

Case presentations

Problematic AST requests on Multi-resistant Gram-negatives

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NordicAST WS 190528

Case : Multi-resistant *A. baumannii*

- *Patient with severe acute necrotising pancreatitis is transferred from ICU in another part of Europe to ICU in Stockholm. Treated with meropenem.*
- *Multiple abscess formation in the pancreas.*
- ***Cultures from aspiration: A. baumannii, OXA-23-like carbapenemase***
- ***Antibiogram: resistant to meropenem, imipenem, amikacin, gentamicin, tobramycin, ciprofloxacin and trimetoprim-sulfamethoxazol***

Case: Multi-resistant *A. baumannii*

- *The ID consultant at the ICU requests MIC testing for 7 antibiotics: colistin, fosfomycin, tigecycline, ceftazidime-avibactam (caz-avi), ceftolozane-tazobactam (tol-taz), aztreonam and rifampicin*
- **Are all of these requests for MIC testing appropriate?**

Mentimeter Question 1:

- **What will you do?**
- 1. I perform all the requested MICs, the ID consultant is the one to know this.
- 2. I only perform MICs that we consider relevant in the lab. Our job is to guide the ID consultant.

Mentimeter Question 2:

- **For which of the following antibiotics will you perform MIC testing?
(multiple answers possible)**
- 1. Colistin
- 2. Fosfomicin
- 3. Tigecycline
- 4. Ceftolozane-tazobactam
- 5. Ceftazidime-avibactam
- 6. Rifampicin
- 7. Aztreonam

If you need help:

- **Start by looking at the Acinetobacter tab in the NordicAST/EUCAST breakpoint table**
- **Dash(-):** No breakpoints exist, susceptibility testing is not recommended. Report as R directly.
 - In the case of *Acinetobacter* spp: **fosfomicin, tol-taz, caz-avi, aztreonam, rifampicin**
- **IE = insufficient evidence** that the organism is a good target for therapy with the agent. On request/after discussion do MIC testing and report the MIC-value without S/I/R-categorisation.
 - In the case of *Acinetobacter* spp: **tigecycline**.
- **Breakpoints exist:** Test with the correct methodology
 - In the case of *Acinetobacter* spp: BMD for **Colistin**

Case: Multi-resistant *A. baumannii*

- *The patient received colistin as monotherapy for a week and then combination treatment with meropenem, colistin and rifampicin without any improvement.*
- *After 2 weeks a new aspirate of the pancreatic abscess was performed.*
- *The culture revealed *A. baumannii* again , now also R for colistin, MIC =8 mg/L*

Possible options now?

- Source control with surgery?
- Optimisation of antibiotic dosing? Meropenem therapy by prolonged infusion?
- Add tigecycline?

- In this case: Compassionate use of cefiderocol

Case: Multi-resistant *P. aeruginosa*

- *Patient with severe burn wounds treated for 3 months at the burn intensive care unit at Uppsala University hospital (one of two national centers in Sweden)*
- *Multiple wound cultures with *P. aeruginosa* and now deterioration with high fever under treatment with meropenem*
- **Blood culture results:** **P. aeruginosa**
- **Antibiogram:** *Resistant to piperacillin-tazobactam, ceftazidime, ciprofloxacin, amikacin, tobramycin, gentamicin, imipenem and meropenem.*

Case: Multi-resistant *P. aeruginosa*

- *The ID consultant at the ICU requests MIC testing for 7 antibiotics: colistin, fosfomycin, tigecycline, ceftazidime-avibactam (caz-avi), ceftolozane-tazobactam (tol-taz), aztreonam and rifampicin*
- **Are all of these requests for MIC testing appropriate?**

Mentimeter question 3:

- **For which of the following antibiotics will you perform MIC testing? (multiple answer possible)**
- 1. Colistin
- 2. Tigecycline
- 3. Ceftolozane-tazobactam
- 4. Ceftazidime-avibactam
- 5. Rifampicin
- 6. Aztreonam
- 7. Fosfomycin

If you need help:

- **Start by looking at the *Pseudomonas* spp tab in the NordicAST/EUCAST breakpoint table**
- **Dash(-):** No breakpoints exist, susceptibility testing is not recommended. Report as R directly
 - In the case of *Pseudomonas* spp: **fosfomicin, tigecycline, rifampicin**
- **Breakpoints exist:** Test with the correct methodology
 - In the case of *Pseudomonas* spp: BMD for **Colistin**, disk diffusion/BMD for **tol-taz, caz-avi, aztreonam**.

Case: Multi-resistant *P. aeruginosa*

- The patient was successfully treated with ceftolozane-tazobactam for 2 weeks.

Ceftolozane-tazobactam and ceftazidime-avibactam

- TOL-TAZ (Zerbaxa)
 - Agent for MDR *P. aeruginosa*.
 - Effect on ESBL-A
 - No effect on CPE (ESBL-carba).
- CAZ-AVI (Zavicefta)
 - Agent for CPE (ESBL-carba) except the MBLs
 - Effect on ESBL-A and ESBL-M (pAmpC).
 - Sometimes effect on MDR *P. aeruginosa*.

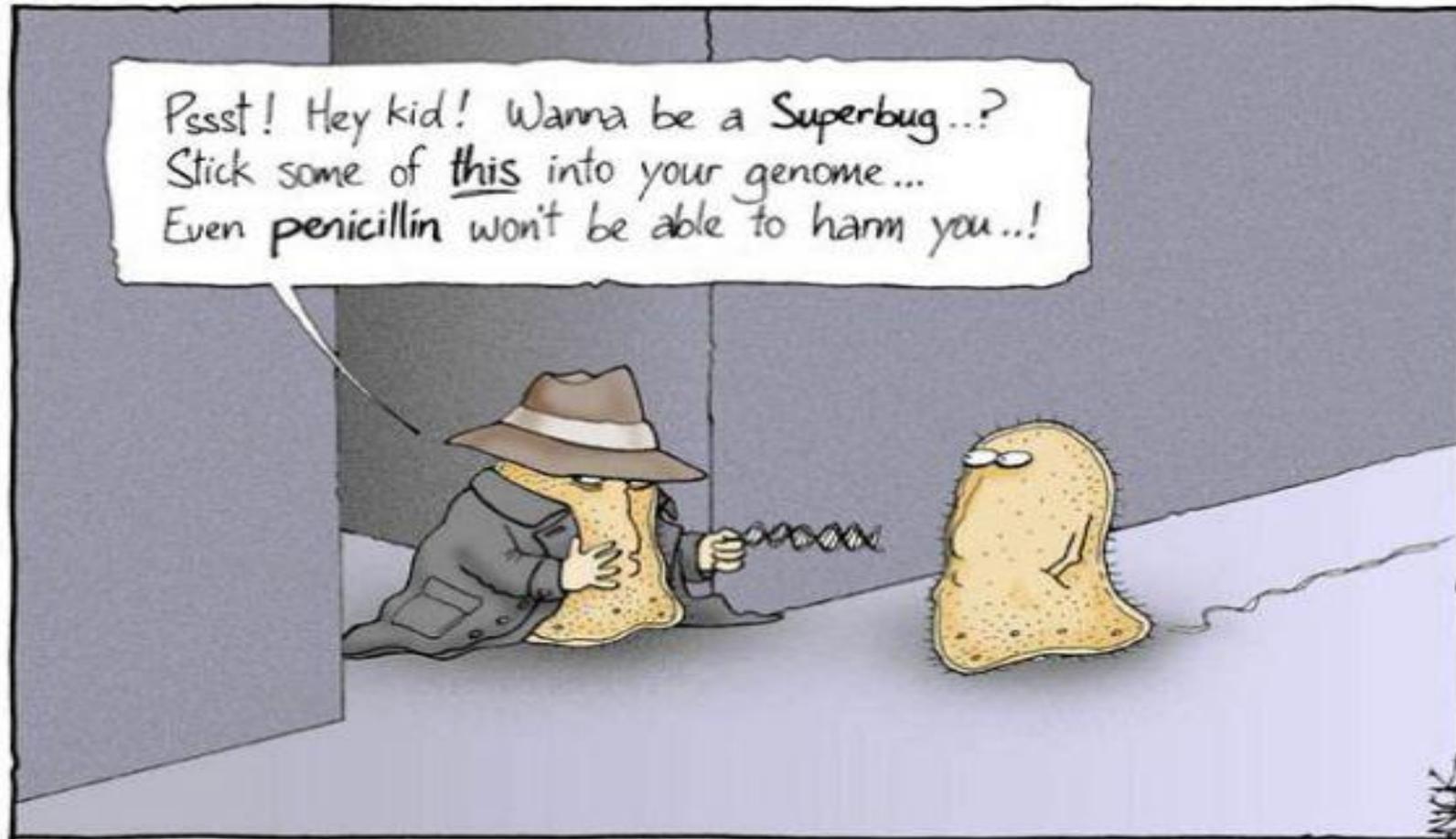
New treatment options for Multi-resistant gram-negatives

Antibiotic	ESBL-A	ESBL-M/ AmpC	ESBL-carba KPC/OXA- 48	ESBL-carba MBL	MDR P aeruginosa	MDR A baumannii	S maltophilia
Ceftolozane- tazobactam	+	-	-	-	+	-	-
Ceftazidime- avibactam	+	+	+	-	+/-	-	-
Meropenem- vaborbactam	+	+	+	-	+/-	-	-
Cefiderocol	+	+	+	+	+	+	+

What to do when the ID consultant won't "behave" regarding MIC requests?

- Remember that you as a Clinical microbiologist are the expert of AST.
- Your job is to help and guide the ID specialist, not to perform every request for MIC you get.
- The breakpoint table and EUCAST guidance documents are there to support you.
- If discussing with the ID consultant doesn't help, consult colleagues in NordicAST and/or other labs.

Thank you!



It was on a short-cut through the hospital kitchens that Albert was first approached by a member of the Antibiotic Resistance.