 2007 and 2008 based on an agreement on harmonization and guidelines provided by Eurostat in October 2007 to the Member States (http://ec.europa.eu/eurostat/cache/metadata/en/hlth_silc_01_esms.htm) with the wording used in the European health Survey as golden standard. In addition to the issues of standardization of the question, social and cultural differences between countries can influence the way of answering this question.[7]
Dimension	Health Status
Related indicators	Health expectancy

13.6.2. Results

13.6.2.1. Belgium

Seventy height percent from the Belgian population reported their health to be (very) good in 2013 (Table 96).

Men are more likely than women to rate their health as good but the difference is not statistically significant.

As expected, there is a strong decreasing trend of the health's rating with age: 93% of the people aged 15-24 rated their health as good or very good, while this was the case in only 56% of people aged 75 and over.

There is an important socio-economic gradient: only 61% of people with a low educational level rate their health positively, against 86% of the people in the highest level (age-adjusted figures).

The prevalence of people perceiving their health as good is higher in Flanders than in Wallonia or Brussels

The evolution over time shows a slight but significant increase (after standardisation for age and gender) of the prevalence of people rating their health as (very) good in Belgium between 1997 and 2013. This trend is mostly perceptible in Wallonia (from 73% in 1997 to 78% in 2013). The disparity between regions remains quite stable in men, while the percentage of women with a good self-perceived health increased sharply in Wallonia (from 67% in 1997 to 77% in 2013), reducing considerably the disparity between the regions.

13.6.2.2. International comparisons

Belgium is one of the countries with the highest proportion of people rating favourably their health (Figure 144); the prevalence is higher than the EU-15 average prevalence.

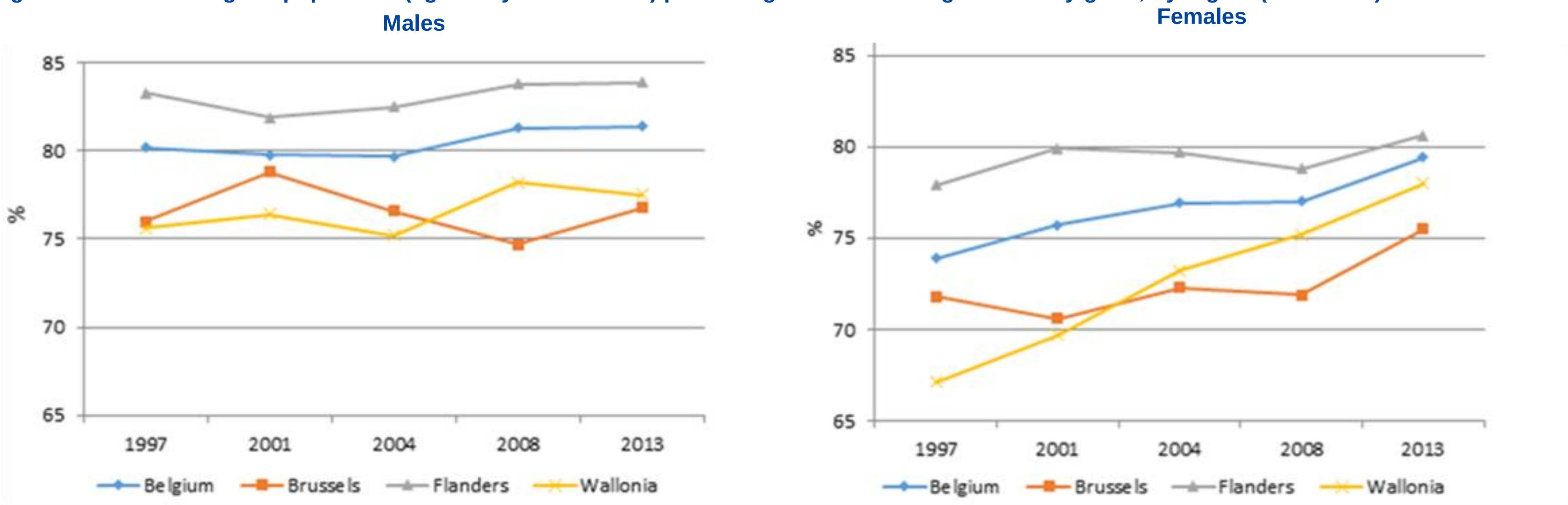
Table 96 – Percentage of the population (aged 15 years and over) perceiving their health as good or very good (2013)

		Crude	CI Crude	Adj.	CI Adj.	N
YEAR	2013	77.9	(76.6-79.3)	81.0	(79.6-82.3)	6555
GENDER	Male	79.6	(77.8-81.4)	81.4	(79.4-83.2)	3096
	Female	76.4	(74.5-78.3)	79.4	(77.3-81.3)	3459
AGE GROUP	15 - 24	93.1	(90.6-95.7)	93.1	(90.1-95.3)	687
	25 - 34	88.5	(85.6-91.4)	88.6	(85.3-91.2)	985
	35 - 44	82.6	(79.6-85.7)	82.6	(79.3-85.4)	1087
	45 - 54	76.5	(73.3-79.7)	76.5	(73.2-79.5)	1159
	55 - 64	72.2	(68.6-75.9)	72.3	(68.4-75.8)	1116

	65 - 74	71.6	(67.4-75.8)	71.6	(67.2-75.7)	842
	75 +	56.4	(51.5-61.3)	56.7	(51.8-61.5)	679
EDUCATION LEVEL	Primary/no degree	50.9	(45.4-56.5)	61.3	(55.4-66.9)	577
	Secondary inferior	67.9	(63.8-72.0)	72.8	(68.5-76.7)	936
	Secondary superior	78.5	(76.2-80.8)	79.7	(77.3-82.0)	2096
	Superior education	86.1	(84.3-87.8)	86.5	(84.6-88.2)	2885
URBANISATION LEVEL	Urban	76.6	(74.5-78.6)	79.0	(76.8-81.1)	3034
	Sub-urban	79.4	(76.8-82.0)	82.1	(79.6-84.4)	1635
	Rural	78.3	(75.6-81.0)	80.3	(77.5-82.9)	1886
REGION	Flemish Region	79.8	(77.9-81.7)	82.6	(80.6-84.4)	2537
	Brussels Region	75.1	(71.9-78.2)	75.5	(72.1-78.7)	1380
	Walloon Region	75.0	(72.8-77.3)	77.1	(74.7-79.3)	2638

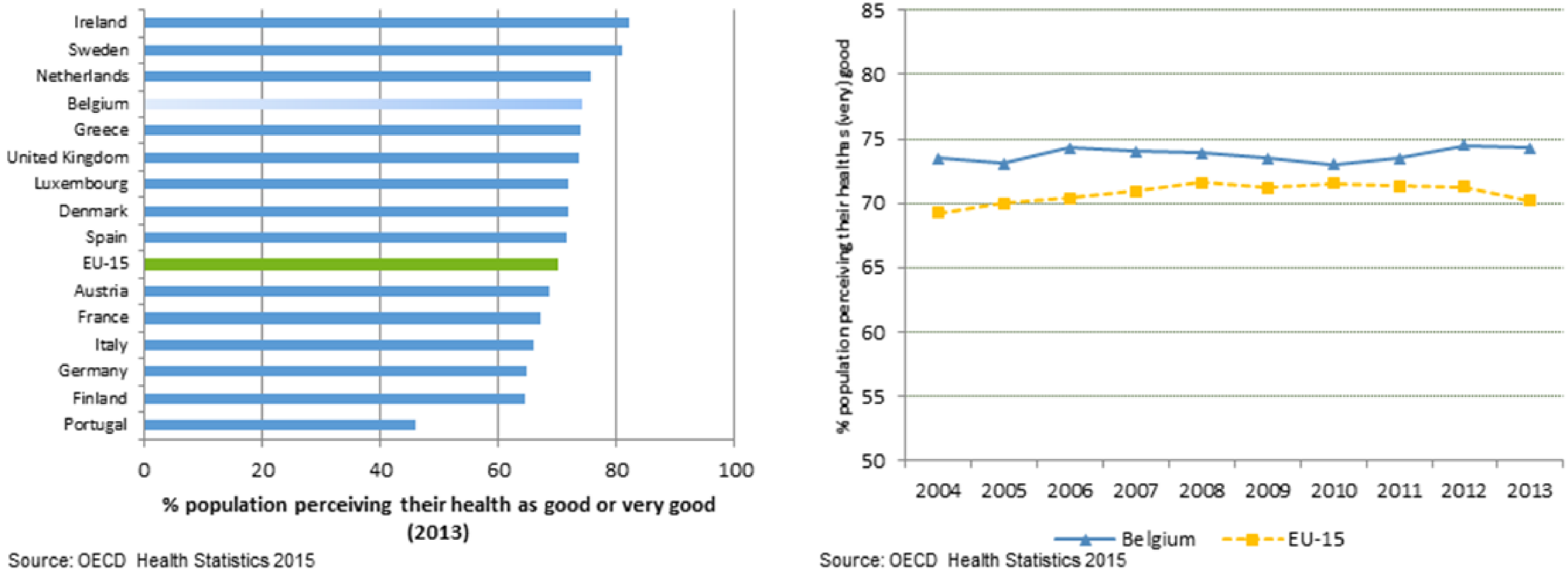
Source: Health Interview Survey, Belgium, 2013
**Adjusted for age and/or gender based on a logistic regression model (Belgian population of 2013 as reference)*

Figure 143 – Percentage of population (aged 15 years or older) perceiving their health as good or very good, by region (1997-2013)



Source: Health Interview Survey, Belgium, 2013

Figure 144 – Self perceived health: international comparisons (2000-2013)



Key points

- 78% of the population reported their health to be good to very good in 2013. As expected, there is a strong decreasing gradient with age.
- There is also in important socio-economic gradient, more persons from the highest socio economic level reporting to be in good health. Also, there are more people reporting to be in good health in Flanders than in Wallonia or Brussels, but the difference between the regions is decreasing overtime at least for women .
- Belgium ranks rather favourably compared to the European average for the self-perceived health, and the situation is similar to the one observed in The Netherlands.

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14. HEALTH PROMOTION

14.1. Obesity in adults (HP-1)

14.1.1. Documentation sheet

Description	Proportion of adult persons (≥18 years) whose Body Mass Index (BMI) is ≥ 30 kg/m².
Calculation	The Body Mass Index (BMI), or Quetelet index, is defined as the individual's body weight (in kilograms) divided by the square of their height (in metres).
Rationale	Excessive body weight predisposes to various diseases, particularly cardiovascular diseases, diabetes mellitus type 2, sleep apnoea, cancers and osteoarthritis. Obesity is a growing public health problem. Many of the risks diminish with weight loss.[1,2]. Effective interventions exist to prevent and treat obesity. The indicator is recommended as a health promotion indicator by the OECD and is one of the ECHI indicators.[3-5]
Primary Data source	Belgian Health Interview Surveys 1997-2001-2004-2008-2013 For international comparisons, OECD provides data from several national data sources
Indicator source	Belgian Health Interview Surveys[6]
Periodicity	Every 4-5 years
Technical definitions	Weight and height are self-reported and derived from European Health Interview Survey (EHIS) questions BMI01: How tall are you? (cm), and BMI02: How much do you weight without clothes and shoes? (kg). Since these data are self-reported they can suffer from inaccuracy of the measures. They can also be subject to some bias: overweight people tend to underestimate their weight and overestimate their height, leading to an underestimation of the overweight prevalence. However, it is likely that the bias remains quite stable over time, allowing for time trends monitoring. While data derived from HES (Health Examination Survey) would be more accurate, the high cost of such surveys is a barrier.
International comparability	EHIS 2008 provides data for 17 countries. The lack of age-standardization in the international data can hamper the comparability for this indicator, because obesity is increasing with age (except in the oldest age groups); it is strongly recommended that standardized data are published by international agencies. OECD provides data from several national data sources, some of which are based on self-reported measures, some based on health examination.
Dimensions	Health Promotion
Related indicators	Link to other lifestyles: consumption of fruits and vegetables and physical activity

14.1.2. Results

In 2013, obesity affected 13.7% of the population in Belgium (Table 97). There is no significant gender difference in obesity prevalence.

Obesity increases with age until the age group 65-74 years, then decreases from the age of 75 years and older. Obesity prevalence is strongly associated with the educational level, the prevalence of obesity is more than 3 times higher among people with the lowest educational level (25,2%) compared to people with the highest educational level (8.7%), a significant difference after adjustment for age and sex. This inequality increased as compared to 2008 (Rate Ratio in 2008 was 2)

Regional disparities: The percentage of obese people is higher in the Walloon Region (Crude prevalence: 16.1%) than in the other regions (12.6% in the Flemish Region and 12.9% in Brussels Region). The regional differences remain significant after adjusted for age and sex. The Walloon excess in the obesity prevalence is more pronounced in men.

Evolution: The percentage of obese people in Belgium increased until 2008, then stabilized afterwards (Figure 145), excepted among men in Wallonia, in which it has considerably increased.

International comparisons

The prevalence of obesity in Belgium (for both sexes considered together) used to be higher than the EU mean until 2008, but it increased slower in Belgium than did the EU mean. In 2013, the prevalence of obese people in Belgium was close to the EU-mean, for the EU-15 countries with self-reported figures (Figure 146).

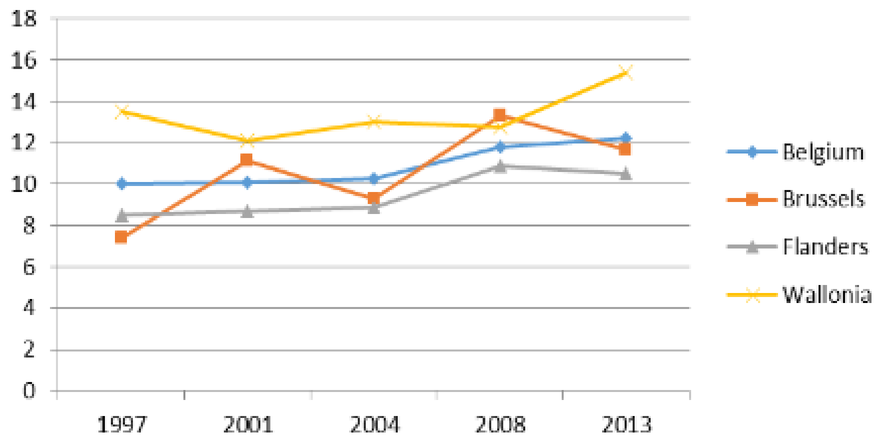
Table 97 – Percentage of the adult population (18 years and over) being obese (BMI >= 30) (2013)

		Crude	CI Crude	Adj.*	CI Adj.	N
YEAR	2013	13.7	(12.7-14.8)	12.0	(10.9-13.1)	8618
GENDER	Male	13.6	(12.1-15.2)	12.2	(10.5-14.2)	4109
	Female	13.9	(12.4-15.3)	12.3	(10.8-14.0)	4509
AGE GROUP	18 - 24	3.9	(1.1-6.7)	3.9	(1.9-7.9)	790
	25 - 34	10.3	(7.9-12.8)	10.3	(8.1-13.0)	1390
	35 - 44	13.0	(10.2-15.8)	13.0	(10.5-16.0)	1491
	45 - 54	14.0	(11.8-16.3)	14.0	(11.9-16.5)	1536
	55 - 64	19.3	(16.4-22.1)	19.3	(16.6-22.3)	1438
	65 - 74	19.6	(15.8-23.4)	19.6	(16.1-23.7)	1014
	75 +	14.5	(11.5-17.6)	14.5	(11.7-17.8)	959
EDUCATION LEVEL	Primary/no degree	25.2	(20.9-29.6)	23.5	(18.4-29.4)	964
	Secondary inferior	18.8	(15.8-21.8)	16.6	(13.7-19.8)	1229
	Secondary superior	14.5	(12.6-16.3)	13.0	(11.3-15.0)	2735
	Superior education	8.7	(7.2-10.1)	7.7	(6.4-9.2)	3598
URBANISATION LEVEL	Urban	14.3	(12.7-15.9)	12.8	(11.2-14.6)	4364
	Sub-urban	12.1	(10.2-14.0)	10.5	(8.5-12.9)	1894
	Rural	14.6	(12.4-16.9)	13.2	(11.1-15.6)	2360
REGION	Flemish Region	12.6	(11.0-14.3)	11.1	(9.4-13.0)	2864
	Brussels Region	12.9	(11.2-14.5)	12.1	(10.5-14.0)	2361
	Walloon Region	16.1	(14.4-17.8)	14.5	(12.7-16.4)	3393

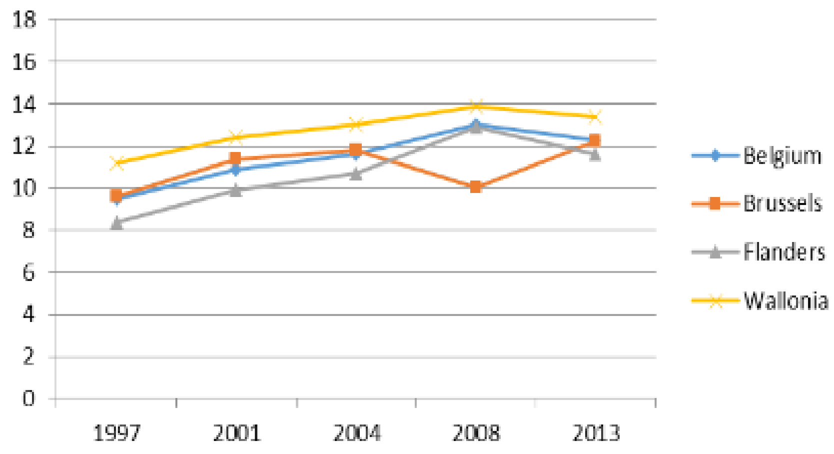
Source: Health Interview Survey, Belgium, 2013
**Adjusted for age and/or gender based on a logistic regression model (Belgian population of 2013 as reference)*

Figure 145 – Prevalence of obesity in the adult (18 years or older) population being obese (BMI ≥ 30), by sex and Region (1997-2013)

Males



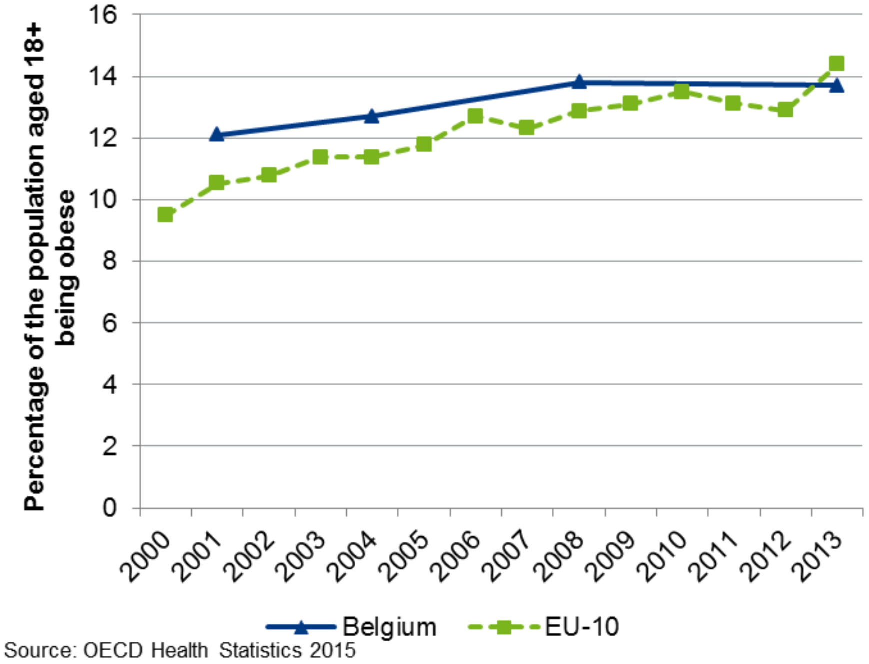
Females

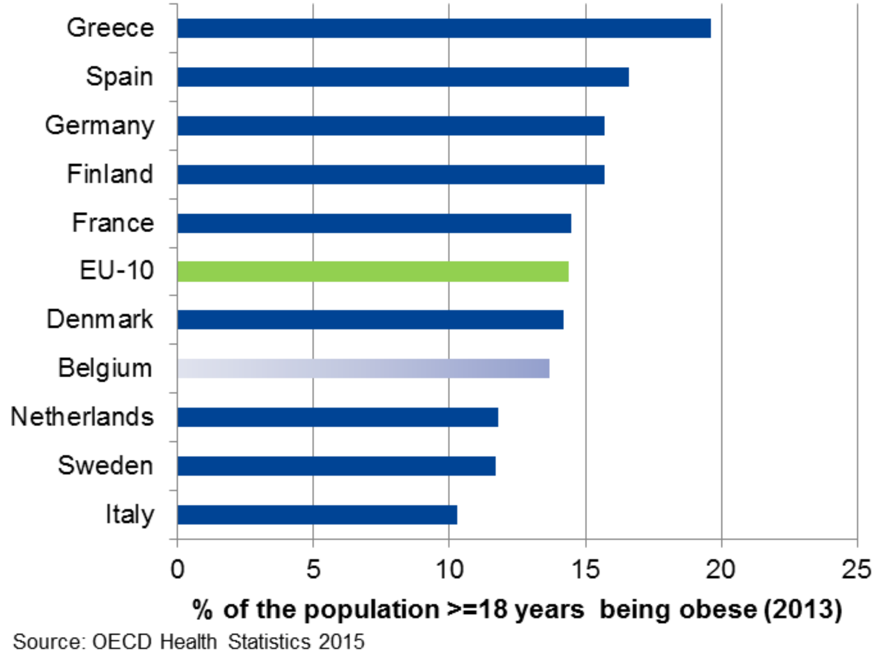


Source: WIV – ISP: Health Interview Survey, Belgium
**Adjusted for age and/or gender (Belgian population of 2013 as reference)*

14.1.2.1. International comparison

Figure 146 – Percentage of population aged >= 18 years being obese: international comparison (2013)





Source: OECD health statistics 2015

Key points

- **In 2013, 14% of the population was obese.**
- **The prevalence of obesity is higher in Wallonia than in the other regions, particularly in men.**
- **The previously observed growing trend in obesity seems to have stabilized, except for men in Wallonia.**
- **The social inequalities are important for this indicator and the same is observed for related health habits (lack of physical activity and poor nutritional habits). Those health inequalities should be addressed together through a coherent strategy.**
- **International comparisons: in 2013, the prevalence of obesity in Belgium was close to the EU-15 mean.**

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14.2. Overweight in adolescents (HP-2)

14.2.1. Documentation sheet

Description	Percentage of adolescents with a Body Mass Index (BMI) exceeding the normal weight limit. In the international Health Behaviour in School-aged Children (HBSC) report, the indicators are reported for the specific ages of 11, 13, 15 years.
Calculation	The numerator includes the children/adolescents with a BMI exceeding a specified cut-off; the denominator includes all surveyed children/adolescents who reported plausible height and weight.
Rationale	Overweight and obesity are public health problems among young people.[1,2] They carry serious health consequences that can last into adulthood.[3]
Primary Data source	HBSC studies in the Flemish- and French-speaking[4] parts of Belgium are providing primary data for the calculation of the indicators
Indicator source	International HBSC report 2009-2010[5]
Periodicity	Every 4 years
Technical definitions	The HBSC survey is a WHO collaborative cross-nation.l study including about 1500 school-aged children/adolescents in each age group in each country (43 countries or regions in 2010). Data collection occurs with comprehensive questionnaire anonymously self-filled at school. For the overweight topic, young people were asked how much they weigh without clothes and how tall they are without shoes. The BMI was computed as weight (kg) divided by the square of the height (cm). The cut off used to define overweight are the international BMI standards for young people adopted by the IOTF.[6]
Limitations	Limitations: the information is self-reported, what can lead to bias in the weight and/or height estimation and hamper the validity. Another limitation comes from the missing value (no answer to weight and/or height), what are more prevalent in the French-speaking part of Belgium than in Flanders
International comparability	More or less, because the high number of missing values in the Belgium French Speaking survey hampers the validity of the results
Dimensions	Health Promotion
Related indicators	Link to other lifestyles: physical activity and sedentary behaviours

14.2.2. Results

The age-adjusted global prevalence by sex and region is shown in Table 98.[5,7] In boys, the overweight prevalence is higher in Wallonia (13.9%) than in Flanders (11.3%). This is mostly the fact of the boys aged 13. At the contrary, the prevalence of overweight in girl is slightly lower in Wallonia, which is mostly the fact of 13 year old girls.

Table 98 – Prevalence of overweight in teenagers, by sex and region (2010)

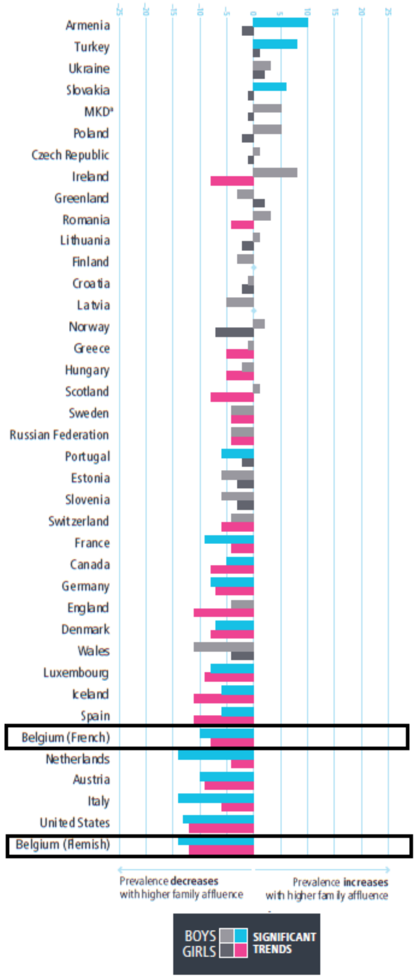
	Boys		Girls	
	Belgium (French)	Belgium (Flemish)	Wallonia-Brussels	Flanders
At 11	11%	10%	11%	10%
At 13	14%	10%	8%	11%
At 15	15%	14%	8%	9%
Global (age-adjusted)	13.6%	11.3%	9.1%	10.3%

Sources: HBSC international report of the 2009-2010 surveys and Alhuwasia (2015)

Results by SES

In the HBSC international report, Belgium (and mainly the Flemish part) ranks as one of the countries with the highest social inequalities in overweight prevalence, when the social status is measured as the family affluence, meaning that the overweight prevalence decreases with higher family affluence.

Figure 147 – Difference in prevalence (%) of overweight and obesity between Low and High family affluence groups, by gender: international comparison (2009-2010)



Source: HBSC survey 2009-2010
** The former Yugoslav Republic of Macedonia, ♦ indicates less than +/- 0.5%*

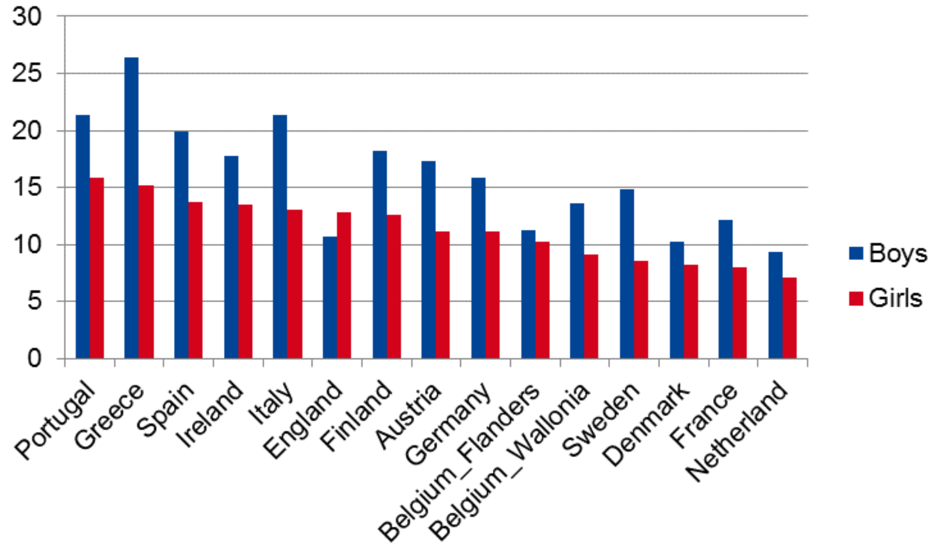
Trends over time

According to Alhuwasia (7), there was no significant trends over time in the prevalence of overweight, in any gender or region of Belgium (Table 99 and Table 100). There was however a borderline increase for the boys in Wallonia and for the girls in Flanders, between 2002 and 2010 (ns, p=0.12).

International Comparisons

Belgium ranks quite favorably among the EU-15 countries, in both sexes and in both communities, with, respectively for Belgium (Flanders) and Belgium (French-speaking), a 10th and a 13th position (among 15 countries) in boys, and a 10th and a 11th position in girls.

Figure 148 – Prevalence of overweight in young people: international comparison (2010)



Source: HBSC survey, from Alhuwasia (2015).

Table 99 – Trends in age-adjusted prevalence of overweight in boys: international comparison (2002-2010)

Country	*N* surveyed (% with BMI data)			Age-adjusted overweight%			Age-adjusted *P* value for trend
	2002	2006	2010	2002	2006	2010	
Austria	2164 (91.1)	2340 (94.4)	2456 (91.2)	13.67	15.37	17.35	0.005
Belgium (Flemish)	2996 (92.8)	2198 (92.0)	2086 (93.4)	10.98	10.01	11.30	0.818
Croatia	2158 (94.7)	2439 (94.8)	3012 (95.4)	15.52	18.41	21.88	<0.001
Czech Republic	2412 (99.5)	2411 (98.8)	2135 (97.1)	12.07	16.97	19.76	<0.001
Denmark	2211 (87.5)	2727 (83.8)	1914 (85.8)	11.67	10.49	10.25	0.217
Estonia	1982 (93.3)	2217 (93.4)	2022 (79.9)	8.95	12.52	17.31	<0.001
Finland	2692 (97.0)	2474 (95.8)	3179 (95.1)	16.19	18.50	18.22	0.051
France	4054 (93.1)	3551 (92.6)	3030 (87.6)	12.52	11.87	12.14	0.608
Germany	2777 (87.6)	3632 (92.3)	2406 (83.7)	15.14	14.41	15.76	0.347
Greece	1870 (93.9)	1746 (96.6)	2380 (96.0)	20.26	24.48	26.44	<0.001
Hungary	1779 (94.0)	1677 (91.7)	2257 (90.5)	15.10	19.12	19.21	0.003
Italy	2106 (93.9)	1974 (91.7)	2408 (89.9)	22.00	24.65	21.38	0.511
Latvia	1619 (88.3)	2034 (88.1)	2054 (91.6)	6.78	9.95	13.29	<0.001
Macedonia	1970 (91.4)	2625 (93.3)	1952 (87.5)	15.56	18.88	20.15	<0.001
Netherlands	2120 (90.2)	2114 (91.3)	2219 (83.7)	8.05	8.02	9.44	0.152
Norway	2550 (89.0)	2428 (80.1)	2171 (81.5)	14.33	12.3	14.36	0.900
Poland	3165 (93.8)	2649 (96.9)	2065 (95.9)	10.27	14.24	20.71	<0.001
Portugal	1413 (89.0)	1884 (90.9)	1878 (93.6)	19.63	21.63	21.34	0.334
Russia	3749 (92.7)	3892 (81.6)	2576 (89.0)	7.28	12.64	14.76	<0.001**
Slovenia	1966 (96.2)	2549 (94.7)	2761 (94.6)	17.09	19.83	21.57	0.002
Spain	2871 (75.7)	4368 (82.6)	2466 (91.8)	22.63	19.82	19.92	0.052
Sweden	1958 (89.7)	2179 (91.0)	3312 (82.4)	12.85	12.31	14.75	0.023
Switzerland	2223 (92.4)	2233 (94.5)	3320 (92.5)	9.83	11.02	11.15	0.156
USA	2322 (89.1)	1857 (91.1)	3260 (85.8)	29.05	32.71	31.7	0.068
Ukraine	1893 (89.0)	2388 (91.2)	2809 (90.6)	6.82	10.87	12.95	<0.001
Countries with >20% missing data on BMI							
Belgium (French)	2069 (71.3)	2313 (73.5)	1985 (71.4)	11.76	12.83	13.59	0.183
Canada	1996 (83.4)	2732 (84.5)	7711 (78.6)	22.96	25.04	23.54	0.868
England	2913 (60.8)	2308 (44.0)	1522 (46.7)	20.38	13.21	10.65	<0.001
Greenland	378 (68.5)	665 (71.3)	586 (57.5)	20.06	18.78	15.74	0.183
Ireland	1302 (41.6)	2451 (36.4)	2522 (35.0)	14.41	16.00	17.75	0.189
Lithuania	2886 (71.8)	2904 (65.6)	2740 (69.9)	5.6	10.41	14.06	<0.001
Scotland	2240 (50.4)	3032 (44.9)	3319 (40.3)	16.49	17.39	15.61	0.666
Wales	2003 (82.2)	2169 (70.0)	2746 (53.8)	22.72	19.46	20.49	0.136

**Significant interaction with age.

Source: HBSC survey (Alhuwasia, 2015)

Table 100 – Trends in age- adjusted prevalence of overweight in girls: international comparison (2002-2010)

Country	*N* surveyed (% with BMI data)			Age-adjusted overweight%			Age-adjusted *P* value for trend
	2002	2006	2010	2002	2006	2010	
Austria	2202 (91.8)	2435 (94.1)	2547 (91.5)	10.35	8.01	11.09	0.422
Belgium (Flemish)	3293 (94.0)	2113 (91.9)	2094 (92.4)	8.58	8.50	10.29	0.123
Croatia	2208 (95.2)	2526 (95.2)	3240 (94.5)	7.32	11.44	12.1	<0.001
Czech Republic	2600 (99.7)	2364 (98.9)	2269 (96.0)	6.47	13.28	9.46	<0.001
Denmark	2373 (87.3)	2955 (82.8)	2132 (86.3)	9.53	9.10	8.23	0.182
Estonia	1994 (95.4)	2260 (94.4)	2002 (81.8)	4.41	6.76	11.58	<0.001**
Finland	2656 (97.7)	2719 (94.7)	3428 (94.2)	10.86	12.79	12.61	0.084
France	4131 (93.2)	3590 (92.5)	2990 (86.5)	9.34	8.95	7.99	0.077
Germany	2858 (85.6)	3592 (90.3)	2549 (82.0)	7.95	9.36	11.07	0.016
Greece	1937 (94.4)	1944 (96.2)	2519 (94.9)	10.84	13.10	15.18	<0.001
Hungary	2278 (95.4)	1821 (92.1)	2530 (90.8)	10.10	11.55	11.06	0.362
Italy	2251 (94.1)	1946 (89.3)	2403 (85.6)	11.16	11.87	13.07	0.067
Latvia	1836 (90.5)	2187 (91.7)	2210 (93.4)	4.33	5.44	8.29	<0.001
Macedonia	2060 (87.2)	2646 (93.5)	1945 (82.9)	8.68	9.95	10.97	0.029
Netherlands	2148 (90.7)	2114 (91.0)	2301 (84.3)	6.64	8.48	7.10	0.637**
Norway	2465 (87.0)	2269 (75.5)	2167 (78.1)	9.14	8.30	9.39	0.788
Poland	3145 (93.5)	2840 (96.9)	2176 (94.4)	5.38	7.93	13.48	<0.001**
Portugal	1515 (87.6)	2035 (91.7)	2158 (93.6)	13.54	15.94	15.87	0.098**
Russia	4283 (92.8)	4339 (83.5)	2598 (88.9)	3.86	7.03	8.17	<0.001**
Slovenia	1949 (96.4)	2570 (94.8)	2668 (93.9)	10.40	10.70	14.03	0.001
Spain	2952 (77.0)	4523 (82.7)	2574 (92.2)	13.00	13.38	13.72	0.407
Sweden	1938 (90.3)	2213 (89.8)	3333 (80.7)	7.94	8.61	8.62	0.407
Switzerland	2305 (92.6)	2346 (90.6)	3291 (91.5)	7.10	5.56	6.36	0.427
USA	2703 (88.0)	2035 (89.7)	3014 (82.2)	20.03	25.57	25.55	<0.001
Ukraine	2197 (88.8)	2681 (90.8)	3081 (91.5)	4.56	6.08	7.34	<0.001
Countries with >20% missing data on BMI							
Belgium (French)	2254 (70.6)	2163 (71.8)	2027 (67.9)	10.54	10.57	9.14	0.256
Canada	2365 (79.4)	3055 (80.5)	7999 (75.7)	14.83	17.41	16.41	0.245
England	3120 (58.7)	2460 (37.8)	1981 (43.4)	16.66	10.43	12.77	0.002
Greenland	495 (58.6)	693 (68.1)	619 (52.7)	19.25	18.71	15.80	0.121
Ireland	1573 (38.1)	2389 (29.0)	2202 (24.3)	10.41	11.84	13.45	0.649
Lithuania	2758 (76.9)	2728 (70.8)	2583 (74.0)	3.44	4.44	7.40	<0.001
Scotland	2155 (46.6)	3113 (39.2)	3419 (37.0)	13.32	13.96	10.98	0.064
Wales	1883 (80.9)	2227 (63.2)	2665 (42.3)	17.07	18.81	15.03	0.216

**Significant interaction with age.

Source: HBSC survey (Alhuwasia, 2015)

Key points

- **The prevalence of overweight in school-aged children and adolescents is around 12% in boys, 9.5% in girls. Belgium ranks rather good in the EU 15 countries. The overweight prevalence is rather stable, despite the health promotion policies aiming to promote the physical activity and a healthier food.**

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14.3. Incidence of HIV (HP-3)

14.3.1. Documentation sheet

Description	Incidence of HIV-infected people in a given calendar year, per 100 000 population.
Calculation	The rates are calculated as the number of newly diagnosed cases registered in the National Surveillance System, per 100,000 population
Rationale	HIV is one of the most important communicable diseases in Europe. It is an infection associated with serious morbidity, high costs of treatment and care, significant mortality and shortened life expectancy. It is also a perfectly avoidable infection, since the transmission is largely preventable by behavioural measures (safe sex, safe injection). Therefore its incidence in a defined population is an indicator of the success/failure of health promotion. It is also an indicator of the ECHI shortlist.[1]
Primary Data source	Institute of Public Health, WIV-ISP: National Surveillance Program of HIV/AIDS
Indicator source	WIV – ISP for national incidence and regional comparisons.[2] European HIV/AIDS Surveillance system organised by the European Center for Disease Control /WHO-Europe, for international comparisons.[3]
Periodicity	Yearly
Technical definition	A case of HIV infection is defined according to the European AIDS and HIV surveillance case definitions. In Belgium, a case must be confirmed in one among the 7 references laboratories. The reference labs report the case to the national surveillance system (IPH HIV-AIDS Surveillance Program). ECDC and the WHO Regional Office for Europe jointly coordinate HIV/AIDS surveillance in Europe. The surveillance data on HIV and AIDS diagnoses are collected and submitted annually by the national HIV/AIDS surveillance programs in the Member States to The European Surveillance System (TESSy).
Limitations	Limitations: as the HIV infection long remains asymptomatic, people are not necessarily aware of being infected, and can live for a while before searching for a diagnosis. This results in an under-diagnosis of the existing cases. Moreover, the actual year of infection is often not known. Therefore, the reported rates are not incidence rates but diagnostic rates.
International comparability	The international comparability is poor, since the national surveillance systems are different between countries. Factors such as underreporting and reporting delay affect the countries figures and there ranking. There are also differences in the way to handle with double registration. To deal with the reporting delay, we present the data until 2011 for the international comparisons.
Dimensions	Quality-effectiveness of Health Promotion

14.3.2. Results

Some background: Belgium has the particularity to have a large proportion of non-Belgian HIV cases (in 2013, 52% of the cases with a known nationality were non-Belgian), a large proportion of which being imported cases. Many non-Belgian cases originate from countries with a high prevalence, like sub-Saharian Africa. Therefore, we shall present separately the global rates and the rates in Belgian people.

In 2013, the global diagnostic rate in Belgium (all nationalities) was around 10 for 100.000 (Figure 149, A), while the diagnostic rate for the people of Belgian nationality was 4 for 100.000 (Figure 149, B).

Regional comparison

The diagnostic rates in Flanders and Wallonia are quite comparable, while the one of Brussels is much higher (Figure 149, A) .This difference is not surprising since a high HIV- diagnostic rate is a usual phenomenon in big towns. The Brussels region is indeed limited to a big city - with the socio-cultural characteristics of an urban context – while the two other regions present a HIV rate that is an average of rates from rural, semi-urban and urban context.

Evolution

The evolution of the diagnostic rate of HIV by region from 1985 to 2013, for all cases and for Belgian cases only[kk] are seen in Figure 149, B)

A steady increase of the rate was observed in Flanders from 1997 to 2010; this trends has stopped in 2010 and seems to decrease afterwards. At the contrary, the rate in Wallonia has increased since 2009.

Ways of transmission

Figure 150 shows the probable way of transmission for Belgian people. For Belgian patients, the most frequent way of infection is from far male homosexual contact (2). The number of new cases attributed to this way of transmission has continuously increased until 2012. New cases acquired through the other ways of transmission are quite stable over time.

International comparison

Figure 151 shows the annual rates by EU-15 countries between 2001 and 2011. The observed rate in Belgium is one of the highest observed in Europe (only Portugal shows higher rate). However, the comparability between countries is quite limited. There are differences in the dataflow and in the way to handle double registration. Belgium has set up a laboratory–based surveillance system that allows for a quasi-exhaustivity of the registration and there is also no reporting delay. Lower rates in some countries could be imputed in some extent to an under-registration, which can reach up to 40% and a reporting delay.

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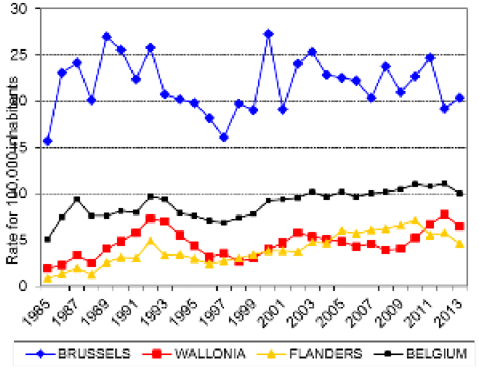
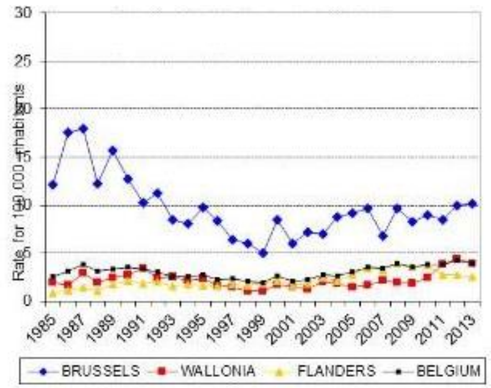
kk Dr A.Sasse, Responsible of the HIV-STD Belgian surveillance programme at the IPH, personal communication.

Figure 149 – Diagnostic rate of HIV, by region, for all cases (A) and for Belgian cases only (B) (1985-2013)

All cases (A)



Belgian cases only (B)



Source: Dr A.Sasse, Responsible of the HIV-STD Belgian surveillance programme at the IPH, personal communication

Figure 150 – Probable ways of transmission for the HIV cases, Belgian cases only (1997-2013)

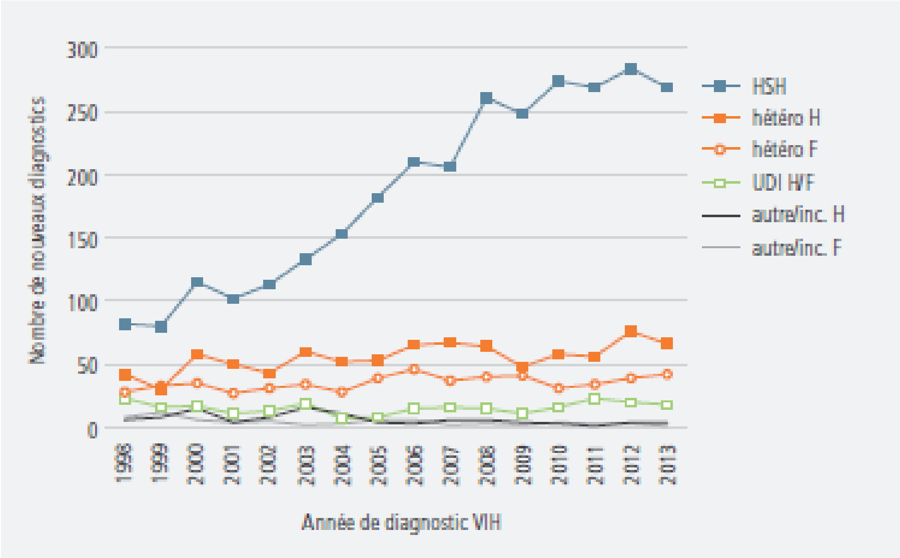
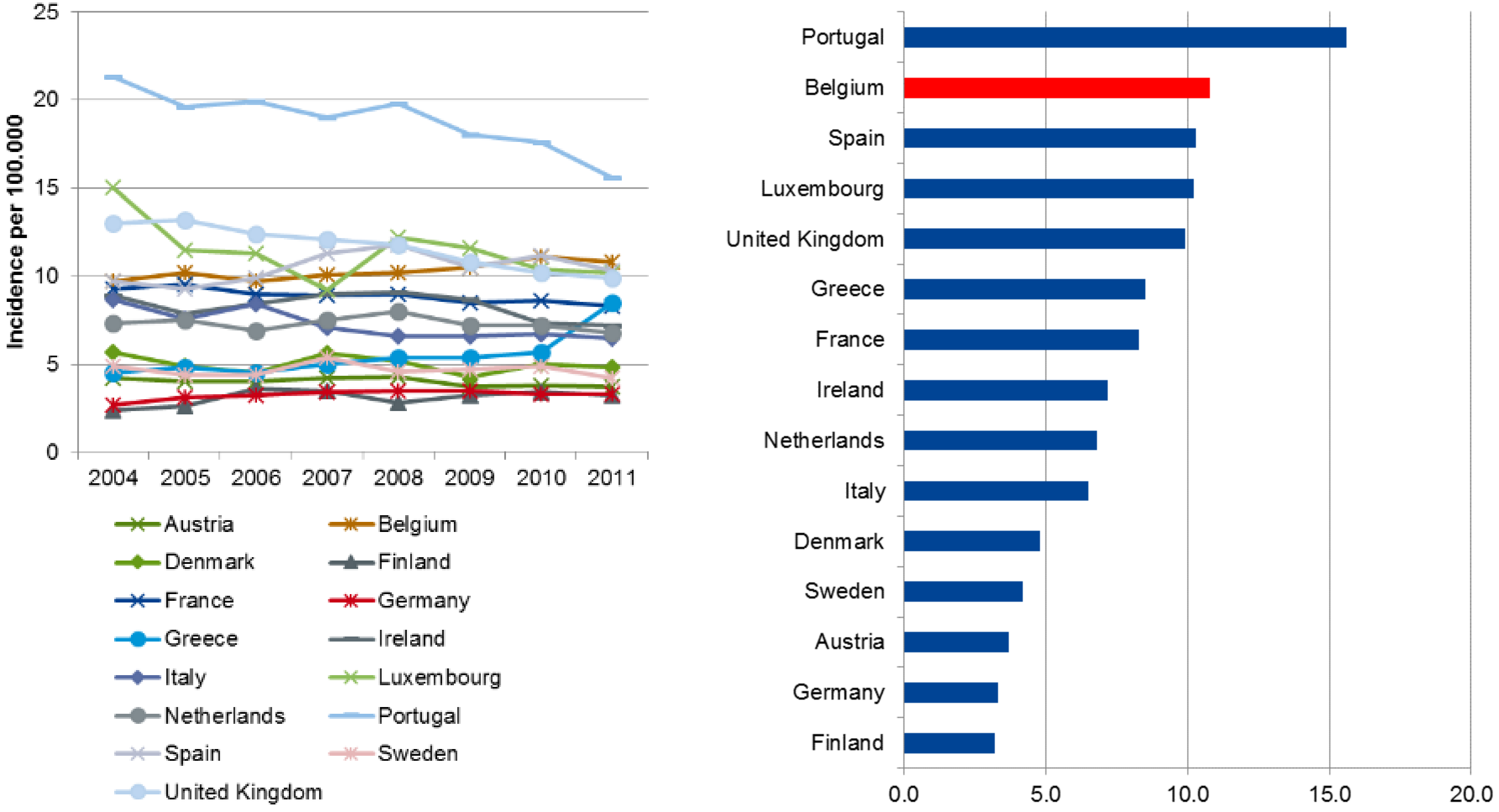


Figure 151 – Rate of the new HIV diagnosis per 100 000 inhabitants: international comparison (2004-2011)



Source: ECDC_OMS report /HIV-AIDS surveillance in Europe 2013

Discussion

The high incidence rates in imported cases occurring in people originating from high-prevalence countries cannot be interpreted as a failure of health promotion in Belgium. The reasons of the importance of imported cases in Belgium are not well known and should be further explored.

Key points

- **The rate of new HIV infection in Belgium is a bit higher than the European (EU-15) mean. A large proportion of cases are imported ones, with different patterns of transmission than the Belgian cases.**
- **The rate in Brussels is higher than in the other regions, representing an urban phenomenon.**
- **The male homosexual transmission is from far the main way of transmission for the Belgian cases. The cases transmitted by other ways are not diminishing.**
- **The possibility to prevent new HIV infection exists and is well known. While the HIV-epidemic has been maintained to a quite stable level in Belgium, the objective of decreasing the infection rate has not been reached up to now. More attention should be paid to the efficiency of the health promotion policies in the field of HIV and more generally, sexually transmitted diseases. A behaviour monitoring related to HIV-transmission patterns has been set up and could help to define preventive strategies.**

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14.4. Daily smokers (HP-4)

14.4.1. Documentation sheet

Description	Proportion of the population aged 15 years and over reporting to smoke on a daily basis (smoking includes the consumption of cigarettes, cigars and pipes).
Calculation	Percentage of people aged 15 years and older participating in the health Interview survey (HIS), reporting that they smoke every day.
Rationale	Tobacco use is considered to be one of the biggest public health threats. It is by far the main risk factor for a number of chronic diseases, including lung cancer and cardiovascular diseases. It is also one of the most preventable causes of morbidity and mortality in the world today. Urgent action is necessary; otherwise, according to the WHO, the number of people dying from tobacco use worldwide each year will increase by a quarter by 2030. Therefore, the prevalence of smoking is considered an important indicator of health promotion outcome.[1 2]
Primary Data source	IPH: Health Interview Survey, Belgium 1997-2001-2004-2008-2013[3]
Indicator source	Idem; for international comparison, data come from EUROSTAT (collected from national HIS) and are also published by the OECD[4]
Periodicity	Every 3-5 years
Technical definitions	The indicator is derived from the combination of 2 questions of the HIS; there were slight changes between the different surveys, but those didn't impact the comparability of the indicator over time. 1997 and 2001: TA.01: Do you smoke? Yes, every day; Yes, from time to time; No. 2004: TA.01: Have you ever smoked at least 100 cigarettes, or the equivalent amount of tobacco, in your lifetime? Only when the answer is 'yes', the next question is asked.TA.02: Do you smoke at the moment? Yes, every day; Yes, from time to time; No. 2008: TA01: idem; TA.05: Do you smoke at all nowadays? Yes, daily; Yes, occasionally; Not at all. 2013: TA01: idem; TA.06: Do you smoke at all nowadays? Yes, daily; Yes, occasionally; Not at all.
International comparability	Harmonisation: The questions are part of the EHIS, and of the national HIS; the EHIS results for this indicator are published by EUROSTAT and OECD. The indicator definition and the methodology are quite comparable between countries. Many efforts are performed at European level to harmonize the methods and the definitions. Some small differences exist regarding the year of the survey, and sometimes the formulation of the question. Availability: for the current year, only partial data are published. A second wave of the EHIS was conducted in 2014, and the results are not yet available. We used the data of the few countries having published national results for the year 2013.
Dimensions	Health Promotion
Related indicators	Tobacco control scale, alcohol use

14.4.2. Results

14.4.2.1.Belgium

The prevalence of daily smokers was around 19% in Belgium in 2013 (Table 101) for both sexes considered together. It has significantly decreased over the past 15 years (25.5% in 1997) and only slightly since 2008 (20.5%). It is higher in men than in women, for all age groups considered together. However, the rate is decreasing more in men than in women (Figure 152).

Smoking in young people: The rate of daily smokers among young people aged 15-24, while slightly lower than in the older age groups, still reaches 17%. This group should be a priority for the health promotion, because habits taken at young age are more difficult to quit, and also because more years will be lived with tobacco for people who begin to smoke early, placing them more at risk of developing a tobacco-related disease. The expert panel of the Belgian Health System Performance Assessment project recommends monitoring the prevalence in teenagers (to monitor the evolution of the initiation habits). This could rather be examined from the HBSC surveys (larger sample for this age group) [5]. In this school-based survey, the prevalence of daily use of tobacco among youngsters aged 12-20 years was 13% in 2010 people for the French Community. The difference between the values measured in the HIS and HBSC can partly be due to a difference in the age ranges. The authors observe a strong diminution in the daily use of tobacco among young people between 1998 (21%) and 2010 (13%).

Socio-economic disparities: This indicator is one of the most illustrative of socio-economic disparities in health behaviour. The decrease in the rate is mostly the fact of people with a high educational level, in which the prevalence of smoking, after adjusting for age, is 2.5 times lower than for people in the lowest educational level (Table 101).

Regional comparisons: the proportion of daily smokers is higher in Wallonia than in Flanders and Brussels (Table 101, Figure 152).

International comparisons: Figure 153 and Figure 154 show that the prevalence of daily smoking in Belgium is close to the EU-15 average, and that it decreases over time in both sexes, as well at EU as at Belgian levels. It decreases faster in men than in women, but the prevalence in women is still lower than the one in men, in Belgium as well as in the EU-15.

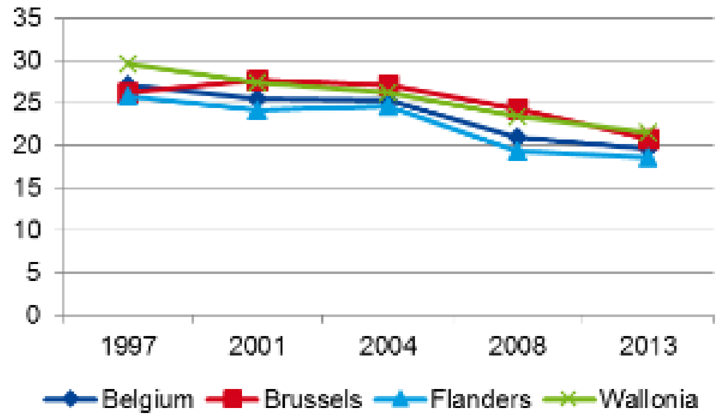
Table 101 – Percentage of the population (aged 15 years or older) that smokes daily (2013)

		Crude	CI Crude	Adj.	CI Adj.	N
YEAR	2013	18.9	(17.4-20.4)	17.2	(15.8-18.7)	6216
GENDER	Male	21.6	(19.6-23.6)	19.7	(17.8-21.8)	2943
	Female	16.4	(14.6-18.2)	15.3	(13.6-17.1)	3273
AGE GROUP	15 - 24	17.2	(12.0-22.5)	17.1	(12.4-23.0)	600
	25 - 34	19.0	(15.5-22.6)	19.0	(15.7-22.7)	952
	35 - 44	23.5	(19.9-27.2)	23.4	(19.9-27.2)	1040
	45 - 54	22.8	(19.5-26.1)	22.8	(19.6-26.3)	1118
	55 - 64	22.8	(19.1-26.4)	22.6	(19.1-26.5)	1075
	65 - 74	13.9	(10.6-17.2)	13.8	(10.8-17.4)	798
	75 +	4.8	(2.8-6.8)	4.9	(3.2-7.4)	633
EDUCATION LEVEL	Primary/no degree	18.4	(14.1-22.6)	25.0	(19.6-31.3)	543
	Secondary inferior	26.0	(22.1-30.0)	26.8	(22.7-31.3)	881
	Secondary superior	25.6	(22.5-28.6)	22.5	(19.6-25.6)	1978
	Superior education	11.8	(10.0-13.7)	9.5	(8.0-11.2)	2757
URBANISATION LEVEL	Urban	18.1	(16.1-20.1)	16.7	(14.8-18.7)	2864
	Sub-urban	19.7	(16.6-22.9)	18.4	(15.4-21.7)	1559
	Rural	19.1	(16.4-21.8)	17.2	(14.7-19.9)	1793
REGION	Flemish Region	17.7	(15.5-19.8)	16.2	(14.2-18.5)	2406
	Brussels Region	18.3	(15.5-21.1)	16.5	(13.9-19.4)	1310
	Walloon Region	21.5	(19.3-23.8)	19.8	(17.7-22.1)	2500

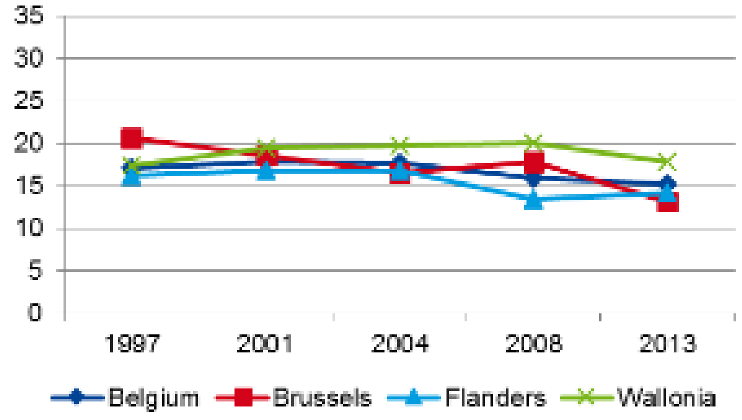
Source: Health Interview Survey, Belgium, 2013
**Adjusted for age and/or gender based on a logistic regression model (Belgian population of 2013 as reference)*

Figure 152 – Percentage of the population (aged 15 or older) that smokes daily, by region and by sex (1997-2013)

Males

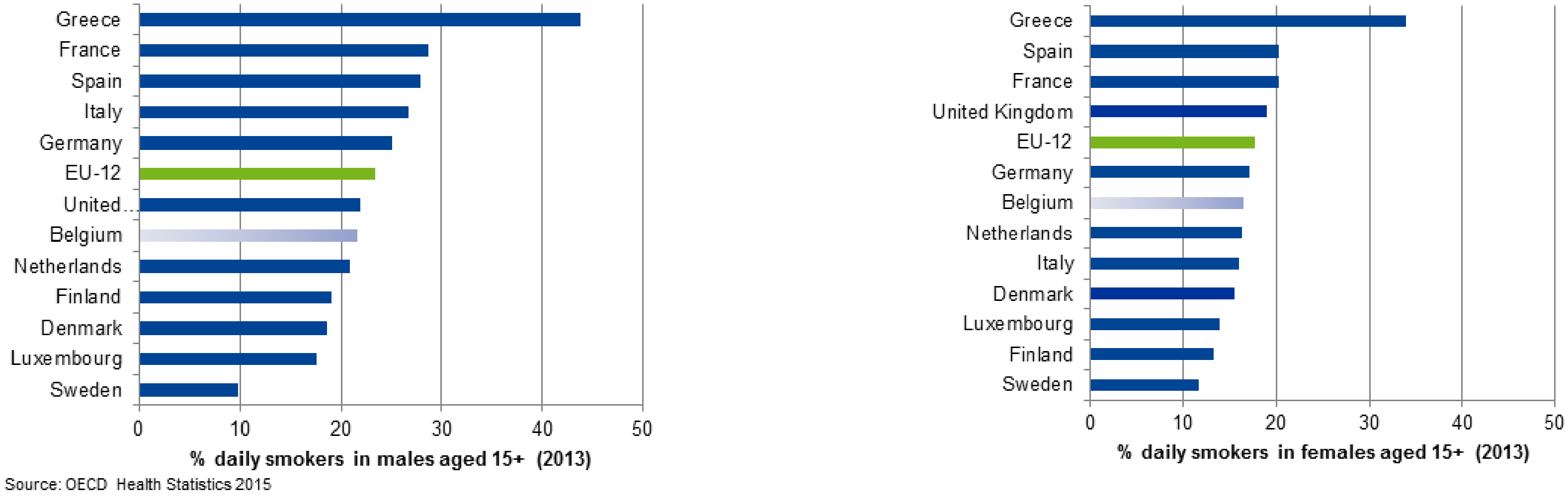


Females



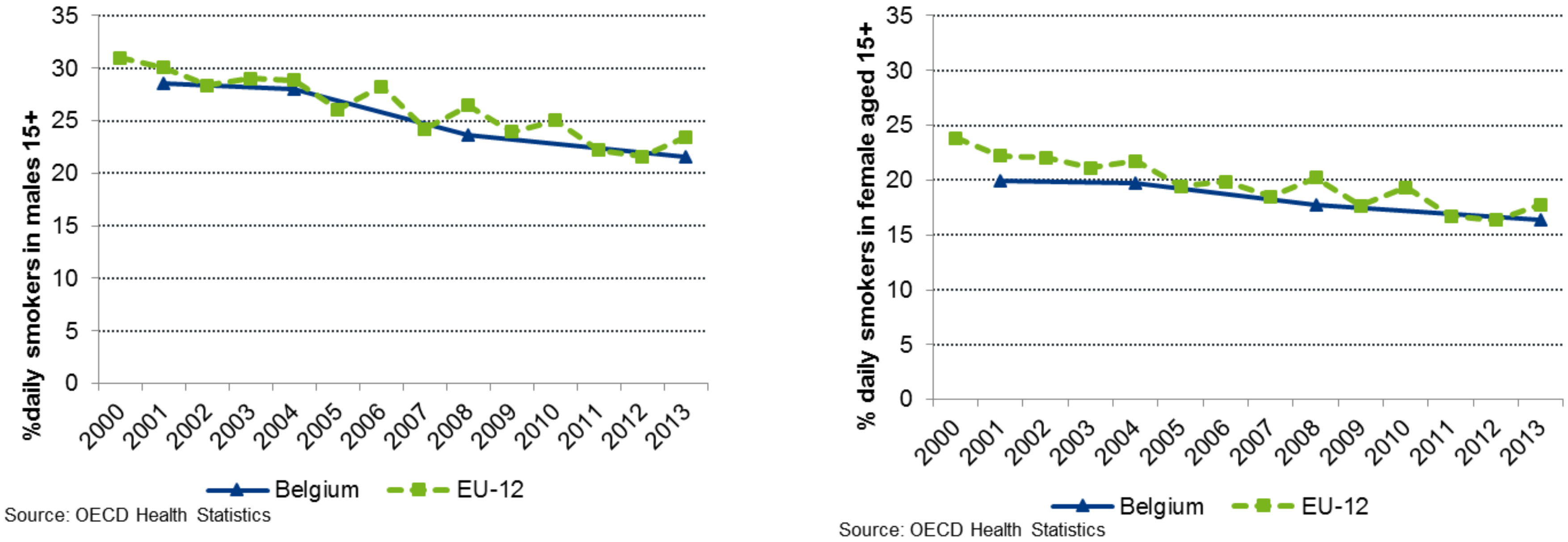
Source: WIV – ISP: Health Interview Surveys, Belgium

Figure 153 –Percentage of the population (aged 15 and older) that smokes daily, by sex: international comparison (2013)



Source: OECD Health statistics 2015

Figure 154 – Prevalence of daily smokers by sex: international comparison (2000-2013)



Source : OECD health statistics 2015

Key points

- **The percentage of daily smokers was around 19% in Belgium in 2013. It has significantly decreased in the past 15 years. It is higher in men than in women. However, the prevalence has decreased more in men than in women over time**
- **The Belgian prevalence of daily smokers is similar to the EU-15 average prevalence**
- **This indicator is one of the most illustrative of socio-economic disparities in health behaviour. The decrease of the prevalence is mostly the fact of the highly educated people, in which the proportion of daily smokers after adjusting for age, is 2.5 times lower than in the lowest educated people.**
- **Smoking habits start in the adolescence, with already 17% of daily smokers among the 15-24 years. Young people should be a target for health promotion policies**

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14.5. Alcohol consumption (HP-4 and HP-6)

14.5.1. Documentation sheet

Description	Two indicators were considered: a) Hazardous drinking: proportion of the population aged 15 years and over with an average weekly alcohol consumption exceeding a threshold considered as harmful. b) Binge drinking: proportion of the population aged 15 years and over who has 6 drinks or more (i.e., ≥ 60 g ethanol) on one occasion at least once a week
Calculation	a) Percentage of 1) men and 2) women aged 15 years and over and participating in the HIS, who reports consuming more than 1) 28 and 2) 14 drinks (standard drink equivalent to 10 g of pure alcohol) per week (respectively more than 280 g and 140 g per week). Results are weighted to account for the survey design. b) Percentage of people aged 15 years and over and participating in the HIS, who reports having, 6 drinks or more on one occasion at least once a week (equivalent of 60g of pure alcohol). Results are weighted to account for the survey design.
Rationale	A substantial part of health, social and economic burden is caused by problems attributable to hazardous alcohol consumption.[1] Reducing this burden is a priority area for public health, which can be reached through the implementation of proven alcohol reduction strategies. Therefore, excessive alcohol consumption is considered an important indicator to monitor.[2]
Primary Data source	IPH: Health Interview Survey, 2001-2004-2008-2013
Indicator source	Idem[3]
Periodicity	Every 3-5 years
Technical definitions	We refer the reader to the HIS questionnaires at https://his.wiv-isp.be/Shared%20Documents/qauto_2013.pdf The indicator is based on questions AL02 to AL05
Limitation	1. There is no clear consensus on the level of harmful alcohol consumption (the cut-off has changed many times over the past decade). The threshold for considering harmful weekly alcohol consumption as harmful was previously fixed by the WHO as >21 weekly drinks (containing 10 g of pure alcohol) for men and >14 weekly drinks for women. This threshold has been replaced by a new one, that is >28 weekly drinks for men and >14 for women.[1] In the present report, we have adopted the threshold ">28->14" in order to follow the new guidelines. Indeed, it is likely that the EU indicator will calculate the new one when analysing the second EHIS, as recommended in the last version of the ECHIM indicators.[2] 2. Unfortunately, since the indicator definition has changed, there were no former values for the indicator 'hazardous alcohol consumption' in the Belgian HIS data; 3. It is very difficult to measure the actual consumption of alcohol : - The quantity of alcohol is derived from the number of drinks reported, but their volume and the ethanol contained is not always known, and varies between countries - Alcohol consumption is a sensitive topic. Self-reported consumption suffers from social desirability bias. - People engaging in heavy drinking underestimate their consumption because of the effect of alcohol itself

	Hence, caution is needed when using self-reported indicators to describe a difficult to measure and sensitive health behaviour.
International comparability	Currently international comparisons are scarce for the indicators self-reported hazardous consumption or binge drinking; up to now, international comparisons are made on average per capita consumption, computed on sales. [4] It is hopeful that the analysis of the second wave of EHIS will produce international comparisons. Results from the RARHA Joint Action, where monitoring alcohol consumption with the SMART questionnaire was carried out in most European Member States, will be available in 2016-17.
Dimensions	Quality-effectiveness of Health Promotion
Related indicators	Tobacco consumption

14.5.2. Results

14.5.2.1.Belgium

1. Hazardous alcool consumption: in 2013, the crude prevalence was 5% (Table 102). It is sligthly higher in men than in women. Since the threshold is twice as high in men as in women, this means that men drink in average more than twice the quantity drunk by women.

The prevalence is the highest among people between 45 and 64 years (7%).

Regional comparisons are shown in Figure 155: in men, no regional differences are observed. In women, the highest prevalence is observed in Brussels, the lowest in Flanders.

Time trends: No time trends could be computed for the hazardous drinking.

2. Binge drinking at least once a week: the prevalence of weekly binge drinking was 8.7% in 2013 (Table 103). It is much more frequent in men (12.3%) than in women; the age group 15-24 has the highest prevalence (14%), followed by the age group 55-64. The prevalence is particularly high in young men (Figure 155), among which it almost reaches 20%.

International comparisons: unfortunately, international comparisons on alcohol consumption are scarce, and mainly report average annual consumption in adults, computed by monitoring annual sales. This average measure does not account for the harmful modes of consumption that are responsible for health damage (such as excessive consumption, alcohol dependence or binge drinking). In 2014,[2,4] the average annual consumption in Belgium was 9.8 litres of pure alcohol per capita, just below the EU-15 average (10.1).

Discussion: One indicator alone cannot capture the whole picture of harmful alcohol consumption. The encouraging results of the indicator ‘hazardous drinking’ have to be tempered, for instance, by the fact that 12% of the young people declare a consumption of (at least) 6 glasses of alcohol at a same occasion at least once a week.

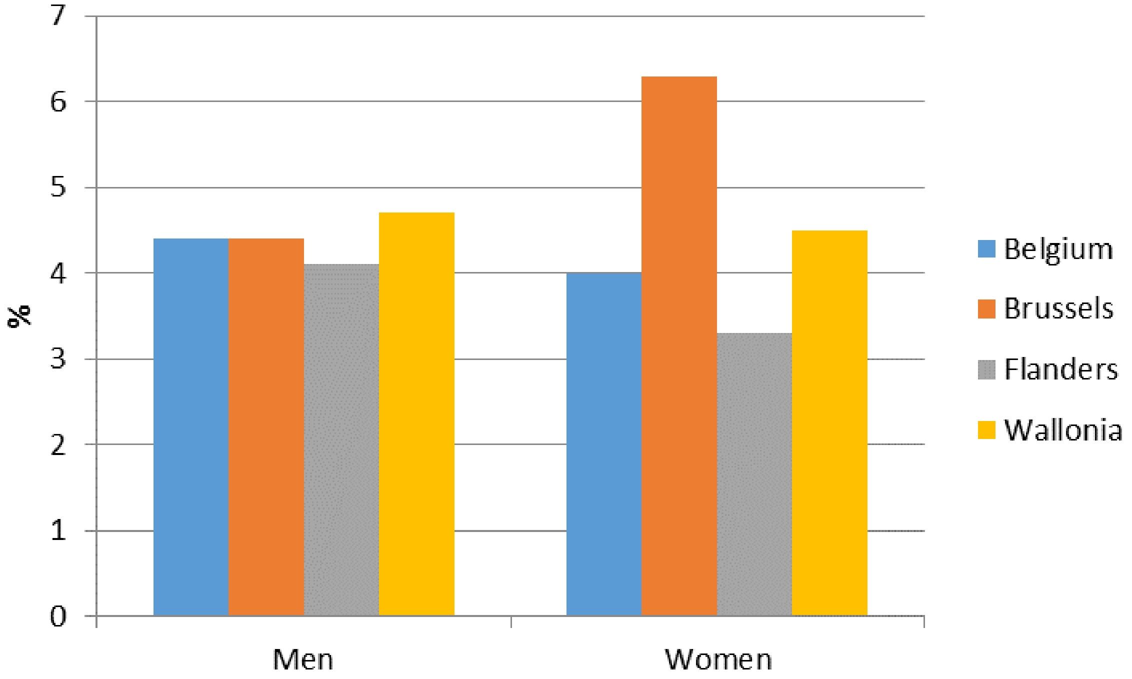
This is mostly the fact of young men (19% of men aged 15-24 and 16% of those aged 25-34). It is worrying that it has increased since the previous HIS, as well in men as in women.

Table 102 – Percentage of the population (aged 15 years and older) with hazardous drinking habits (2013)

		Crude	CI Crude	Adj.	CI Adj.	N
YEAR	2013	5.0	(4.2-5.7)	4.2	(3.5-4.9)	5991
GENDER	Male	5.3	(4.3-6.4)	4.4	(3.6-5.5)	2843
	Female	4.7	(3.6-5.7)	3.9	(3.2-4.8)	3148
AGE GROUP	15 - 24	3.3	(1.6-4.9)	3.2	(1.9-5.5)	588
	25 - 34	2.2	(1.2-3.3)	2.2	(1.4-3.6)	932
	35 - 44	2.3	(1.3-3.4)	2.3	(1.5-3.7)	1004
	45 - 54	7.3	(5.1-9.4)	7.3	(5.4-9.8)	1080
	55 - 64	9.9	(7.1-12.6)	9.9	(7.4-13.0)	1035
	65 - 74	5.9	(3.9-7.8)	5.9	(4.2-8.1)	769
	75 +	2.5	(1.2-3.7)	2.5	(1.5-4.2)	583
EDUCATION LEVEL	Primary/no degree	5.1	(2.2-8.1)	4.6	(2.5-8.1)	509
	Secondary inferior	5.6	(3.3-7.9)	4.2	(2.7-6.4)	813
	Secondary superior	5.3	(3.9-6.6)	4.3	(3.2-5.6)	1913
	Superior education	4.6	(3.5-5.7)	4.0	(3.2-5.0)	2700
URBANISATION LEVEL	Urban	5.7	(4.6-6.8)	4.9	(4.0-6.0)	2774
	Sub-urban	4.4	(2.8-6.0)	3.6	(2.6-5.0)	1498
	Rural	4.6	(3.4-5.9)	3.7	(2.8-5.0)	1719
REGION	Flemish Region	4.7	(3.7-5.8)	3.9	(3.1-4.9)	2330
	Brussels Region	5.8	(4.2-7.4)	5.3	(3.9-7.1)	1264
	Walloon Region	5.2	(4.0-6.4)	4.3	(3.4-5.6)	2397

Source: Health Interview Survey, Belgium, 2013
**Adjusted for age and/or gender based on a logistic regression model (Belgian population of 2013 as reference)*
Note: Hazardous drinking habits: Female > 14 drinks weekly, Male > 28 drinks weekly

Figure 155 – Percentage of people (aged 15 years and over) with an hazardous alcohol consumption, by sex and region (2013)



Source=Health Interview Surveys, Belgium
Note: Hazardous drinking habits: Female > 14 drinks weekly, Male > 28 drinks weekly

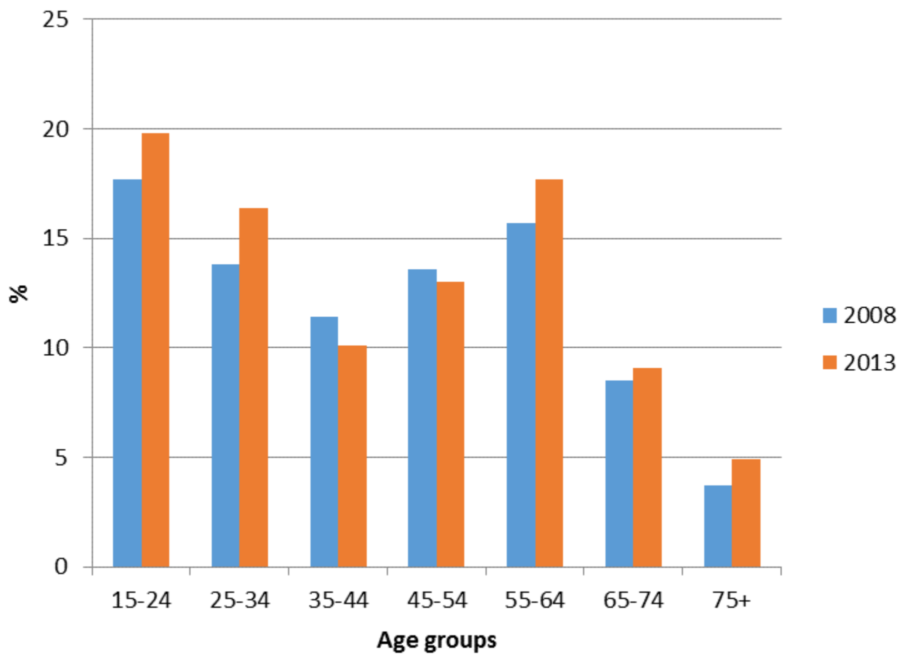
Table 103 – Percentage of the population (aged 15 years and older) having weekly at least 6 drinks on one occasion (2013)

		Crude	CI Crude	Adj.	CI Adj.	N
YEAR	2013	8.5	(7.5-9.4)	6.7	(5.9-7.6)	5967
GENDER	Male	13.4	(11.8-15.0)	12.5	(11.0-14.2)	2843
	Female	3.8	(2.9-4.7)	3.5	(2.8-4.5)	3124
AGE GROUP	15 - 24	14.0	(10.1-18.0)	12.3	(8.9-16.7)	594
	25 - 34	8.8	(6.4-11.2)	7.4	(5.6-9.8)	929
	35 - 44	6.5	(4.6-8.5)	5.4	(3.9-7.3)	1008
	45 - 54	7.9	(5.8-10.0)	6.7	(5.1-8.9)	1071
	55 - 64	11.3	(8.6-13.9)	9.4	(7.4-12.0)	1041
	65 - 74	7.4	(5.1-9.7)	6.1	(4.3-8.6)	756
	75 +	2.6	(1.2-3.9)	2.3	(1.4-3.8)	568
EDUCATION LEVEL	Primary/no degree	6.3	(3.6-9.0)	6.6	(4.2-10.2)	503
	Secondary inferior	10.1	(7.4-12.9)	8.6	(6.4-11.3)	809
	Secondary superior	9.2	(7.5-10.9)	6.9	(5.5-8.6)	1898
	Superior education	7.8	(6.4-9.1)	5.9	(4.8-7.1)	2702
URBANISATION LEVEL	Urban	8.3	(7.0-9.7)	6.6	(5.5-8.0)	2755
	Sub-urban	9.0	(7.1-10.9)	7.2	(5.7-9.1)	1496
	Rural	8.0	(6.5-9.6)	6.1	(5.0-7.6)	1716
REGION	Flemish Region	8.7	(7.3-10.0)	6.9	(5.8-8.2)	2312
	Brussels Region	8.6	(6.6-10.7)	6.9	(5.3-9.0)	1260
	Walloon Region	8.0	(6.6-9.4)	6.2	(5.1-7.6)	2395

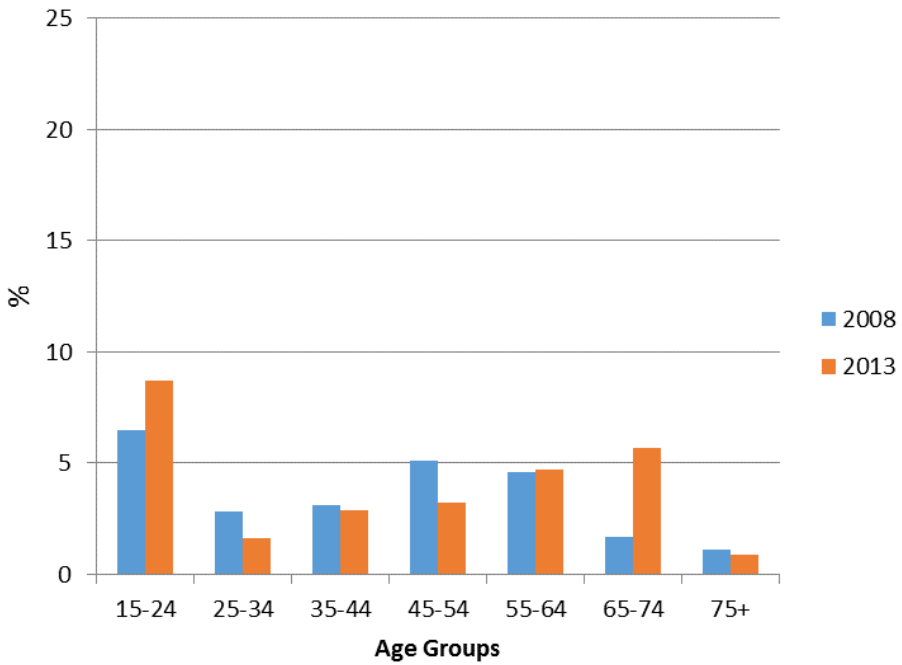
Source: Health Interview Survey, Belgium, 2013
**Adjusted for age and/or gender based on a logistic regression model (Belgian population of 2013 as reference)*

Figure 156 – Prevalence of people having weekly at least 6 drinks on one occasion, by age and sex (2013)

Males



Females



Source: HIS

Key points

- **The prevalence of self-reported hazardous alcohol consumption was 5% in 2013, appearing to be not alarming.**
- **However, this optimistic observation should be considered as a partial picture of alcohol consumption: actually, the high prevalence of risky consumption (at least 6 drinks on a same occasion) reported in young men (20%) is of concern and has slightly increased since last survey in 2008.**
- **Health policies should target young people**

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14.6. Physical activity (HP-7)

14.6.1. Documentation sheet

Description	Proportion of the population (aged 18-64) who are sufficiently active
Calculation	Percentage of the population (aged 18-64) that devoted at least 30 minutes to moderate or intense physical activity per day
Rationale	Overall, strong evidence demonstrates that compared to less active adult men and women, individuals who are more active have lower rates of all-cause mortality, coronary heart disease, high blood pressure, stroke, type 2 diabetes, metabolic syndrome, colon and breast cancer, and depression; the OECD HCQI project and ECHIM both recommended using an indicator around the practice of physical activity, [1] [2] but the precise operationalization has still to be defined. The WHO recommends that the adult population aged 18-64 devotes weekly at least 150 minutes of moderate or intense physical activity.[3] Other recommends 30 minutes every day; in Belgium, the Vlaams Instituut voor Gezondheidspromotie en ziekte preventive (VIGEZ) en de 'Ligue cardiologique Belge'[ll] recommend to spend at least 30 minutes to moderate physical activity each day.[4] For this project, we choose the indicator meeting the recommendation to devote 30 minutes each day to (at least) moderate physical activity.
Primary Data source	Health Interview Survey, 2001-2004-2008-2013
Indicator source	Idem[5]
Periodicity	Every 4-5 years
Technical definitions	All types of physical activity are considered (leisure time, work, commuting) provided that they are moderate to intensive (walking is not considered here). The indicator is derived from the IPAQ[6] (short version) included in the HIS: PA01: During the last 7 days, on how many days did you do vigorous physical activities like heavy lifting, digging, aerobics, or fast bicycling? PA02: How much time did you usually spend doing vigorous physical activities on one of those days? PA 03: During the last 7 days, on how many days did you do moderate physical activities like carrying light loads, bicycling at a regular pace, or doubles tennis? (does not include walking) PA04: How much time did you usually spend doing moderate physical activities on one of those days?
Limitations	The amount of physical activity is difficult to measure through surveys.
International comparability	Availability: no recent data have been found. The results of the EHIS wave II will be available soon. Standardisation: some latitude remains in the wording of the questions; the questionnaires used in the national HIS and the EHIS were different, so probably it will not possible to construct the same indicators.
Dimensions	Health Promotion
Related indicators	Obesity

ll http://liguecardioliga.be/prevention/sedentarite/

14.6.2. Results

The 2013 results are shown in Table 104. The percentage of the population (aged 15 years and over) that devoted at least 30 minutes to moderate or intense physical activity per day was 38% in Belgium in 2013. There is plenty of room for improving this national level.

This level is twice as high in men (50%) as in women (27%). There is an important decrease gradient with age.

The prevalence of devoting 30 minutes to physical activity is increasing with the educational level (Table 104).

Regional comparisons: the prevalence of spending at least 30 min a day at (at least moderate) physical activity is higher in the Flemish Region (43%) than in the two other regions (31% in the Brussels and 33% in the Walloon Region). Maybe a part of this difference could be explained by a greater facility for cycling in Flanders, both because of the geographical conditions and to the arrangement of cycling ways.

Evolution: The global percentage of practising physical activity has remained stable at country level for both sexes considered together, but a decrease was observed in women. At country level, no change was observed in men since 2008.

Figure 157 shows the evolution by region and by sex: in Flanders, the percentage has fallen in both sexes, and especially in women; in Brussels, the percentage increased sharply in both sexes, while in Wallonia, it has only increased in men.

International comparison: international comparisons are scare; no recent data have been found. In a 2002-2004 international study, Belgium showed a prevalence of 43% of lowly active, which put our country on the 4th worst position among 20 countries.[7]

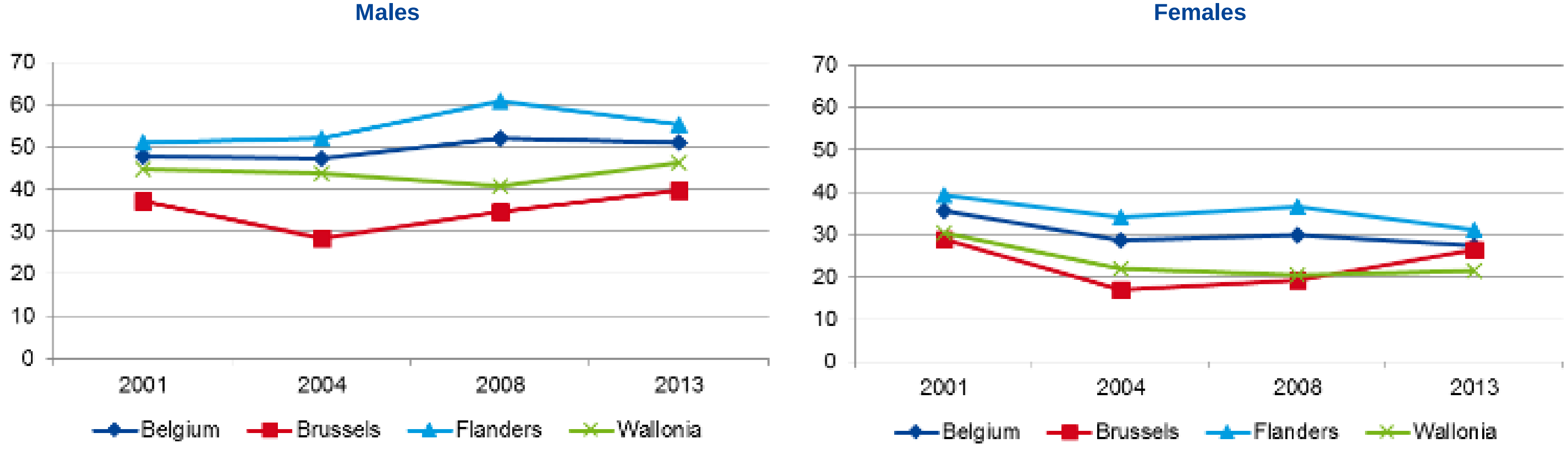
The next EHIS will probably allow for comparisons between some European countries. However, as stated above, the Belgian questionnaire was different of the EHIS questionnaire, and it might be difficult to construct comparable indicators.

Table 104 – Percentage of the adult population (aged 18 -64 years) that devoted at least 30 minutes to moderate or intense physical activity per day (2013)

		Crude	CI Crude	Adj.	CI Adj.	N
YEAR	2013	38.4	(36.1-40.6)	38.3	(36.1-40.7)	3648
GENDER	Male	49.9	(46.8-53.0)	51.0	(47.8-54.2)	1763
	Female	27.0	(24.2-29.7)	27.5	(24.7-30.4)	1885
AGE GROUP	18 - 24	48.3	(40.7-55.8)	48.3	(41.0-55.7)	335
	25 - 34	41.1	(35.7-46.4)	40.9	(35.6-46.4)	792
	35 - 44	39.1	(34.9-43.3)	38.2	(34.0-42.6)	828
	45 - 54	36.4	(32.0-40.9)	35.3	(30.8-40.1)	865
	55 - 64	32.4	(28.1-36.7)	31.0	(26.7-35.6)	828
EDUCATION LEVEL	Primary/no degree	30.4	(20.4-40.5)	29.6	(20.6-40.5)	187
	Secondary inferior	38.2	(31.5-45.0)	39.7	(33.3-46.4)	390
	Secondary superior	40.5	(36.5-44.5)	40.4	(36.2-44.7)	1175
	Superior education	37.9	(34.8-41.1)	37.7	(34.4-41.1)	1860
URBANISATION LEVEL	Urban	34.6	(31.4-37.8)	34.1	(30.8-37.6)	1748
	Sub-urban	39.8	(35.2-44.5)	40.2	(35.5-45.2)	857
	Rural	42.1	(38.0-46.3)	42.3	(38.1-46.6)	1043
REGION	Flemish Region	42.3	(38.9-45.7)	42.6	(39.0-46.2)	1282
	Brussels Region	32.2	(28.2-36.1)	31.0	(26.9-35.4)	876
	Walloon Region	33.2	(29.9-36.6)	33.1	(29.8-36.6)	1490

Source: Health Interview Survey, Belgium, 2013
**Adjusted for age and/or gender based on a logistic regression model (Belgian population of 2013 as reference)*

Figure 157 – Percentage of the population aged 18 -64 years that devoted at least 30 minutes to moderate or intense physical activity per day, by sex and Region (2013)



Source: Health interview surveys, Belgium

Key points

- **Three quarter of the women and the half of the men do not practice enough physical activity.**
- **The lack of physical activity is more pronounced in Brussels and Wallonia than in Flanders.**
- **In women, the rate has decreased over time (excepted in Brussels)**
- **The practice of physical activity is lower among the people with the lowest educational level.**
- **Health policies should target the facilitation of practising physical activities in Wallonia and Brussels, and for all regions, for women.**

References

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14.7. Health literacy related to the dimension of health resources and/risk factors (HP-8)

14.7.1. Documentation sheet

Description	% of people having a sufficient level of health literacy, defined as the ability to access, understand, appraise and apply relevant information to take decisions concerning health care, prevention and health promotion.
Calculation	The value of the indicator has been calculated as a score derived from a short version of the EU Health Literacy Survey (HLS-EU) project questionnaire; this short versions contains 16 questions. Values of the score are then grouped according to cut off scores into 3 groups: sufficient, problematic and insufficient health literacy
Rationale	Health literacy is considered a crucial resource for health and as a core outcome of health education, which in itself is an important strategy for health promotion. It can be defined as the individual knowledge, motivation and competences to access, understand, appraise and apply information that is relevant for functioning in the health system (health care, diseases prevention and health promotion).[1] [2] As it gives individuals the possibility to make healthier choices, improving health literacy is critical to empowerment.[3] As such, health literacy is increasingly included in European health policies.[4]
Primary Data source	An 'ad hoc' survey was conducted in 2011 in Belgium, on a sample of 9 616 members of the Christian Mutuality[5]
Periodicity	Currently, the indicator has been measured only once. There is no project as yet for a routine data collection
Technical description and limitations	Different tools have been developed to measure health literacy and to date there is no full consensus on the best way to measure health literacy. The European Health Literacy Survey project (HLS-EU), conducted by a consortium of 8 partners from different European countries, developed and validated a comprehensive questionnaire containing 47 questions measuring 12 indicators measuring dimensions of health literacy.[6] A first survey using this tool was performed on 8000 people in 8 European countries in 2010-2011.[7] Belgium did not participate in this EU project. An online survey using a short version of the questionnaire comprising 16 questions was conducted on a sample of 9 616 members of one health insurance (Christian Mutuality) in 2012.This survey allowed to measure health literacy. Limitations: The results should be considered with caution, because : a) the sample was selected only from the members of the Christian Mutuality, which is not representative for the entire Belgian population; b) the response rate was low (5% of the initial sample) c) the composition of the sample in terms of language and gender is different from the Belgian population.
Dimensions	Empowerment

14.7.2. Results:

The Belgian study indicated that 58.7% of the sample had a sufficient level of health literacy, while 28.7% had a problematic level, and 11.6% had an insufficient level.

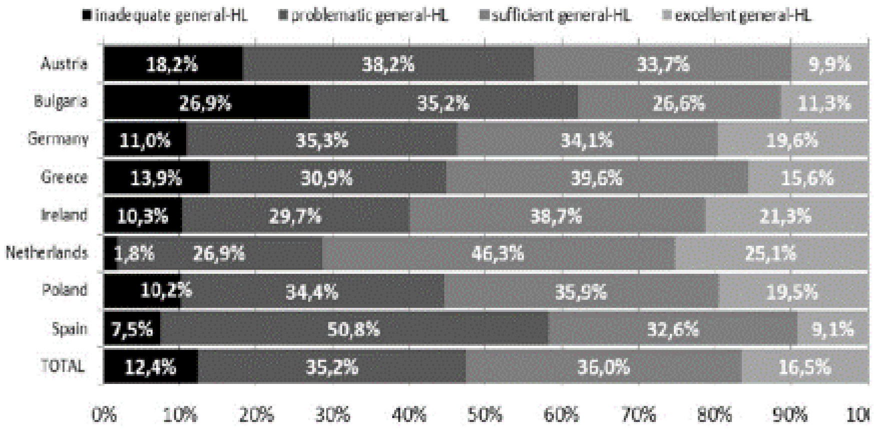
The Health literacy level was better in the Flemish region (with 62% of the respondents having a sufficient level) than in Brussels (52.5% with a sufficient level) or Wallonia (48.7% with a sufficient level).

The percentage of women having a sufficient level of health literacy (60%) is slightly higher than in men (56%).

This situation can result either in a lack of skills of the population, either in a too complex health system, or from both. The origin of this situation should be further analysed in Belgium, so that suited solutions could be found to improve the level of literacy.

A comparison of the results of this Belgian study with those of the EU Health Literacy Survey (Figure 158) shows that the health literacy level in Belgium is situated close to the average rate of the participating EU countries: A significant part of the population (approximately 40%) have an insufficient level of heath literacy. However, the levels differ substantially between the countries (29%-62% with a problematic to insufficient health literacy).

Figure 158 – Literacy level: international comparison



Source: EU Health Literacy Survey

The study also investigated if health literacy plays a mediation role between the educational level and some health behaviours. This was partially the case for some the practise of physical activity, healthy eating and medicine use, but not for alcohol and tobacco use.

Discussion: The results of the Belgian survey should be interpreted with caution, as the sample is not entirely representative of the Belgian population. However, even though the results cannot been extrapolated as such to the Belgian population, this study constitutes a first step in the measurement of the health literacy in Belgium. It is recommended to develop a methodology to collect health literacy data in a structural way, for instance through the addition of a HL module to an existing sustainable data collection/survey.

Key points

- **Although health literacy is a key outcome of health education, a crucial factor to improve health, a critical factor for empowerment, and a potential mediator of the impact of socio-economic inequalities in health on health status, few data exist to measure it in Belgium.**
- **A limited study conducted in 2012 gives a first insight of the magnitude of the problem of health literacy in Belgium.**
- **It is estimated that approximately 40% of the population has a problematic or insufficient level of health literacy.**
- **Further research on health literacy is required to identify the causes of limited health literacy, its impact on health outcomes, and its mediating role in social inequalities, and to search for solutions that can be offered to remedy low health literacy.**
- **To monitor the evolution of health literacy in Belgium, it is recommended to include the questionnaire in an existing survey conducted on a representative sample of the population.**

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14.8. Tobacco Control Scale (HP-9)

14.8.1. Documentation sheet

Description	The Tobacco Control Scale (TCS) quantifies the implementation of tobacco control policies at country level.[1]
Calculation	The TCS is the summation of 6 scores, quantifying the intensity of six policies considered by the World Bank and the WHO[2] as priorities for a comprehensive tobacco control programme. Those six policies are: - price increases through higher taxes on cigarettes and other tobacco products; - bans/restrictions on smoking in public and work places; - better consumer information, including public information campaigns, media coverage, and publicising research findings; - comprehensive bans on the advertising and promotion of all tobacco products, logos and brand names; - large, direct health warning labels on cigarette boxes and other tobacco products; - treatment to help dependent smokers stop, including increased access to medications. The experts of the Association of the European Cancer Leagues computed global scores summarizing the result of the comprehensive strategy. The detailed method of calculation of the scale is explained in the documentation
Rationale	Tobacco use is considered to be one of the biggest public health threats. The concept of multi-pronged and 'comprehensive' tobacco control arose through academic advances, advocacy groups, and government policy initiatives.[3] The interest of such a composite index is to provide a global level of the Tobacco Control Policy in the country.
Primary Data source	The report of the European Cancer Leagues Association collected data from many sources,e.g. : - Survey among the country-correspondents of the European Network of Smoking Prevention - WHO-Euro tobacco control database[4] - Examination of national laws - EU reports
Indicator source	Report of 2 experts of the Association of the European Cancer Leagues[5]
Periodicity	Every 2-3 years
Technical definitions	Being a global index, the score on its own gives a vague information. It necessitates an insight into its components to be interpreted. Fortunately, the report also provides the details and the interpretation of the score. Note that between-countries comparisons for some elements of the scale are published as maps by the WHO.[6]
International comparability	Yes, comparisons of the Tobacco Control Scale are regularly published by the Association of the European Cancer Leagues
Dimensions	Health oriented Governance
Related indicators	Percentage of daily smokers

14.8.2. Results

The report by Joossens and Raw evaluates the tobacco control policies within 34 European countries in 2013, as measured with the Tobacco Control Scale. Countries were judged according to a scale of 6 measures considered by the World Bank and the WHO as essential components of a comprehensive tobacco control programme:

- price increases through higher taxes on cigarettes and other tobacco products;
- bans/restrictions on smoking in public and work places;
- better consumer information, including public information campaigns, media coverage, and publicising research findings;
- comprehensive bans on the advertising and promotion of all tobacco products, logos and brand names;
- large, direct health warning labels on cigarette boxes and other tobacco products;
- treatment to help dependent smokers stop, including increased access to medications.

Belgium is situated on the 13th place on 31, with a global score of 47/100 (The scores of the more extreme countries were respectively 31 (Austria) and 74 (UK). The authors conclude that: “Belgium played a positive role during the Tobacco Products Directive 11 negotiations, but like Luxembourg has low prices for hand rolled tobacco. Sales of hand rolled tobacco were the highest ever in 2013. No progress to report since 2006, with the exception of a constitutional court decision to ban smoking in bars in 2011”.

It is noteworthy that the score of Belgium decreased by 3 points since 2010, and that its ranking also moved to a worse position.

Table 105 – Ranking by total Tobacco Control Scale: international comparison (2013)

2013 ranking (2010 ranking)		Country	Price (30)	Public place bans (22)	Public info. campaign spending (15)	Advert-ising bans (13)	Health warnings (10)	Treat ment (10)	Total (100)
1 (1)	–	**UK**	27	21	3	10	4	9	74
2 (2)	–	**Ireland**	24	21	1	12	5	7	70
3 (4)	▲	**Iceland**	20	17	12	12	4	1	66
4 (3)	▼	**Norway**	20	17	3	12	4	5	61
5 (4)	▼	**Turkey**	21	19		7	5	5	57
5 (6)	▲	**France**	20	17	1	9	4	6	57
7 (13)	▲	**Spain**	15	21	1	9	4	6	56
7 (7)	-	**Malta**	17	18		10	4	7	56
9 (7)	▼	**Finland**	15	17	3	12	2	6	55
10 (new)		**Ukraine**	20	17		12	4		53
11 (9)	▼	**Sweden**	17	15		10	1	5	48
11 (27)	▲	**Hungary**	15	13		11	3	6	48
13 (13)	–	**Netherlands**	16	13	1	9	1	7	47
13 (10)	▼	**Belgium**	14	13	2	8	4	6	47
15 (12)	▼	**Italy**	15	15	2	8	1	5	46
15 (13)	▼	**Denmark**	15	11	2	8	4	6	46
15 (24)	▲	**Bulgaria**	18	15		10	1	2	46
18 (11)	▼	**Switzerland**	13	11	7	2	5	7	45
19 (16)	▼	**Romania**	19	7		8	3	7	44
20 (17)	▼	**Slovenia**	12	15		9	1	6	43
20 (19)	▼	**Estonia**	14	12		10	1	6	43
20 (19)	▼	**Poland**	14	11		9	1	8	43
23 (new)		**Serbia**	18	11		9	1	3	42
24 (17)	▼	**Latvia**	14	14		8	3	2	41
24 (19)	▼	**Portugal**	14	11		8	1	7	41
26 (new)		**Croatia**	14	12		11	1	2	40
27 (22)	▼	**Slovakia**	13	10		9	1	6	39
28 (29)	▲	**Luxembourg**	5	15		9	1	7	37
29 (22)	▼	**Lithuania**	12	12		8	1	2	35
29 (30)	▲	**Greece**	15	7		6	1	6	35
31 (27)	▼	**Czech Rep.**	12	9		8	1	4	34
32 (24)	▼	**Cyprus**	15	7		10	1	-	33
33 (26)	▼	**Germany**	14	11		4	1	2	32
34 (30)	▼	**Austria**	11	8		7	1	4	31

Source: [4]

Additional information: separate components of the comprehensive strategy

Beside the global index (Tobacco Control Scale) described above, partial comparisons have been made in the same report, but they are presented in unranked tables, making their interpretation less straightforward.

Other comparison:

The **WHO**[6] publishes geographical comparisons for some components of a global policy, but until now, doesn't computes a global scale.

- **Tobacco dependence treatment, 2012 :** Existence of National quit line, and both Nicotine Replacement Therapy (NRT) and some cessation services cost-covered (Belgium's answer lies in highest of 4 categories).
- **Warn about the dangers of tobacco, 2012** : Medium size warnings with all appropriate characteristics OR large warnings missing some appropriate characteristics (Belgium's answer lies in the 3th on 4 categories).
- **Anti-tobacco mass media campaigns, 2012** : No national campaign conducted between January 2011 and June 2012 with duration of at least three weeks (Belgium's answer lies lowest on 4 categories of answers).
- **Enforce bans on tobacco advertising, promotion and sponsorship, 2012** : Ban on national television, radio and print media as well as on some but not all other forms of direct and/or indirect advertising (Belgium's answer lies 3th on 4 categories of answers).
- **Raise taxes on tobacco, 2012**: >75% of retail price is tax (Belgian answer ranks highest on 4 categories of answers).
- **Restrictive laws on tobacco use in public area , transport area and working places** Belgium is not included in the international comparisons in the "Maps on the Global Tobacco Control Policy data" (WHO report of the global Tobacco Epidemic 2013), because the strength of the interdiction is interpreted differently by Belgium and by the WHO. Indeed, the Belgian law tolerates the existence of "smoking areas under strict conditions". The interdiction is considered as being "partial" by the WHO, and as being "total" by Belgium, hence the absence of data for Belgium in this section in the WHO report.

Key points

- **Belgium ranks intermediate with its strategy for tobacco control, but has worsened its ranking and its score since 2010 .**
- **Prices are too low (especially for hand roll tobacco which sales increased in 2013), and Belgium is known to be a place of supply to neighbouring countries. Mass media campaign could reinforce the other measures.**
- **Regarding the taxes and the offer of tobacco dependence treatment, Belgium ranks good.**

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15. EQUITY

15.1. Gini Index (EQ1)

15.1.1. Documentation sheet

Description	The Gini index measures the degree of inequality in the distribution of the income in a country. The index is calculated from the Lorenz curve, in which cumulative income is plotted against the cumulative number of individuals arranged from the poorest to the richest. The index is the ratio of (a) the area between a country's Lorenz curve and the 45 degree line to (b) the entire triangular area under the 45 degree line. The more nearly equal a country's income distribution, the closer its Lorenz curve to the 45 degree line and the lower its Gini index. The more unequal a country's income distribution, the farther its Lorenz curve from the 45 degree line and the higher its Gini index. If incomes are distributed with perfect equality, the Lorenz curve coincides with the 45 degree line and the index is zero; if incomes are distributed with perfect inequality, the Lorenz curve coincides with the horizontal axis and the right vertical axis and the index is 100.
Rationale	There is a link between the way to redistribute the incomes (income inequality) in a country and some forms of objective health problems and the perceived health situation or status.[1-6]
Source	OECD
Periodicity	Yearly
Technical definitions and limitations	Countries with similar incomes and Gini index can still have very different income distributions. This is because the Lorenz curves can have different shapes and yet still yield the same Gini coefficient. Taking income before and after taxes and transfers into account doesn't give a complete picture of the income redistribution in a country. Indeed, free collectives goods increase the welfare of the citizens but have no impact on the Lorenz curve and the Gini index. Nevertheless, it is the best we can get because the lack of data about the consumption of free collectives goods. In the data we use, income is defined as household disposable income in a particular year. It consists of earnings, self-employment and capital income and public cash transfers; income taxes and social security contributions paid by households are deducted. The income of the household is attributed to each of its members, with an adjustment to reflect differences in needs for households of different sizes (*i.e.* the needs of a household composed of four people are assumed to be twice as large as those of a person living alone). OECD has used three different equivalent scales: (1) the 'OCDE equivalence scale' which assigns a value of 1 to the first household member, of 0.7 to each additional adult and of 0.5 to each child (labelled the 'old' OCDE scale), (2) the 'OECD-modified scale' which assigns a value of 1 to the household head, of 0.5 to each additional adult member and 0.3 to each child. (3) the 'Square root scale' which divides the household income by the square root of the household size. The Gini coefficient is simple to understand and easily comparable between countries and in the time. Nevertheless, it remains a very global representation of the distribution of the welfare in a given population. That is reason why we present also the results of a recent analysis of the poverty in Belgium. Indeed there exist a close correlation between the at-risk-of-poverty rate (defined as the part of the population living in households whose total equalised income is below 60 percent of the median national equalised household income) and the Gini coefficient and the S80/S20 ratio. The S80/S20 ratio is the ratio of the share of income going to the top 20 per cent of the population to that going to

	the bottom 80 per cent. Furthermore, the estimates of poverty risk as presented by OECD, EU-SILC (EU Statistics on Income and Living Conditions) and LIS (Luxembourg Income Study) are close even if the three studies are based on different databases and use different methodologies. For instance, the EU-SILC uses the 'OECD-modified scale' and the OECD uses the 'Square root scale' and not the scale bearing its name.[7-9] For methods and figures see: http://www.oecd.org/social/OECD2014-Income-Inequality-Update.pdf http://socialsecurity.fgov.be/fr/nieuws-publicaties/sociale-bescherming-inclusie-indicatoren/sociale-bescherming-inclusie-indicatoren.htm
International comparability	Gini indexes are computed by international organization using the same (or a comparable) methodology and are therefore comparable. Indeed, globally, we observe a large congruence, on one hand, between the results of different sources about the evaluation of the poverty rates and the income inequality and, on the other hand between poverty rates and income inequality indicators.
Dimensions	Equity
Related indicators	Contextual indicator of equity

15.1.2. Results

15.1.2.1.1. The income inequalities: the situation of Belgium and international comparison

We evaluate the inequality of income distribution by the Gini index and the redistribution effect of the taxation and transfers by the difference between the pre-tax & transfers and the post-tax & transfers Gini indexes, a conventional and easy way of measuring the redistributive effect of a tax and transfers system. We observe a quite large inequality in Belgium before taxation and transfers but also a large redistribution after the application of the taxes and transfers. These results are confirmed by analysis using the LIS database.[10]

Taking the redistributive effects of the tax and transfers system into account gives a truer picture of the potential effects of the 'inequality feeling' on the health population expressed in objective and subjective terms.

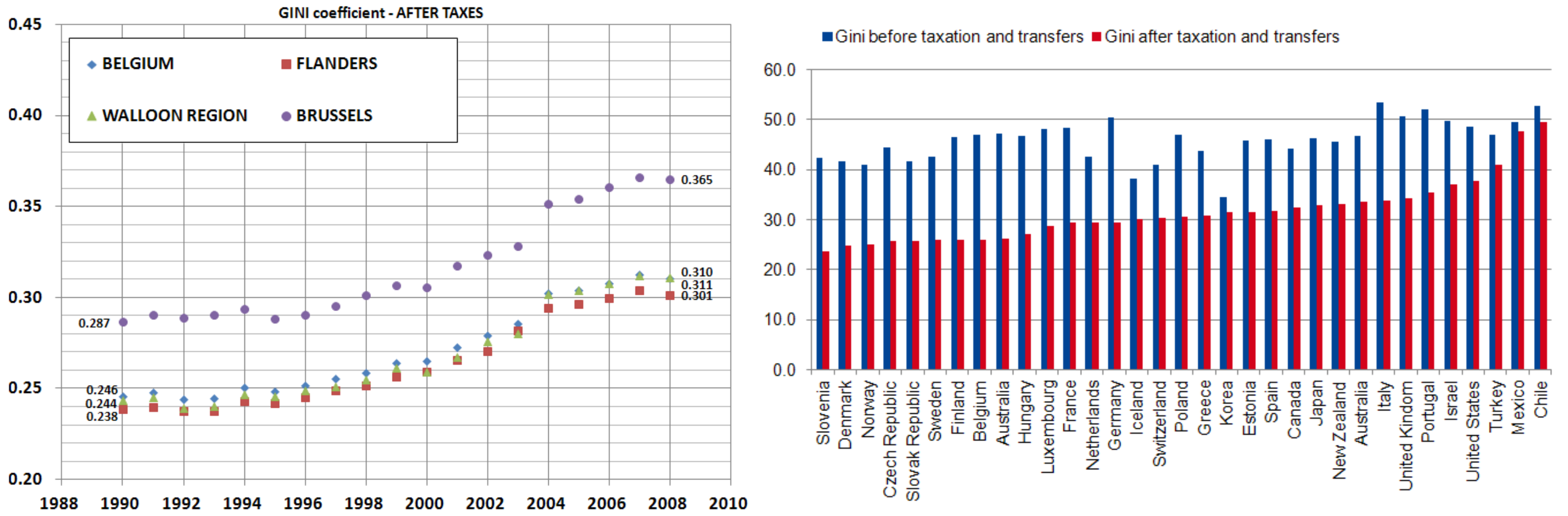
Table 106 – Gini index before and after taxation and transfers, and calculation of the redistribution effect: international comparison (late 2000s)

Countries (Late 2000s)	Gini before taxation and transfers	Gini after taxation and transfers	Difference
Slovenia	42.3	23.6	18.7
Denmark	41.6	24.8	16.8
Norway	41.0	25.0	16.0
Czech Republic	44.4	25.6	18.8
Slovak Republic	41.6	25.7	15.9
Sweden	42.6	25.9	16.7
Finland	46.5	25.9	20.6
Belgium	**46.9**	**25.9**	**21.0**
Australia	47.2	26.1	21.1
Hungary	46.6	27.2	19.4
Luxembourg	48.2	28.8	19.4
France	48.3	29.3	19.0
Netherlands	42.6	29.4	13.2
Germany	50.4	29.5	20.9
Iceland	38.2	30.1	8.1
Switzerland	40.9	30.3	10.6
Poland	47.0	30.5	16.5
Greece	43.6	30.7	12.9
Korea	34.4	31.4	3.0
Estonia	45.8	31.5	14.3
Spain	46.1	31.7	14.4
Canada	44.1	32.4	11.7
Japan	46.2	32.9	13.3
New Zealand	45.5	33.0	12.5
Australia	46.8	33.6	13.2
Italy	53.4	33.7	19.7
United Kingdom	50.6	34.2	16.4
Portugal	52.1	35.3	16.8
Israel	49.8	37.1	12.7
United States	48.6	37.8	10.8

Turkey	47.0	40.9	6.1
Mexico	49.4	47.6	1.8
Chile	52.6	49.4	3.2

Source: OECD

Figure 159 – Gini coefficient before and after taxation and transfers (1998-2010): international comparison (late 2000s)



Source: DGSIE (Belgium) and OECD Health Data 2012
Note: the Gini coefficient is a coefficient for inequality of income in a population. When there is perfect equality (everybody has the same income, the coefficient is 0). When there is perfect inequality, the coefficient is 1 (one person has all the revenues). A lower coefficient indicates a more equal distribution of the incomes. .

Table 107 – Gini coefficient of equivalent disposal income: international comparison (2005-2013)

	2005	2006	2007	2008	2009	2010	2011	2012	2013
Norway	0.282	0.292	0.237	0.251	0.241	0.236	0.229	0.225	0.227
Iceland	0.251	0.263	0.280	0.273	0.296	0.257	0.236	0.240	0.240
Slovakia	0.262	0.281	0.245	0.237	0.248	0.259	0.257	0.253	0.242
Slovenia	0.238	0.237	0.232	0.234	0.227	0.238	0.238	0.237	0.244
Czech Republic	0.260	0.253	0.253	0.247	0.251	0.249	0.252	0.249	0.246
Sweden	0.234	0.240	0.234	0.240	0.248	0.241	0.244	0.248	0.249
Netherlands	0.269	0.264	0.276	0.276	0.272	0.255	0.258	0.254	0.251
Finland	0.260	0.259	0.262	0.263	0.259	0.254	0.258	0.259	0.254
Belgium	**0.280**	**0.278**	**0.263**	**0.275**	**0.264**	**0.266**	**0.263**	**0.265**	**0.259**
Austria	0.263	0.253	0.262	0.277	0.275	0.283	0.274	0.276	0.270
Denmark	0.239	0.237	0.252	0.251	0.269	0.269	0.278	0.281	0.275
Malta	0.270	0.271	0.263	0.281	0.274	0.286	0.272	0.271	0.279
Hungary	0.276	0.333	0.256	0.252	0.247	0.241	0.268	0.269	0.280
Switzerland	0.000	0.000	0.304	0.311	0.307	0.296	0.297	0.288	0.285
Germany	0.261	0.268	0.304	0.302	0.291	0.293	0.290	0.283	0.297
Ireland	0.319	0.319	0.313	0.299	0.288	0.307	0.298	0.299	0.300
France	0.277	0.273	0.266	0.298	0.299	0.298	0.308	0.305	0.301
United Kingdom	0.346	0.325	0.326	0.339	0.324	0.329	0.330	0.313	0.302
Luxembourg	0.265	0.278	0.274	0.277	0.292	0.279	0.272	0.280	0.304
European Union (27)	0.306	0.303	0.306	0.309	0.305	0.304	0.307	0.304	0.305
Poland	0.356	0.333	0.322	0.320	0.314	0.311	0.311	0.309	0.307
Croatia	0.300	0.280	0.290	0.280	0.270	0.316	0.312	0.309	0.309
Cyprus	0.287	0.288	0.298	0.290	0.295	0.301	0.292	0.310	0.324
Italy	0.328	0.321	0.322	0.310	0.315	0.312	0.319	0.319	0.325
Estonia	0.341	0.331	0.334	0.309	0.314	0.313	0.319	0.325	0.329
Spain	0.322	0.319	0.319	0.319	0.329	0.335	0.340	0.342	0.337
Romania	0.310	0.330	0.378	0.360	0.349	0.333	0.332	0.332	0.340
Portugal	0.381	0.377	0.368	0.358	0.354	0.337	0.342	0.345	0.342
Greece	0.332	0.343	0.343	0.334	0.331	0.329	0.335	0.343	0.344
Lithuania	0.363	0.350	0.338	0.345	0.359	0.370	0.330	0.320	0.346
Latvia	0.362	0.389	0.354	0.375	0.375	0.359	0.351	0.357	0.352
Bulgaria	0.250	0.312	0.353	0.359	0.334	0.332	0.350	0.336	0.354

Source: http://appsso.eurostat.ec.europa.eu/nui/setupDownloads.do
Note : last update 18/05/2015

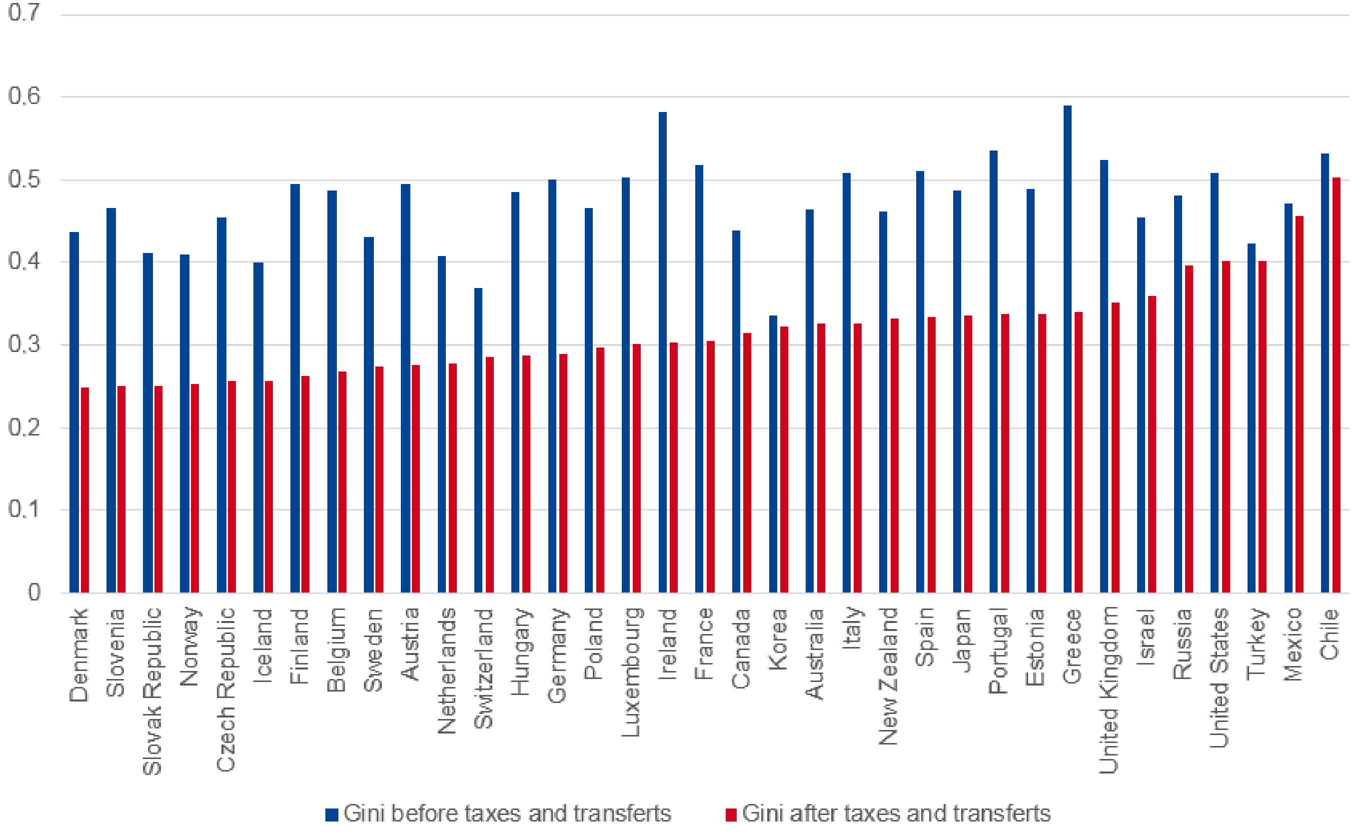
Table 108 – Gini coefficient in OECD countries (late 2000s)

	Gini before taxes and transfers	Gini after taxes and transfers	Reduction in %
Denmark	0.436	0.249	42.9
Slovenia	0.466	0.250	46.4
Slovak Republic	0.412	0.250	39.3
Norway	0.410	0.253	38.3
Czech Republic	0.455	0.256	43.7
Iceland	0.399	0.257	35.6
Finland	0.495	0.262	47.1
Belgium	0.488	0.268	45.1
Sweden	0.431	0.274	36.4
Austria	0.495	0.276	44.2
Netherlands	0.407	0.278	31.7
Switzerland	0.368	0.285	22.6
Hungary	0.485	0.288	40.6
Germany	0.501	0.289	42.3
Poland	0.465	0.298	35.9
Luxembourg	0.502	0.302	39.8
Ireland	0.582	0.304	47.8
France	0.518	0.306	40.9
Canada	0.438	0.315	28.1
Korea	0.336	0.322	04.2
Australia	0.463	0.326	29.6
Italy	0.509	0.327	35.8
New Zealand	0.461	0.333	27.8
Spain	0.511	0.335	34.4
Japan	0.488	0.336	31.1

	Gini before taxes and transfers	Gini after taxes and transfers	Reduction in %
Portugal	0.536	0.338	36.9
Estonia	0.489	0.338	30.9
Greece	0.589	0.340	42.3
United Kingdom	0.523	0.351	32.9
Israel	0.454	0.360	20.7
Russia	0.481	0.396	17.7
United States	0.509	0.401	21.2
Turkey	0.424	0.402	05.2
Mexico	0.472	0.457	03.2
Chile	0.532	0.503	05.5

Source : http://stats.oecd.org/index.aspx?queryid=66670
Note : last year from 2008 until 2014.

Figure 160 – Gini coefficient before and after taxation and transfers: international comparison (late 2000s)



Note: last year from 2018 until 2014.

Beyond the redistribution, the level of poverty

Because the health situation is correlated with the socioeconomic level, it is interesting to contextualize the positive evolution of the Gini coefficient with data concerning the poverty in Belgium.

Table 109 – At-risk of poverty or social exclusion rate (AROPE), at-risk-of-poverty rate (AROP), Severe Material Deprivation rate (SMD) and very low work intensity rate (VLWI) (2005-2013)

%	2005	2006	2007	2008	2009	2010	2011	2012	2013
AROPE	22.6	21.5	21.6	20.8	20.2	20.8	21.0	21.6	20.8
AROP	14.8	14.7	15.2	14.7	14.6	14.6	15.3	15.3	15.1
SMD	6.5	6.4	5.7	5.6	5.2	5.9	5.7	6.3	5.1
VLWI	15.1	14.3	13.8	11.7	12.3	12.7	13.8	13.9	14.0

Source: EU-SILC

Source: Federal Public Service Social Security, April 2015

Table 109 shows that 15.1% of the population is at risk of poverty (p.15). The median at-risk-poverty gap became larger since 2008 (the rate has risen from 17.2% in 2008 to 19.2% in 2013. That is measured by the difference between the median income of persons having an income that is below the at-risk-of-poverty threshold and the at-risk-of-poverty threshold, as a percentage of the at-risk-of-poverty threshold (p.16). This risk became larger for the children and the active population but decreases significantly for the elderly peoples to reach a minimal level for the period 2004-2013. The same observation can be made for the persistent poverty risk (percentage of persons that is at-risk-of-poverty in the most recent year and in at least 2 of 3 preceding years).

From an equity perspective, it is also very important to observe the difference of at-risk-of-poverty rate in function of the level of education. For Belgium, this risk for low level was 14% higher than for people from high level of education in 2005. In 2013, that difference has risen until 20%.

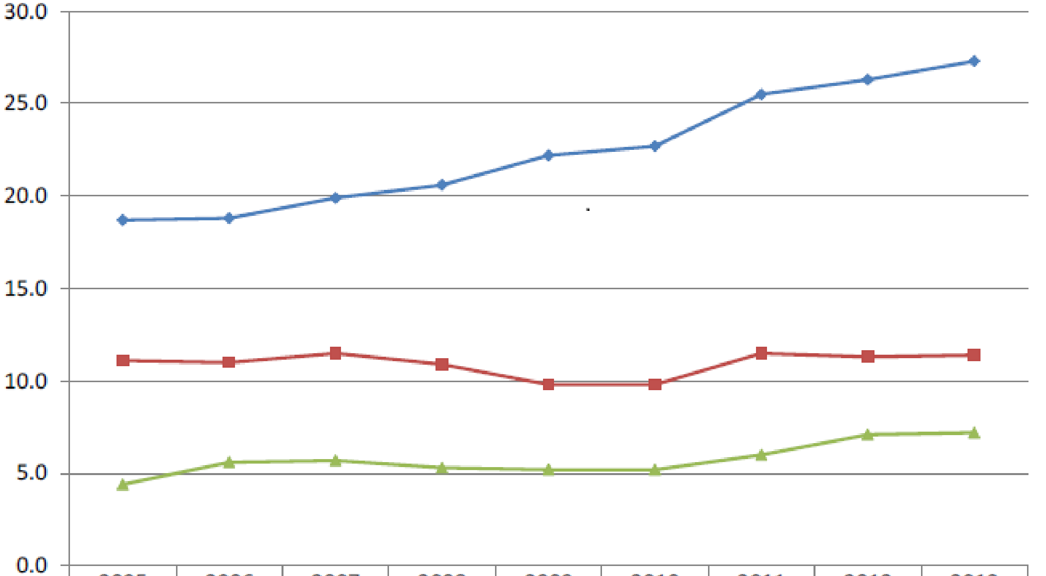
Figure 161 – Relative median poverty risk gap (%), total and by age (2004-2013)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Total	21.5	17.8	19.4	17.8	17.2	18.1	18.0	18.6	18.7	19.2
<18	20.7	17.6	20.7	18.3	17.5	21.3	20.8	21.5	19.2	21.3
18-64	24.0	19.3	21.1	20.5	19.1	20.7	21.1	20.0	20.9	22.8
>64	18.0	14.3	17.2	14.6	14.1	12.0	13.0	13.2	12.7	10.5

Source: EU-SILC, EUROSTAT

Source: Federal Public Service Social Security

Figure 162 – At-risk-of-poverty rate by level of education in population aged 18-64 (2005-2013)



	2005	2006	2007	2008	2009	2010	2011	2012	2013
low	18.7	18.8	19.9	20.6	22.2	22.7	25.5	26.3	27.3
middle	11.1	11.0	11.5	10.9	9.8	9.8	11.5	11.3	11.4
high	4.4	5.6	5.7	5.3	5.2	5.2	6.0	7.1	7.2

Source: EU-SILC, Eurostat

Source: Federal Public Service Social Security

Key points

- **The income inequality in Belgium is relative high before the redistribution impact of taxes and transfers**
- **Thanks to the system of taxation and transfers, Belgium is one of the most egalitarian countries**
- **The high level of income redistribution and the less inegalitarian repartition of disposal incomes should have a positive impact on the different aspects of the Belgian population health**
- **Nevertheless, some part of the Belgian population are confronted with substantial poverty risks; people with a low education, people living in households very low work intensity, persons with nationalities outside the EU-27, even adults (18-64 years) and young people (<18 years) compared with older people (>64 years)**

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15.2. Financing progressivity (EQ-2 and EQ-3)

15.2.1. Documentation sheet

Description	Since 2005, the financing of the Belgian social security system is based on the principle of pooling of receipts (the so-called 'financial global management'). That means that all financial resources are globalized and then transferred to the different branches of the social security in function of their respective financial needs. The financing of the healthcare system is also composed of some 'own receipts'. We consider here these two parts of the financing of the health care system in order to characterize the financing in terms of progressivity.
Calculation	Three ratios are calculated: respectively progressive, proportional and regressive receipts divided by the total receipts. The 'own receipts' of the health system sector are well defined (personal social contributions, alternative financing and allocated receipts). The transferred receipts from the 'global management' of the two social security systems (employed workers and self-employed) are no longer specific to the health care branch. Therefore, we have calculated the 'transferred social contributions', the 'transferred allocated receipts' and the 'transferred subsidies' using as 'repartition key' the proportion of these three sources of financing in the total receipts of social security in the two systems.
Rationale	Wagstaff and van Doorslaer do not find in the literature a real justification of the ability-to-pay principle but rather a justification for rejecting the benefit principle or in favour to the decoupling of payments from utilization.[1] On the other hand, the progressivity of the financing of the health system constitutes an interesting argument to decouple the payment on the 'point of care' from the ability to pay. Moreover, progressivity is a necessary condition for vertical equity (individuals of unequal ability to pay make dissimilar payments to finance the health system) but the average tax rate interacts with it to determine the magnitude of redistribution, since progressivity is defined by the dispersion of tax liabilities, irrespective of their average. Horizontal equity requires equal treatment of equals (individuals of equal ability to pay make similar payments to finance the health system) and departures from horizontal equity may affect vertical equity if the discrepancy between the "contribution base" and the ability to pay is increasing in ability to pay. We can say that we adopt here a 'strong egalitarian perspective' because we examine if the health system is financed according to the ability to pay (egalitarian perspective[1]) not by a proportional way, but by a progressive way ('strong' egalitarian)
Source (data and indicator)	SPF Sécurité sociale, INAMI – RIZIV
Periodicity	Yearly
Technical definitions and limitations	The financing of the health care system can be defined as progressive (regressive) when the average rate of levy is increasing (decreasing) with the income. And the financing system is called proportional if the average rate of levy stays constant whatever the income level. The progressivity of the levy system results not only of the progressivity of the taxation structure. She depends also of all the system of fiscal deductions and of the tax immunisations of some part of the income. **We do not calculate the absolute progressivity of each levy system** (social contribution, alternative financing, and subsidies). We rather consider the **relative progressivity** of these sources of financing and we characterize the global financing in terms

	of progressivity given that direct taxation (subsidies) is more progressive than social contributions and that social contributions are more progressive than the indirect taxes. The allocated receipts for the financial global management of the social security are mainly composed by the 'special contribution for the social security'.[2] This contribution is more progressive than the direct taxation which is also more progressive than the social contributions.[3] Social contributions are mostly proportional. Apart that social transfers, that are concentrated in the lower part of the income distribution, are not subject to social security contribution. If we take that into account the social contributions are slightly progressive. We can clearly identify the social contributions (proportional financing) and the alternative financing (VAT) (Regressive financing). The status of the subsidies is less unambiguous. We have characterised all the different types of receipts of the State between 1995 and 2013 and observed that approximately the half of the total receipts can be considered as progressive. Globally, if we do not take the financial income into account, the system of direct taxation in Belgium is progressive and this progressivity has been yet slightly amplified since the fiscal reform which has begun in 1999. During the period 2000-2009, the progressivity of statutory labour tax schedules has increased in the majority of countries and certainly in Belgium where this progressivity is the highest of the OECD countries just after Ireland (OECD, 2012, p. 193) [4]. Nevertheless, we have to distinguish the progressivity from the redistribution. During the past, we had periods characterized by a stable progressivity and a higher redistribution because the average taxation rate was increasing [5]. Again, we do not calculate here nor an indicator of absolute progressivity, nor an indicator of redistribution. In our calculation we do **not take into account the personal situation** of the individual. We characterize only the 'system', in general terms a direct taxation is more progressive than a social contribution and a social contribution is more progressive than an indirect taxation. Thereby, we cannot determine if the personal situation of an individual is characterized by a progressive financing (the proportion of the revenues paid by a richer one is higher than the proportion of the revenues paid by a poorer one). We consider here the **financing of the health care system in a restricted view**. Indeed, we do not take into account the amounts paid on the 'point of care' (the 'cost sharing') that we consider as a private financing. Wagstaff and van Doorslaer meanwhile present an estimation of progressivity indices for public and private source of financing.
International comparability	International comparisons are not pertinent because the part of public/private financing of the total health care expenditure is substantially different in all countries.
Dimensions	Contextual indicator of equity - Equity of the financing
Related performance indicators	Ratio **proportional** receipts/total receipts, **progressive** receipts/total receipts, **regressive** receipts/total receipts, **regressive** receipts/**progressive** receipts

15.2.2. Results

If we consider the period 2005-2011, the public financing of the health care system becomes more regressive. The proportional financing represents in 2014, 62.6% of the total receipts (70.0 in 2005). The part of the progressive financing (the half of the total receipts – and thus the subsidies - of the State) increases slightly, the part of the regressive receipts (essentially Tax on added value as alternative financing) is substantially increased. If we do not consider the two last years (budgetary situation), the evolution is sufficiently clear to avoid the calculation of a mixed indicator composed by the three sources of financing.

Table 163 – Structure of the financing of the public health care system (2005-2014)

Public financing of the health system of the employed workers (million euros)	2005 (FA)	2006 (FA)	2007 (FA))	2008 (FA))	2009 (FA))	2010 (FA))	2011 (PA)	2012 (PA)	2013 (B)	2014 (B)
Social contributions transferred from general scheme	12983	12981	14210	15075	15953	15519	16468	16490	16946	16932
Social contributions transferred from self-employed	719	771	800	1287	1324	1334	1394	1383	1410	1416
Subsidies transferred from general scheme	2466	2442	2596	2717	2877	3684	2756	3683	4187	4539
Subsidies transferred from self-employed	305	317	321	502	499	580	543	637	682	733
Alternative financing transferred from general scheme	0	0	0	565	964	1684	2903	1435	998	1579
Alternative financing transferred from self-employed	0	0	0	57	93	168	293	144	99	158
Diverse receipts	101	103	107	278	692	695	0	0	130	135
Own social contributions	668	690	719	790	837	865	920	963	982	1018
Own alternative financing	2012	2034	2190	2311	2352	2525	2613	2720	2792	2839
Own allocated receipts	1047	1098	1022	972	1126	1049	1029	1071	1132	1157
Own diverse receipts	232	259	285	310	338	384	410	413	427	453
Total	20533	20696	22251	24861	27055	28487	29327	28940	29787	30959

FA: Final accounts; B: Budget; PA: Provisional accounts
Source: SPF – FOD Social Security + INAMI – RIZIV + National Bank of Belgium + KCE calculations

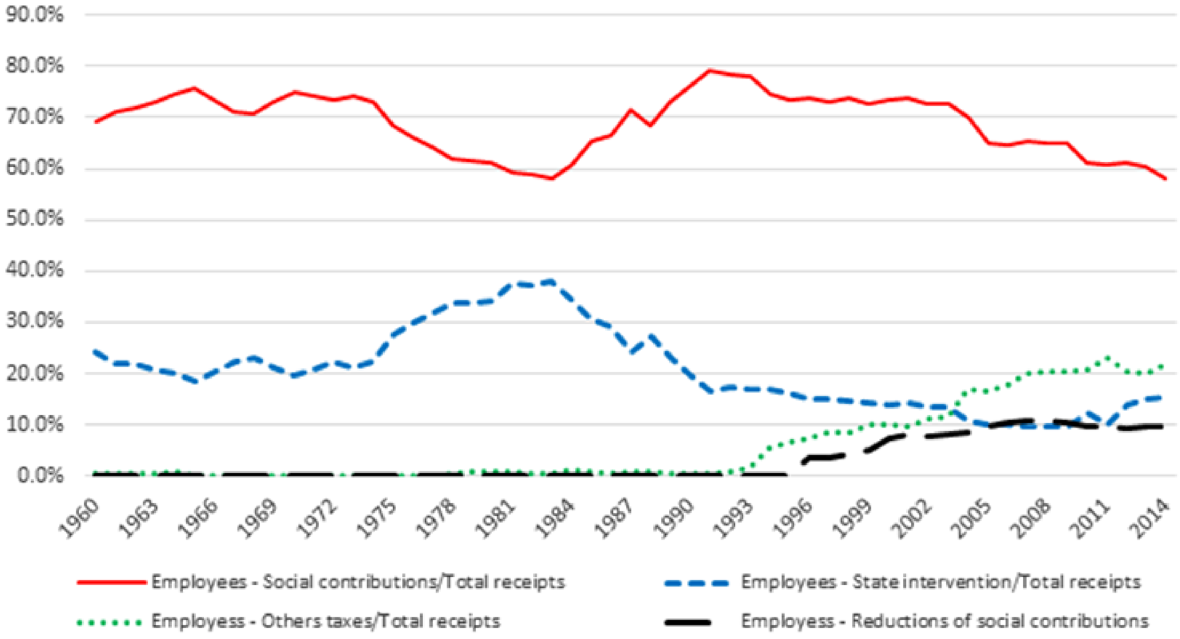
Table 110 – Progressivity indicators of the financing of the public health care system (2005-2014)

Indicators of progressivity/regressivity in %	2005 (final accounts)	2006 (final accounts)	2007 (final accounts)	2008 (final accounts)	2009 (final accounts)	2010 (final accounts)	2011 (provisional accounts)	2012 (provisional accounts)	2013 (budget)	2014 (budget)
Ratio **proportional** receipts/**total** receipts	70.0	69.8	70.7	69.0	67.0	62.2	64.0	65.1	64.9	62.6
Ratio **progressive** receipts/**total** receipts	6.7	6.7	6.6	6.5	6.2	7.5	5.6	7.5	8.2	8.5
Ratio **regressive** receipts/**total** receipts	21.6	21.8	21.0	22.2	23.0	26.5	28.9	26.0	25.0	27.0
Ratio **diverse** receipts/**total** receipts	1.6	1,7	1.8	2.4	3.8	3.8	1.4	1.4	1.9	1.9
Ratio **regressive** receipts/**progressive** receipts (not in %)	3.2	3,3	3.2	3.4	3.7	3.5	5.1	3.5	3.1	3.2

FA: Final accounts; B: Budget; PA: Provisional accounts
Source: SPF – FOD Social Security + INAMI – RIZIV + National Bank of Belgium + KCE calculations

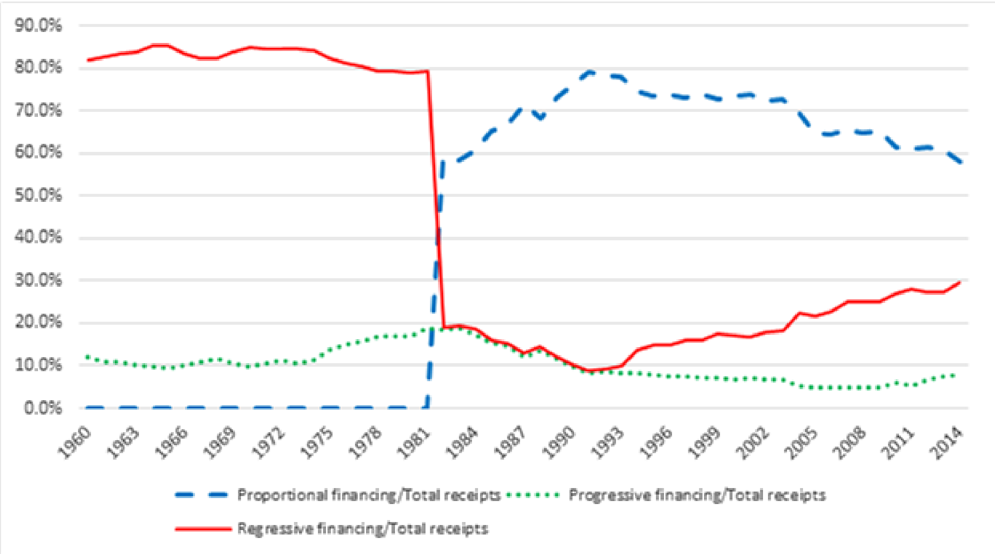
We add some information about the financing of the whole social security to give a broader context of the financing of the health care expenditure. Figure 165 is a transformation of Figure 164 when we consider the characterisation of the composition of the financing. Before 1982, the calculation of the social contributions was limited to a certain level of income. After 1982, the social contribution are calculated as a give percentage of the total income, the financing becomes proportional and was regressive before 1982. With the alternative financing, the financing of the social security becomes more regressive with the introduction of the alternative financing decided to compensate the reductions of the social contributions.

Figure 164 – Composition of the financing of the social security (1960-2014)



Source: annual editions of the vade mecum of the social security

Figure 165 – Characterisation of the financing of the social security (1960-2014)



Source: annual editions of the vade mecum of the social security and Statistics of the National Bank

Key points

- **The public financing of the health care system becomes more regressive, certainly since 2005.**

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