Antimicrobial Susceptibility of Organisms Isolated from Complicated UTI in Europe: Results from the SENTRY Antimicrobial Surveillance Program (2019-2021)

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Objective

To evaluate the antimicrobial susceptibility of bacteria isolated from patients with complicated UTI (cUTI) in European (EU) medical centres.

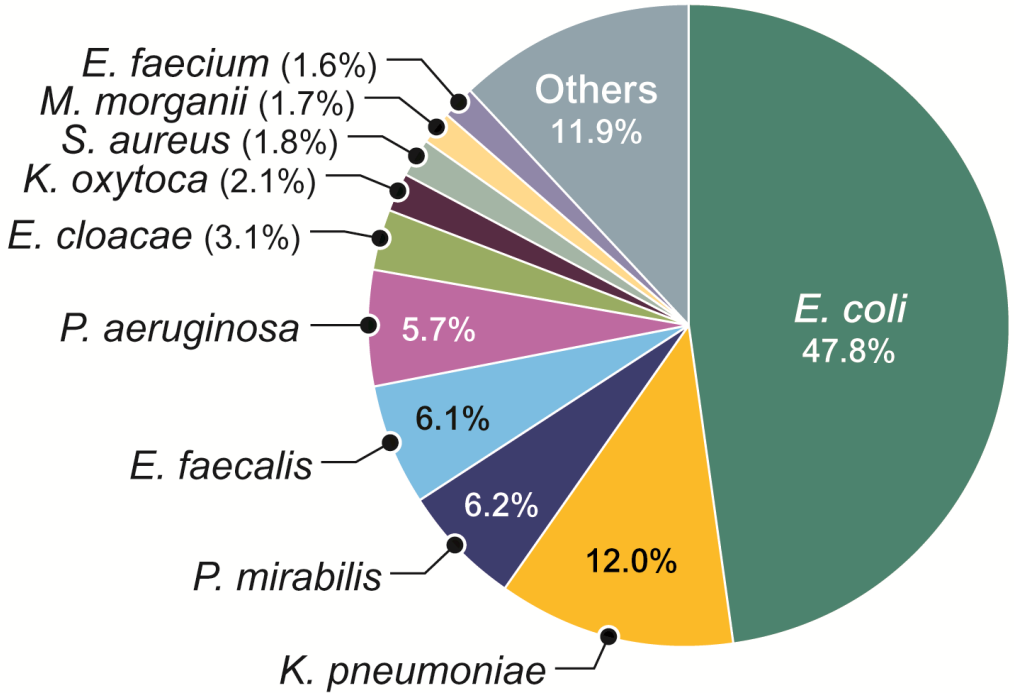
Methods

- 4,290 organisms were consecutively collected (1/patient) as part of the SENTRY Program:
  - Western Europe (W-EU): 3,055 isolates from 25 medical centres in 10 countries: Belgium, France, Germany, Ireland, Italy, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.
  - Eastern Europe and Mediterranean region (E-EU): 1,235 isolates from 13 medical centres in 10 countries: Belarus, Czech Republic, Greece, Hungary, Israel, Poland, Romania, Russia, Slovenia, and Turkey.
- Organisms were susceptibility tested by reference broth microdilution methods in a central laboratory.
- EUCAST breakpoints were applied.

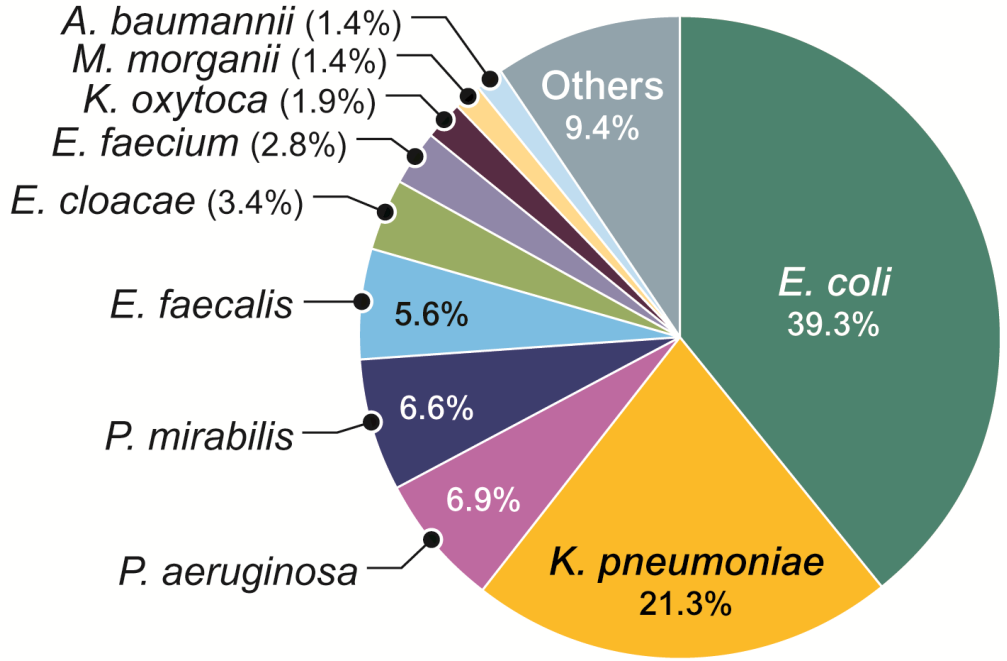
Results

Figure 1. Frequency of occurrence

A. Western Europe



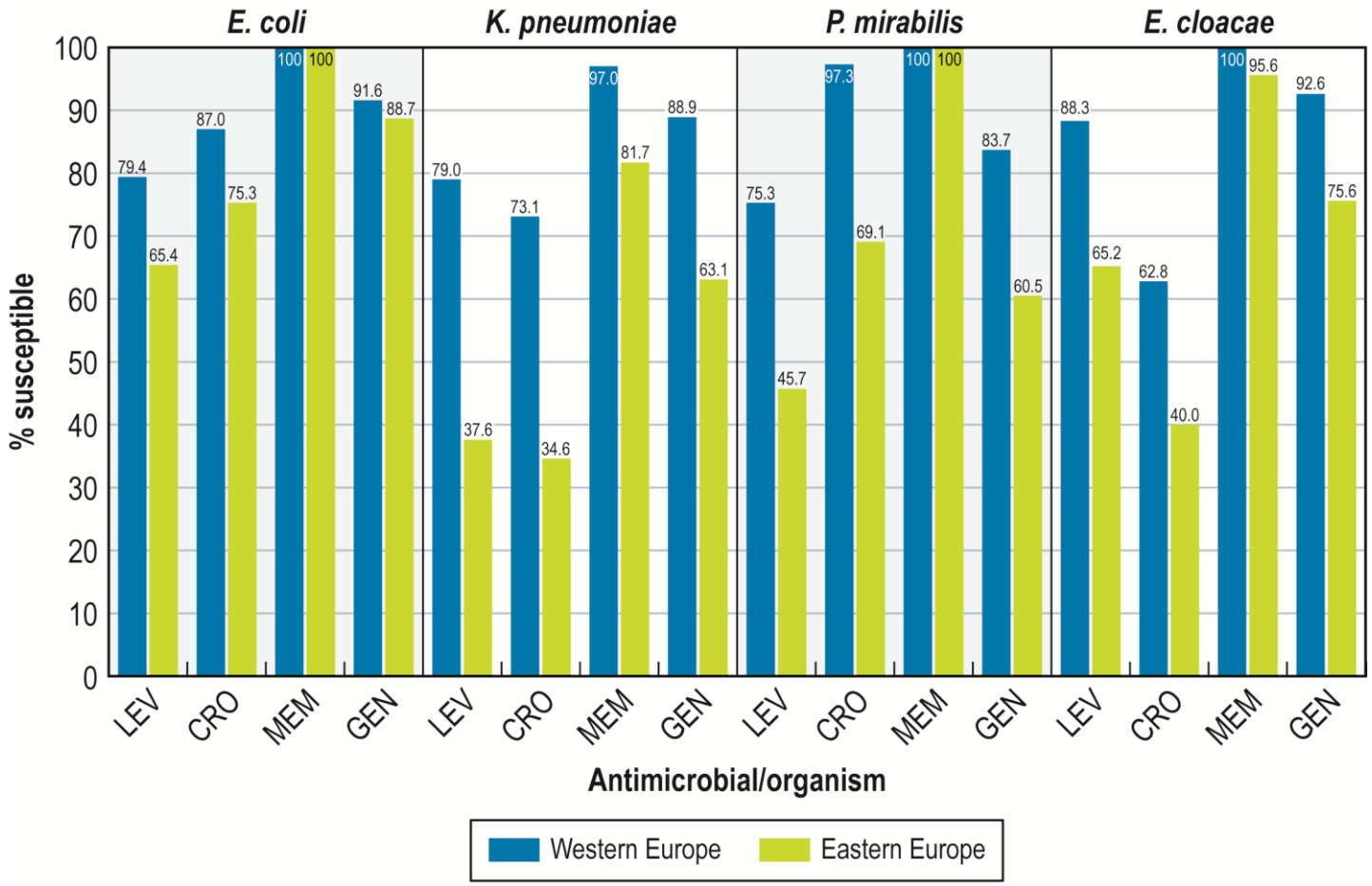
B. Eastern Europe



- *E. coli*, *K. pneumoniae*, *P. mirabilis*, *P. aeruginosa*, *E. faecalis*, and *E. cloacae* complex were the 6 most common organisms, but the rank order varied between W-EU and E-EU.

Results

Figure 2. Susceptibility results for the most common Enterobacterales species from Western Europe and Eastern Europe



Abbreviations: LEV, levofloxacin; CRO, ceftriaxone; MEM, meropenem; GEN, gentamicin.

- Resistance to key antimicrobial agents were markedly higher in E-EU than W-EU.
- Meropenem susceptibility among *K. pneumoniae* from E-EU was only 81.7%.
- Ceftazidime-avibactam was active against 99.9%/97.7% of Enterobacterales isolates from W-EU/E-EU.
- Ceftolozane-tazobactam was active against 96.1%/86.0% of Enterobacterales from W-EU/E-EU, but showed limited activity against *E. cloacae* (77.7%S /53.3%S) and *K. pneumoniae* (91.8%S/63.5%S).
- The frequencies of CRE were 0.5% in W-EU and 5.5% in E-EU.
- The most active antimicrobials against CRE in W-EU/E-EU were colistin (91.7%S/68.5%S), CAZ-AVI (83.3%S/66.7%S), and MEM-VAB 75.0%S/44.4%S.

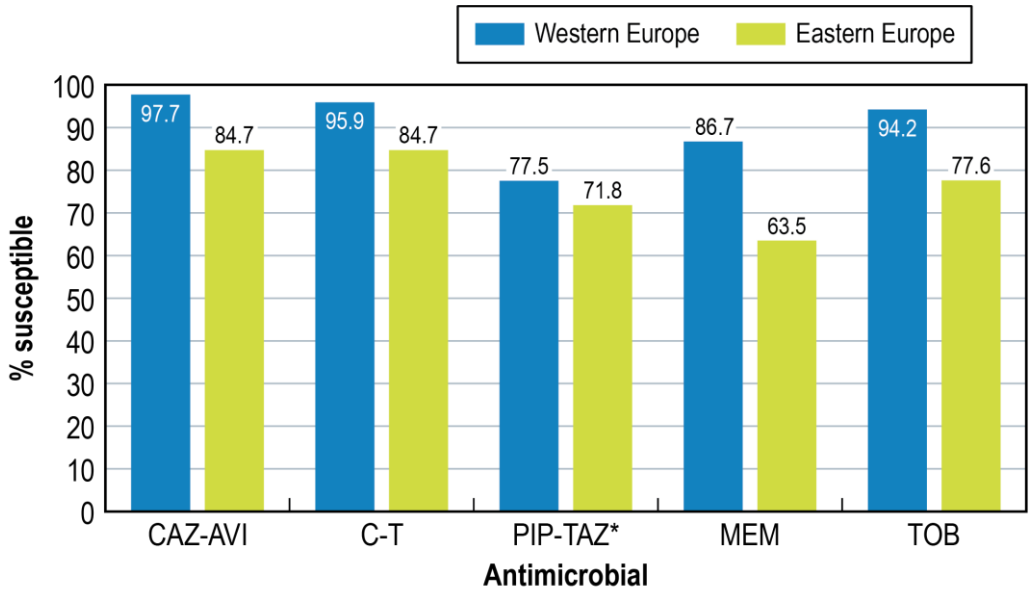
Frequency of ESBL Phenotype

Organism	W-EU	E-EU
E. coli	14.4%	25.8%
K. pneumoniae	30.2%	66.2%
P. mirabilis	6.3%	30.9%

Results

Susceptibility of *P. aeruginosa*

- The most active compounds against *P. aeruginosa* in both W-EU and E-EU were colistin (100.0%S/98.8%S), CAZ-AVI (97.7%S/84.7%S), and C-T (95.9%S/84.7%S).



* S increased exposure. Abbreviations: CAZ-AVI, ceftazidime-avibactam; C-T, ceftolozane-tazobactam; PIP-TAZ, piperacillin-tazobactam; MEM, meropenem; TOB, tobramycin.

Conclusions

- Resistance rates were markedly higher among cUTI isolates from E-EU compared to W-EU.
- Elevated rates of resistance to the newer β-lactamase inhibitor combinations CAZ-AVI, C-T, and meropenem-vaborbactam were observed among *P. aeruginosa* and CRE, especially in E-EU.

Acknowledgements

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SENTRY results are available at: **sentry-mvp.jmilabs.com**