Relevance: Romania is one of the countries with the highest prevalence of methicillin-resistant Staphylococcus aureus (MRSA) in the world. Aim of this study was to characterise a collection of clinical isolates from Iași, a city in the North-Eastern part of Romania.

Methods: Isolates from bloodstream infections, skin and soft tissue infections as well as from screening swabs were collected at a tertiary care hospital during the years 2008-2012. 97 isolates were characterised by microarray hybridisation. This included the detection of toxin genes, genes associated with resistance and the assignment to clonal complexes and strains.

Results: The MRSA prevalence was high; during this period, nearly half of all isolates and about one third of bloodstream isolates were MRSA. The most common MRSA strain was a PVL-negative CC1- MRSA-IV. ST239-MRSA-III were also frequently found while other MRSA strains were only sporadically detected. Such sporadic strains included ST722-MRSA-II, CC5-MRSA-IV, CC22-MRSA-IV and CC398-MRSA-IV. The prevalence of the Pantone-Valentine leukocidin (PVL) was high (38.9%) due to a common occurrence of PVL-positive ST8-MRSA-IV ("USA300") and sporadic isolates of CC80-MRSA-IV (PVL+).

Conclusions: Our study provides a snapshot of S. aureus/MRSA epidemiology in Romania. Although it focuses on one city only, it confirms a high burden of MRSA and PVL on Romanian healthcare settings that might also become relevant for Western Europe with increasing travel activities.

Introduction: The healthcare systems in Eastern European countries in general, and in Romania in particular, have been significantly affected by recent political changes, de-centralisation, transition to market-oriented economies, as well as various political and economic crises. With the inflation of the national currency and consequent increase in the cost of care and scarce antibiotics, many Romanian hospitals use alternative antibiotics not approved for use in Romania.

Materials and Methods: 97 MRSA isolates were retrospectively selected from frozen stocks of routine isolates that were collected between 2008 and 2012 in the "Sf. Parascendi" Hospital for Infectious Diseases in Iași. MRSA was defined as an isolate of about 300,000 inhabitants in the North-Eastern part of Romania (47°09′25″N, 27°33′21″E). The 300-bed university hospital mainly serves the Iași district (~400,000 people), and it is the referral hospital for ICU and infectious diseases patients for the North-East of Romania. The methods and details of assay procedures have been published previously (Moncke et al., 2008, 2011). In short, clinical samples were first collected and subsequently digested with lysostaphin, lysosome, ribonuclease A and protease K. DNA was purified using spin columns. Microtitre-plate-based DNA microarrays (StaphyType, Alere Technologies, Japan, Germany) were used that covered 335 target sequences. This included species markers, resistance and cationic genes, genes encoding microbial surface components recognised by antibodies (MSCRAMMs) such as MRSE, as well as SCCmec, some of which carry drug resistance genes and the pulsefield gel electrophoresis (PFGE) patterns of MRSA strains. This included the detection of toxin genes, genes associated with resistance and the assignment to clonal complexes and strains.

Conclusion: This study provides a snapshot of S. aureus/MRSA epidemiology in Romania. Although it focuses on one city only, it confirms a high burden of MRSA and PVL on Romanian healthcare settings that might also become relevant for Western Europe with increasing travel activities.