ORGANISM FACT SHEET

Gram Negative Aerobes

OFS004

Gram negatives aerobes : Mainly *Enterobacteriaceae* and Non-*Enterobacteriaceae*.

Important Nosocomial Pathogens

Enterobacteriaceae	Empiric therapy no longer reliable due to resistance development.
E. coli and Klebsiella spp.	Key nosocomial pathogens in UTI, RTI and sepsis. Resistance to beta lactams, ESBLs and multi-drug resistance (MDR).
Enterobacter, Citrobacter and *Serratia* spp.	Key nosocomial pathogens in UTI, sepsis and neonatal meningitis.
Non-*Enterobacteriaceae*	Resistant to penicillins and varying resistance to broad spectrum ureidopenicillins (e.g. piperacillin), cephalosporins, tetracyclines, quinolones and trim/sulfa. Imipenem resistance in *Stenotrophomonas* and *Acinetobacter* spp. and increasing resistance in *Pseudomonas* spp. Antibacterial activity of β-lactamase inhibitor *per se,* e.g. sulbactam or tazobactam can be useful for MDR *Acinetobacter* spp.
P. aeruginosa, S. maltophilia, Acinetobacter spp. and *B. cepaciae*	

Infections

- Immunocompromised patients in ICU, haematology, neonatal, burn and cystic fibrosis units.
- Mortality of 35-40% in nosocomial sepsis in ICUs, especially due to ESBL positive strains.
- Severe RTI, complicated UTIs, sepsis, intra-abdominal and wound infections.
- 60% of nosocomial pneumonias, 59% nosocomial UTIs, 35% surgical wound infections.
- Mucoid *P. aeruginosa* and *K. pneumoniae* cause severe chronic lung infection in cystic fibrosis.

Susceptibility testing needs

- Routine methods for urine, sputum and wounds.
- MIC testing recommended for blood, CSF, broncho-alveolar lavage and specimens from ICU patients.
- MIC results for resistance surveillance in ICU.

Methods

Disc diffusion

- Not recommended for Non-*Enterobacteriaceae* other than *P. aeruginosa* and *Acinetobacter* spp.
- Limited testing for *S. maltophilia, B. cepaciae, P. aeruginosa and Acinetobacter* spp.
- Not useful for mucoid strains due to inoculum standardisation problems.
- Problematic with *Pseudomonas* spp. for quinolones, aminoglycosides and carbapenems.

Microdilution, Automated systems, Breakpoint methods

- Automation: false susceptibility or resistance e.g. cephalosporins, imipenem and aztreonam.
- Unreliable for *Pseudomonas, Acinetobacter, Stenotrophomonas* spp. and *B. cepaciae*.
- Not recommended for mucoid strains.
- Low level resistance may be missed.
- Specific problems: see individual instrument package inserts for limitations.
- Qualitative methods (3 to 5 dilutions) not useful for epidemiology.
- Extrapolated MIC values are not real MIC results.

Etest

- Can be used with all Gram negatives (*Enterobacteriaceae* and Non-*Enterobacteriaceae*).
- Macromethod optimal for resistance detection.
- Cost effective and flexible for MIC testing of 3-5 drugs of choice for ICU patients.
- Confirmatory test for questionable and unusual results with other systems.
- Provides precise on-scale MIC values for targeting therapy based on PK/PD considerations.
- MIC validation of empiric therapy and dose give pharmacoeconomic advantages for hospital formulary.
- Useful for resistance surveillance.

AB BIODISK Dalvägen 10, S-169 56 Solna, Sweden. Tel: +46-(0)8-730 07 60. Fax: +46-(0)8-83 81 58. etest@abbiodisk.se www.abbiodisk.com