**METHODS**

217 unique hospital-acquired (HA-SA) and 180 unique community-acquired S. aureus (CA-SA) isolates were collected from pneumonia patients from 19 European countries including Belarus, Belgium, Czech Republic, France, Germany, Greece, Hungary, Ireland, Israel, Italy, Poland, Portugal, Romania, Russia, Slovenia, Spain, Sweden, Turkey and United Kingdom (32 sites) in 2015 as part of the SENTRY surveillance project. Only one isolate per patient infection episode was included in surveillance. For this investigation, a S. aureus isolate obtained from an outpatient or earlier than 48 hours after hospitalization was considered community-acquired (CAP), whereas S. aureus isolates obtained later than 48 hours after hospitalization were considered hospital-acquired (HAP).

Susceptibility testing was conducted using the CLSI broth microdilution method and susceptibility was calculated using EUCAST 2017 breakpoints.6,8 Our reference organisms were tested concurrently for lefamulin and comparator agents.

**RESULTS**

Susceptibility rates for lefamulin were determined in HAP and CAP isolates from HAP and CAP patients. The lefamulin activity was unaffected by resistance to the other antibiotics tested including macrolides, fluoroquinolones, tetracyclines and others.

Among HAP isolates, 24.4% were MRSA which was slightly higher than for CAP strains (21.7%). HAP and CAP isolates showed similar susceptibility rates, with MRSA displaying higher resistance rate than MSSA isolates. Lefamulin displayed potent activity against MSSA and CA-MSSA isolates with 97.6% and 96.5% of CA-MSSA were susceptible to lefamulin.

HA-MRSA and 76.9% of CA-MRSA were susceptible to ceftaroline, while 100% of HA-MSSA and 96.5% of CA-MSSA were susceptible to levofloxacin.

9.4% of HA-MRSA and 12.8% of CA-MRSA were susceptible to levofloxacin, whereas 97.6% of HA-MSSA and 96.5% of CA-MSSA were susceptible to levofloxacin.

79.5% of CA-MRSA and 77.3% of HA-MRSA were resistant to azithromycin.

MRSA showed higher resistance rates to azithromycin, cefotaxime or lefamulin. 71.6% CA-MRSA and 81.1% HA-MRSA were susceptible to azithromycin.

Only 9.4% of HA-MRSA and 12.8% of CA-MRSA were susceptible to ceftaroline, whereas 97.6% of HA-MSSA and 96.5% of CA-MSSA were susceptible to ceftaroline.

69.8% HA-MRSA and 76.9% CA-MRSA were susceptible to cefotaxime, while 100% of HA-MSSA and CA-MSSA were susceptible.

**REFERENCES**


**CONCLUSIONS**

- Lefamulin displayed potent activity against S. aureus isolates collected from HAP and CAP patients including MRSA and MSSA irrespective of their resistance phenotypes.
- HAP and CAP isolates showed similar susceptibility rates, with MRSA displaying higher resistance rate than macrodilides, lefamulin and cefotaxime than MSSA.
- These data support the development of lefamulin for infections caused by S. aureus, including CAP, HAP and acute bacterial skin and structure infections (ABSSSI).

- The lefamulin activity was unaffected by resistance to the other antibiotics tested including macrolides, fluoroquinolones, tetracyclines and others.
- Among HAP isolates, 24.4% were MRSA which was slightly higher than for CAP strains (21.7%). HAP and CAP isolates showed overall similar MIC distributions and susceptibility rates for lefamulin and comparators. This study investigated the susceptibility of S. aureus strains to lefamulin and comparators collected from HAP and hospitalized CAP patients in Europe in 2015.

**INTRODUCTION & PURPOSE**

Background: Lefamulin is the first semi-synthetic pleuromutilin antibiotic for IV and oral use in humans. Lefamulin inhibits bacterial protein synthesis by binding to the A- and P-site of the peptidyl transferase centre of the 50S ribosomal preventing the correct positioning of the CCA-ends of tRNA.1,2 Lefamulin is currently in Phase 3 trials for the treatment of CAP in adults. Its antibacterial profile covers the most important Gram-positive, fastidious Gram-negative and atypical bacterial pathogens causing pneumonia.3,4 Lefamulin is the second most common nosocomial bacterial infection and the primary cause of death among nosocomial infections, particularly in intensive care units. S. aureus is a well-recognized pathogen causing nosocomial infections, particularly in intensive care units. S. aureus is a well-recognized pathogen causing nosocomial infections, particularly in intensive care units. 8

HAP is the second most common community-acquired (CAP), whereas than 48 hours after hospitalization were considered hospital-acquired (HAP). 8

Among HAP isolates, 24.4% were MRSA which was slightly higher than for CAP strains (21.7%). HAP and CAP isolates showed similar MIC distributions and susceptibility rates for lefamulin and comparators.

- Among HAP isolates, 24.4% were MRSA which was slightly higher than for CAP strains (21.7%). HAP and CAP isolates showed overall similar MIC distributions and susceptibility rates for lefamulin and comparators. This study investigated the susceptibility of S. aureus strains to lefamulin and comparators collected from HAP and hospitalized CAP patients in Europe in 2015.

**RESULTS (continued)**

- Lefamulin was the most potent compound tested, with 100% of HA-SA and CA-SA isolates inhibited at a concentration of 0.025 mg/L and 0.12 mg/L, respectively.
- Susceptibility to lefamulin was similar for both subsets, hospital-acquired and community acquired isolates (Table 1 and Figure 1). The lefamulin activity was unaffected by resistance to the other antibiotics tested including macrolides, fluoroquinolones, tetracyclines and others.
- Among HAP isolates, 24.4% were MRSA which was slightly higher than for CAP strains (21.7%). HAP and CAP isolates showed overall similar MIC distributions and susceptibility rates for lefamulin and comparators. This study investigated the susceptibility of S. aureus strains to lefamulin and comparators collected from HAP and hospitalized CAP patients in Europe in 2015.

- Men and women from HAP and CAP patients. The lefamulin activity was unaffected by resistance to the other antibiotics tested including macrolides, fluoroquinolones, tetracyclines and others. Among HAP isolates, 24.4% were MRSA which was slightly higher than for CAP strains (21.7%). HAP and CAP isolates showed overall similar MIC distributions and susceptibility rates for lefamulin and comparators.

- Among HAP isolates, 24.4% were MRSA which was slightly higher than for CAP strains (21.7%). HAP and CAP isolates showed overall similar MIC distributions and susceptibility rates for lefamulin and comparators. This study investigated the susceptibility of S. aureus strains to lefamulin and comparators collected from HAP and hospitalized CAP patients in Europe in 2015.

- Men and women from HAP and CAP patients. The lefamulin activity was unaffected by resistance to the other antibiotics tested including macrolides, fluoroquinolones, tetracyclines and others. Among HAP isolates, 24.4% were MRSA which was slightly higher than for CAP strains (21.7%). HAP and CAP isolates showed overall similar MIC distributions and susceptibility rates for lefamulin and comparators.

- Men and women from HAP and CAP patients. The lefamulin activity was unaffected by resistance to the other antibiotics tested including macrolides, fluoroquinolones, tetracyclines and others. Among HAP isolates, 24.4% were MRSA which was slightly higher than for CAP strains (21.7%). HAP and CAP isolates showed overall similar MIC distributions and susceptibility rates for lefamulin and comparators. This study investigated the susceptibility of S. aureus strains to lefamulin and comparators collected from HAP and hospitalized CAP patients in Europe in 2015.