

Antimicrobial resistance in *Escherichia coli* in uncomplicated urinary tract infections – A European update 2014 and comparison with 2000.

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Objective

The objective of this study was to update European antimicrobial resistance rates of *Escherichia coli* (*E. coli*) from women with acute uncomplicated urinary tract infection (UTI) in France (FR), Germany (DE), Spain (ES), Sweden (SE) and United Kingdom (UK) to mecillinam (MEC), amoxicillin-clavulanic acid (AMC), cefadroxil (CFR), nitrofurantoin (NIT), ciprofloxacin (CIP) and trimethoprim (TMP) and to compare the results with resistance rates obtained through the ECO-SENS I survey in 2000¹ where the target population was mainly the same.

Methods

The susceptibility of *E. coli* isolated from women with acute uncomplicated UTI in FR, DE, ES, SE and UK was determined to MEC, AMC, CFR, NIT, CIP and TMP by disc diffusion according to EUCAST breakpoints and methodology. Urine samples were obtained from women in primary healthcare with the exception of Germany, where the origin of the isolates could not be guaranteed beyond the fact that they were from women with UTI.

Resistance in 2014 and 2000¹ were compared. Statistical comparison was by Fisher's Exact Test, 2-tailed, $p < 0.05$ indicating statistical significance.

References

1. G. Kahlmeter. *J. Antimicrob. Chemother.* 51 (2003), 69-76.

Table 1. Percentage susceptibilities of *E. coli* isolated from women with acute uncomplicated UTI

Country	No of isolates	MEC Mecillinam	AMC Amoxi-clav	CFR Cefadroxil	NIT Nitro- furantoin	CIP Cipro- floxacin	TMP Trim-sulfa
France (FR)	166	97	94	97	100	95	82
Germany (DE)	133	97	92	88	98	80 [#]	63
Spain (ES)	169	93	80	92	100	69	63
Sweden (SE)	137	99	94	97	99	93 [#]	84 [#]
United Kingdom (UK)	124	95	86	95	94	85	54

Additional 1% intermediate susceptibility.

Comparison with ECO-SENS data from 2000¹:

FR: significant increase in resistance to AMC (1.5% to 6%; $p < 0.05$)

DE: significant increase in resistance to AMC (2% to 8%; $p < 0.05$), CFR (1% to 12%; $p < 0.001$), CIP (2% to 21%; $p < 0.0001$) and TMP (23% to 37%; $p < 0.05$). However, note that the origin of the isolates were not necessarily comparable between the two years.

ES: significant increase in resistance to MEC (1% to 7%; $p < 0.005$), AMC (4% to 20%; $p < 0.0001$), CFR (3% to 8%; $p < 0.05$), CIP (15% to 31%; $p < 0.0001$), and TMP (25% to 37%; $p < 0.05$) and decrease in resistance to NIT (4% to 0%; $p < 0.01$)

SE: significant increase in resistance to CIP (0% to 7%; $p < 0.001$) and TMP (9% to 17%; $p < 0.05$)

UK: significant increase in resistance to CIP (1% to 15%; $p < 0.0001$) and TMP (13% to 46%; $p < 0.0001$)

Results

Percentage susceptibilities are given in **Table 1**. A comparison between 2014 and 2000 is given in table footnotes.

Conclusions

E. coli isolates, from women with acute uncomplicated UTI, showed a significant increase in antimicrobial resistance since 2000, particularly to amoxicillin-clavulanic acid (FR, DE, ES and UK), ciprofloxacin (DE, ES, SE and UK) and trimethoprim (DE, ES, SE and UK). However, resistance for mecillinam and nitrofurantoin has mostly remained at the same low level.

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Acknowledgements

All participating laboratories in France, Germany, Spain, Sweden and the United Kingdom are acknowledged for their contribution of clinical isolates. Paul Menday is thanked for data analysis.

This study was supported by a grant from LeoPharma.