

EPIDEMIOLOGY OF SEPSIS IN AUSL ROMAGNA AND TIME TO POSITIVITY

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Introduction

Blood cultures represent the *gold standard* in the microbiological diagnosis of bloodstream infections. The need to develop early de-escalation therapy strategies to reduce the emergence of resistant strains and to better identify patients who might benefit from more aggressive treatment has focused attention on time to positivity (TTP) as an indicator capable of guiding therapy. The majority of positive blood cultures turn positive within the first 24 hours. Sepsis episodes with TTP ≥ 24 hours are commonly associated with ongoing treatment infections, catheter-related infections, or infections caused by slow-growing microorganisms such as *Candida* or anaerobic Gram-negative bacteria. The growth of multidrug-resistant Gram-negative bacilli beyond 24 hours is rare. This study investigates the distribution of time to positivity for pathogens responsible for bloodstream infections in AUSL Romagna over the past two years.



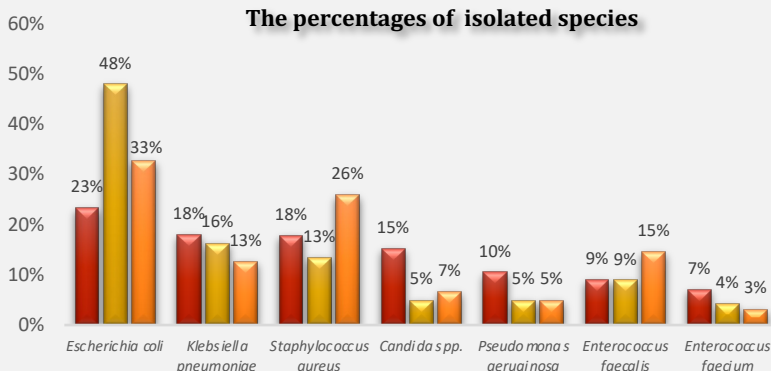
Methods

BACT/ALERT® blood culture bottles are incubated in the BACT/ALERT® VIRTUO® instrument (bioMérieux, France) and monitored for up to five days. A retrospective study was conducted from November 2021 to November 2023 on a total of 22,039 positive bottles. Positive bottles were collected following the single-sampling strategy (SSS), which involves drawing two sets of bottles from a single venipuncture, or the multiple-sampling strategy (MSS) (one set of bottles per single venipuncture). Additionally, for suspected catheter-related infections, sets of bottles were drawn directly from the catheters in association with the SSS

Results

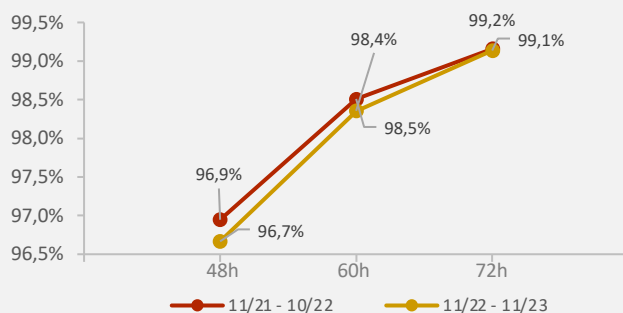
Of the 22,039 blood culture bottles analyzed, 2,272 were from central catheters, 17,752 from SSS, and 2,015 from MSS. The most frequently isolated species were *Escherichia coli*, *Staphylococcus aureus*, *Klebsiella pneumoniae*, *Enterococcus faecalis*, *Candida* spp., *Pseudomonas aeruginosa*, and *Enterococcus faecium*. The positivity rates were 96.8% at 48h, 98.4% at 60h, and 99.1% at 72h.

% of resistance	11/21-10/22	11/22-10/23
VRE <i>E. faecalis</i>	18,0%	15,4%
VRE <i>E. faecium</i>	38,9%	38,6%
MRSA	31,5%	32,3%
ESBL	18,7%	20,4%
KPC	0,9%	1,2%
VIM	0,1%	0,0%
NDM	0,0%	0,3%
OXA-48	0,0%	0,0%
Pseudo MDR	13,8%	14,3%
Fluconazole (<i>Candida</i> spp.)	23,3%	18,6%
Amphotericin (<i>Candida</i> spp.)	ND	0,0%
Voriconazole (<i>Candida</i> spp.)	7,6%	1,7%



CVC: Central venous catheter
SSS: single-sampling strategy
MSS: multiple-sampling strategy

Blood cultures positivity rate



Conclusions

Most blood cultures (>96%) turn positive within 48 hours. The possibility of releasing an intermediate negative result at 48 hours could provide physicians with useful information for discontinuing empirical or targeted therapy, reducing the development of resistance due to prolonged antibiotic use.