

Pseudomonas and carbapenem resistance

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Carbapenem resistance in Pseudomonas

- Hyperproduction of chromosomal AmpC
- Upregulation of efflux systems
- Alteration or lack of outer membrane proteins (e.g porin OprD)
- Carbapenemase production

Carbapenemase production in *P. aeruginosa*

- MBLs
 - Typically MBLs (VIM, NDM, IMP)
- KPC (rare)
 - South America, USA, China



Inhibitorbased screening - many false positives!

- MBL inhibitors (EDTA, DPA)
 - EDTA increases cell permeability, lowering the MICs of especially imipenem in the presence of porin mutations
 - PPV of MBL Etest 58%:
(True positives/all positives)
 - Hansen et al, Diagn Microbiol Infect Dis 2014

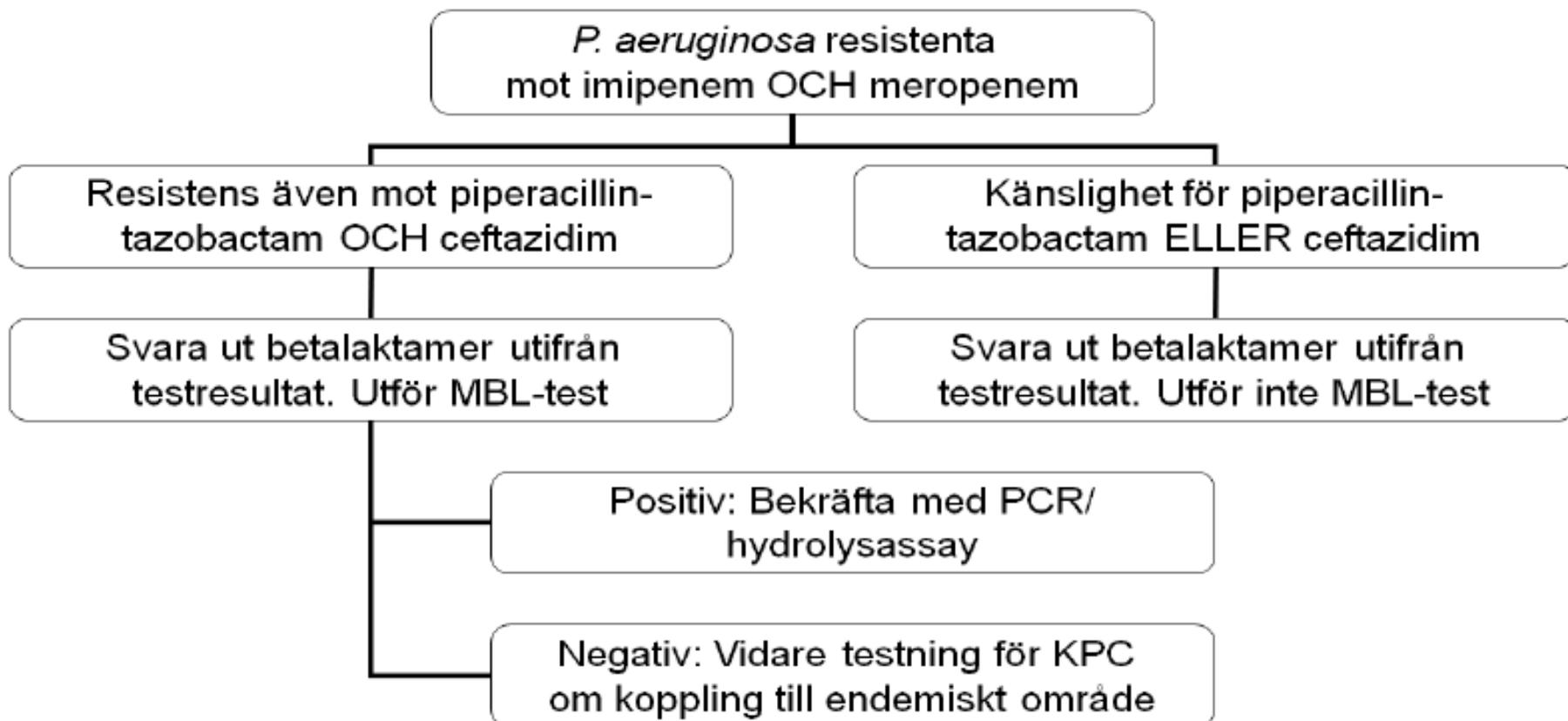
MBL detection in a low prevalence setting

- Safest to screen all isolates resistant to imipenem and meropenem - but costly
- + Ceftazidime & pip/tazo resistance combined with meropenem & imipenem resistance

-> ↑PPV

Pseudomonas aeruginosa

ALGORITM FÖR DETEKTION AV KARBAPENEMASER



MBL-producing *P. aeruginosa* susceptible to ceftazidime and pip/tazo

- Reported by Pereira SG et al. Microb Drug Resist 2013, Rojo-Bezares B et al, Int J Med Microbiol
- Rare in the Nordic countries
- However MBL-producing strains susceptible to pip/tazo have been detected in Denmark and Sweden

New NordicAST algoritm for carbapenemase detection in *P. aeruginosa*

P. aeruginosa resistant mot imipenem, meropenem OG ceftazidim

Svar ut betalaktamer utifra testresultat. Utfør MBL-test

Positiv: Bekreft med PCR/
hydrolyseassay

Negativ: Videre testing for KPC
hvis tilknytning til endemisk område