1.1. Incidence of healthcare-associated MRSA (QS-2)

1.1.1. Documentation sheet

Description	Incidence of healthcare-associated MRSA (Methicillin-resistant *Staphylococcus aureus*) infections per 1000 hospital admissions.
Calculation	Numerator: Number of newly acquired healthcare-associated MRSA infections in acute care hospitals in the reporting period. Healthcare-associated is defined as not present at admission, no known carriage (for 12 months), and 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, pneumonia, bacteraemia and infections of articulations.[1] Since its first description,[2] MRSA has been a major source of healthcare-associated infections in European countries and abroad. Participation in the surveillance of MRSA (at least one semester/year) is compulsory in Belgium for acute care hospitals since 2006.[3]
Primary data source	Sciensano, Service healthcare-associated infections & antimicrobial resistance https://www.sciensano.be/nl/over-sciensano/organigram-van-sciensano/zorginfecties-en-antibioticaresistentie
Source of results	National Surveillance of Infections in Healthcare facilities: https://www.sciensano.be/nl/projecten/nationale-surveillance-van-antimicrobiele-resistentie Surveillance of antimicrobial resistant bacteria in Belgian hospitals: Report 2021[4]
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, and the first MRSA positive strain is isolated >48h after admission (healthcare-associated 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, and aggregated at hospital level. Institutions that are part of a fusion unity are asked to gather their data per hospital site but can choose not to do so.
International comparability	No international organisations include data on healthcare-associated MRSA, making comparison difficult. An exception is the European Antimicrobial Resistance Surveillance Network (EARS-Net), but this European program does not focus on nosocomial acquisition and considers isolates 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.

Dimensions	Quality (safety)
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3.1.1. Results

Belgium

The median incidence of healthcare-associated MRSA in acute care hospitals was 0.3 cases per 1000 admissions in 2021. The median incidence of healthcare-associated MRSA was calculated as the median of all incidence rates of hospitals participating in the surveillance period.

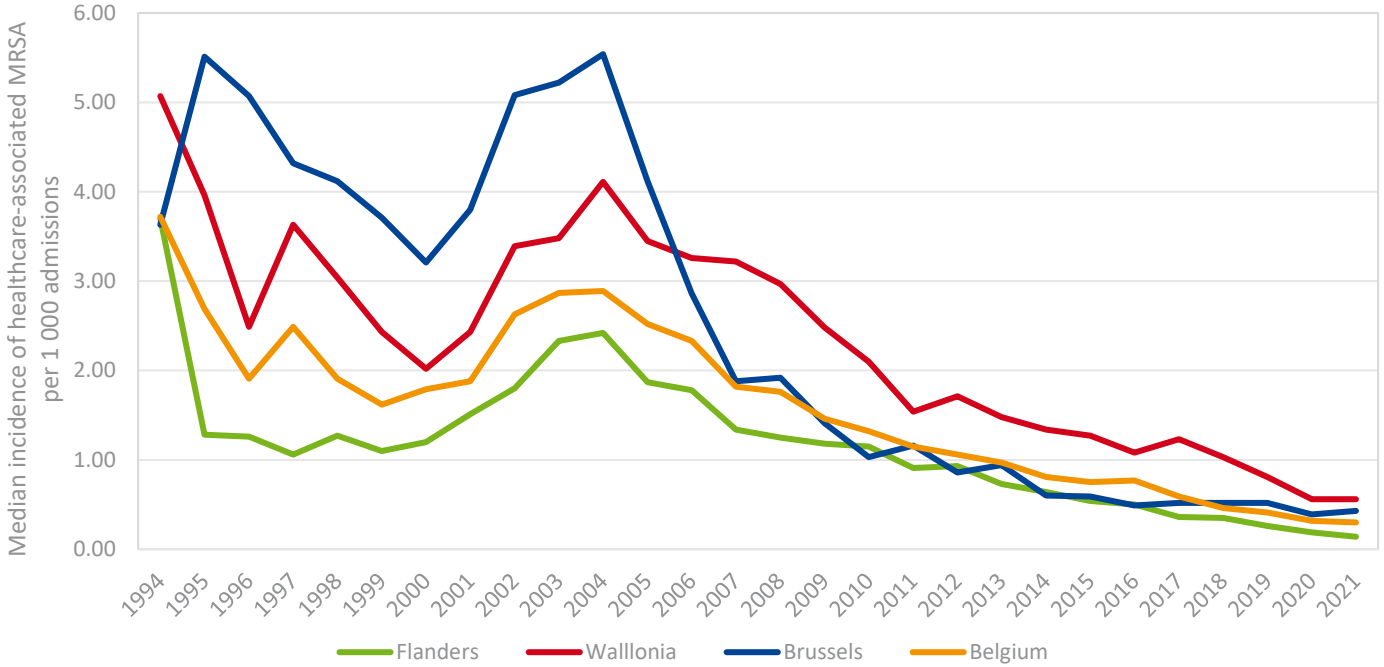
The incidence has been decreasing since 2004 and is currently at its lowest level since the start of the surveillance in 1994 (Figure 1).

Probably, the application of the recommendations for the control of MRSA (since 2003), the national hand hygiene campaigns, and the rationalisation of the use of antibiotics positively influenced this evolution. Nevertheless, the interpretation of the indicator remains influenced by the screening practices which vary in coverage rate and intensity between hospitals.[4]

Regional comparisons

To illustrate the trends by region, we used the median incidence of healthcare-associated MRSA by region. The median incidence increased in all regions between 2001 and 2004, but again decreased afterwards (Figure 1). This decrease was most impressive in the Brussels hospitals: from 5.5 cases/1000 admissions in 2004 to 0.4 cases/1000 admissions in 2021. In the Flemish Region, the median incidence decreased from 2.4 cases (2004) to 0.1 cases/1000 admissions in 2021. In the Walloon Region, after a peak at 4.1 cases/1000 admissions (2004), the median incidence decreased to 0.6 cases/1000 admissions in 2021.

Figure 1 – Evolution of the median incidence of healthcare-associated methicillin resistant *Staphylococcus aureus* (MRSA) per 1000 admissions (clinical samples only) by region, Belgian acute care hospitals, 1994–2021



Source: Latour et al., 2023[4]

International comparisons

Not available.

Impact of COVID-19 pandemic

Due to the COVID-19 pandemic, there was no legal obligation for hospitals to participate in the national surveillances (incl. the surveillance of MRSA and multi-resistant Gram-negative bacteria) in 2020 (collecting 2019 data) and 2021 (collecting 2020 data). When interpreting the results, it is important to keep in mind that the 2019 surveillance findings presented in this report reflect the pre-pandemic period. The 2020 and 2021 data are however largely impacted by the altered hospital activities due to the COVID-19 crisis.

Key points

- **Since 2005, we have measured a slow decrease in the incidence of healthcare-associated MRSA in acute care 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.**
- **No international data are currently available to benchmark the Belgian results.**

References

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