

Session: P006 MRSA and MSSA: epidemiology and resistance

**Category: 3a. Resistance surveillance & epidemiology: MRSA, VRE & other Gram-positives**

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**In vitro activity of ceftaroline against pathogens isolated from infants <1 year old collected from the AWARE surveillance programme, 2014-2015**

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**Background:** Ceftaroline, the active metabolite of ceftaroline-fosamil, is a cephalosporin developed for treating infections caused by *Staphylococcus aureus*, including methicillin-resistant *S. aureus* (MRSA), *S. pneumoniae*,  $\beta$ -hemolytic streptococci, and some gram-negative pathogens. In this regard ceftaroline might be effective for the treatment of certain infections afflicting paediatric patients. To evaluate this potential this report investigated the *in vitro* activity of ceftaroline against clinically relevant isolates collected in 2014-2015 from infants  $\leq 1$  year old.

**Material/methods:** 1,971 non-duplicate *S. aureus* (MSSA and MRSA), *Streptococcus pneumoniae*, *Streptococcus agalactiae*, *Haemophilus influenzae*, and ESBL-negative *Enterobacteriaceae* from paediatric patients aged  $\leq 1$  year were collected worldwide during 2014 – 2015. Isolates were from complicated intraabdominal, complicated urinary tract, complicated skin and skin structure and lower respiratory tract infections. MIC values were determined by broth microdilution and interpreted using EUCAST breakpoints.

**Results:** Ceftaroline activity based on % susceptibility (%S) and MIC<sub>90</sub> is shown in the table. Ceftaroline was active *in vitro* against both gram-positive (100% of MSSA, 97.5% of MRSA

and 99.4% of *S. pneumoniae* susceptible) and gram-negative (97.1% of *H. influenzae* and 91.4% of ESBL-negative Enterobacteriaceae) isolates.

### ***In vitro* Activity of Ceftaroline**

<b>Organism (n)</b>	<b>Breakpoint (S R)</b>	<b>%S</b>	<b>%R</b>	<b>MIC<sub>50</sub></b>	<b>MIC<sub>90</sub></b>	<b>Range</b>
<i>S. aureus</i> , MRSA (363)	≤1   >1	97.5	2.5	0.5	1	0.25 - 4
<i>S. aureus</i> , MSSA (353)	≤1   >1	100	0	0.25	0.25	0.06 - 0.5
<i>S. pneumoniae</i> (333)	≤0.25   >0.25	99.4	0.6	0.008	0.12	≤0.004 - 0.5
<i>H. influenzae</i> (104)	≤0.03   >0.03	97.1	2.9	0.03	0.03	≤0.015 - 0.5
Enterobacteriaceae, ESBL Negative (818)	≤0.5   >0.5	91.4	8.6	0.12	0.5	≤0.015 - > 128

%S, %R- percent susceptible, resistant based on EUCAST breakpoints; MIC<sub>50</sub>, MIC<sub>90</sub>, range in mg/L

**Conclusions:** Based on these data generated with isolates collected from 2014 – 2015, ceftaroline exhibited potent *in vitro* activity against isolates from infants, with >91% of all isolates susceptible at their EUCAST breakpoints.