Background

Already in 1945, Sir Alexander Fleming warned scientists about the risk for antimicrobial resistance. Methicillin resistant *Staphylococcus aureus* (MRSA), first reported fifty years ago, terrorises acute care hospitals in most European countries and abroad.

In the early nineties, a Belgian policy for MRSA management in acute care hospitals was worked out including guidelines, microbiological and epidemiological surveillance, and improvement of identification techniques for MRSA in hospital microbiology laboratories.

Methodology

Since 1994, the Scientific Institute of Public Health and the National MRSA Reference laboratory set up an epidemiological surveillance in acute care hospitals, collecting semi-annual MRSA data, aggregated at hospital level. Hospitals participate on voluntary basis until 2006, when participation became mandatory. Semi-annual surveillance data (MRSA/S.aureus) and the incidence of nosocomial MRSA (n-MRSA, isolated > 48h. post admission) were calculated on data excluding duplicates (patients counted only once). Semi-annual national and local feedback reports were sent to all hospitals.

Results

Surveillance data were available for 33 semestral observation periods (1994 - 2010). 77% of the Belgian hospitals delivered data for at least 10 surveillance periods.

- **During period-1** (1994-1998), the resistance rate decreased in acute care hospitals from 24.4% to 14.4% and the incidence of n-MRSA from 4.1 to 2 cases/1000 admissions.
- **Unfortunately** between 1999-2003 (period-2), the resistance proportion and nosocomial incidence increased dramatically and doubled in a five-year time span, reaching respectively 31.1% and 4.3 cases/1000 admissions.
- Meanwhile, a national survey on MRSA-carriage in 60 Belgian nursing homes (NH) showed also a high prevalence (19%) of MRSA-carrying among NH residents, highlighting the need for targeted screening of this population at admission to the hospital.
- In **period-3** (2003-2010), the resistance rate in acute care hospitals decreased slowly (~ 10%) attaining 21.1% in 2010. In the same time span the incidence of n-MRSA dropped from 4.3 to 1.5 cases/1000 admissions.

Actions (cont’d)

3- Promotion of hand hygiene in Belgian healthcare settings

**In 2005 - 2006/07 - 2008/09 - 2010/11** 4 consecutive, nationwide hand hygiene campaigns were organized in Belgian healthcare facilities.

![Hospital handwashing rates](Image)

**Compliance before vs. after campaign**

4- Guidelines for the management of MRSA in nursing homes (2005) and revision of guidelines for acute care hospitals (2003).

![Screening During Hospital Stay](Image)

**5- Target screening in acute care hospitals**

Since 2006, all Belgian acute care hospitals performed target screening of patients at risk, at admission and/or during hospital stay.

![Incidence of MRSA Present at Admission](Image)

The incidence of MRSA present at admission ranged between 7.1 and 9.3 cases per 1000 admissions. Known carriers formed the largest group (+/- 3.3 cases/1000 adm.), followed by patients transferred from other healthcare facilities and NHs. Patients without previous contacts with healthcare represented 1 case/1000 admissions.

Conclusion

Since 2003, the nationwide implementation of bundled actions for the control of MRSA in Belgian healthcare facilities resulted in a very successful evolution. The action lines were:

- The implementation of an antibiotic management team in each hospital and participation at repeated, nationwide hand hygiene campaigns,
- The revision of existing guidelines for the control of MRSA in acute care hospitals with promotion of target screening at admission and during hospital stay,
- A study on MRSA carriage among NH residents and the implementation of specific guidelines for these facilities in order to prevent MRSA transmission.

In 2005: national prevalence survey on MRSA carriage in 60 Belgian NHs.