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# *In vitro* Activities of Ceftaroline and Comparator Agents against Gram-positive Bacterial Pathogens Causing Blood Stream Infections in a Global Population: ATLAS Surveillance Program 2012-2018

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## Introduction

Typical gram-positive organisms causing bloodstream infections (BSI) include *Staphylococcus aureus* (methicillin-susceptible [MSSA] and -nonsusceptible [MRSA]), coagulase negative staphylococci, *Streptococcus pneumoniae* and beta hemolytic streptococci. The parenteral cephem ceftaroline fosamil is currently approved by the FDA for the treatment of adult and pediatric patients with acute bacterial skin and skin structure infections caused by *S. aureus* (including MSSA and MRSA isolates), *Streptococcus pyogenes*, *Streptococcus agalactiae*, *Escherichia coli*, *Klebsiella pneumoniae*, and *Klebsiella oxytoca*, as well as for community-acquired bacterial pneumonia caused by *S. pneumoniae* (including cases with concurrent bacteremia), *S. aureus* (MSSA isolates only), *Haemophilus influenzae*, *E. coli*, *K. pneumoniae*, and *K. oxytoca* [1]. Limited data have been published on the *in vitro* activity of ceftaroline against recent gram-positive clinical isolates known to be frequent bacterial causes of blood stream infections. The ATLAS (Antimicrobial Testing Leadership and Surveillance) program is a worldwide surveillance study that summarizes the *in vitro* activities of ceftaroline and comparator agents against common pathogens isolated from patients with bloodstream infections and other infection types.

## Materials & Methods

Clinically relevant, non-duplicate, isolates cultured from blood by clinical laboratories in 2012-2018 were collected as part of the ATLAS program. Isolates were shipped to a central laboratory (IHMA, Inc., Schaumburg, IL, USA) for testing. Identifications were confirmed by MALDI-TOF mass spectroscopy (Bruker Daltronics, Bremen, Germany; library version MBT Compass 4.1.90. and 4.1.100). In total, 10,998 non-duplicate isolates of *S. aureus*, *S. epidermidis*, *S. pneumoniae* and beta hemolytic streptococci from BSI collected between 2012 and 2018 were tested. Isolates came from (n/%): Asia/South Pacific (1,739/15.8%), Europe (5,448/49.5%), Latin America (1,805/16.4%), Middle East/Africa (861/7.8%), and North America (1,145/10.4%). Minimum inhibitory concentration (MIC) values were determined by broth microdilution according to Clinical Laboratory Standards Institute (CLSI) guidelines [2] and percent susceptibility (%S) interpreted using 2020 CLSI MIC breakpoints [3].

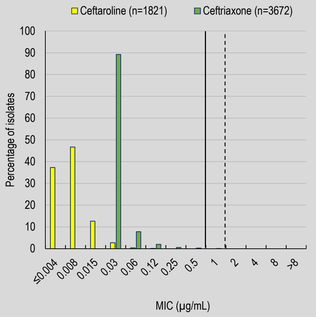
## Results

Table 1. *In vitro* activity of ceftaroline and comparator agents against isolates from bloodstream infections, 2012-2018

| Organism | Antimicrobial | Global | | | | Asia/South Pacific | | | | Europe | | | | Latin America | | | | MidEast/Africa | | | | North America | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | N | %S | $MIC_{90}$ | Range | N | %S | $MIC_{90}$ | Range | N | %S | $MIC_{90}$ | Range | N | %S | $MIC_{90}$ | Range | N | %S | $MIC_{90}$ | Range | N | %S | $MIC_{90}$ | Range |
| *Staphylococcus aureus*, MSSA | Ceftaroline | 2692 | 100 | 0.25 | ≤0.015 - 2 | 454 | 99.8 | 0.5 | 0.06 - 2 | 1264 | 100 | 0.25 | ≤0.015 - 0.5 | 544 | 100 | 0.25 | ≤0.06 - 0.5 | 203 | 100 | 0.25 | ≤0.015 - 0.5 | 227 | 100 | 0.25 | ≤0.06 - 0.5 |
| | Ceftriaxone | 4712 | na | 4 | ≤0.03 - > 64 | 494 | na | 4 | 0.5 - > 64 | 2737 | na | 4 | ≤0.03 - > 64 | 552 | na | 4 | 0.12 - > 64 | 204 | na | 4 | ≤0.03 - 8 | 725 | na | 4 | ≤0.03 - 32 |
| | Clindamycin | 2692 | 96.1 | 0.12 | ≤0.03 - > 4 | 454 | 93.2 | 0.25 | ≤0.03 - > 4 | 1264 | 97.0 | 0.12 | ≤0.03 - > 4 | 544 | 97.1 | 0.12 | ≤0.03 - > 4 | 203 | 99.5 | 0.12 | ≤0.03 - > 4 | 227 | 92.1 | 0.25 | ≤0.03 - > 4 |
| | Daptomycin | 2692 | 100 | 0.5 | ≤0.06 - 1 | 454 | 100 | 0.5 | ≤0.06 - 1 | 1264 | 100 | 0.5 | ≤0.06 - 1 | 544 | 100 | 0.5 | 0.12 - 1 | 203 | 100 | 0.5 | 0.12 - 1 | 227 | 100 | 0.5 | 0.12 - 1 |
| | Erythromycin | 2692 | 77.3 | 8 | ≤0.12 - > 8 | 454 | 78.9 | > 4 | ≤0.12 - > 8 | 1264 | 81.7 | > 4 | ≤0.12 - > 8 | 544 | 71.9 | > 8 | ≤0.12 - > 8 | 203 | 81.8 | > 4 | 0.25 - > 8 | 227 | 58.1 | 8 | ≤0.12 - > 8 |
| | Gentamicin | 2692 | 95.0 | ≤2 | ≤0.06 - > 32 | 454 | 90.1 | 2 | ≤0.06 - > 32 | 1264 | 97.6 | ≤2 | ≤0.06 - > 32 | 544 | 93.6 | ≤2 | ≤0.06 - > 32 | 203 | 91.6 | 2 | ≤0.06 - > 32 | 227 | 96.9 | ≤2 | 0.12 - > 32 |
| | Levofloxacin | 5806 | 92.0 | 0.5 | ≤0.03 - > 32 | 671 | 88.1 | 4 | 0.03 - > 32 | 3265 | 92.9 | 0.5 | ≤0.03 - > 32 | 703 | 97.7 | 0.25 | 0.03 - 32 | 297 | 91.2 | 0.5 | ≤0.06 - 8 | 870 | 87.5 | 4 | ≤0.06 - > 32 |
| | Linezolid | 5806 | 100 | 2 | ≤0.5 - > 8 | 671 | 99.9 | 2 | ≤0.5 - > 8 | 3265 | 100 | 2 | ≤0.5 - 4 | 703 | 100 | 2 | ≤0.5 - 4 | 297 | 100 | 2 | ≤0.5 - 4 | 870 | 100 | 2 | ≤0.5 - 4 |
| | Trimethoprim Sulfa | 2692 | 99.0 | ≤1 | ≤0.03 - > 4 | 454 | 97.4 | ≤1 | ≤0.03 - > 4 | 1264 | 99.7 | ≤1 | ≤0.03 - > 4 | 544 | 99.6 | ≤1 | ≤0.03 - > 4 | 203 | 97.0 | ≤1 | ≤0.03 - > 4 | 227 | 98.7 | ≤1 | ≤0.03 - > 2 |
| | Vancomycin | 5806 | 100 | 1 | ≤0.12 - 2 | 671 | 100 | 1 | ≤0.25 - 2 | 3265 | 100 | 1 | ≤0.12 - 2 | 703 | 100 | 2 | 0.25 - 2 | 297 | 100 | 1 | ≤0.12 - 2 | 870 | 100 | 1 | ≤0.12 - 2 |
| *Staphylococcus aureus*, MRSA | Ceftaroline | 2454 | 91.4 | 1 | ≤0.015 - 8 | 474 | 81.6 | 2 | 0.06 - 8 | 1147 | 95.4 | 1 | 0.25 - 4 | 464 | 87.9 | 2 | ≤0.015 - 2 | 159 | 90.6 | 1 | 0.25 - 2 | 210 | 99.5 | 1 | 0.25 - 2 |
| | Ceftriaxone | 3655 | na | > 64 | ≤0.03 - > 64 | 621 | na | > 64 | 0.12 - > 64 | 1780 | na | > 64 | ≤0.03 - > 64 | 474 | na | > 64 | 1 - > 64 | 193 | na | > 64 | 0.06 - > 64 | 587 | na | > 64 | 1 - > 64 |
| | Clindamycin | 2454 | 64.9 | > 4 | ≤0.03 - > 4 | 474 | 58.6 | > 4 | ≤0.03 - > 4 | 1147 | 73.0 | > 4 | ≤0.03 - > 4 | 464 | 45.9 | > 4 | ≤0.03 - > 4 | 159 | 69.8 | > 4 | ≤0.03 - > 4 | 210 | 73.3 | > 4 | ≤0.03 - > 4 |
| | Daptomycin | 2454 | 99.8 | 1 | 0.12 - 4 | 474 | 99.8 | 1 | 0.12 - 2 | 1147 | 99.7 | 1 | 0.25 - 2 | 464 | 100 | 1 | 0.25 - 1 | 159 | 99.4 | 1 | 0.25 - 4 | 210 | 99.5 | 1 | 0.25 - 2 |
| | Erythromycin | 2454 | 33.8 | > 8 | ≤0.12 - > 8 | 474 | 30.4 | > 8 | ≤0.12 - > 8 | 1147 | 39.3 | > 8 | ≤0.12 - > 8 | 464 | 29.3 | > 8 | ≤0.12 - > 8 | 159 | 43.4 | > 8 | ≤0.12 - > 8 | 210 | 14.3 | > 8 | ≤0.12 - > 8 |
| | Gentamicin | 2454 | 80.1 | > 32 | ≤0.06 - > 32 | 474 | 64.3 | > 32 | ≤0.06 - > 32 | 1147 | 87.0 | 32 | ≤0.06 - > 32 | 464 | 79.3 | > 32 | ≤0.06 - > 32 | 159 | 59.7 | > 32 | ≤0.06 - > 32 | 210 | 94.8 | ≤2 | 0.12 - > 32 |
| | Levofloxacin | 4056 | 28.8 | 16 | ≤0.06 - > 32 | 686 | 43.1 | 8 | ≤0.06 - > 32 | 1936 | 18.9 | 32 | ≤0.06 - > 32 | 575 | 41.7 | > 4 | ≤0.06 - > 32 | 223 | 32.7 | > 4 | 0.12 - 16 | 636 | 30.2 | > 32 | ≤0.06 - > 32 |
| | Linezolid | 4056 | 100 | 2 | ≤0.5 - 4 | 686 | 100 | 2 | ≤0.5 - 4 | 1936 | 100.0 | 2 | ≤0.5 - 4 | 575 | 100 | 2 | ≤0.5 - 4 | 223 | 100 | 2 | ≤0.5 - 4 | 636 | 100 | 2 | ≤0.5 - 4 |
| | Trimethoprim Sulfa | 2454 | 95.0 | ≤1 | ≤0.03 - > 4 | 474 | 89.0 | 4 | ≤0.03 - > 4 | 1147 | 98.8 | ≤1 | ≤0.03 - > 4 | 464 | 97.6 | ≤1 | ≤0.03 - > 4 | 159 | 83.0 | > 4 | 0.06 - > 4 | 210 | 91.4 | ≤1 | 0.06 - > 4 |
| | Vancomycin | 4056 | 100 | 1 | ≤0.12 - 2 | 686 | 100 | 1 | ≤0.25 - 2 | 1936 | 100 | 1 | ≤0.12 - 2 | 575 | 100 | 2 | ≤0.25 - 2 | 223 | 100 | 2 | 0.5 - 2 | 636 | 100 | 1 | 0.25 - 2 |
| *Staphylococcus epidermidis* | Ceftaroline | 1978 | na | 0.5 | ≤0.015 - 4 | 234 | na | 0.5 | 0.03 - 2 | 1035 | na | 0.5 | ≤0.015 - 2 | 357 | na | 0.5 | ≤0.015 - 2 | 166 | na | 0.5 | 0.03 - 2 | 186 | na | 0.5 | 0.03 - 4 |
| | Ceftriaxone | 2440 | na | > 32 | ≤0.03 - > 64 | 155 | na | > 32 | ≤0.5 - > 32 | 1795 | na | > 32 | ≤0.03 - > 64 | 270 | na | > 32 | ≤0.5 - > 32 | 127 | na | > 32 | ≤0.5 - > 32 | 93 | na | > 32 | ≤0.5 - > 32 |
| | Clindamycin | 1978 | 55.1 | > 4 | ≤0.03 - > 4 | 234 | 56.0 | > 4 | ≤0.03 - > 4 | 1035 | 57.3 | > 4 | ≤0.03 - > 4 | 357 | 51.0 | > 4 | ≤0.03 - > 4 | 166 | 48.8 | > 4 | ≤0.03 - > 4 | 186 | 55.4 | > 4 | ≤0.03 - > 4 |
| | Daptomycin | 1978 | 99.8 | 1 | ≤0.06 - 2 | 234 | 100 | 1 | 0.25 - 1 | 1035 | 99.7 | 1 | ≤0.06 - 2 | 357 | 100 | 1 | ≤0.06 - 1 | 166 | 100 | 1 | ≤0.06 - 1 | 186 | 100 | 1 | 0.12 - 1 |
| | Erythromycin | 1978 | 30.1 | > 8 | ≤0.12 - > 8 | 234 | 31.2 | > 8 | ≤0.12 - > 8 | 1035 | 30.4 | > 8 | ≤0.12 - > 8 | 357 | 27.5 | > 8 | ≤0.12 - > 8 | 166 | 26.5 | > 8 | ≤0.12 - > 8 | 186 | 35.5 | > 8 | ≤0.12 - > 8 |
| | Gentamicin | 1978 | 48.8 | > 32 | ≤0.06 - > 32 | 234 | 51.3 | > 32 | ≤0.06 - > 32 | 1035 | 46.5 | > 32 | ≤0.06 - > 32 | 357 | 44.8 | > 32 | ≤0.06 - > 32 | 166 | 48.8 | > 32 | ≤0.06 - > 32 | 186 | 66.1 | 32 | ≤0.06 - > 32 |
| | Levofloxacin | 3015 | 37.3 | 8 | ≤0.03 - > 32 | 234 | 41.5 | > 4 | ≤0.03 - > 4 | 2070 | 34.8 | 8 | ≤0.03 - > 32 | 358 | 43.3 | > 4 | 0.06 - > 4 | 167 | 44.9 | > 4 | 0.12 - > 4 | 186 | 41.9 | > 4 | ≤0.03 - > 4 |
| | Linezolid | 3015 | 98.7 | 2 | ≤0.5 - > 8 | 234 | 100 | 2 | ≤0.5 - 2 | 2070 | 98.5 | 2 | ≤0.5 - > 8 | 358 | 98.6 | 2 | ≤0.5 - > 8 | 167 | 99.4 | 2 | ≤0.5 - > 8 | 186 | 100 | 2 | ≤0.5 - 2 |
| | Trimethoprim Sulfa | 1978 | 54.3 | > 4 | ≤0.03 - > 4 | 234 | 53 | > 4 | ≤0.03 - > 4 | 1035 | 58.5 | > 4 | ≤0.03 - > 4 | 357 | 49 | > 4 | ≤0.03 - > 4 | 166 | 45.8 | > 4 | 0.06 - > 4 | 186 | 50.5 | > 4 | ≤0.03 - > 4 |
| | Vancomycin | 3015 | 99.8 | 2 | ≤0.12 - 8 | 234 | 99.6 | 2 | 0.5 - 8 | 2070 | 100 | 2 | ≤0.12 - 8 | 358 | 99.2 | 2 | ≤0.25 - 8 | 167 | 100 | 2 | 0.5 - 4 | 186 | 100 | 2 | ≤0.25 - 4 |
| *Streptococcus pneumoniae*, penicillin-susceptible | Ceftaroline | 1821 | 100 | 0.015 | ≤0.004 - 0.12 | 201 | 100 | 0.015 | ≤0.004 - 0.12 | 1124 | 100 | 0.015 | ≤0.004 - 0.12 | 146 | 100 | 0.015 | ≤0.004 - 0.06 | 126 | 100 | 0.015 | ≤0.004 - 0.03 | 224 | 100 | 0.008 | ≤0.004 - 0.06 |
| | Ceftriaxone | 3672 | 100 | 0.06 | ≤0.015 - 1 | 226 | 100 | 0.06 | ≤0.015 - 0.5 | 2350 | 100 | 0.06 | ≤0.015 - 1 | 224 | 100 | 0.06 | ≤0.015 - 0.25 | 160 | 100 | 0.06 | ≤0.015 - 0.25 | 712 | 100 | 0.03 | ≤0.015 - 0.5 |
| | Erythromycin | 3554 | 88.9 | > 1 | ≤0.008 - > 64 | 223 | 78.9 | > 1 | ≤0.008 - > 64 | 2283 | 92.6 | 0.06 | ≤0.008 - > 64 | 212 | 90.6 | 0.06 | ≤0.008 - > 64 | 158 | 91.8 | 0.06 | ≤0.008 - 64 | 678 | 78.8 | 4 | ≤0.015 - > 64 |
| | Linezolid | 3672 | 99.7 | 1 | ≤0.06 - 16 | 226 | 99.6 | 1 | ≤0.12 - > 8 | 2350 | 99.6 | 1 | ≤0.06 - 16 | 224 | 99.6 | 1 | ≤0.06 - 4 | 160 | 100 | 1 | ≤0.06 - 2 | 712 | 99.7 | 1 | ≤0.06 - 8 |
| | Vancomycin | 3672 | 100 | 0.5 | ≤0.008 - 1 | 226 | 100 | 0.5 | 0.015 - 1 | 2350 | 100 | 0.5 | ≤0.008 - 1 | 224 | 100 | 0.5 | 0.06 - 0.5 | 160 | 100 | 0.5 | 0.06 - 1 | 712 | 100 | 0.5 | ≤0.03 - 1 |
| *Streptococcus pneumoniae*, penicillin-non-susceptible | Ceftaroline | 600 | 99.7 | 0.25 | ≤0.004 - 2 | 126 | 99.2 | 0.25 | 0.008 - 2 | 240 | 99.6 | 0.25 | ≤0.004 - 1 | 91 | 100 | 0.25 | ≤0.004 - 0.25 | 78 | 100 | 0.25 | 0.008 - 0.5 | 65 | 100 | 0.12 | ≤0.004 - 0.25 |
| | Ceftriaxone | 1413 | 90.7 | 1 | ≤0.015 - 64 | 157 | 79.6 | 2 | ≤0.03 - 8 | 715 | 92.7 | 1 | ≤0.015 - > 4 | 156 | 87.8 | 2 | ≤0.03 - 2 | 122 | 87.7 | 2 | ≤0.03 - > 4 | 263 | 95.1 | 1 | ≤0.015 - 64 |
| | Erythromycin | 1372 | 42.5 | > 64 | ≤0.015 - > 64 | 154 | 30.5 | 16 | ≤0.015 - > 64 | 697 | 52.8 | > 64 | ≤0.015 - > 64 | 152 | 30.3 | 64 | ≤0.015 - > 64 | 118 | 38.1 | 64 | ≤0.015 - > 64 | 251 | 30.7 | > 64 | ≤0.015 - > 64 |
| | Linezolid | 1413 | 98.5 | 1 | ≤0.06 - 16 | 157 | 95.5 | 2 | 0.25 - 16 | 715 | 99.0 | 1 | ≤0.06 - 16 | 156 | 98.7 | 1 | ≤0.06 - 4 | 122 | 97.5 | 1 | ≤0.06 - > 8 | 263 | 99.2 | 1 | 0.12 - > 8 |
| | Vancomycin | 1413 | 100 | 0.5 | 0.06 - 1 | 157 | 100 | 0.5 | ≤0.12 - 0.5 | 715 | 100 | 0.5 | 0.06 - 1 | 156 | 100 | 0.5 | ≤0.12 - 1 | 122 | 100 | 0.5 | ≤0.12 - 1 | 263 | 100 | 0.5 | ≤0.12 - 1 |
| Beta hemolytic streptococci | Ceftaroline | 1453 | 100 | 0.015 | ≤0.004 - 0.06 | 250 | 100 | 0.015 | ≤0.004 - 0.06 | 638 | 100 | 0.015 | ≤0.004 - 0.03 | 203 | 100 | 0.015 | ≤0.004 - 0.06 | 129 | 100 | 0.015 | ≤0.004 - 0.06 | 233 | 100 | 0.015 | ≤0.004 - 0.03 |
| | Ceftriaxone | 2901 | 99.9 | 0.12 | ≤0.015 - > 64 | 313 | 100 | 0.12 | ≤0.015 - 0.5 | 1474 | 99.9 | 0.12 | ≤0.015 - > 64 | 253 | 100 | 0.12 | ≤0.015 - 0.5 | 172 | 100 | 0.12 | ≤0.015 - 0.12 | 689 | 99.7 | 0.12 | ≤0.015 - 1 |
| | Daptomycin | 1031 | 100 | 0.5 | ≤0.03 - 1 | 192 | 100 | 0.5 | ≤0.03 - 1 | 449 | 100 | 0.25 | ≤0.03 - 1 | 155 | 100 | 0.5 | ≤0.03 - 1 | 104 | 100 | 0.25 | ≤0.03 - 0.5 | 131 | 100 | 0.5 | ≤0.03 - 1 |
| | Erythromycin | 1453 | 80.5 | > 1 | ≤0.008 - > 1 | 250 | 72.8 | > 1 | ≤0.008 - > 1 | 638 | 85.4 | > 1 | ≤0.008 - > 1 | 203 | 89.7 | 0.5 | ≤0.008 - > 1 | 129 | 91.5 | 0.06 | 0.015 - > 1 | 233 | 61.4 | > 1 | ≤0.008 - > 1 |
| | Linezolid | 2901 | 100 | 1 | ≤0.06 - 4 | 313 | 99.7 | 2 | ≤0.06 - 4 | 1474 | 100 | 1 | 0.12 - 2 | 253 | 100 | 1 | 0.25 - 2 | 172 | 100 | 1 | 0.12 - 2 | 689 | 100 | 1 | 0.25 - 2 |
| | Penicillin | 2901 | 100 | 0.12 | ≤0.015 - > 8 | 313 | 100 | 0.06 | ≤0.015 - 0.12 | 1474 | 99.9 | 0.12 | ≤0.015 - > 8 | 253 | 100 | 0.06 | ≤0.015 - 0.12 | 172 | 100 | 0.12 | ≤0.015 - 0.12 | 689 | 100 | 0.12 | ≤0.015 - 0.12 |
| | Vancomycin | 2901 | 100 | 0.5 | 0.015 - 1 | 313 | 100 | 0.5 | 0.015 - 1 | 1474 | 100 | 0.5 | 0.06 - 1 | 253 | 100 | 0.5 | ≤0.12 - 0.5 | 172 | 100 | 0.5 | 0.25 - 1 | 689 | 100 | 0.5 | ≤0.12 - 1 |

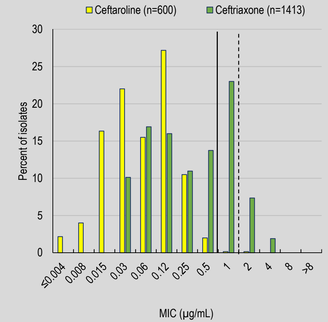
%S, percent susceptible; $MIC_{90}$, range in µg/mL; MRSA, methicillin-resistant *S. aureus*; MSSA, methicillin-susceptible *S. aureus*; Beta hemolytic streptococci includes *S. agalactiae* (n=342), *S. dysgalactiae* (n=305), and *S. pyogenes* n=806).

Figure 1. Ceftaroline and ceftriaxone MIC distributions for penicillin-susceptible *Streptococcus pneumoniae*



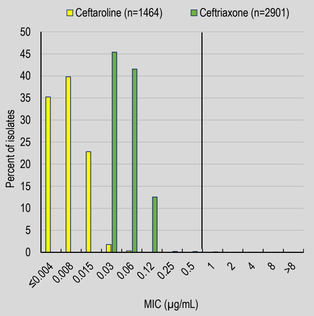

The solid line indicates the CLSI susceptible MIC breakpoint for ceftaroline; the dotted line indicates the CLSI susceptible MIC breakpoint for ceftriaxone

Figure 2. Ceftaroline and ceftriaxone MIC distributions for penicillin-non-susceptible *Streptococcus pneumoniae*



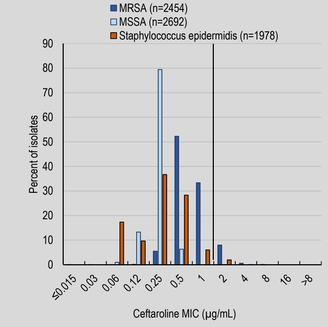

The solid line indicates the CLSI susceptible MIC breakpoint for ceftaroline; the dotted line indicates the CLSI susceptible MIC breakpoint for ceftriaxone

Figure 3. Ceftaroline and ceftriaxone MIC distributions for β-hemolytic streptococci




The solid line indicates the CLSI susceptible MIC breakpoint for ceftaroline and ceftriaxone
Beta-hemolytic streptococci consist of (ceftaroline/ceftriaxone) *S. agalactiae* (n=342/1625); *S. dysgalactiae* (n=305/305); *S. pyogenes* (n=806/960)

Figure 4. Ceftaroline MIC distributions for *Staphylococcus* spp.




The solid line indicates the *S. aureus* CLSI susceptible MIC breakpoint for ceftaroline
MRSA, methicillin-resistant *S. aureus*; MSSA, methicillin-susceptible *S. aureus*;

## Results Summary

- The *in vitro* activity of ceftaroline and comparators against each organism group is provided in Table 1. Ceftaroline MIC distributions are provided in Figures 1 through 4.
- Overall, 100% of MSSA and 91.4% of MRSA from bloodstream infections were susceptible to ceftaroline (MIC ≤1 µg/mL). 98.0% of the *S. epidermidis* isolates had MIC values ≤1 µg/mL. Two MRSA isolates (one each from Thailand and S. Korea) were resistant to ceftaroline (MIC >4 ug/mL).
- 99% of *S. pneumoniae* and 100% of β-hemolytic streptococci were susceptible to ceftaroline (MIC ≤0.5 µg/mL).

## Conclusions

Ceftaroline continues to demonstrate potent *in vitro* activity against clinically relevant Gram positive pathogens associated with BSI.

## References

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## Disclosures

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