

ANTIBIOTIC RESISTANCE IN THE HOSPITAL CONTEXT: RETROSPECTIVE ANALYSIS OF ANTI BIOGRAMS, RESISTANCE AND SENSITIVITY PROFILES AT AN ITALIAN HEART CENTER

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Abstract number: 4CPS-093

Background and importance: The fight against antibiotic resistance is one of the main challenges of the twenty-first century. Hospital antimicrobial stewardship activities are fundamental for appropriate antibiotic therapies (J01-ANTIBACTERIALS FOR SYSTEMIC USE) against multi-resistant bacteria (MDRO).

Materials and Methods: The MICs of some antibiotic-MDRO combinations were evaluated compared to the epidemiological cut-off ECOFF. The calculated differences were evaluated using the Student's t test for paired samples. All results are presented as two-sided values and a p value < 0.05 is considered significant. Analyses were performed with SAS software.

Results: The retrospective analysis was conducted on 167 adult subjects. The majority of patients are male (65.27%, n=109) aged between 56 and 75 years (50.9%, n=85).

Aim and objectives: A retrospective descriptive analysis of a sample of patients hospitalized to a cardiac center between 2018 and 2021 and subjected to culture examination was conducted in order to evaluate the resistance and sensitivity profile of MDRO through the evaluation of MICs (minimum inhibitory concentration) expressed in the antibiograms.

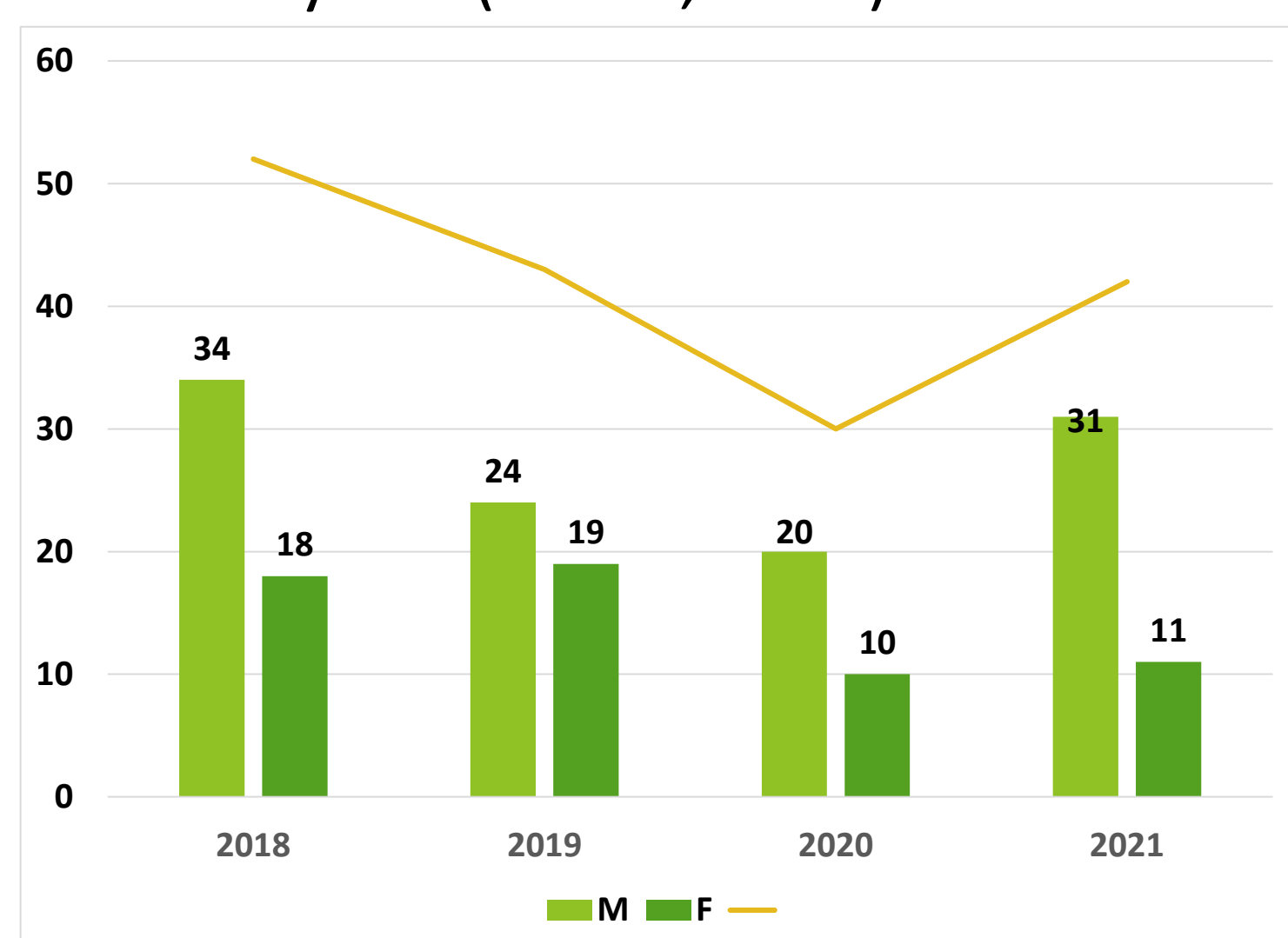


Figure 1 Gender distribution of patients subjected to culture examination

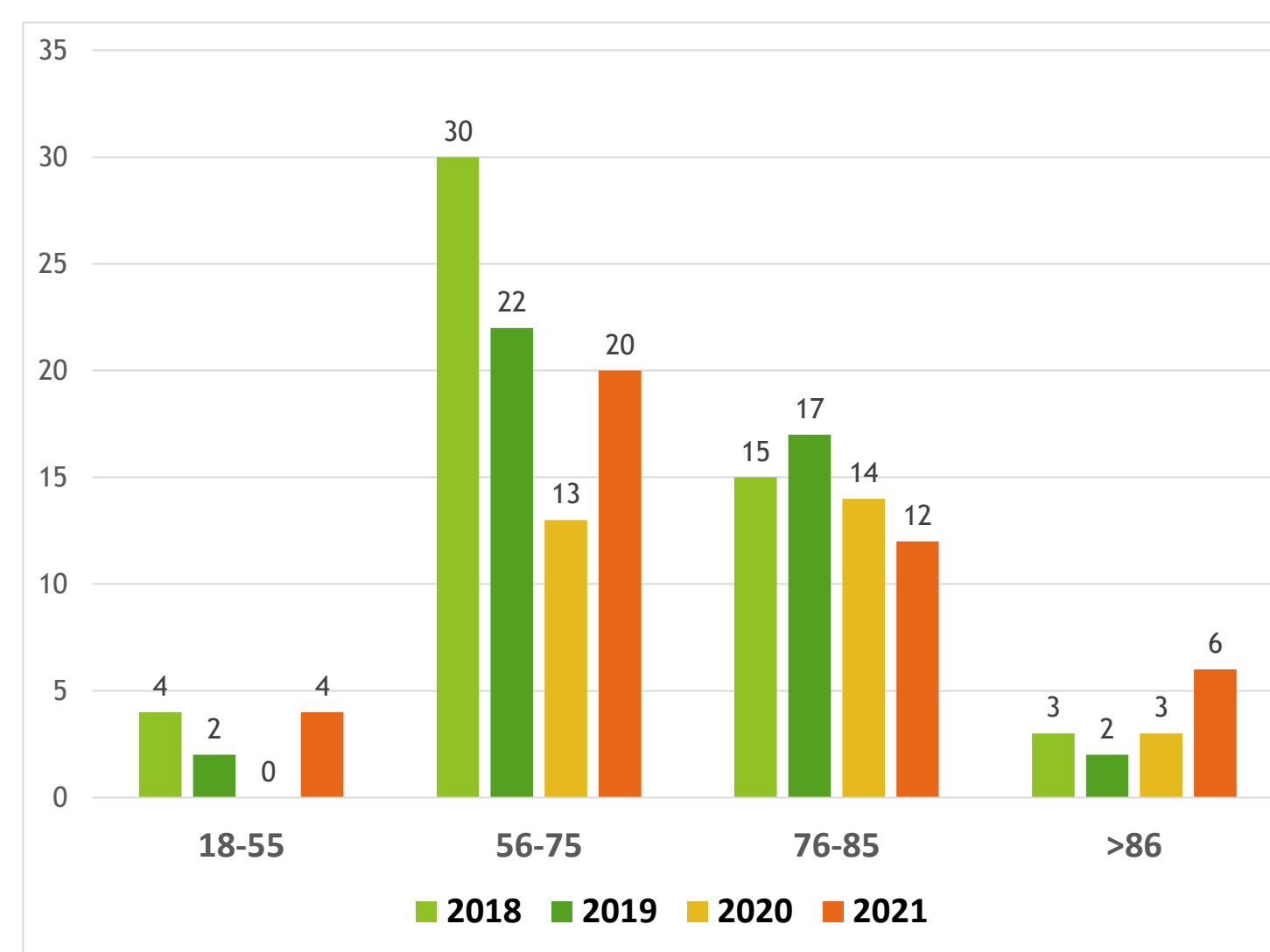


Figure 2 Age distribution of patients in the years between 2018 and 2021

The majority tested positive for Gram negative bacteria throughout the period (55.56% n=30 in 2019, 65.85% n=27 in 2020, 68% n=34 in 2021), with the exception of 2018 in which a prevalence of Gram positives was detected (55.41%, n=41).

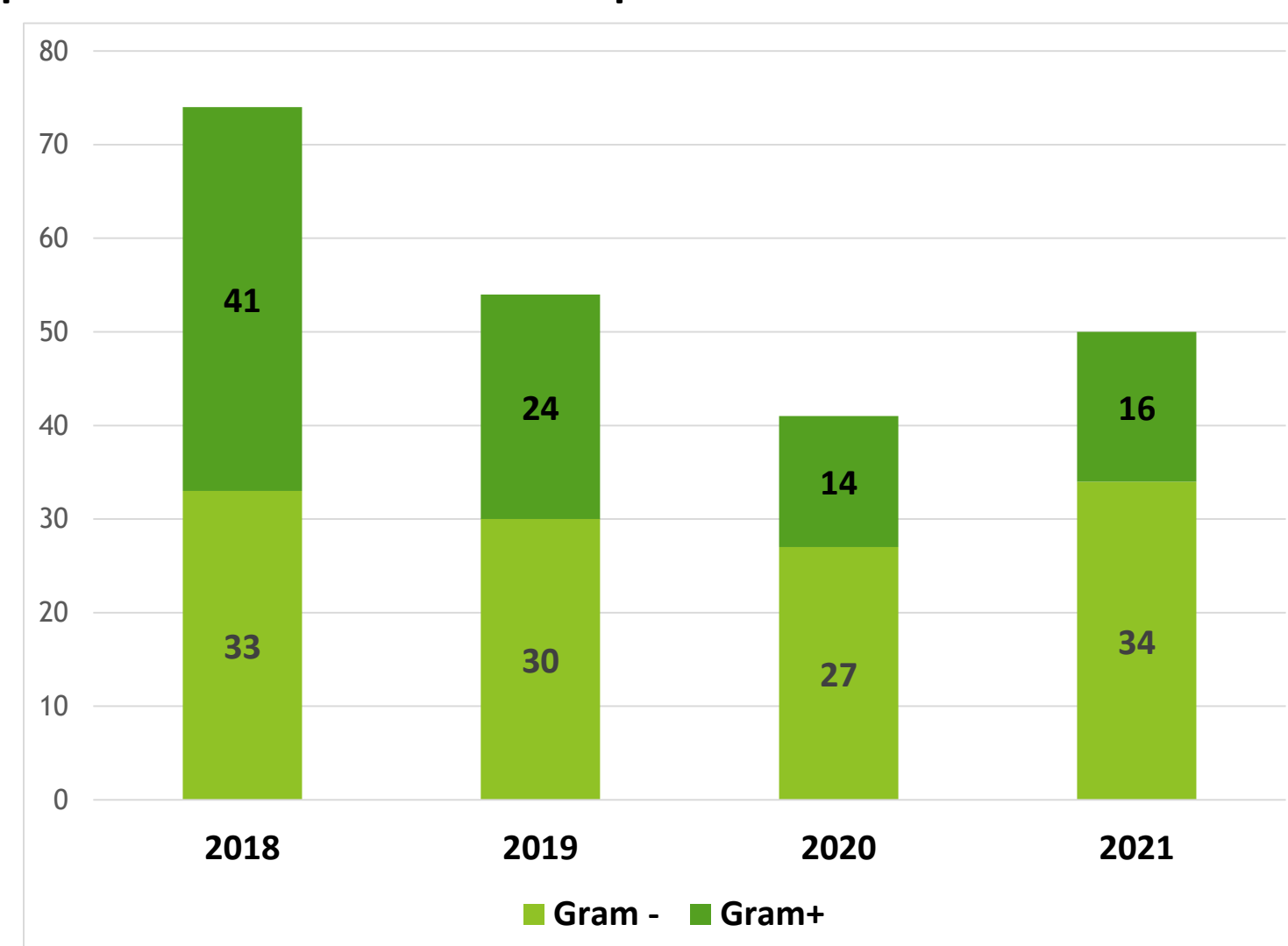


Figure 3 Distribution of patients by bacterial category Gram +/-

The most widespread bacterial species were Escherichia coli and Klebsiella Pneumoniae among Gram negatives and Staphylococcus epidermidis and Staphylococcus aureus among Gram positives.

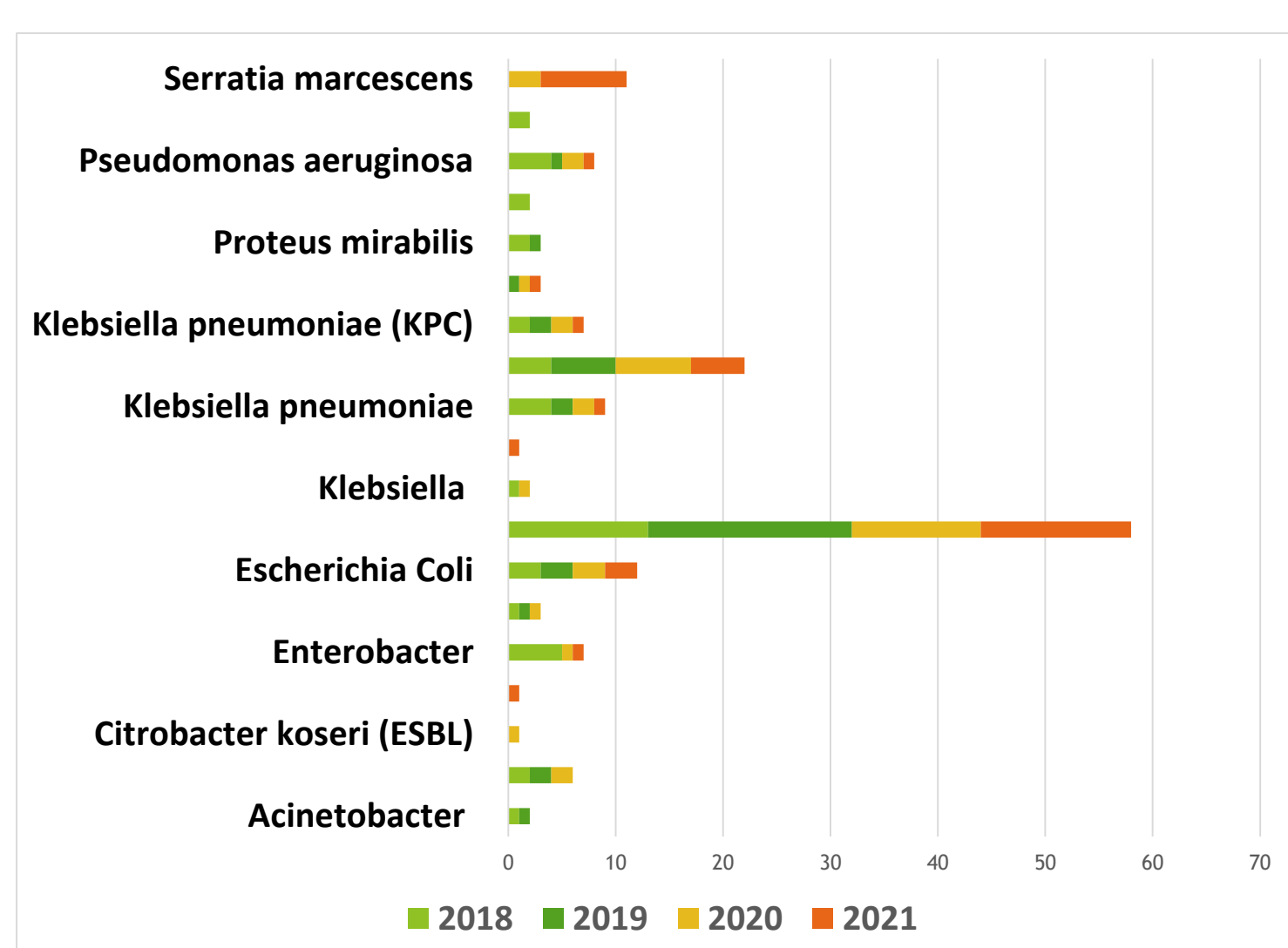


Figure 4 Distribution by species of isolated Gram - microorganisms

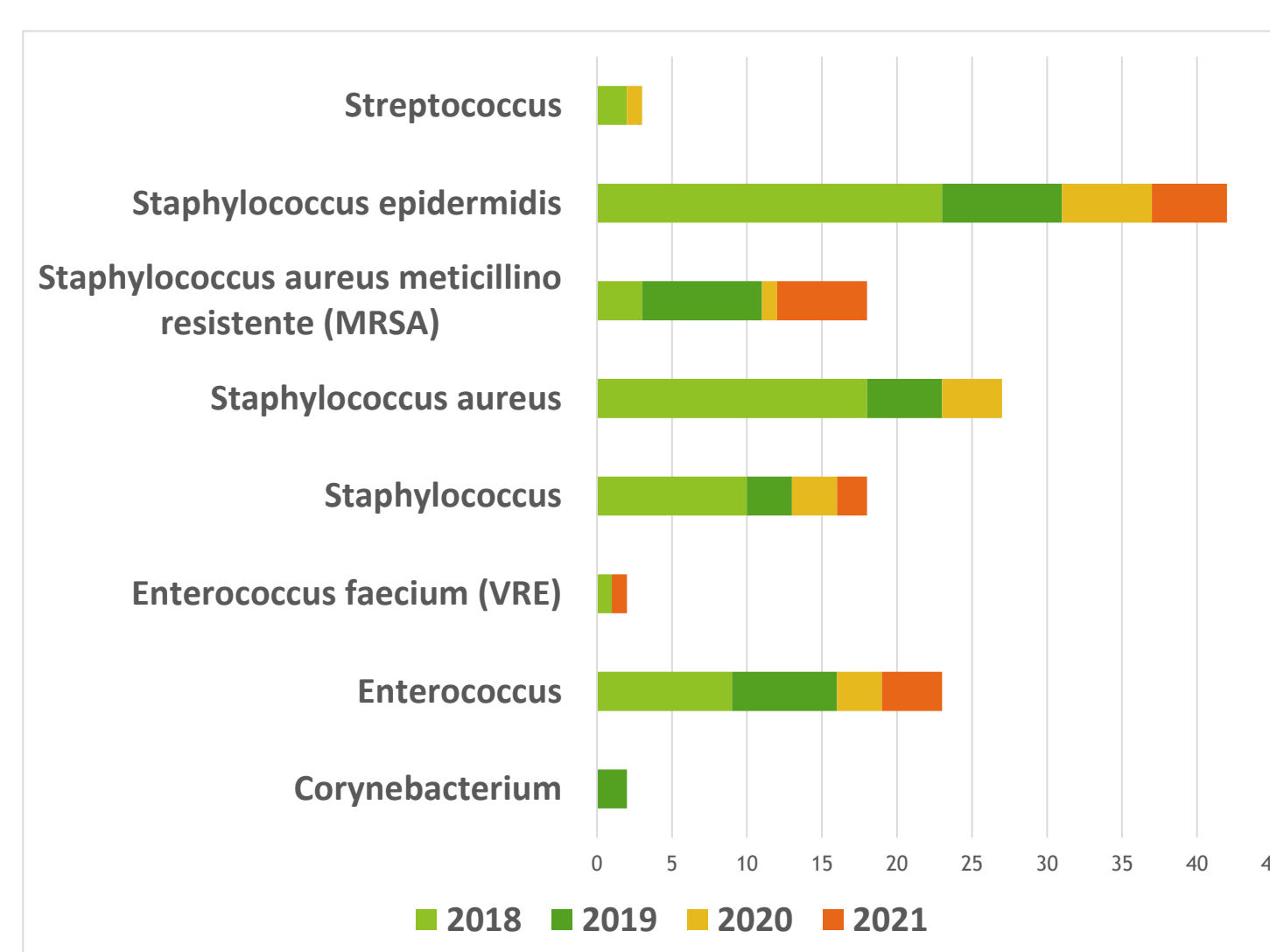


Figure 5 Distribution by species of isolated Gram + microorganisms

The MICs of these bacteria are increasing, as in the case of Klebsiella Pneumoniae, for which the MIC value of meropenem exceeds the ECOFF with a frequency of 99.9%. The Staphylococci family expressed MIC values for the antibiotic linezolid equal to the ECOFF with a frequency of 5.38%. The MIC of daptomycin was equal to the ECOFF for 17.58% of the isolates.

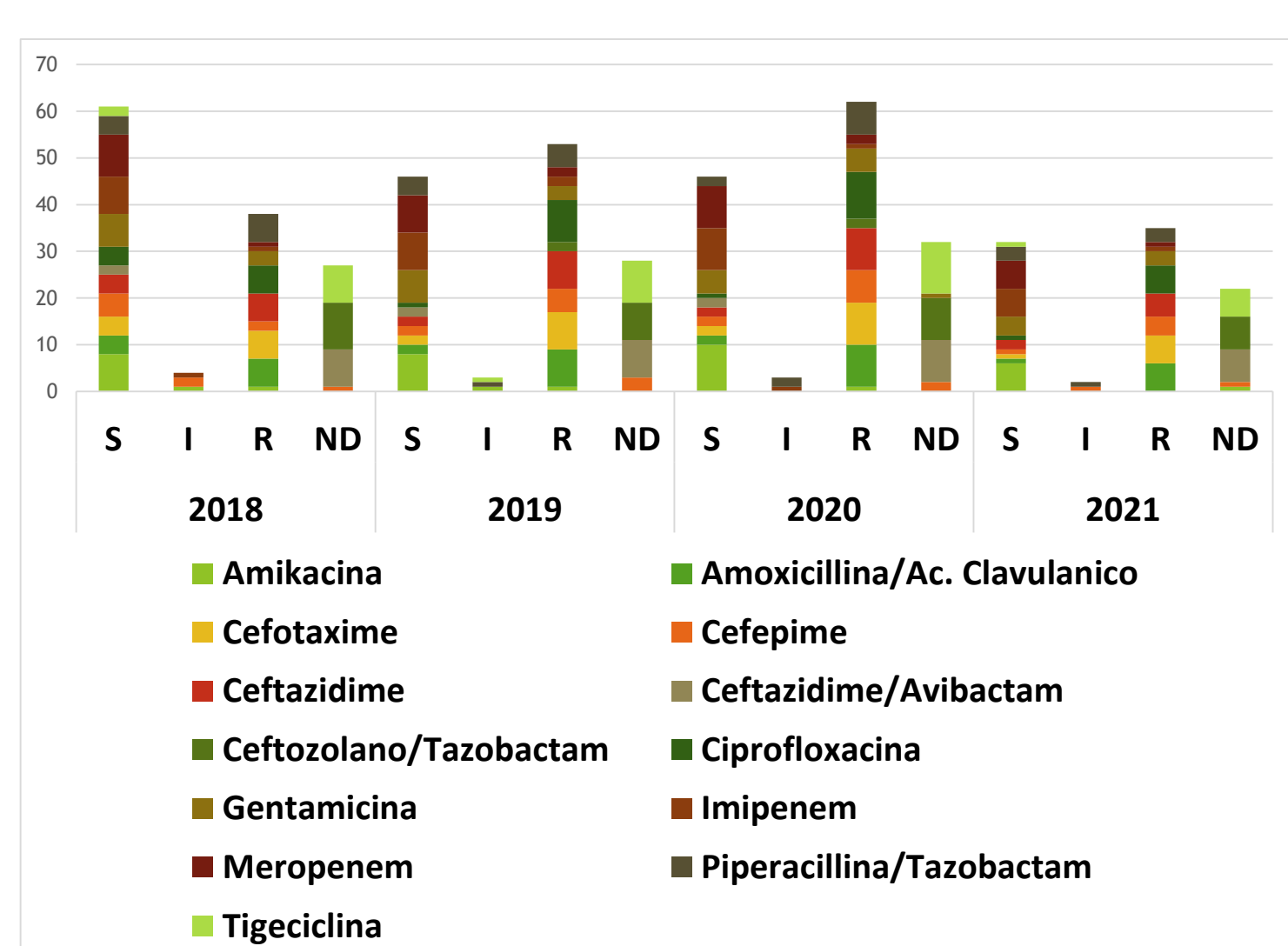


Figure 6 Klebsiella Pneumoniae resistance profile between 2018-2021

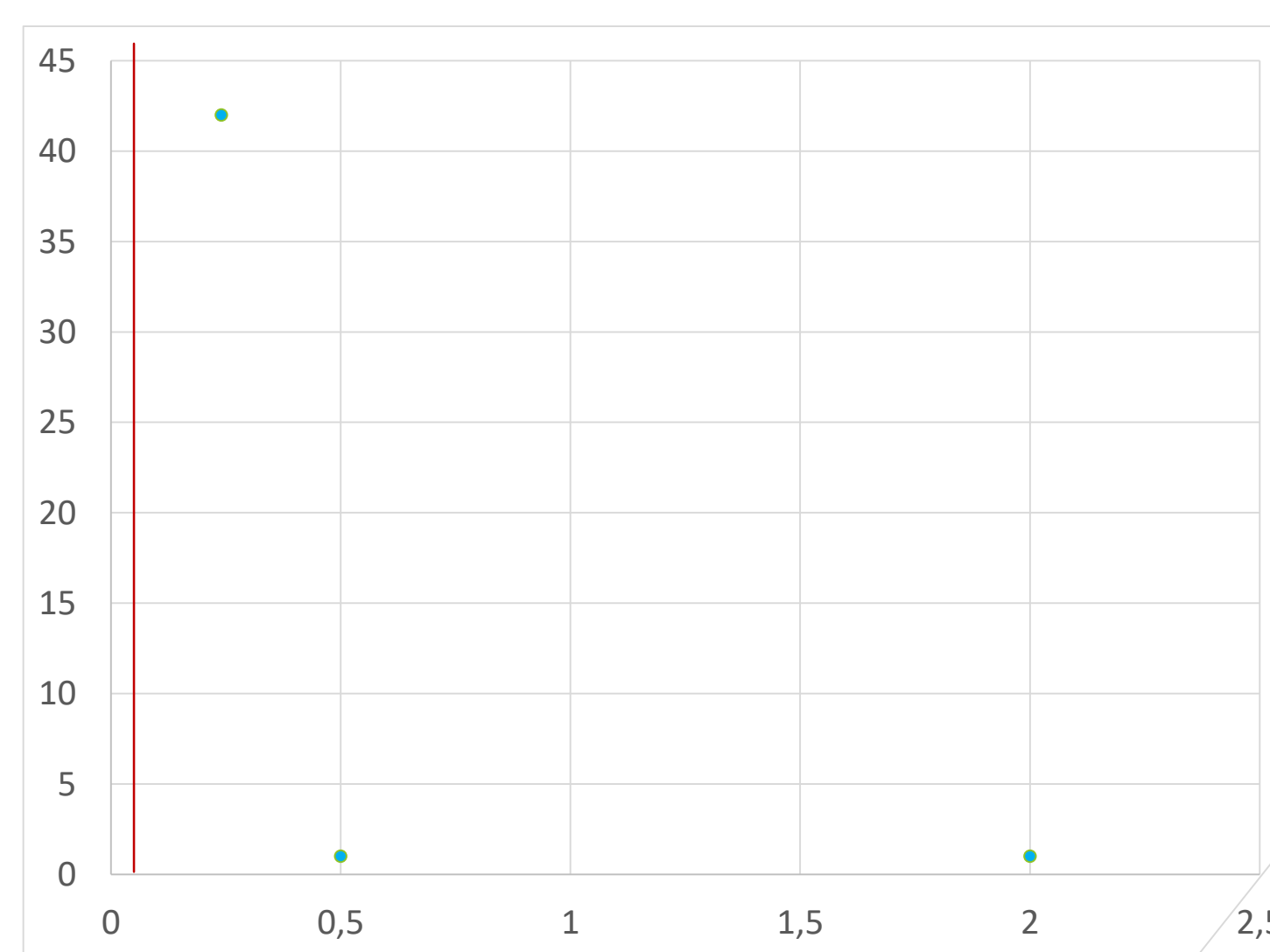


Figure 7 Statistical comparison between MIC and ECOFF of K. Pneumoniae and Meropenem

Conclusion and relevance: From this work, the need for clinicians to consult antibiograms and evaluate the ECOFF parameter has emerged. The project will be continued in the future in order to monitor the evolution of the resistance profiles of MDROs and to evaluate the prescriptive appropriateness through the analysis of the clinical outcome of treatment efficacy.

