

# Ceftaroline susceptibility against clinically relevant skin and soft tissue infection pathogens collected from hospitalized patients in the European Union: 2013 AWARE surveillance program

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## Introduction

- *Staphylococcus aureus* is the predominant pathogen causing skin and soft tissue infections (SSTIs) in the European Union (EU).
- This report summarizes the *in vitro* activity of ceftaroline (CPT) the active metabolite of ceftaroline fosamil and comparator activity (percent susceptible and MIC<sub>90</sub> (mg/L) against clinically relevant SSTI pathogens collected from hospitalized patients in 2013 from representative (EU) Member States.

## Materials and Methods

- 5,033 SSTI isolates were collected from 66 hospitals in 17 EU Member States: Austria (2), Belgium (4), Czech Republic (3), Denmark (2), France (6), Germany (7), Greece (3), Hungary (3), Ireland (1), Italy (7), Netherlands (2), Poland (3), Portugal (4), Romania (3), Spain (7), Sweden (4), United Kingdom (5) in 2013 collected as part of the Assessing Worldwide Antimicrobial Resistance Evaluation (AWARE) surveillance program.
- Broth microdilution susceptibility testing was performed according to CLSI<sup>1</sup> guidelines and percent susceptibility (%S) was interpreted using EUCAST<sup>2</sup> breakpoints where available.
- *Enterobacteriaceae* were screened for extended-spectrum  $\beta$ -lactamases (ESBLs) using ceftazidime and aztreonam MIC values  $\geq 2$  mg/L.

## Results

**Table. Antimicrobial Activity of Ceftaroline and Comparator agents Tested Against SSTI Pathogens.**

Pathogen (n)	% susceptibility/MIC <sub>90</sub> (mg/L)							
	CPT	AMC	FEP	TZP	LVX	ATM	TGC	ERY
<b>S. aureus (3111)</b>	97.4/1	-	-	-	58.4/>2	-	97.3/0.5	57.0/>4
<b>MSSA (1453)</b>	99.9/0.25	-	-	-	93.2/0.5	-	97.5/0.25	80.4/>4
<b>MRSA (1658)</b>	95.2/1	-	-	-	27.9/>2	-	97.2/0.5	36.5/>4
<b>S. pyogenes (501)</b>	-/ $\leq 0.004$	-	-	-	90.8/1	-	100/0.06	93.6/0.06
<b>S. agalactiae (117)</b>	-/0.015	-	-	-	74.4/2	-	100/0.06	61.5/>1
<b>S. dysgalactiae (122)</b>	-/0.008	-	-	-	92.6/1	-	100/0.12	81.2/>1
<b>E. coli (605)</b>	75.2/128	63.5/>16	83.6/>16	86.1/16	71.6/>4	81.5/16	99.2/0.5	-
<b>ESBL-negative (488)</b>	91.8/0.5	71.9/>16	98.0/ $\leq 0.12$	91.6/8	81.4/>4	100/0.25	99.0/0.5	-
<b>K. pneumoniae (278)</b>	52.9/>128	52.5/>16	59.4/>16	57.9/>128	66.9/>4	56.8/>128	82.4/2	-
<b>ESBL-negative (154)</b>	94.8/0.5	89.6/16	98.1/ $\leq 0.12$	89.0/16	94.2/0.5	100/0.12	86.4/2	-
<b>K. oxytoca (110)</b>	86.4/64	87.3/16	91.8/0.25	89.1/16	91.8/0.25	88.2/32	93.6/1	-
<b>ESBL-negative (96)</b>	97.9/0.5	99.0/8	100/ $\leq 0.12$	100/4	99.0/0.06	100/0.5	96.9/0.5	-
<b>P. mirabilis (189)</b>	85.2/4	82.0/>16	92.1/0.5	97.4/2	75.7/>4	94.7/>16	10.1/8	-
<b>ESBL-negative (174)</b>	92.5/0.5	86.2/16	98.3/0.25	99.4/1	81.0/2	100/0.06	99.4/1	-

AMC=amoxicillin-clavulanate, FEP=cefepime, CPT=ceftaroline, TZP=piperacillin-tazobactam, LVX=levofloxacin, ATM=aztreonam, TGC=tigecycline, ERY=erythromycin, "-"(not indicated or no breakpoints)

## Conclusions

- CPT was active against clinically-relevant SSTI isolates collected in 2013 from 17 EU Member States.
- Against Gram-positive pathogens 97.4% of the 3,111 *S. aureus* isolates including 1,451 of 1,453 MSSA (MIC<sub>90</sub> of 0.25mg/L) and 1,658 MRSA (MIC<sub>90</sub> of 1 mg/L) were CPT susceptible. MSSA non-susceptible to CPT exhibited MICs of  $\geq 2$ mg/L.
- All 740  $\beta$ -haemolytic streptococci tested were ceftaroline susceptible (MIC<sub>90</sub> of 0.015 mg/L).
- CPT was active against the majority of ESBL-negative isolates of *E. coli*, *K. pneumoniae*, *K. oxytoca* and *P. mirabilis* (MIC<sub>90</sub> of 0.5 mg/L).

- Overall, CPT demonstrated *in vitro* activity against Gram-positive and Gram-negative pathogens commonly associated with SSTIs.

## References

1. Clinical and Laboratory Standards. Performance Standards for Susceptibility Testing M100-S24. 2014
2. EUCAST breakpoint tables for interpretation of MICs and zone diameters Version 4.0 January 2014.

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