While higher minimum inhibitory concentrations (MICs) can inhibit antimicrobial effectiveness, dose adjustments can often mitigate this effect. The purpose of this study was to ascertain whether reported R in intensive care units (ICUs) to several commonly used agents has increased enough to significantly impact their ability to achieve a bactericidal effect.
Methods: We evaluated 74,235 Gram negative bacilli obtained in the Merck ICU Surveillance Program in the United States of America (USA) between 1993 and 2004. MICs to cefepime (FEP), ceftriaxone (CRO), imipenem (IMP) and piperacillin-tazobactam (TZP) were grouped into four 3-year periods. Patient-derived pharmacokinetics with Monte Carlo simulation were used to predict microbiological success in each period, as measured by cumulative fraction of response (CFR). Trends in CFR over the four 3-year periods of this survey were assessed using the Cochran-Armitage trend test. The primary analysis included all organisms aggregated; *P. aeruginosa* (PSA) and *Acinetobacter* spp. (ACNB) were also evaluated individually.
Results: In the primary analysis, IMP 1g q8 h showed %CFRs from 87 to 90 across all four study periods, a trend toward slightly improved susceptibility ($p < 0.0001$). %CFR for FEP 2g q12 h declined from 87 to 85, showing increasing R over time ($p < 0.01$). The %CFR for TZP 4.5g q6 h declined from 80 to 78, showing increasing R ($p < 0.05$). CRO had <52% CFR for all regimens in all periods, with no significant trend. Against PSA, significant declines in CFR were seen for (%CFR range, p-value): IMP 1g q8 h (82–79, <0.0001), FEP 1g q12 h (70–67, <0.01), FEP 2g q12 h (84–82, <0.05), TZP 3.375g q6 h (76–73, <0.01), TZP 4.5 q8 h (71–68, <0.01), and TZP 4.5 q6 h (80–77, <0.01). Against ACNB, all regimens of IMP, FEP and TZP showed significant declines in CFR over time ($p < 0.0001$).
Conclusions: These data suggest that increasing R in ICU pathogens is indeed present in the USA, and that drug effectiveness as measured by ability to attain pharmacodynamic targets has declined. Declines against PSA are significant, though FEP 2g q8 h remains potent and more aggressive dosing of IMP and TZP can preserve some viability for those compounds. The most relevant declines were seen against ACNB; only IMP remains a viable option against this pathogen.

P1814 Susceptibility to tigecycline and to an extended panel of antimicrobials of contemporary Gram-positive and Gram-negative Portuguese isolates

C. Silva-Costa, M. Ramirez, J. Melo-Cristino (Lisbon, PT)

Objectives: Antibacterial resistance is a frequent finding in common bacterial isolates from Portugal. Availability of new agents offer clinicians novel options for therapy. Tigecycline has a broad spectrum of activity, including strains resistant to other drugs. Strains collected in Portugal in 2005 were evaluated for susceptibility to tigecycline and several other antimicrobials.
Methods: A total of 1575 clinically significant isolates were collected and identified at 15 hospitals in Portugal. MICs were determined at the coordinating laboratory using E-tests, and interpreted according to CLSI guidelines. The antimicrobials tested against Gram positive bacteria were: tigecycline, vancomycin, teicoplanin, linezolid, quinupristin/dalfopristin, levofloxacin, gentamicin, streptomycin, rifampicin, erythromycin, benzylpenicillin, ampicillin, cefotaxime. The antimicrobials tested against Gram negative bacteria were: tigecycline, imipenem, trimethoprim/sulphamethoxazole, ciprofloxacin, levofloxacin, gatifloxacin, gentamicin, amikacin, ampicillin, cefotaxime, ceftazidime, cefepime, piperacillin/tazobactam, amoxicillin/clavulanic acid, ampicillin/sulbactam and sulbactam.
Results: Among Gram-positive isolates (n = 825), all Staphylococcus spp. isolates (n = 375), including methicillin-resistant strains, had tigecycline $MIC_{90} \leqslant 0.5$ mg/L. All *Enterococcus* spp. isolates (n = 150), including vancomycin-resistant strains, had tigecycline $MIC_{90} \leqslant 0.25$ mg/L. *Streptococcus pneumoniae* (n = 150), *Streptococcus pyogenes* (n = 75) and *Streptococcus agalactiae* (n = 75) had tigecycline $MIC_{90} \leqslant 0.25$ mg/L.
Among Gram-negative isolates (n = 750), ESBL-producing or quinolone resistant *Escherichia coli* (n = 225), *Klebsiella* spp. (n = 225) and *Enterobacter* (n = 75) isolates had tigecycline $MIC_{90} \leqslant 2$ mg/L. *Haemophilus* inlfuenzae (n = 75) had tigecycline $MIC_{90} \leqslant 0.5$ mg/L, Stenotrophomonas maltophilia (n = 75) had tigecycline $MIC_{90} \leqslant 1.5$ mg/L and *Acinetobacter baumannii* (n = 75) had tigecycline $MIC_{90} \leqslant 4$ mg/L.
Conclusion: Most of the pathogens analysed in this study were resistant to many broad-spectrum antibiotics. Tigecycline presented consistently low MIC_{90} values and broad spectrum of activity, including otherwise resistant strains. These characteristics should make tigecycline a useful option for difficult-to-treat infections.

P1815 Micronet: an Italian automatised laboratory based surveillance and early warning system for infectious diseases

F. D'Ancona, C. Rizzo, V. Alfonsi, M.L. Ciofi degli Atti on behalf of the Micronet Group

Objectives: In Italy several diseases specific surveillance systems have been in use to support mandatory notification of infectious diseases. These systems are mainly based on reporting by clinicians and they require additional resources also from clinical microbiologists. In 2005, the Istituto Superiore di Sanità, supported by Ministry of Health, began to create Micronet, the first Italian automatised laboratory based surveillance system.
Methods: Micronet is designed to be a sentinel surveillance system that collect all laboratory test results (positive and negative) from a convenience sample of peripheral microbiological laboratories. The approach is based on the clinical requests. All data are collected from the informative system (LIS) of each laboratory. Before the transmission to the central server, all data are converted automatically in Micronet data format using standardised tables. The data transmission is designed to be on daily basis.
Results: A group of microbiologists and epidemiologists produced 11 standardised tables, regularly updated. The Micronet team released the specifics for the exchange of the data in XLM format. Seven laboratories, as pilot test, implemented the tables and the specifics at local level, sending 3 months of data, corresponding, removing duplicates, to more than 50,000 records. All the data are stored into the Micronet central database and a web site was set up to provide feedback in terms of analysis on aggregated data. For specific requirements, data could be exported on statistical packages for analysis.
Conclusion: The potential users of Micronet are Regional Authorities (integrating existing clinical and laboratories surveillance system) National authorities (trend analysis, alert and support of the infectious diseases notification system) and participant laboratories (comparing local data with regional/national average). Micronet could also represents an important a national network providing instruments for rapid detection of outbreaks and assessment of microbiological trends. Micronet should be fully operative from January 2007 when it is also planned to recruit other laboratories in order to improve the representativeness of the system. The project is now facing some difficulties and criticalities such as the representativeness, comparability of data and methods for duplicates clearing, management of the standardised tables at local level, but the results obtained in the pilot phase show its potentialities.

P1816 Matching criteria in case-control studies in the field of antimicrobial resistance

M.E. Falagas, E.G. Mourtzoukou, K. Giannopoulou, V.G. Alexiou, P.I. Rafailidis (Athens, GR)

Objectives: Although the effect of confounding factors on the studied outcome may be taken under consideration in stratified or multivariable analysis of the data, another approach is to adjust for the effect of such factors in the design of the study. We evaluated the available evidence from case-control studies in the field of antimicrobial resistance to identify the degree that matching was performed and the criteria used to do so.