



## 18. SUCCESSFUL TREATMENT OF PULMONARY TUBERCULOSIS CASES (QE-11)

### 18.1. Documentation sheet

<b>Description</b>	Percentage of people with laboratory-confirmed Tuberculosis (TB) successfully treated among TB cases notified during past year
<b>Calculation</b>	<p>Numerator: number of people successfully treated from laboratory confirmed pulmonary tuberculosis within the Belgian tuberculosis cohort of the previous year.</p> <p>Denominator: number of people with laboratory confirmed pulmonary tuberculosis notified the previous year, included in the Belgian tuberculosis cohort and for which information about their follow up or treatment outcome at 12 months was available. Result is provided as a percentage.</p>
<b>Rationale</b>	<p>Since the 1970s, Belgium has had compulsory reporting and registration of tuberculosis cases. Since 1995, our country has participated in the European surveillance network. This system allows the comparison of the epidemiology of European countries and helps to define coordinated prevention measures.</p> <p>According to the recommendation of the World Health Organisation (WHO)<sup>1</sup>, Belgium has implemented a system to collect data on the therapeutic results in a standardised manner since 2002.<sup>2</sup></p> <p>In the treatment of tuberculosis, compliance is essential to cure. However, keeping the patient's adherence to the TB treatment is challenging. Indeed, it is a long treatment of minimum 6 months, and, in addition, the treatment consists on a polytherapy with many potential side effects.<sup>3</sup></p> <p>The calculation of the indicator on successful treatment of pulmonary tuberculosis cases allows to assess the effectiveness and the compliance of the patients to their treatment. This indicator reflects notably the capacity of the health system to ensure the adhesion to a long and difficult treatment, especially as it affects, as described in the tuberculosis section of the health status report, a public that is often in a precarious situation.<sup>2</sup></p>
<b>Primary data source</b>	<p>The Belgian tuberculosis register: data from 2014, 2015, 2016, 2017 and 2018 are used.</p> <p>All results are published in reports available on the websites of the 'Fonds des affections respiratoires - FARES ASBL'<sup>4</sup> and the 'Vlaamse vereniging voor respiratoire gezondheidzorg en tuberculosebestrijding VZW – VRGT'.<sup>5</sup></p> <p>The Belgian tuberculosis register is created by merging databases from Flanders (Agenschap Zorg en Gezondheid), Brussels (Inspection d'hygiène de la Commission Communautaire Commune) and Wallonia (Cellule de surveillance des maladies infectieuses en Wallonie). In all of the three regions, TB registration is mandatory. So the Belgian tuberculosis register attempts to accurately represent the situation in Belgium.</p> <p>The data is processed in compliance with the General Data Protection Regulation. Encoded pseudo-anonymously by regional teams, they are then centralised once a year to be validated and processed by the data manager.<sup>2</sup> Treatment outcomes data are collected by FARES, VRGT and Agenschap Zorg en Gezondheid from the patient's physician in charge of the clinical follow-up.</p> <p>In 2018 (last cohort for which there is available data concerning treatment outcomes), 981 new notifications of TB cases were included in the register, from which 526 were eligible to be included in the cohort of lung tuberculosis treatment follow-up (see inclusion criteria in technical definition just below).</p>



<b>Technical definitions</b>	<p>The study population is part of the Belgian cohort of the tuberculosis register. It includes only people with bacteriological confirmation of pulmonary tuberculosis at the diagnostic phase (n=545) for whom FARES/VRGT/Agentschap Zorg en Gezondheid's teams got follow-up information on treatment outcomes at one year (n=526).</p> <p>Although the Belgian register includes TB incident cases whatever the localisation (with 71% being pulmonary TB), the results of the follow up study published in the Belgian report only includes the pulmonary cases. However, the European report includes all TB cases (for Belgium also).</p> <p>The term 'successfully treated' covers two different treatment outcomes grouped together: patients with bacteriological evidence of negativity and patients who have completed their treatment but with no bacteriological result.</p> <p>Successful treatment rate is an indicator that evaluates the management of the TB cases in a public health perspective. TB successful treatment rate indicator is a usual indicator through countries and regions.</p>
<b>Limitations</b>	<p>All confirmed pulmonary TB cases (new and previously treated cases) are evaluated together in Belgium because the information collected about previous TB treatment is not reliable and does not allow to distinguish relapses, failure and return after defaulted (clinical history usually not available)</p> <p>There is no treatment follow-up data available for 8 patients of the cohort 2018.</p> <p>Many European countries reports only few data on treatment follow-up.</p>
<b>International comparability</b>	<p>Data comes from the database of the European Centre for Disease Prevention and Control (ECDC) and the database of the European Region of the WHO. The analysis of those databases is reported in the same document: "Tuberculosis surveillance and monitoring in Europe". The last report was published in 2021 and analyses the data of 2019 which means the treatment outcomes of the cohorts of 2018.<sup>6</sup></p> <p>Since 2008, the ECDC and the WHO Regional Office for Europe have coordinated the collection and analysis of TB surveillance data in Europe. The standards and definitions have been agreed by experts. Reporting completeness varied among countries due to differences in legislation, surveillance systems and TB case identification. Everyone should be cautious when making comparisons across countries as the rate of data reporting by countries vary a lot. So only data from a short number of EU-countries (n=7) can be taken into account as they report treatment follow-up data for at least 80% of their notification cohort. However a global mean for 29 European countries is available based on the analysis of all the reported treatment follow-up cases whatever the country's origin of the data (63.7%).<sup>6</sup></p> <p>A difference appears between the data reported in Belgium and at the European level. Indeed, in Belgium, the success of the management only concerns confirmed pulmonary tuberculosis cases, whereas the data reported in the European report does not specify the body's location of tuberculosis. However, in the EU data, Belgian data concern all cases. This difference does not hamper the comparability.</p>
<b>Performance dimension</b>	Quality of care : effectiveness
<b>Related indicators</b>	/



## 18.2. Results

In Belgium in 2019, 81.2% of the people with proven pulmonary tuberculosis (TB) were successfully treated (n=427). This proportion of favourable treatment outcomes corresponds to an increase of 3.5 points of percentage from 2017 (77.7%) but to a decrease of 3 points of percentage from 2014 (84.2%) (see Figure 53 and Table 31). The target set by WHO is 85% of success rate.<sup>2</sup>

The term 'successfully treated' covers two different treatment outcomes grouped together: patients with bacteriological evidence of negativity; they are a minority (n=82); and patients who have completed their treatment but without bacteriological evidence of negativity; they are a majority (n=345). So the group of "successfully treated" mainly includes people without bacteriological results. Indeed, the bacteriological evidence of TB negativity in the lung is obtained only in 15.6% of the patients in the Belgian follow-up cohorts (see Table 32).

Between regions, very small differences exist in 2019 and those differences vary over time (see Figure 53). In 2019, Wallonia (84.2%) performs a little bit better than Flanders (80.8%) and Brussels (79.3%) (see Table 31). But from 2014 to 2015, Wallonia performed worse than Brussels and Flanders. Since 2016, the success rate in Brussels is slightly lower than in the other regions. One explanation could be that big cities host often more people at risk of unsuccessful treatment outcome (homeless people, asylum seekers, ...).<sup>2</sup>

Other items included in 'unsuccessful treatment outcomes' are death, treatment failure and treatment discontinuation, also known as loss to follow-

up. Failure means that patient take the treatment correctly but does not respond. This outcome almost never happens in Belgium because treatment is always adjusted to the resistance profile. Death is usually the result of a very late diagnosis and/or co-morbidities. Loss to follow-up leads to unsuccessful treatment outcome of precarious population. Loss of follow-up is also the most valuable indicator for programmatic evaluation (which is the purpose of the TB register).

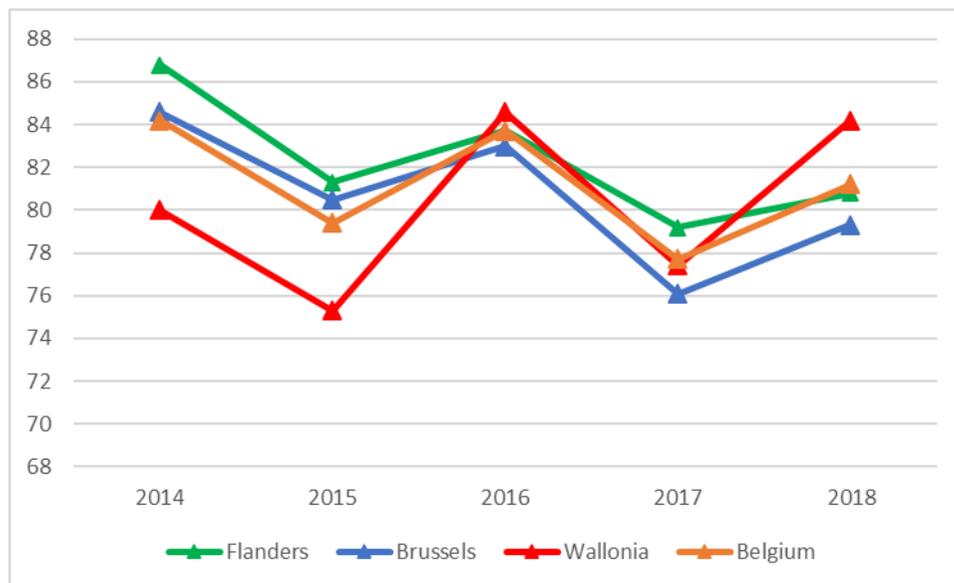
## 18.3. International comparison

According to the ECDC/WHO Europe report<sup>6</sup>, the treatment success rate among 173 058 new and relapse TB cases having started treatment with first-line drugs in 2018 was 76.5% in EU WHO Region (53 countries). The treatment success rate shows results comparable with the previous year. Only 14 countries and areas achieved an 85% treatment success rate in this treatment cohort. Another 13 were close to the target, with success rates of 80–85%. Seven had treatment success rates below 60%. However the annex 4 of the ECDC report<sup>6</sup> shows that most of the countries do not report complete data. In several countries, a very high proportion of cases are not evaluated (see Table 33). The Figure 54 shows the success rate of tuberculosis treatment of 7 EU-countries which report treatment outcome data for at least 80% of their cohort.

Compared to the rate available for EU-7 countries, Belgium shows a good success rate in TB treatment (81.7%), ranked at the second place, just after the Netherlands (85.7%) (see Figure 54). Belgium is categorised in the countries close to the target set by WHO.



**Figure 53 – Successful treatment rate (% of people successfully treated), by year and by region**



Data source: FARES and VRGT; Figure: KCE

**Table 31 – Successful treatment rate in bacteriologically proven pulmonary tuberculosis at one year, per region and year**

	2014	2015	2016	2017	2018
<b>Belgium</b>	84.2%	79.4%	83.7%	77.7%	81.2%
<b>Flanders</b>	86.8%	81.3%	83.7%	79.2%	80.8%
<b>Wallonia</b>	80%	75.3%	84.6%	77.4%	84.2%
<b>Brussels</b>	84.6%	80.5%	83%	76.1%	79.3%

Data source: FARES and VRGT; Table: KCE



**Table 32 – Treatment outcomes (indicator-related and other issues) at one year in bacteriologically proven pulmonary tuberculosis, per region – cohort of 2018, followed in 2019**

Treatment outcomes	Belgium	Flanders	Wallonia	Brussels
<b>Treatment fully completed</b>	81.2% (n=427)	80.8% (n=168)	84.2% (n=117)	79.3% (n=142)
Successful treatment without bacteriological evidence of negativity	65.6% (n=345)	76.9% (n=160)	59.0% (n=82)	57.5% (n=103)
Successful treatment with bacteriological evidence of negativity	15.6% (n=82)	3.8% (n=8)	25.2% (n=35)	21.8% (n=39)
<b>Treatment failure</b>	0.2% (n=1)	0.5% (n=1)	0% (n=0)	0% (n=0)
<b>Death</b>	8.2% (n=43)	11.1% (n=23)	8.6% (n=12)	4.5% (n=8)
<b>Discontinuation of treatment</b>	10.5% (n=55)	7.7% (n=16)	7.2% (n=10)	16.2% (n=29)

Data source: FARES and VRGT; Table: KCE



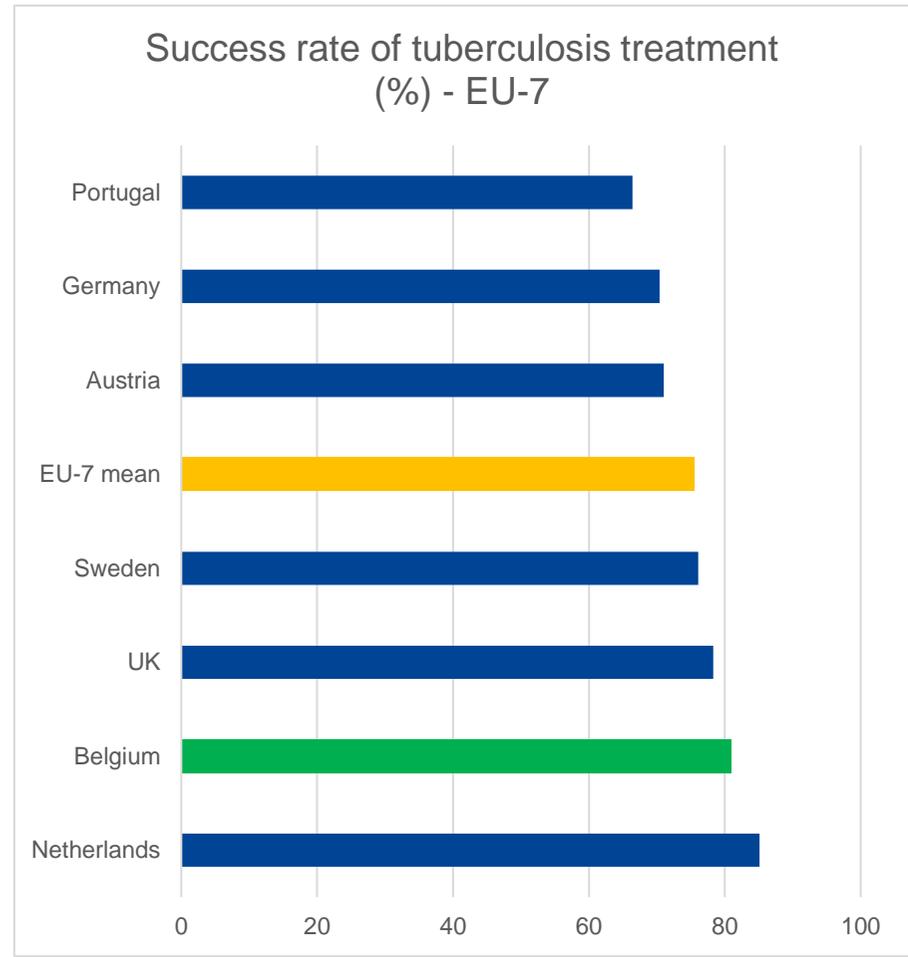
**Table 33 – Successful treatment rate of incident TB cases (new cases and relapse of TB), for a sample of EU countries –reported in 2019**

	Successful treatment rate at one year (%)	Completeness rate (%)
<b>Austria</b>	73.4	92.3
<b>Belgium</b>	81.7	97.2
<b>Denmark</b>	15.8	16.2
<b>Finland</b>	20.5	20.9
<b>France</b>	Not Available	13.3
<b>Germany</b>	71.4	86.6
<b>Greece</b>	Not Available	1.6
<b>Ireland</b>	38.7	47.1
<b>Italy</b>	NA	0
<b>Luxembourg</b>	NA	0
<b>Netherlands</b>	85.7	97.1
<b>Portugal</b>	67.1	100
<b>Spain</b>	44.9	55
<b>Sweden</b>	78	86.5
<b>UK</b>	79.5	95.8
<b>EU-7</b>	<p>mean of the 7 countries for which completeness rate is above 80%</p> <p>75.46</p>	At least 80%

Data source: ECDC and WHO-Europe; Table: KCE



Figure 54 – Success of TB treatment in EU-7 countries - cohorts of 2018, data reported in 2019 (%)



Data source: ECDC and WHO-Europe; Figure: KCE



### Key points

- The successful treatment rate of tuberculosis is an indicator for which WHO European Region have set the target of 85%.
- The successful treatment rate of tuberculosis is an indicator composed by two subcomponents which are summed before being reported to the analysed population: people having completed their treatment with a bacteriological proof of negativity, and people who completed their treatment but without bacteriological proof of negativity.
- The last report of the Belgian TB register (2019) shows that 81.2% of the people with proven pulmonary tuberculosis in 2018 were successfully treated at one year. This proportion of favourable treatment outcomes corresponds to an increase of 3.5 points of percentage from 2017 (77.7%) but to a decrease of 3 points of percentage from 2014 (84.2%). Actually, this rate is quite stable since several years and through the different regions.
- Compared to 7 European countries for which outcome data are reported for at least 80% of the people included in each cohort, Belgium shows a good successful treatment rate of (any site) tuberculosis (81.7%) just after the Netherlands (85.1%) according to the last available data (cohorts 2018).
- The systematic reporting of TB and follow-up of treatment outcomes, operative in Belgium since 2002, represents an important advantage to Belgian Authorities to reach the target set by WHO European Region.
- According to the FARES and VRGT, the systematic use of polytherapy, over a long period and the adherence to treatment

till completion, are of the utmost importance to improve the successful treatment rate of TB in Belgium. It is necessary for the health care system to be able to support patients to complete this long and difficult treatment. FARES and VRGT have implemented many projects to support this objective over the last few years.

### References

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