17. HOSPITAL ADMISSIONS FOR ASTHMA (QE-1), HOSPITAL ADMISSIONS FOR UNCONTROLLED DIABETES OR COMPLICATION OF DIABETES (QE-2), AND HOSPITAL ADMISSIONS FOR CHRONIC OBSTRUCTIVE PULMONARY DISEASE (QE-10)

17.1. 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 C. Number of hospital admissions for chronic obstructive pulmonary disease (COPD) in people aged 15 years and over, per 100 000 population For the international comparison, rates are age-sex standardised to the 2010 OECD population aged 15 and over.
Calculation	See technical definition below. The indicator for diabetes admission is based on the sum of three indicators: admissions for short-term complications, for long-term complications and for uncontrolled diabetes without complications.
Rationale	Asthma, diabetes and COPD are three widely prevalent long term conditions. For asthma and diabetes, the evidence for effective treatment is well established and much of it can be delivered at the primary care level. A high performing primary care system can to a significant extent, therefore, avoid acute deterioration in people living with asthma and 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 primary care, as well as poor coordination or continuity of care. Hospital admissions for COPD is also usually used as an indicator to measure the performance of primary care.[1] For COPD nevertheless, patients are extremely fragile and the pathology is very serious. A large number of hospitalisations is therefore less a reflection of poor primary care. For this indicator, the evolution is therefore more meaningful than the absolute numbers.
Primary data source	RHM – MZG (hospital administrative discharge data), FOD – SPF Public Health
Source of results	FOD – SPF Public Health and OECD health data for international comparison. These indicators belong to the set of indicators on quality of care that are published in Health at a Glance by OECD.[2] The OECD set of "avoidable hospital admission" also contains indicators of admissions for hypertension and congestive heart failure, but these have not been retained in this report to keep the number of indicators manageable.
Technical definitions	From OECD website: Definitions for Health Care Quality and Outcomes (HCQO) 2020-21 Indicators.[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. All acute care hospitals (public and private) that provide inpatient care.

	Numerator: All non-maternal/non-neonatal hospital admissions with principal diagnosis code of asthma in a specified year (See asthma diagnosis codes in OECD 2021[3], p5) Denominator: Population count 15+ (mean January t - January t+1) Exclude cases: Non-residents and cases died in hospital; transferred from another institution; with MDC 14 (pregnancy, childbirth and puerperium) or with a specified pregnancy, childbirth and puerperium code in any field; with cystic fibrosis and anomalies of the respiratory system diagnosis code in any field (see diagnosis codes in OECD 2021[3], p5); or that are same day/day only admissions. It should be noted that previously (2009-2012), cases with MDC 15 (newborn and other neonates) were also excluded. **Indicator B: Admission of uncontrolled diabetes or complication of diabetes** Coverage: Population aged 15 and older. All acute care hospitals (public and private) that provide inpatient care. Numerator: All non-maternal/non-neonatal hospital admission with principal diagnosis code (see diagnosis codes in OECD 2021[3], p10-11) of - Uncontrolled diabetes - Diabetes Short-term complication (i.e. ketoacidosis, hyperosmolarity) - Long term complication (i.e. renal, eye; neurological, circulatory, or complication not otherwise specified). Denominator: Population count 15+ (mean January t - January t+1). Exclude cases: Non-residents and cases died in hospital; transferred from another institution; with MDC 14 (pregnancy, childbirth and puerperium) or with a specified pregnancy, childbirth and puerperium code in any field; or that are same day/day only admissions. It should be noted that previously (2009-2012), cases with MDC 15 (newborn and other neonates) were also excluded. **Indicator C: Hospital admission for chronic obstructive pulmonary disease (COPD)** Coverage: Population aged 15 and older. All acute care hospitals (public and private) that provide inpatient care. Numerator: All non-maternal/non-neonatal hospital admissions with principal diagnosis code of COPD in a specified year (See COPD diagnosis codes in OECD 2021[3], p7) Denominator: Population count 15+ (mean January t - January t+1). Exclude cases: Non-residents and cases died in hospital; transferred from another institution; with MDC 14 (pregnancy, childbirth and puerperium) or with a specified pregnancy, childbirth and puerperium code in any field; or that are same day/day only admissions. It should be noted that previously (2009-2012), cases with MDC 15 (newborn and other neonates) were also excluded.
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. Differences in coding practices or in data coverage of the hospital sector across countries may also affect the comparability of data. 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] It is also important to note that Belgium changed its coding system to ICD-10 in 2015 but not necessarily other countries. Some may not have changed their system yet while others may have changed long before. Because when moving from ICD-9 to ICD-10 coding, there is a shift from asthma to COPD for some mixed conditions, comparison must be used with cautions.

Review	Reviewed by Pr Renaud Louis, University of Liege, Head of Pneumology Department (asthma and COPD) and by Astrid Lavens, Sciensano, Scientist in Health services research (diabetes)
Dimensions	Effectiveness + Continuity (Management)

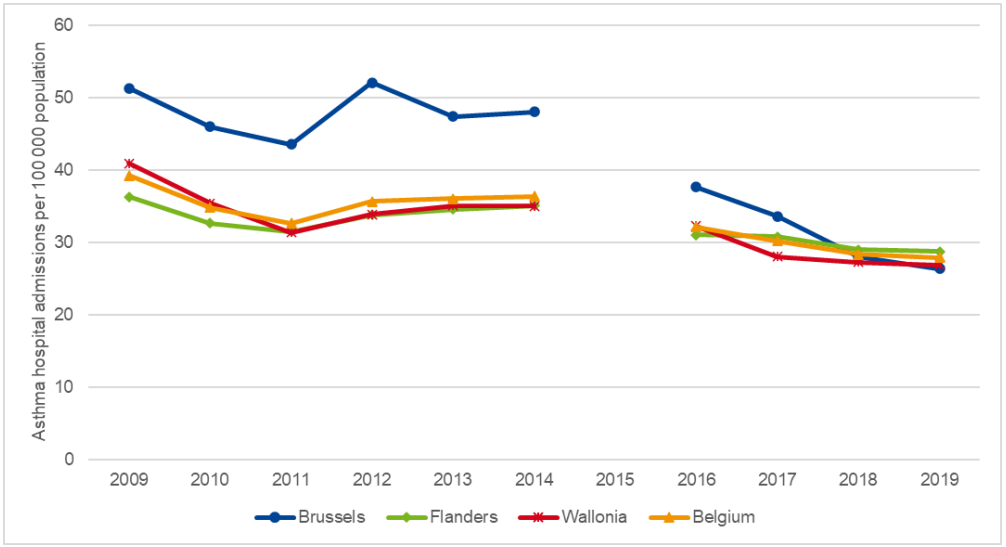
17.2. Results

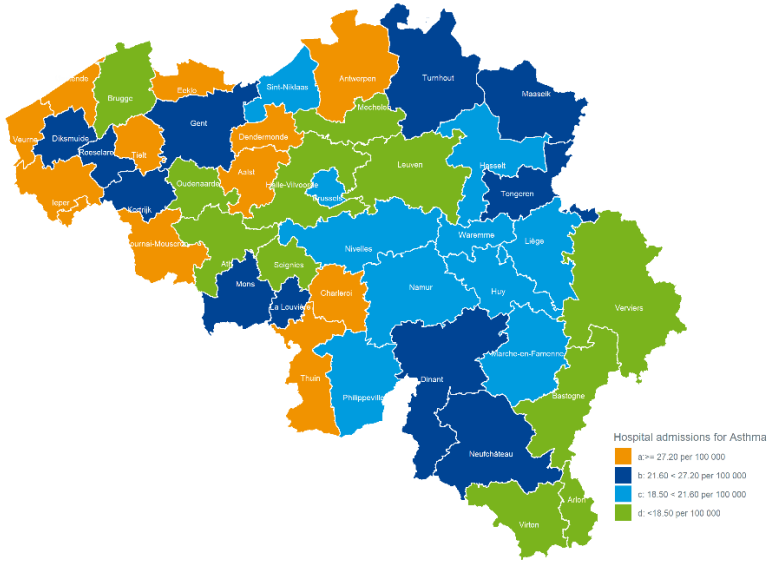
17.2.1. Hospital admission for asthma (for people aged 15 years old and over)

Data on asthma admissions in Belgium on the 2009-2014 period showed a slight decrease up to 2011, followed by a stagnation (Figure 47): with 39.2, 32.6, and 36.3 admissions per 100 000 population aged 15 years old and over in 2009, 2011 and 2014 respectively. During this period, rates were higher in Brussels than in other regions. A break in data series can be observed in 2016, due to the passage to the ICD 10 and a drop compared to 2014 can be observed, in part due to the fact that when moving from ICD-9 to ICD-10 coding, there is a shift from asthma admission to COPD admission for some mixed conditions. Comparison between the two periods must therefore be used with caution. During the 2016-2019 period, a decline in hospital admission for asthma can be observed, especially in Brussels and in 2019, rates were similar between regions (26.3 in Brussels, 28.7 in Flanders, 26.8 in Wallonia, and 27.9 for Belgium, see Figure 47).

The analysis by district shows that Virton (9.3) has the lowest hospital admission rate for asthma per 100 000 population while Veurne has the highest (53.5, see Figure 5).

Figure 47 – Hospital admissions for asthma per 100 000 population aged 15 years and older, per region (2009-2019) and per district (2019)



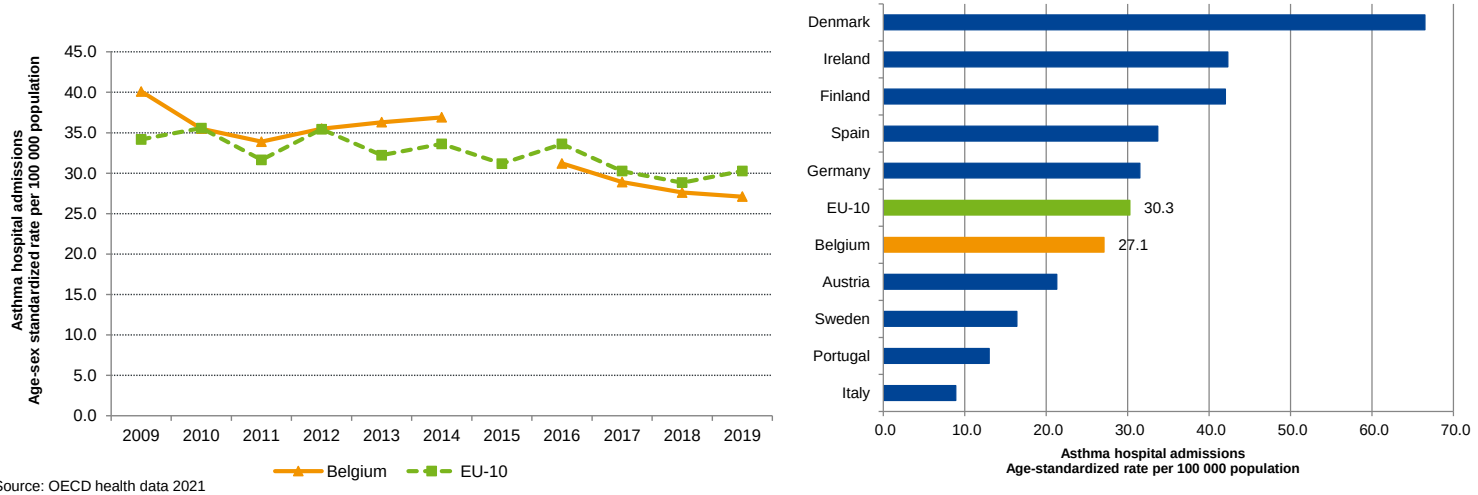


Source: FOD – SPF Public Health, hospital administrative discharge data

When comparing with EU-15 countries, we see that rates have declined over time and that Belgium was above the European average on the 2009-2014 period and below the European average on the 2016-2019 period, i.e. after the break in data series due to the passage to the ICD-10. Because the passage to the ICD-10 (implying a shift from asthma to COPD for some mixed conditions) is not performed at the same time period in each European country, such comparison must be used with caution.

Figure 48 also showed variation across European countries in 2019.

Figure 48 – Age-sex standardized hospital admissions for asthma (for population aged 15 years and older): international comparison (2009-2019)



Source: OECD health data 2021

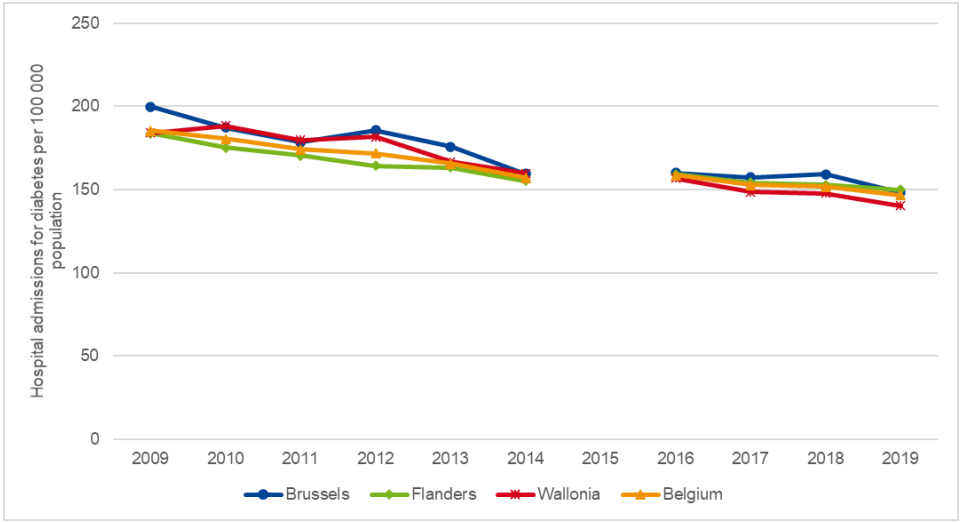
17.2.2. Hospital admission for uncontrolled diabetes, or complications of diabetes for people aged 15 years old and over)

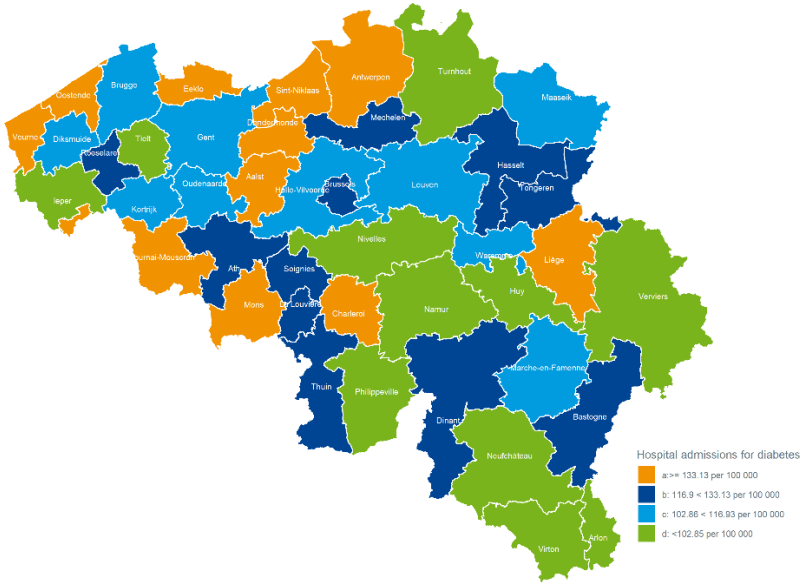
Data on diabetes admission (for uncontrolled diabetes or for complication of diabetes) in Belgium exhibit a slow decrease these latest 10 years, from 185.4 to 146.7 per 100 000 population in 2009 and 2019 respectively (Figure 49), which is also observed in other European countries (Figure 50). The introduction of care trajectories for patients with type 2 diabetes in 2009 could in part explain such a decrease.

Rates are very similar in the 3 regions for the latest available year (Figure 49). An analysis by district shows that Neufchâteau (58.2) has the lowest hospital admission rates for diabetes per 100 000 population while Veurne has the highest (218.8, see Figure 49).

At European level the rates declined more rapidly that the rates for Belgium (Figure 50) and the EU-15 average is below Belgium rates.

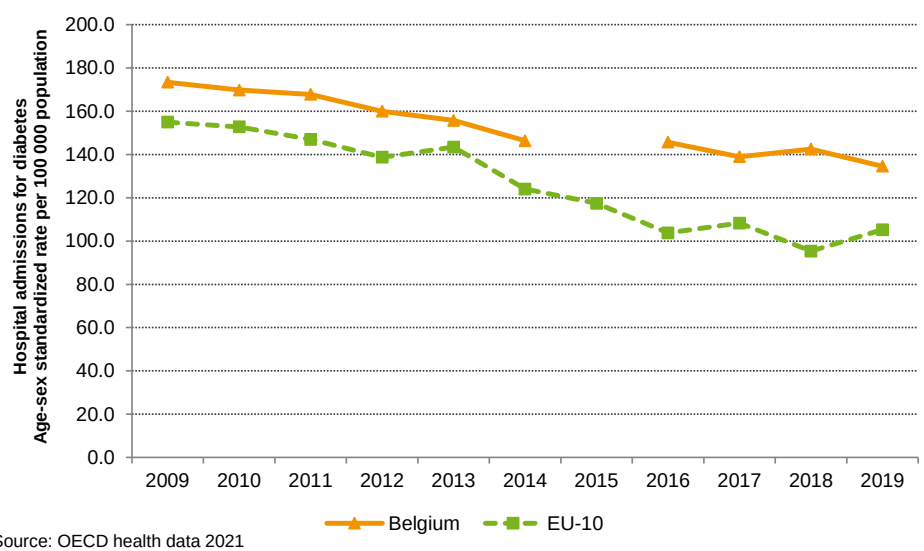
Figure 49 – Hospital admissions for (complications of) diabetes per 100 000 population aged 15 years and older, per region (2009-2019) and per district (2019)

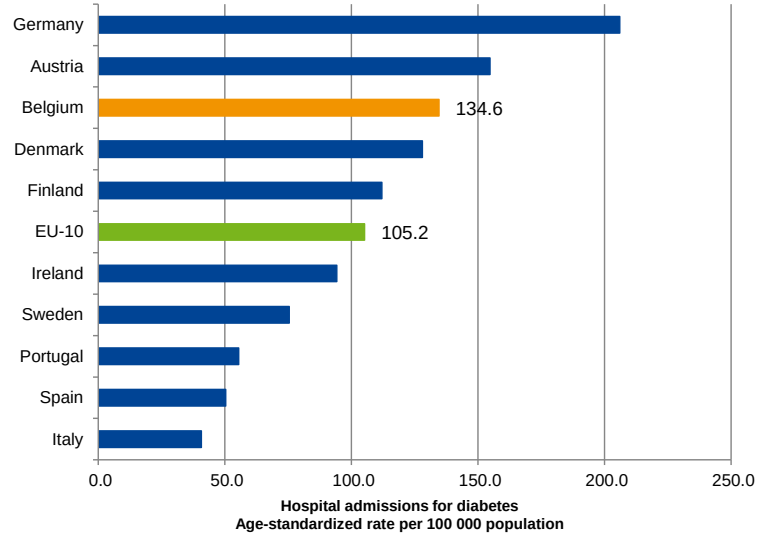




Source: FOD – SPF Public Health, hospital administrative discharge data

Figure 50 – Age-sex standardized hospital admissions for diabetes (for population aged 15 years and older): international comparison (2000-2014)



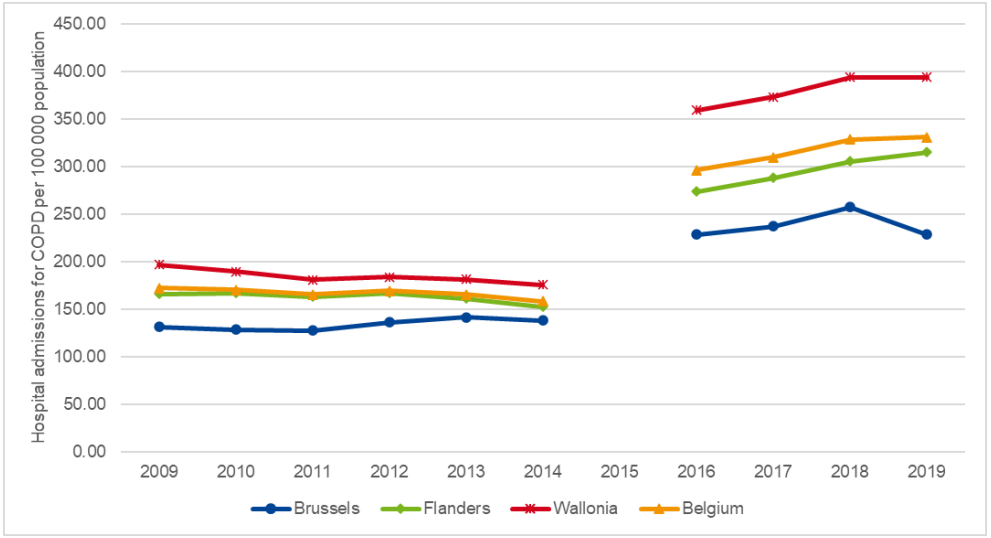


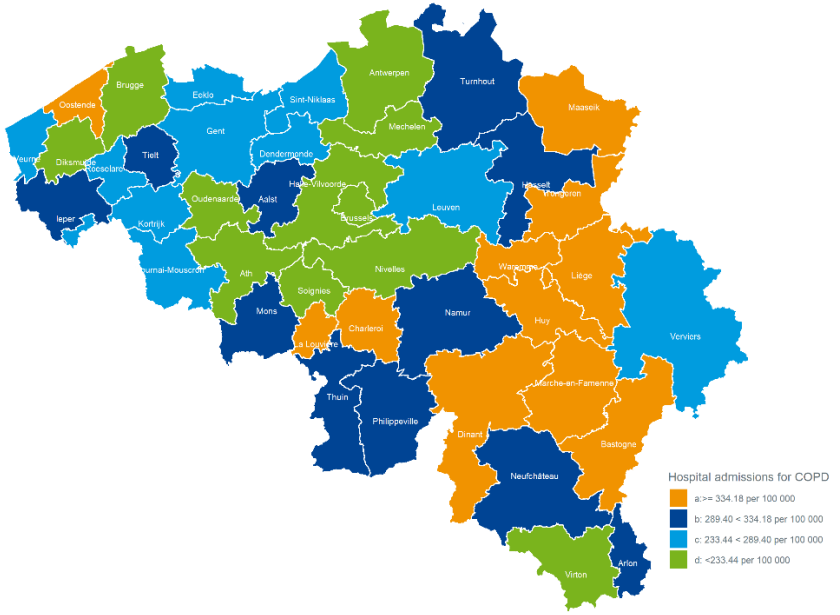
Source: OECD health data 2021

17.2.3. Hospital admission for COPD for people aged 15 years old and over)

Data on COPD admissions are quite stable on the 2009-2014 period: with 172.2 and 158.3 admissions per 100 000 population aged 15 years old and over in Belgium in 2009 and 2014 respectively (see Figure 51). During this period, rates were lower in Brussels than in other regions. A break in data series can be observed in 2016, due to the passage to the ICD 10 and an increase compared to 2014 can be observed, in part due to the fact that when moving from ICD-9 to ICD-10 coding, there is a shift from asthma admission to COPD admission for some mixed conditions. Comparison between the two periods must therefore be used with caution. During the 2016-2019 period, an increase in hospital admissions for COPD can be observed, except in Brussels and in 2019, rates were lower in Brussels than in other regions (228.3 in Brussels, 314.7 in Flanders and 393.8 in Wallonia, see Figure 51). Based on an expert opinion, the lower rate in Brussels can in part be explained by the fact that the population is usually younger. An analysis by district shows that Hall-Vilvorde (177.2) has the lowest hospital admission rates for COPD per 100 000 population while Marche-en-Famenne has the highest (475.1, see Figure 51).

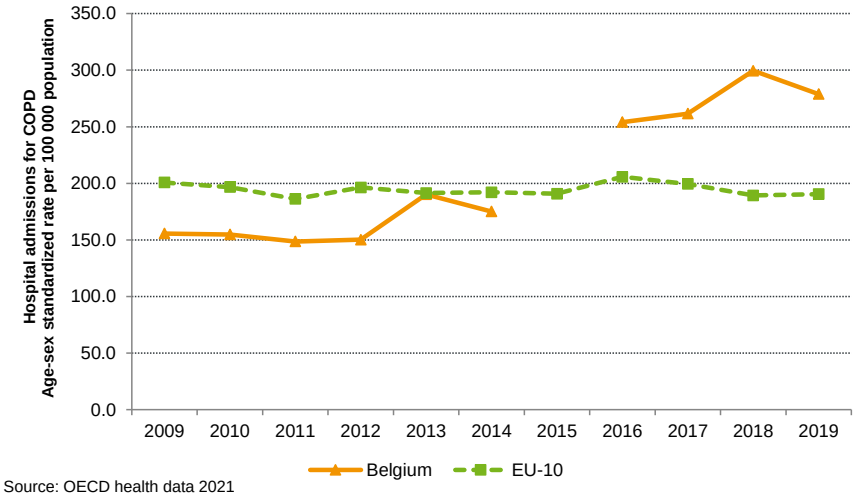
Figure 51 – Hospital admissions for (complications of) COPD per 100 000 population aged 15 years and older, per region (2009-2019) and per disctrict (2019)



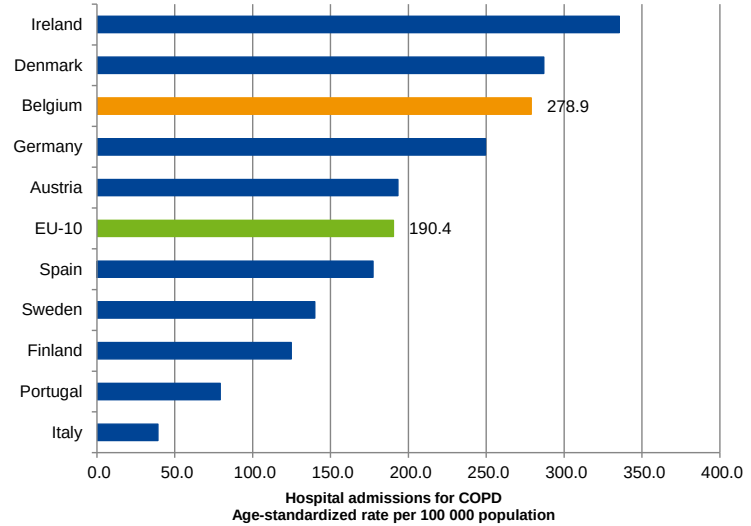


Compared to other European countries, Belgium was below the European average during the 2009-2014 period and above the European average during the 2016-2019 period, i.e. after the break in data series due to the passage to the ICD-10. Because the passage to the ICD-10 (implying a shift from asthma to COPD for some mixed conditions) is not performed at the same time period in each European country, such comparison must be used with caution. Figure 52 also showed that the European average (based on 10 of the EU-15 countries) is quite stable.

Figure 52 – Age-sex standardized hospital admissions for COPD (for population aged 15 years and older): international comparison (2009-2019)



Source: OECD health data 2021



Key points

- **Hospital admission rates for asthma, diabetes, and COPD 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 COPD nevertheless, these patients are extremely fragile and the pathology is very serious. A large number of hospitalisations is therefore less a reflection of poor primary care and for this indicator, the evolution is more meaningful than the absolute number.**
- **For these indicators on avoidable hospital admissions, trends over time report a reduction in admission rates over recent years for asthma and diabetes, which may represent an improvement in the quality of primary care. These decreasing trends are also observed in other European countries. This is nevertheless not the case for COPD, whith an increasing trends over recent years (except in Brussels).**
- **Belgium is situated above the EU-15 average for diabetes and COPD, 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. Time diffrences in the passage to the ICD-10 between countries also decrease the validity of the international comparison, especially**

because such a passage induce a shift for asthma to COPD admissions for some mixed condition.

- **While care trajectories have been developped to improve care for patients with diabetes, this is not the case for patients with asthma and COPD. Nevertheless, rehabilitation conventions for the care of these patients in specialized centres have been concluded, as for patients with diabetes.**

References

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2. OECD. Health at a Glance 2017: OECD Indicators. Paris: 2017. Available from: http://dx.doi.org/10.1787/health_glance-2017-en
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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.