



3.2. Incidence of hospital-acquired MRSA (QS-2)

3.2.1. Documentation sheet

Description	Incidence of nosocomial MRSA (Methicillin-resistant <i>Staphylococcus aureus</i>) 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), and first positive strain >48h after admission. Denominator: Number of hospital admissions in the reporting period x 1000.
Rationale	<i>Staphylococcus aureus</i> is an important cause of infections of the skin and mucosae, of postoperative wound infections, catheter infections, pneumonias, bacteraemia and infections of articulations. ¹ Since its 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 for acute care hospitals since 2007. ³
Primary data source	Sciensano, Service healthcare-associated infections & antimicrobial resistance (www.nsih.be)
Source of results	National Surveillance of Infections in Hospitals: http://www.nsih.be/surv_mrsa/introduction_nl.asp Surveillance of antimicrobial resistant bacteria in Belgian hospitals: Report 2016 ⁴
Technical definitions	In Belgium the following indicator is in use: the total number of hospitalised patients with new Methicillin Resistant <i>Staphylococcus aureus</i> 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 (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: <ul style="list-style-type: none"> • 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.
International comparability	No international organizations include data on nosocomial 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)
Related indicators	Post-operative sepsis; MRSA in institutions



3.1.2. Results

Belgium

The median incidence of nosocomial MRSA in acute care hospitals was 0.7 cases per 1000 admissions in 2016. The incidence is significantly decreasing since 2003 and currently is at its lowest level since the start of the surveillance in 1994.

The median incidence of nosocomial MRSA was calculated as the median of all incidence rates of hospitals participating at the surveillance period. A decreasing incidence was found between 1994 and 2000 (from 3.7 to 1.4 cases/1000 admissions, respectively), after which the incidence again increased reaching 3.0 in 2004. Since 2005, we measure a slow and constant decrease of the incidence of nosocomial MRSA in acute care hospitals, finally reaching 0.7 new cases/1000 in 2016 (Figure 1).

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.⁴ However, it will be essential to support MRSA screening efforts if we want to hand-hold the excellent results since 2005. Indeed, the attention with respect to 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 producing (CPE) enterobacteriaceae and other multi-resistant micro-organisms.

Regional comparisons

In order to illustrate the trends by region, we used the median incidence of nosocomial MRSA by region, because the Brussels-Capital 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-Capital 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 2001 and 2004, but again decreasing afterwards (Figure 1).

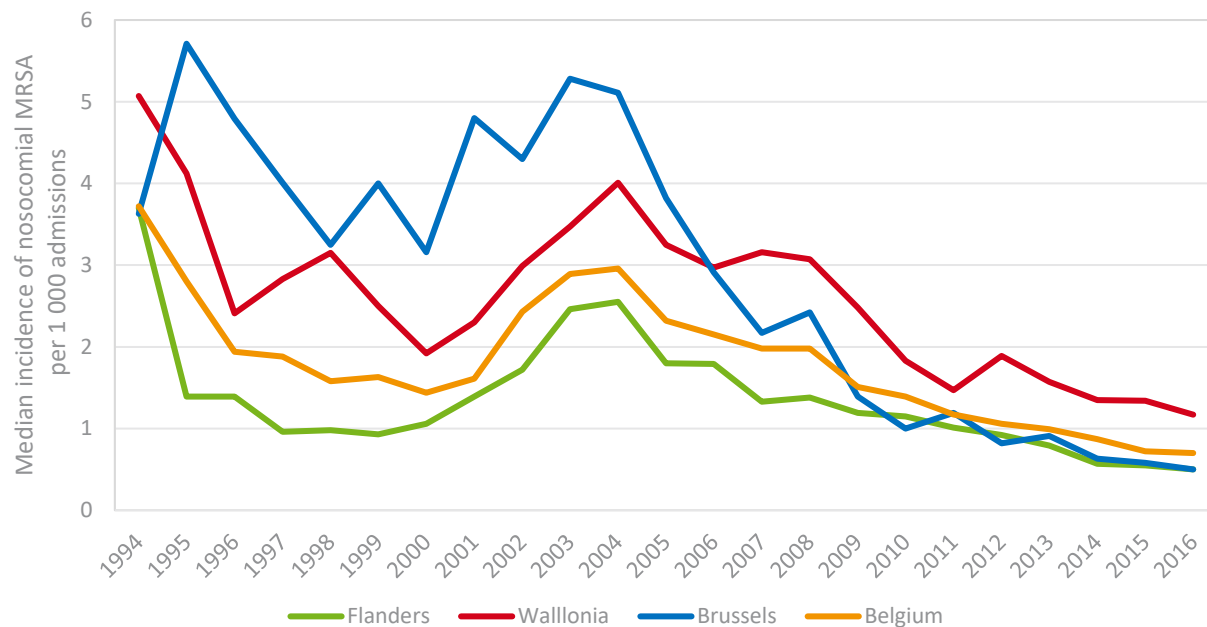
This decrease was most impressive in the Brussels hospitals: from 5.3 cases/1000 admissions in 2003 to 0.5 cases/1000 admissions in 2016.

In the Flemish Region, the median incidence decreased from 2.6 cases (2004) to 0.5 cases/1000 admissions in 2016.

In the Walloon Region, after a peak at 4.0 cases/1000 admissions (2004), the median incidence decreased to 1.2 cases/1000 admissions in 2016.



Figure 37 – Evolution of the median incidence of nosocomial methicillin resistant *Staphylococcus aureus* (MRSA) per 1000 admissions by region, Belgian acute care hospitals with at least 5 years of participation in the surveillance, 1994–2016



Source: Latour et al., 2018⁴

International comparisons

Not available.



Key points

- **A decreasing median incidence in MRSA was found between 1994 and 2000, after which the incidence again increased in 2004. Since 2005, we measure a slow and constant decrease of the incidence of nosocomial 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. However, it will be essential to support MRSA screening efforts if we want to handhold the excellent results since 2004.**
- **No international data are currently available to benchmark the Belgian results.**

References

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