

P2699 Prevalence, antibiotic resistance patterns and *spa* types of MRSA from hospitalised patients in Germany, 2010-2016Michael Kresken^{1,2}, Franziska Layer³, Barbara Körber-Irrgang¹, Guido Werner³¹ Antiinfectives Intelligence GmbH, Rheinbach, Germany, ² Rheinische Fachhochschule Köln gGmbH, Cologne, Germany, ³ FG13 Nosocomial Pathogens and Antibiotic Resistance, Robert Koch Institute, Wernigerode, Germany

Background: *Staphylococcus aureus* (SAU) is a leading cause of infections in both hospitals and the community ranging from mild disease to life-threatening disease. Unfortunately, methicillin-resistant SAU (MRSA), which are often resistant to many other antimicrobials, are widespread across the world as a cause of health-care associated infections (HA-MRSA). Further, MRSA have established as significant community-associated pathogens (CA-MRSA) and livestock-associated pathogens (LA-MRSA). The objectives of this study were i) to examine the distribution of MRSA clones among SAU collected in 18 medical laboratories in Germany and ii) to determine their susceptibility to non- β -lactams.

Materials/methods: Isolates were collected prospectively over a three-month-period in the years 2010, 2013 and 2016. Verification of species identification and susceptibility testing were performed in one reference laboratory. MICs of antimicrobial agents were determined by broth microdilution according to the ISO-standard and interpreted by EUCAST criteria (v.8.1). Epidemiological typing was performed by sequencing the polymorphic X region of the protein A gene (*spa*) after amplification using the primers *spa*-1113f.

Results: Overall, 1.411 SAU isolates were collected. The majority of isolates was recovered from wound swabs (41.9%), followed by respiratory tract specimens (17.3%) and blood samples (13.4%). There were 304 ICU isolates and 1.107 non-ICU isolates. Resistance to oxacillin and/or cefoxitin was detected in 199 isolates. The prevalence of MRSA decreased from 18.1% (82/454) in 2010 to 11.6% (57/493) in 2016 (Pearson's Chi-squared test; $p=0.011$). *Spa* types t003 (Rhine Hesse MRSA; $n=58$) and t032 (EMRSA-15, Barnim MRSA; $n=58$) accounted for 58.3% of all MRSA strains. 12 (6%) and 7 (3.5%) MRSA were considered CA-MRSA and LA-MRSA, respectively. Eight CA-MRSA carried the Panton-Valentine leukocidin gene (*lukS-lukF*). With regards to the resistance patterns of MRSA strains, resistance to ciprofloxacin, erythromycin and clindamycin declined, though the trend was not statistically significant (Table).

Conclusions: The prevalence of MRSA isolates among SAU from hospitalized patients decreased between 2010 and 2016 in Germany. Most frequent *spa* types are t003 and t032. Resistance to fluoroquinolones, macrolides and lincosamides in MRSA isolates declined.

Table: Number (%) of MRSA isolates resistant to non- β -lactams by year of collection

Antibacterial agent	2010 (n=82)	2013 (n=60)	2016 (n=57)	Trend ^a
Ciprofloxacin	74 (90.2)	51 (85)	48 (84.2)	0.2775
Erythromycin	63 (76.8)	43 (71.7)	36 (63.2)	0.0821
Clindamycin	54 (65.9)	35 (58.3)	30 (52.6)	0.1133
Amikacin	0 (0)	0 (0)	0 (0)	n/a
Gentamicin	4 (4.9)	3 (5)	2 (3.5)	0.7197
Doxycycline	2 (2.4)	6 (10)	2 (3.5)	0.6218
Rifampicin	3 (3.7)	2 (3.3)	4 (7)	0.379
Trimethoprim/sulfamethoxazole	0 (0)	0 (0)	0 (0)	n/a
Fosfomycin ^b	0 (0)	1 (1.7)	1 (1.8)	0.2818
Linezolid	0 (0)	0 (0)	0 (0)	n/a
Vancomycin	0 (0)	0 (0)	0 (0)	n/a
Mupirocin (high-level)	2 (2.4)	0 (0)	0 (0)	0.1325

^a Chi-squared-test for linear trend; p value; ^b Note, that we used broth microdilution which is not the reference method of susceptibility testing for fosfomycin; n/a, not applicable

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