



### 3.3 Appropriateness of care

Appropriateness of care can be defined as “the degree to which provided healthcare is relevant to the clinical needs, given the current best evidence”.<sup>26</sup> Appropriateness can be assessed through several methods. The best method is to measure to what extent medical practice follows **recommendations from clinical guidelines**. Another method often used is the analysis of **geographical variation**.

Eight indicators related to acute and chronic care have been selected (Table 4). They refer to the application of guidelines (in follow-up of diabetic patients, in prescribing patterns of antibiotics, in use of inappropriate medical imaging techniques, in use of adjuvant treatment after surgery for testicular cancer treatment) or to the variability of caesarean section rates.

Other additional indicators are presented in the tables on preventive care (Table 22) for vaccination and screening, mental health (Table 23) for drug prescription and consumption, and end of life care (Table 26) for aggressiveness of care at the end of life. Finally, variations in practice are presented in Box 7.

#### Appropriateness of care for patients with a chronic disease (diabetes)

The appropriateness of care for patients with a chronic disease is evaluated by measuring the follow-up of people living with diabetes.<sup>9</sup> A composite quality indicator based on the percentage of adults living with diabetes and having received a combination of five tests or examinations (2xHbA1c, 1x lipid profile, 1x microalbuminuria, 1x serum creatinine, and one ophthalmologist consultation) in the past 15 months was measured to estimate the appropriateness of their follow-up. The percentage of appropriate follow-up (i.e. people having received these 5 tests) was 42.7%

<sup>9</sup> For diabetic care, the guidelines recommend that glycated haemoglobin, microalbuminuria, creatinine, and lipids are monitored preferably once a year, and at least every 15 months and that glycaemia is monitored every 3 months. It is also recommended that an ophthalmologist performs a dilated fundus examination every year to detect early ocular complications.

for adults living with diabetes and under insulin and only 16.9% for adults living with diabetes and receiving glucose-lowering drugs other than insulin. There were regional differences for both subgroup populations: for people living with diabetes treated with insulin, Flanders reached 46.4% of patients having the five tests in 2021, Brussels 42.9% and Wallonia 36.8%. For those receiving glucose-lowering drugs other than insulin, Brussels showed the highest coverage rate with 23.3%, the two other regions being behind (Flanders 17.4% and Wallonia 14.7%). Differences by socioeconomic status are discussed in section 7.1.

For people treated by insulin, the bottleneck seemed to be the consultation with the ophthalmologist, while for those receiving glucose-lowering drugs other than insulin, it was the microalbuminuria testing. The low rates for the five tests combined can in part be explained by the fact that not all these five tests are recommended for every people living with diabetes in some recent guidelines (see the technical sheet for more details). Additional analyses would be needed to determine the reasons of these low rates. Especially concerning the consultations with an ophthalmologist, i.e. could these low results in part be explained by the new guidelines or do they reflect a potential problem of care coordination (between medical specialists) or of accessibility of care (such as long waiting time)?

#### Appropriateness of care in prescribing patterns

Since the early 2000s, the authorities have been raising awareness among the public and the physicians concerning the issue of antibiotic resistance. Antibiotics should only be prescribed when necessary and the choice should preferably be in favour of first-line antibiotics (“prudent use”). The **prescription of antibiotics** is used to evaluate guideline adherence.



Belgium ranked poorly internationally for antibiotics consumption (similar to Italy for instance, but about two times more than the Netherlands). In 2021, a high percentage (32.6% vs 41.6% in 2010) of total population received at least one antibiotic prescription, with higher figures in Wallonia (37.0%) than in Flanders (30.4%) and Brussels (29.6%). The use of antibiotics at least once in the year was high for individuals aged 0-4 years (43.8%) and 75 years and above (39.8%). Furthermore, 40.5% of the antibiotics prescribed were second-line antibiotics in 2021 (versus 16% in the Netherlands in 2016<sup>30</sup>). Poor scores on this indicator were also observed among children (36.6%). Differences by socioeconomic status are discussed in section 7.1. The Belgian Antibiotic Policy Coordination Committee (BAPCOC) has defined two indicators with targets for second-line antibiotics:

- The ratio amoxicillin/amoxicillin-clavulanate should reach 4 to 1 (or 80%), it was still just under 50/50 at 48.1% in 2021; for children (under 15), the target was reached at 79.9%; but for patients aged 65 years and over, it was only 33.6%.
- The total DDDs (Defined Daily Doses) of quinolones compared to the total antibiotics prescribed should reach 5% (national objective): in 2021, it is still at 7.1%, an improvement compared to the 11.5% in 2010.

The impact of the COVID-19 pandemic is analysed in section 8.4.

### Use of inappropriate techniques in medical imaging

Inappropriate techniques were responsible for 50% of medical radiation in 2013, mainly due to lumbar spine CT scans. Medical imaging is not recommended in most cases of non-specific low back pain.<sup>31, 32</sup> Therefore, in this report, we focused on spine imaging: computed tomography (CT) scans and X-rays, two imaging techniques which emit ionising radiations that can cause cancer, as well as magnetic resonance imaging (MRI), which

is a safe but more costly imaging technique. Global imaging of the spine decreased by 2% per year from 2016 to 2022, with X-rays declining much faster in recent years with a 4.9% annual decrease. CT scan consumption decreased by 1.5% per year over the 2016-2022 period; MRI consumption growth was still at 2.0% per year though. For the COVID-19 period, see also section 8.4.

### Geographic variability in surgical procedures

Geographic variability for elective surgical procedures can be an indication of inappropriate care. Caesarean section was chosen in this report as an illustration, but there are many others (such as hip or knee replacement, two procedures for which Belgium has one of the highest intervention rates in the EU-14).<sup>17</sup>

While WHO stated from 1985 to 2015 that caesarean section rates should not exceed 10-15%,<sup>h, 33</sup> rates were still high and increasing in the EU-14 region (24.3% of live births for EU-14 [12 countries]). The rate in Belgium was lower (21.7%) but still much higher than in the Netherlands (15.2%) and has been growing slowly over the years in every region.

### Appropriateness of care in adjuvant treatments after surgery

Patients with early testicular cancer (stage I) have a primary surgical treatment (i.e. orchiectomy) which can be followed within 3 months by an adjuvant treatment or surveillance. Since 2013, ESMO guidelines recommend surveillance after orchiectomy for stage I seminomas and non-seminomas rather than adjuvant treatment, especially in the absence of risk factors. When comparing with the period before the publication of the guidelines (2004-2012), a clear decrease in the proportion of adjuvant treatment was observed for the 2013-2016 period (shortly after the guidelines' publication) and the 2017-2020 period (after the guidelines'

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<sup>h</sup> Latest WHO recommendations state that "every effort should be made to provide caesarean sections to women in need, rather than striving to achieve a specific rate."<sup>33</sup> WHO. WHO statement on caesarean section rates. Copenhagen: World Health Organization; 2015.



publication) in case of seminoma, and to a lesser extent in case of non-seminoma. These trends were observed in all regions.

### Indicators of appropriateness in other sections of this report

Indicators described in other domains can also be linked to appropriateness. In the **preventive care domain** (Table 22), breast cancer screening does not seem to be appropriately performed: the participation rate in the organised screening programme was low (especially in Wallonia and Brussels). In the domains of **mental healthcare** and **care for older people**, there were indications of inappropriate prescription of medication (e.g. the recommended duration for major depression treatment (at least three months) was not met in a substantial proportion of patients using antidepressants).

### Conclusion

Several indicators illustrated that appropriateness of care was not optimal in many domains (preventive, acute, and long-term people care). For many indicators, Belgium performed poorly compared to international benchmarks, and only a small improvement was observed in recent years for some indicators.

The results for antibiotics and antidepressants prescription indicators were poor in volume as well as in quality. Caesarean section rates were under the EU-14 average but have increased slowly and were higher than expected.

Inappropriate care (over-, under- and misuse of resources) has consequences in several dimensions (safety, continuity, effectiveness, efficiency). Tackling inappropriate care to improve the performance of the health system is a real challenge in Belgium.

### Box 7 – Variations in practice

Variations in practice cover any unjustified variation in healthcare that is a non-random variation related to insufficient or excessive use of care. Using N documents<sup>i</sup> 2012-2022 data (with medical expenses of insured people), standardised per year based on age, gender and increased reimbursement status for districts, provinces and regions, RIZIV – INAMI analysed several kinds of variation of practice (variations by gender, variations by age, geographical variations, variations by social status, variations by type of care, variations in the evolution trends, variations in the techniques used). The detailed analysis can be found on <https://www.healthybelgium.be/>. Here are some examples:

#### Variation by gender

While some variations in practice by gender are intrinsically linked to the treatment itself (hysterectomy, ultrasound of the prostate, etc.) this is not necessarily the case for other types of interventions. In the case of proton pump inhibitors, for example, in 2022 the rate of use was significantly higher for women than for men, which raises the question of possible overuse in women.

#### Variation by age groups

As with gender-related variations, age-related variations can also be explained by the epidemiology or by policies such as screening. Analyses showed that in 2022, breast cancer screening in the age group 40-49 years had a volume of 1 258 per 100 000 insured population; whilst in the age group 50-74 years the volume was 15 819 per 100 000 insured population. Further analysis is required to evaluate whether these numbers are consistent with epidemiology of risk factors and screening policy.

<sup>i</sup> N documents are monthly data sent by health insurers to the RIZIV – INAMI within three months. These data include the number of services, dates and fees.

**Variation by type of care**

Variations can also be observed between day care and hospital inpatient stay. For instance, for abdominal hernia, there was little geographical variation in terms of rates of use but there were significant differences in terms of choice of type of care (day care vs inpatient). When comparing the proportion of day care for this intervention, the ratio between the province with the highest proportion of day care and the one with the lowest was approximately 2.5.

**Variation by social status**

Social status is approximated by the increased reimbursement status of the patient. For example, in the case of varicose surgery, it was fairly generalised for all the provinces that rates of use were significantly higher (+56%) for persons who do not benefit from a preferential reimbursement scheme. Analyses also showed that breast cancer screening rate was about 40% lower in women (between 50 and 74 years) entitled to increased reimbursement than in women not entitled to increased reimbursement (see also indicator P-6). Similarly, the screening rate for smear for cervical cancer (in women aged 25-64 years) was nearly 30% lower in women entitled to increased reimbursement. Socioeconomic inequalities by reimbursement status or education level in various indicators have also been studied in chapter 7 of this report.

**Geographical variation**

As the data are standardised by age, sex and social status (reimbursement scheme), geographical variations reflect different practice behaviours in different areas of the country and can therefore a priori be considered as unjustified. In the case, for example, of carotid ultrasound, the data showed a ratio between the extreme values of utilisation rate per district of approximately 7 (max/min ratio) and a ratio of 2 when analysed at the level of the regions. For caesarean section, the ratio between the extreme values of utilisation rate per district (max/min ratio) was 2.

In the same way, despite no standardisation in the data, geographic variability were observed for several indicators presented in this report. The use of biosimilars in ambulatory setting, for instance, varied from 7.8% of biologicals in Flanders to 4.2% in Wallonia and 5.3% in Brussels (indicator E-4). The use of antidepressants varied from 11.3% for the population of the region of Brussels Capital to 17.1% for the population of the province of Namur (indicator MH-7.).

Source: RIZIV – INAMI ([www.healthybelgium.be/en/medical-practice-variations](http://www.healthybelgium.be/en/medical-practice-variations))



Table 4 – Quality: Indicators on appropriateness of care

(ID) Indicator		Belgium	Year	Flanders	Wallonia	Brussels	Source	EU-14	EU-27
<b>Primary care – people living with chronic disease (guidelines)</b>									
<b>QA-1</b>	Appropriate follow-up of diabetes (% of people 18+ living with diabetes and under insulin) <sup>a</sup>	➖	42.7	2021	46.4	<b>36.8</b>	42.9	IMA – AIM	-
<b>QA-2</b>	Appropriate follow-up of diabetes (% of people 18+ living with diabetes and receiving glucose-lowering drugs other than insulin) <sup>a</sup>	➖	16.9	2021	<b>17.4</b>	<b>14.7</b>	23.3	IMA – AIM	-
<b>Primary care – prescribing patterns (guidelines)</b>									
<b>QA-3</b>	Use of antibiotics (total DDD/1000 pop/day)	●	16.0	2021	15.6	17.8	14.8	RIZIV – INAMI	
				2021				ESAC-net	13.6 13.0
<b>QA-4</b>	Use of antibiotics at least once in the year (% of population)	●	32.6	2021	30.4	<b>37.0</b>	29.6	IMA – AIM atlas	-
<b>QA-5</b>	Use of antibiotics of second intention <sup>b</sup> (% total DDD antibiotics)	⊕	40.5	2021	39.9	41.3	35.9	RIZIV – INAMI	-
<b>Inappropriate medical imaging</b>									
<b>QA-6</b>	Spine imaging (X-ray, CT scan, MRI per 100 000 population)	⊕	9320	2021	8378	<b>11 370</b>	8618	RIZIV – INAMI	-
<b>Hospital care (guidelines)</b>									
<b>QA-8</b>	Caesarean section rate (per 1 000 live births)	⊕	217	2021	218	224	201	FPS Public Health	
				2020				OECD	243 252
<b>QA-9</b>	Patients with early testicular cancer (seminoma) receiving adjuvant treatment after surgery (% of patients with early testicular cancer stage I treated with orchiectomy)	↗	40.4	2017	<b>45.5</b>	<b>35.9</b>	25.7	BCR	- -
				- 2020					

Good (●), average (⊕) or poor (●) results, globally stable (ST), improving (+) or trend not evaluated (empty).

For contextual indicators (no evaluation): upwards trend (↗), stable trend (→), downwards trend (↘), no trend (C). a Appropriate follow-up is defined as patients receiving regular retinal exams and blood tests (glycohemoglobin, serum creatinin, lipid profile and microalbuminuria) b Antibiotics of second intention are: amoxicillin with clavulanic acid, macrolides, cephalosporins and quinolones