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Antimicrobials: Resistance surveillance

**In vitro activity of ceftaroline against common causative pathogens of complicated skin and soft tissue infections in France: results from PREMIUM, a prospective national multi-centre study**

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**Introduction:** Ceftaroline is a new cephalosporin with retained activity against methicillin-resistant *Staphylococcus aureus* (MRSA). Ceftaroline is indicated in the treatment of complicated skin and soft tissue infections (cSSTIs).

**Aim of the study:** To determine the distribution of pathogens causing cSSTIs diagnosed in French hospitals and to test their in vitro antimicrobial susceptibility, including ceftaroline and comparators.

**Methods:** The PREMIUM study is a prospective national multi-center study involving 18 hospital centers across France. From February 1, 2012 to June 1, 2013 each center collected 50 consecutive isolates cultured from patients with cSSTIs, excluding obligate anaerobes. All isolates were centralized in a core laboratory (Bacteriology Laboratory, Henri Mondor University Hospital). Their susceptibility to ceftaroline and to antimicrobial comparators was assessed by minimum inhibitory concentration (MIC) determination using broth microdilution method, in accordance with EUCAST guidelines.

**Results achieved:** 821 bacterial isolates were included from invasive sampling, mainly per-operative sampling (44%) and syringe aspiration (22%), divided equally between nosocomial (48.9%) and community-acquired origin (51.1%). The distribution of pathogens was as follows: *Staphylococcus aureus* (41%, n= 332, including 20% / n=67 MRSA) Enterobacteriaceae (29%, n= 239, including 12 % of extended spectrum beta-lactamase producer), beta-haemolytic *Streptococcus* (7%), *Pseudomonas aeruginosa* (4%), coagulase-negative staphylococci (4%) including *S. lugdunensis* (1.7%), enterococci (4%), other bacteria (11%). The percentage of ceftaroline susceptible isolates among *S. aureus* was 99.4% (MIC range: 0.006-2 mg/L, MIC<sub>90</sub> of 0.5 mg/L), vs 91.3% for clindamycin, 98.8% for gentamicin and 81.7% for levofloxacin; all the isolates were susceptible to vancomycin, daptomycin, linezolid and tigecycline. Two ceftaroline resistant strains (MIC = 2 mg/L) were identified among the MRSA isolates (97% susceptible, MIC range: 0.012-2 mg/L, MIC<sub>90</sub> of 1 mg/L). Among the Enterobacteriaceae, 70.3% of isolates were susceptible to ceftaroline (MIC range: 0.015 - 32 mg/L, MIC<sub>90</sub> of 32 mg/L) vs 82.8% for cefotaxime, 80.4 for the piperacillin – tazobactam combination, 98.7% for ertapenem, 85.8% for levofloxacin and 97.7% for amikacin. Among the streptococci, 97% had an MIC less than or equal to 0.25 mg/L.

**Conclusion:** Distribution of bacteria responsible for cSSTIs in France was in accordance with previously published data. Ceftaroline is a new cephalosporin whose spectrum of activity is suitable for bacteria isolated in France during cSSTIs diagnosed in the hospital, excluding obligate anaerobes, *P. aeruginosa*, enterococci and cefotaxime resistant Enterobacteriaceae.