

Figure 2. Data on the prevalence of 4 of the 13 interactions

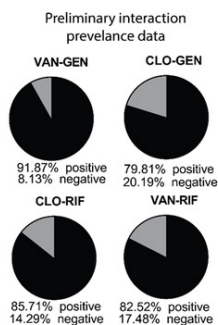


Figure 2: Preliminary data on the prevalence of 4 of the 13 interactions on a pilot dataset of 50 strains. Data indicate significant prevalence of negative/antagonistic interactions

Figure 3. Clinical impact of combinations in the treatments of MRSA

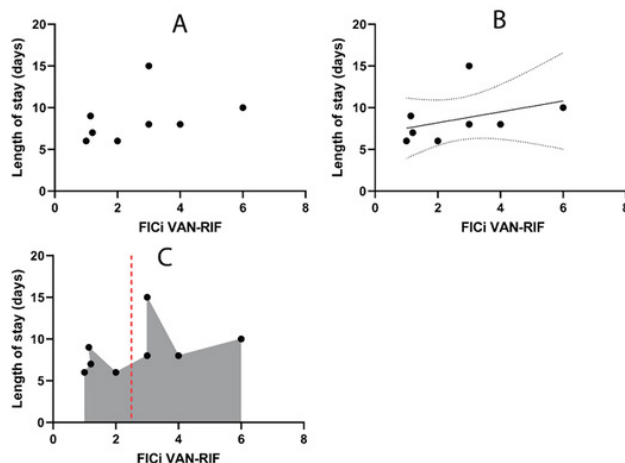


Figure 3 Preliminary data on WP2. A) representation of patient's length of stay that were treated with VAN and RIF as a function of their interaction score (FICi). B) a Spearman linear correlation coefficient applied on the same data to investigate a relationship between FICi and length of stay. C) A Break point analysis on the same dataset identifies a FICi value above which the antagonisms of the 2 antibiotics leads to longer length of stay. The analyses presented here are on a pilot subset of 7 strains, therefore there was no statistical testing and all correlations represent trends. The full dataset will be analyzed in a similar way, and tested for statistical significance when appropriate.

## References

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## Characteristics and prognosis of patients following complete surgical removal of infected vascular graft

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## Background

Vascular graft infection (VGI) associates high rates of morbidity and mortality. We describe the characteristics and outcomes of patients who underwent complete surgical removal of an infected vascular prosthesis.

## Methods

We conducted a retrospective single-center cohort study between January 2018 and October 2022. VGI was defined according to the criteria proposed by FitzGerald. We collected demographic, clinical, microbiological and therapeutic data, as well as all-cause mortality and the need for limb amputation during a 1-year follow-up.

## Results

Fifty-four patients were included, 83% were male and median age 68 (SD 9) years. The most common comorbidities were dyslipidemia (78%) and high blood pressure (70%). Median Charlson index was 5 (SD 1.7) points and body mass index 26 (SD 3.7). Graft location was extracavitary in 70% of cases, with the majority being synthetic (96%), and the onset of infection occurred late (>4 months after implantation) in 78% of cases. Clinical features of the infection included bypass obstruction (49%), surgical site infection (17%), fistula (15%), bleeding (13%), and fever (7%). Intraoperative samples were positive in 76% of patients isolating gram-positive bacteria (19), enterobacteria (16), *Pseudomonas aeruginosa* (7), anaerobes (7), and *Candida albicans* (5); 31% of the infections were polymicrobial and 29% of patients had associated bacteremia. Regarding surgical management, 69% required the implantation of a new prosthesis (75% homograft), while surgical removal alone was performed in the remaining cases. Empirical treatment was appropriate in 94%, mostly based on a broad-spectrum beta-lactam + methicillin-resistant *Staphylococcus aureus* treatment. Definitive antibiotic therapy was based on fluoroquinolone in 67% of cases. The median antibiotic duration was 38 (SD 17) days. After 1 year of follow-up, 14% experienced a VGI relapse, 19% died (37% related to infection), and 20% required limb amputation.

## Conclusions

Patients undergoing complete surgical removal of VGI were predominantly men with comorbidities. Infections mostly occurred in synthetic extracavitary grafts placed >4 months ago, manifesting in half of the cases with bypass obstruction. Many patients required implantation of a new prosthesis. After 1 year of follow-up, 80% of patients were alive without relapse of the infection.

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## Sepsis knowledge and management proficiency of nurses and physicians in tertiary care neonatal units of Switzerland

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## Background

Sepsis is a leading cause of neonatal morbidity and mortality. Educational interventions reinforcing sepsis awareness and guidelines adherence have improved patient outcomes in adult medicine. We aimed to evaluate the perceptions and knowledge gaps regarding neonatal sepsis of nurses and physicians working in neonatal units.

## Methods

We conducted a survey on nurses and physicians working in seven tertiary care neonatal units across Switzerland. Questions and clinical scenarios tailored to the profession were used to assess their understanding of sepsis diagnosis and management. Participants answered the questionnaires between August 18, 2021 and February 10, 2022. We scored the answers of each participant to questions on diagnosis and management according to a scale made by the study investigators based on literature review and consensus and expressed results as percentage of the maximum score.

## Results

The questionnaire was completed by 526 participants comprising 418 nurses (418/526, 79.5%) and 108 physicians (108/526, 20.5%). Median scores of nurses and physicians were 59.1% (Q1-Q3, 52.3-65.9%) and 73.1% (Q1-Q3, 68.8-77.4%). For nurses, 41% (173/418) did not recognize the necessity to place a vascular access in a newborn with septic shock, and 44% (182/418) considered that they should avoid disturbing such a patient for at least 30 minutes. In an extremely preterm newborn with phlebitis at the site of central line insertion and clinical deterioration, 34% (142/418) of nurses did not identify the need to administer antibiotics within 1 hour. For physicians, 31% (33/108) did not identify elevated blood lactate as a risk factor for death in newborns with bacteremia, and 29% (30/108) did not identify persistent positive blood cultures under antibiotic treatment as a risk factor for death. In clinical scenarios with a probability of early-onset sepsis estimated at 1/1000 and 5.8/1000, 74% (80/108) and 75% (81/108) of physicians immediately started antibiotics.

## Conclusions

Future educational programs on neonatal sepsis should focus on identification of scenarios at high-risk of adverse outcome, and actions to prioritize in those settings.

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## Epidemiology of bloodstream infections caused by extended-spectrum cephalosporin-resistant *Escherichia coli* and *Klebsiella pneumoniae* in Switzerland, 2015-2022: secular trends and association with the COVID-19 pandemic

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## Background

The association between the COVID-19 pandemic and the incidence of invasive infections caused by multidrug-resistant organisms remains a topic of debate. The aim of this study was to analyse the national incidence rates of bloodstream infections (BSI) caused by *Escherichia coli* (EC) and *Klebsiella pneumoniae* (KP) with extended-spectrum cephalosporin-resistance (ESCR) in two distinct regions in Switzerland, each exhibiting varying antimicrobial resistance patterns and that were impacted differently by the pandemic.

## Methods

We analysed data of positive blood cultures prospectively collected by the nationwide surveillance system (ANRESIS) from January 1, 2015, to August 31, 2022. To explore the potential relationship between COVID-19 patient occupancy and ESCR incidence rates, we conducted an in-depth analysis over the two-year pandemic period from April 1, 2020, to March 30, 2022. We employed Quasi-Poisson and logistic regression analyses to investigate these associations.

## Results

Data from a total of 40997 EC-BSI and 8537 KP-BSI episodes were collected. A significant reduction in ESCR-EC BSI incidence occurred during the pandemic in the region with the highest COVID-19 incidence. Conversely, ESCR-KP BSI incidence initially fell considerably and then increased during the pandemic in both regions, however, this effect was not statistically significant. No association between hospital occupancy from COVID-19 patients and these trends was observed.

## Conclusions

In the early phase of the COVID-19 pandemic, a decrease in ESCR rates was observed, particularly in ESCR-EC BSI within the most heavily impacted region.