

# Impact of Rapid Antimicrobial Susceptibility Testing (MHR-SIR) on Antibiotic Adaptation with Enterobacterales Bacteremia

*A Multicenter Cluster-Randomized Cross-Over Controlled Study (MHR-BLOOD)*

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## Background

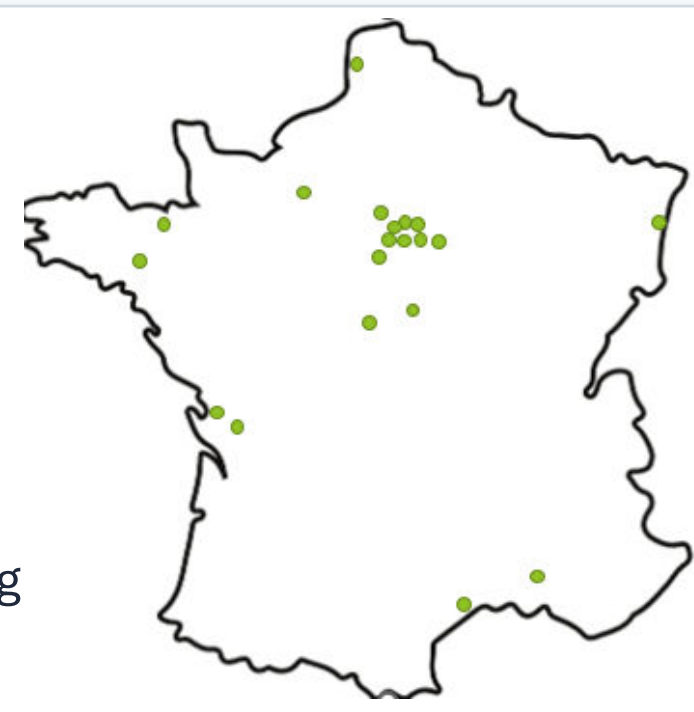
- Optimizing management of Enterobacterales bacteremia requires rapid, targeted antibiotic adjustment to limit resistance and improve outcomes.
- MHR-SIR delivers susceptibility results in < 8 hours, vs. 39 h [IQR 26–48] with standard culture methods (Pilmis *et al.*, JAC 2019).
- This multicenter RCT evaluates the clinical impact of MHR-SIR on antibiotic adaptation in Enterobacterales bacteremia.



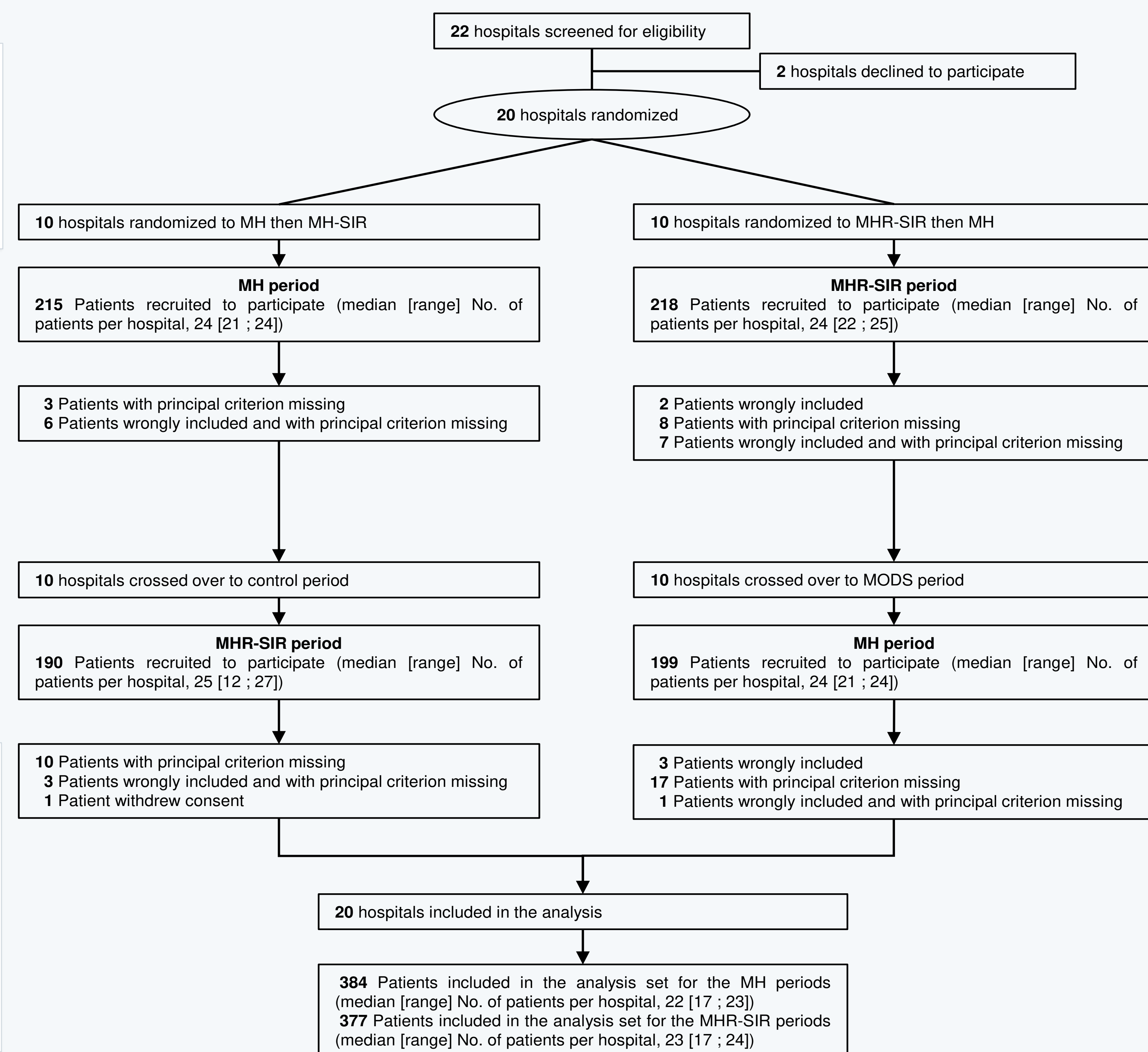
MHR-SIR rapid AST incubation 6 to 8 h

## Materials & Methods

- 20 French hospitals — Cluster-randomized, cross-over controlled design
- 761 adult patients enrolled with confirmed Enterobacterales bacteremia
- Intervention: MHR-SIR rapid AST (incubation 6–8 h) versus standard susceptibility testing
- Primary endpoint : proportion of patients with Enterobacterales bacteremia for whom antibiotic therapy was effective against the causative bacterium within twelve hours of blood culture positivity, as determined by AST results



## Study Design — CONSORT Flow



## Results

761 patients enrolled

73 years median age

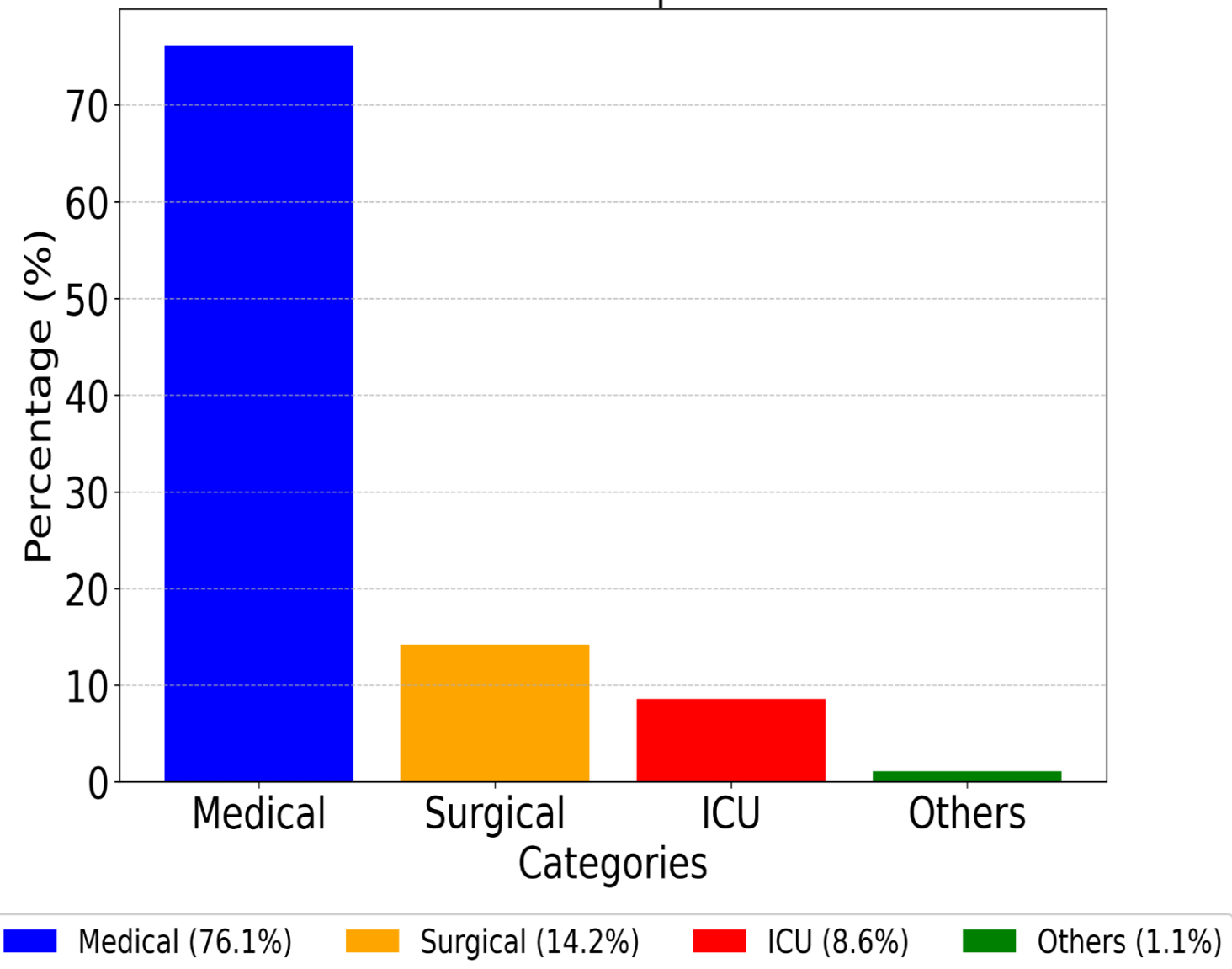
56.2% male

15.4% in-hospital mortality

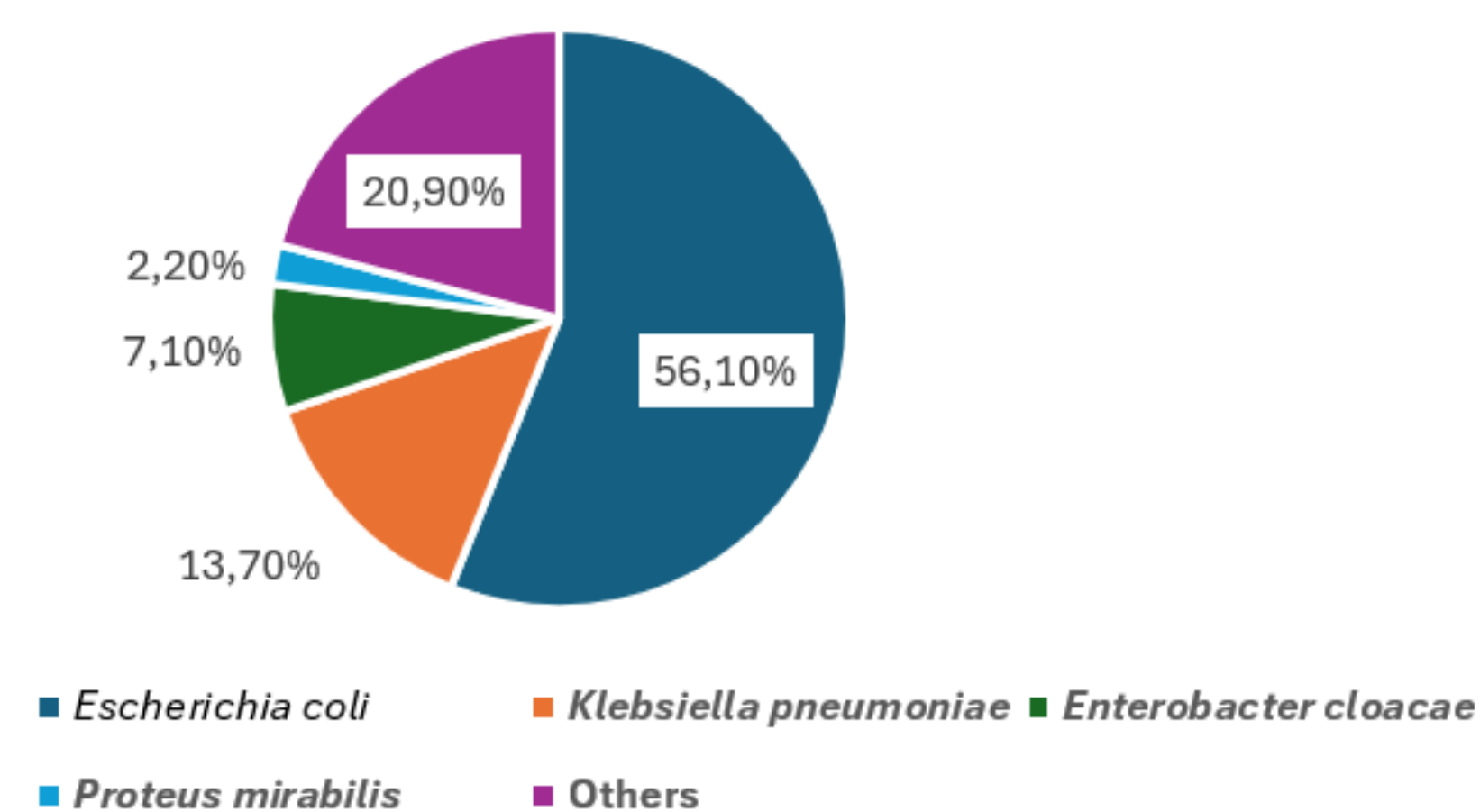
MHR-SIR: ~18 hours faster — 40% reduction in time-to-antibiogram ( $p < 0.05$ )

Oral switch: 18.3% of patients

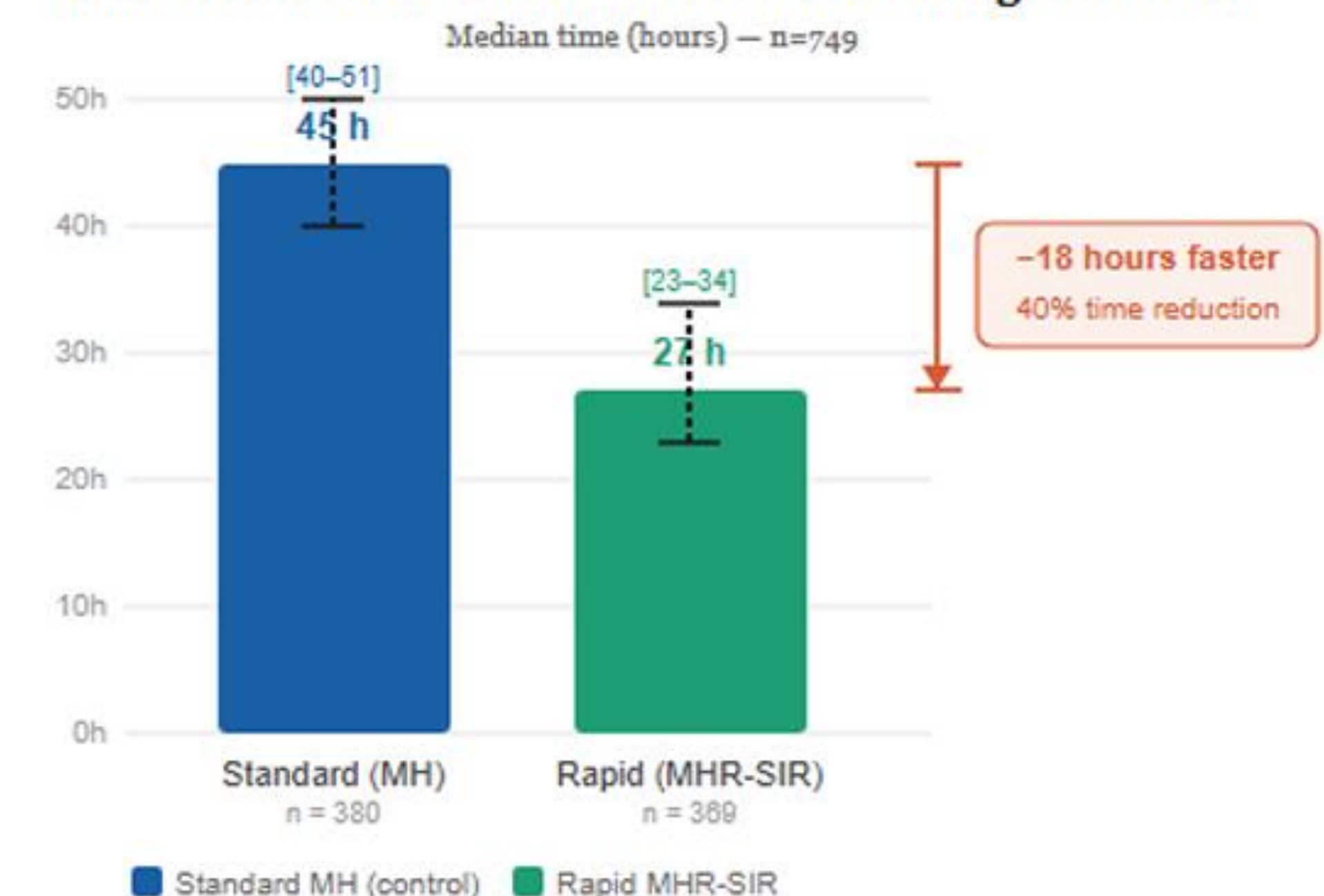
### Reasons for hospitalization



### Distribution of bacteria

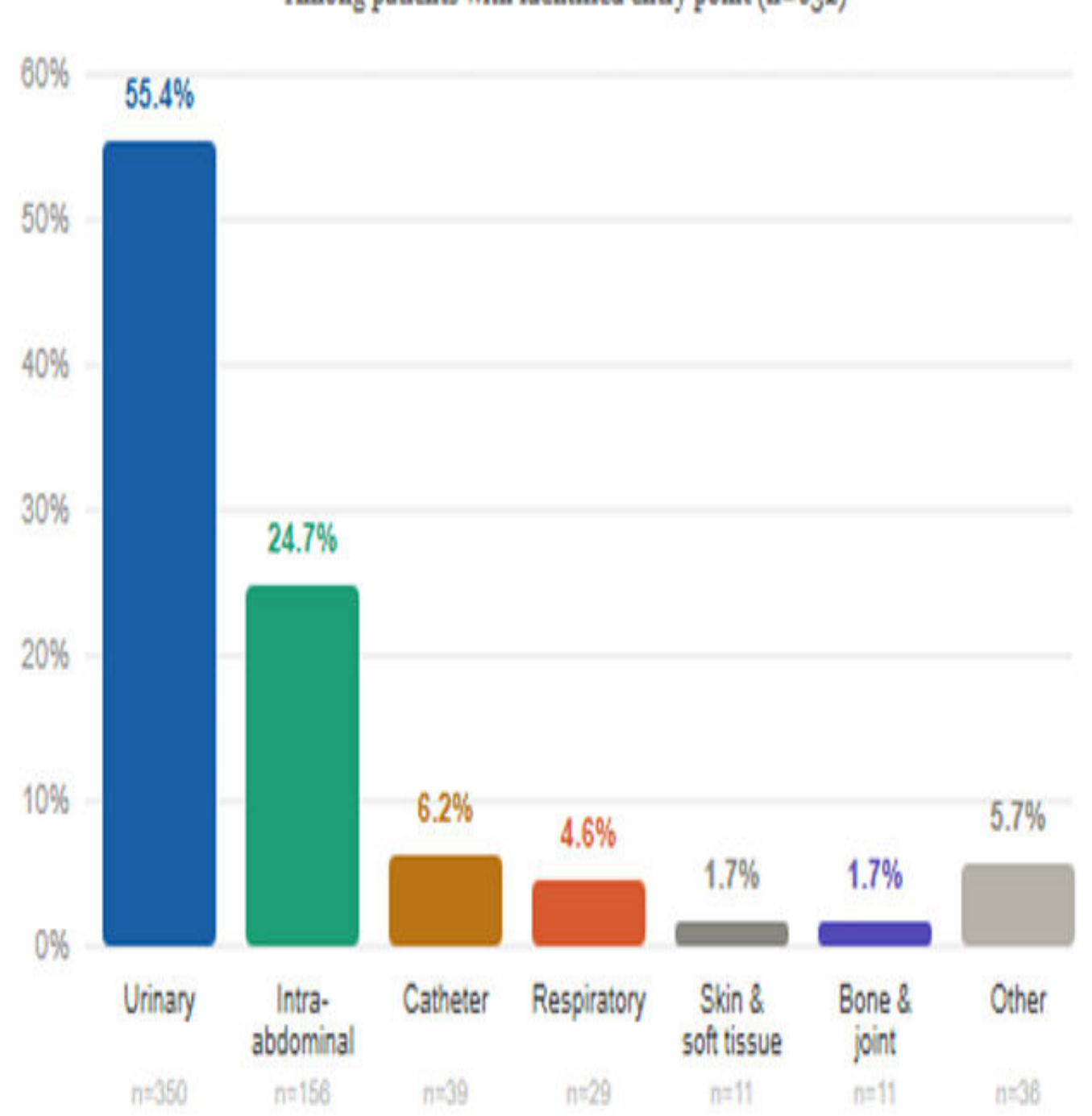


### Time from blood culture collection to antibiogram result

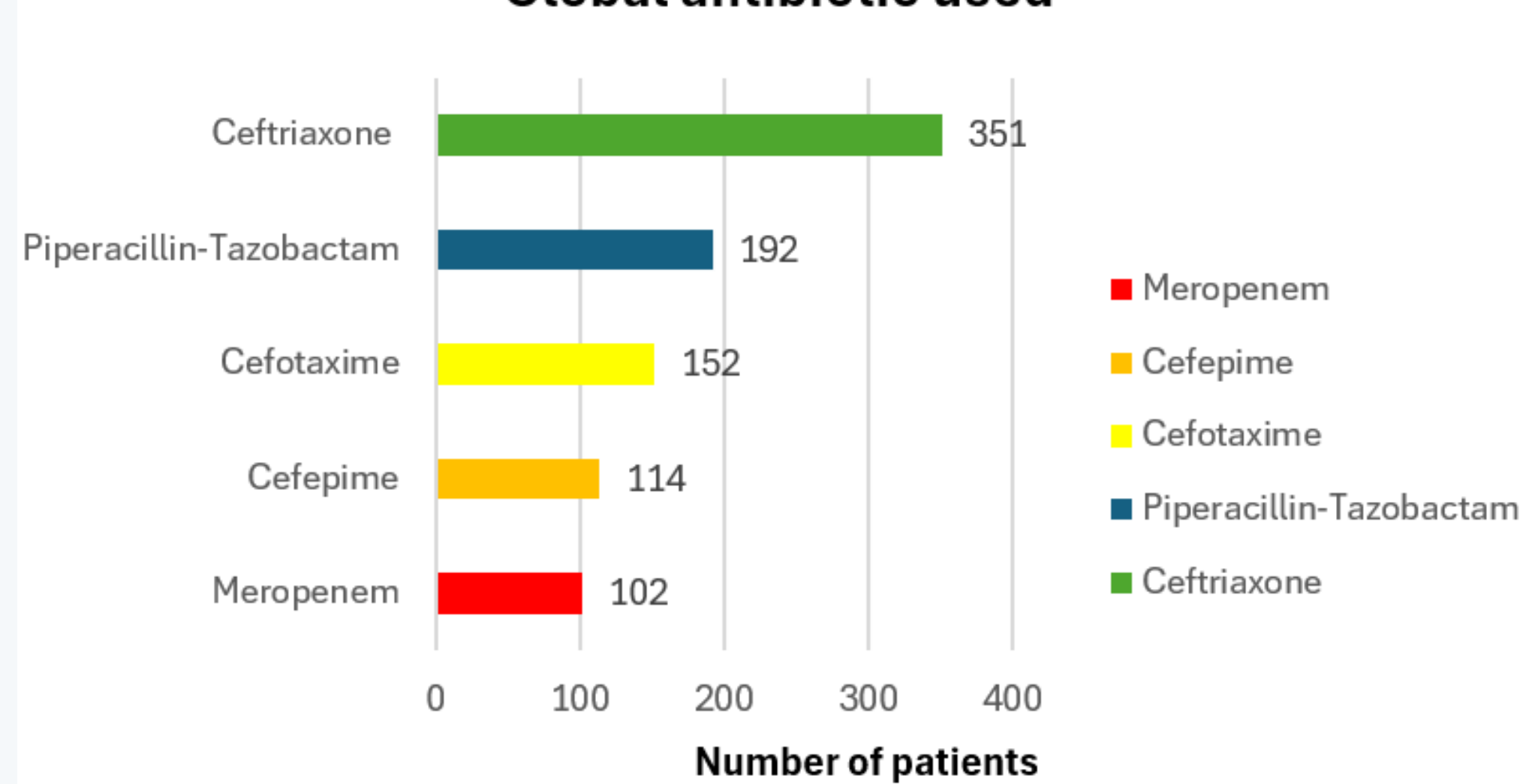


### Infectious source of bacteremia

Among patients with identified entry point (n=692)

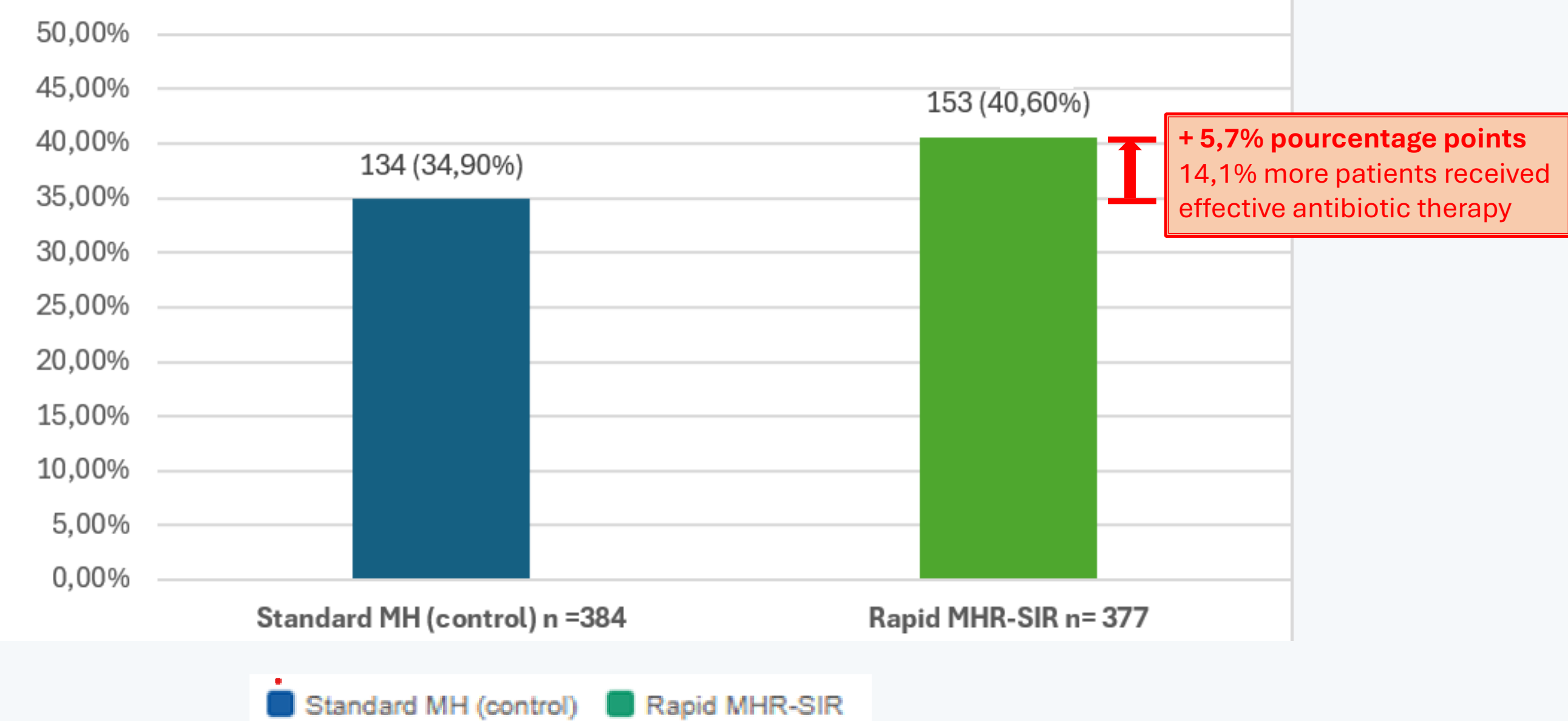


### Global antibiotic used



### Effective antibiotic therapy within 12 h of blood culture positivity

Primary endpoint- Bacteremia due to Enterobacterales (n = 761)



## Conclusion

These findings support the integration of rapid AST using MHR-SIR into antimicrobial stewardship strategies to improve the management of Enterobacterales bacteremia.

## Reference

Pilmis B, Thy M, Diep J, Krob S, Périllaud C, Couzigou C, Vidal B, Mizrahi A, Lourtet-Hascoët J, Le Monnier A, Nguyen Van JC. Clinical impact of rapid susceptibility testing on MHR-SIR directly from blood cultures. J Antimicrob Chemother. 2019;74(10):3063–3068.