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Abstract (poster session)

Antimicrobial susceptibility of Gram-negative bacteria causing urinary tract infections in European and United States hospitals (2009-2011)

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Objective: To evaluate the antimicrobial susceptibility (S) pattern of bacteria isolated from patients with urinary tract infections (UTI) or associated bacteremia in European (EU) and United States (USA) hospitals. UTIs are a major cause of hospital admissions and are associated with significant morbidity. Selection of proper antimicrobial should consider local resistance (R) patterns, and R to first-line antimicrobial agents has become increasingly common. Methods: Isolates were collected from 34 hospitals in 9 EU countries and 64 centres in USA, from patients with UTI in 2009-2011. S testing was performed by the CLSI broth microdilution method, and the antimicrobial S rates of main Gram-negative (GN) organisms were evaluated using EUCAST and CLSI breakpoints. Results: 1594 and 2144 GN isolates from EU and USA, respectively, were evaluated. E. coli represented 61.6/41.7% of isolates from EU/USA and showed ESBL phenotype rates varying from 9.7/8.1 in 2009 to 14.2/8.3% in 2011 in EU/USA. E. coli S rates (EUCAST) for ciprofloxacin (CIP; 74.6-75.6%) and gentamicin (GEN; 89.9-92.2%) were similar in EU and USA. Among Klebsiella spp. (KSP), ESBL rates varied from 17.1/14.4 in 2009 to 37.4/9.1% in 2011 in EU/USA, and S rates were generally lower in EU compared to USA. P. mirabilis exhibited ESBL rates of 7.0% in EU and 1.4% in USA. S to ceftazidime (CAZ) was lower in EU (68.8%) than USA (85.2%) among Enterobacter spp.. P. aeruginosa was the most common non-enteric bacillus in EU (4.6%) and in the USA (3.3%), and had lower S to CAZ, piperacillin/tazobactam (P/T) and GEN in EU compared to USA. Only amikacin (95.8-97.3% S) and colistin (100.0% S) were active against >86% of PSA strains. Indole-positive Proteae (IPP) showed modest (<90%) S to CAZ, imipenem (IMI), CIP and GEN, and >96% S to P/T. Among Citrobacter spp. and S. marcescens, S rates were similar in EU and USA, except for lower S to CIP in EU compared to USA. Conclusions: In general, the carbapenems were the most active compounds tested against UTI-associated organisms from EU and USA. S to IMI was >95% among the most common GN organisms isolated from UTI, except for PSA (82.4-84.5% S) and IPP (87.9-89.3% S). S to CAZ and P/T were generally lower in EU compared to USA. ESBL rates increased in EU and remained more stable (E. coli) or decreased (KSP) in USA overtime. Very few antimicrobials provided satisfactory coverage (>90%) against KSP in EU and PSA in either the EU or USA.

Organism	% susceptible (EUCAST) in EU / USA				
(no: EU / USA)	CAZ	P/T	IMI	CIP	GEN
E. coli (998/907)	91.0 / 93.3	91.2 / 94.8	100.0 / 100.0	75.6 / 74.6	92.2 / 89.9
Klebsiella spp. (225/605)	74.2 / 92.2	74.8 / 91.2	96.9 / 98.8	74.3 / 90.3	82.7 / 95.2
P. mirabilis (86/148)	96.5 / 99.3	97.7 / 100.0	95.3 / 96.6	70.9 / 66.9	86.1 / 81.1
Enterobacter spp. (80/135)	68.8 / 85.2	71.3 / 88.2	100.0 / 97.8	87.5 / 94.1	95.0 / 94.1
P. aeruginosa (74/71)	77.0 / 88.7	73.0 / 80.3	82.4 / 84.5	62.2 / 63.4	68.9 / 85.9
Indole-pos. Proteae (58/104)	75.9 / 76.9	96.6 / 96.2	87.9 / 89.3	75.9 / 61.4	72.4 / 80.8
Citrobacter spp. (49/139)	81.6 / 81.3	85.7 / 82.0	100.0 / 99.3	87.8 / 94.2	91.8 / 92.8
S. marcescens (24/35)	100.0 / 100.0	91.7 / 100.0	100.0 / 100.0	87.5 / 97.2	95.8 / 100.0

CAZ = ceftazidime, P/T = piperacillin/tazobactam, IMI = imipenem, CIP = ciprofloxacin and GEN = gentamicin