Background for new carbapenem breakpoints and comments

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NordicAST workshop 12-13 May 2026

Agenda and take-home messages

- **Carbapenem breakpoints**
  Lowered

Consultation in January 2026
New consultation open until June.

- **Ceftazidime-avibactam breakpoints**
  Lowered for Enterobacterales

Consultation in January 2026

- **Carbapenem reporting of carbapenem-susceptible (S/I) CPE**
  From “report as tested” to comment

Implemented in Breakpoint table v16.0

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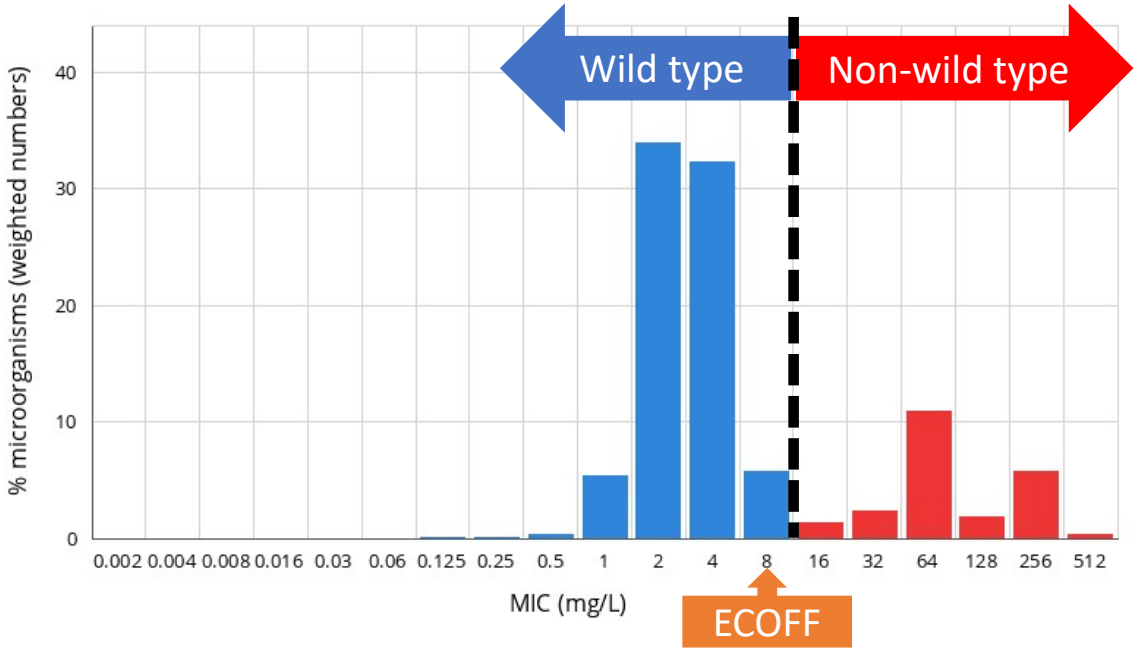
Very short: Taking ECOFF into account when setting breakpoints



Breakpoints should never split the wildtype

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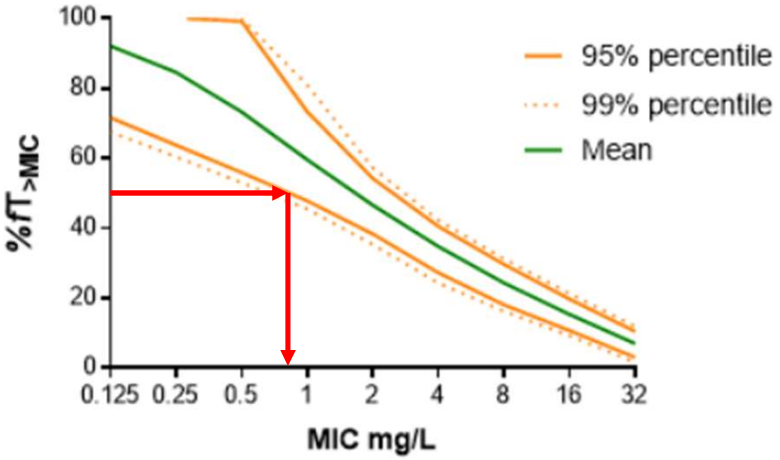
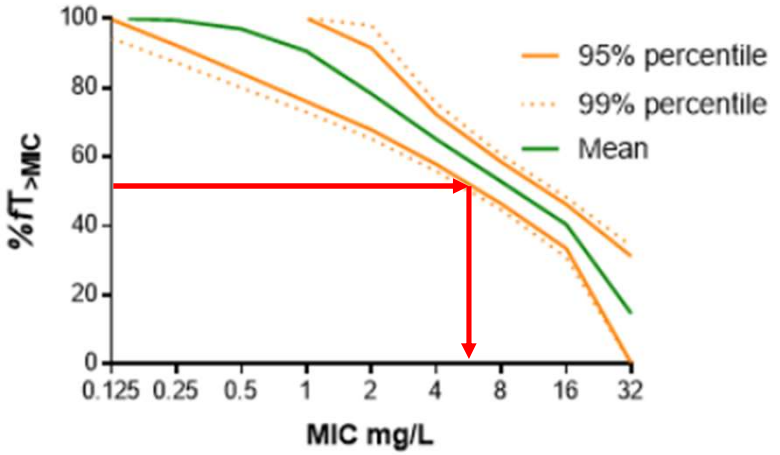
Very short: Taking PKPD into account when setting breakpoints

Meropenem 1 g x3



Meropenem 2 g x3, prolonged infusion (3h)



For a certain dose and a certain pharmacodynamic target (e.g. %fT>MIC = 50%), a certain MIC can be covered

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Very short:
Revision of breakpoints

Breakpoints can be revised according to new data

or different interpretations of previously available data in a changed situation

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Background: what has changed?

New clinical situation: new β-lactam agents for treatment of CPO

- ceftazidim-avibactam (2016)
- meropenem-vaborbactam (2018)
- imipenem-relebactam (2020)
- cefiderocol (2020)
- aztreonam-avibactam (2024)

Treatment with carbapenems (ertapenem, imipenem, meropenem) is not so relevant anymore.

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Background: what has changed?

Re-evaluation of PKPD-data

For carbapenems:

Pharmacodynamic target %fT>MIC: >40%

For ceftazidime-avibactam:

Pharmacodynamic target attainment and resistance development

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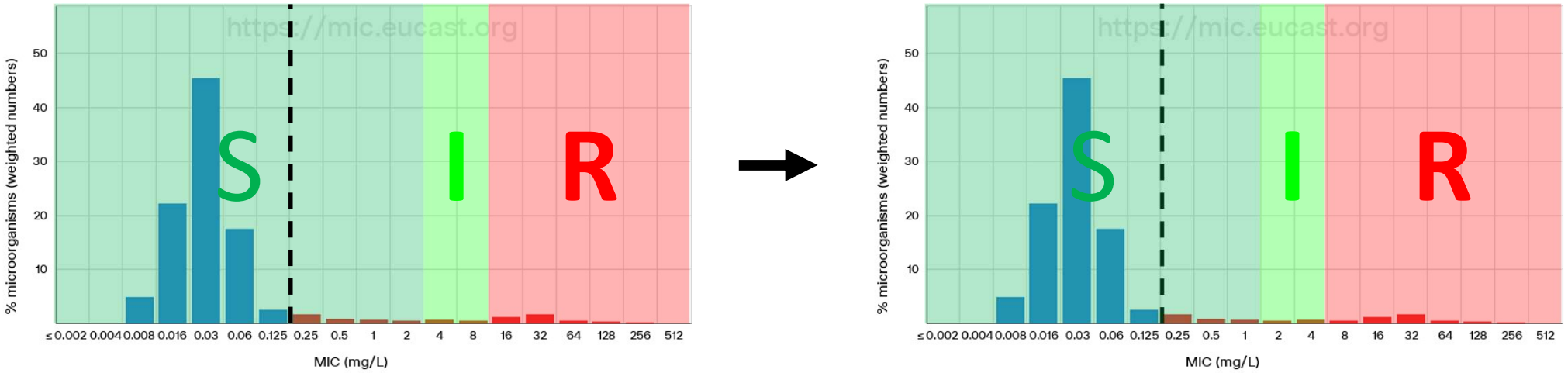
Breakpoint lowered after reconsidering pharmacodynamic target: an example

Meropenem / Enterobacterales (here: *K. pneumoniae*)



- S-/R-breakpoint lowered by 1 dilution step
- Still several dilution steps over ECOFF

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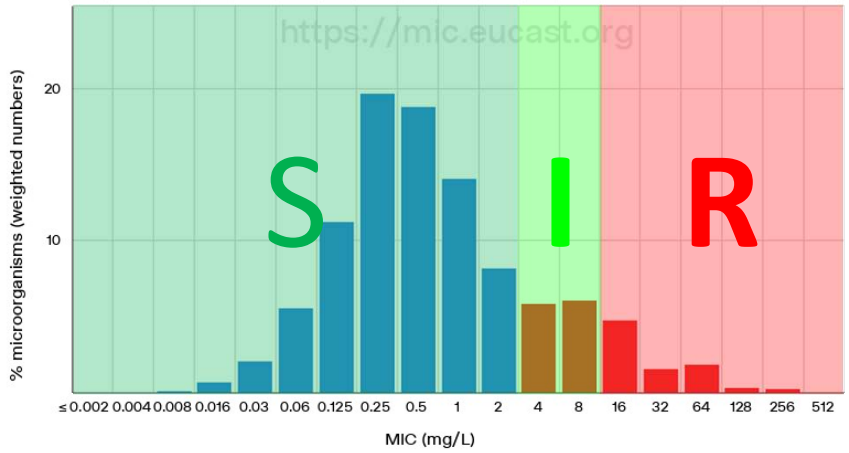
	ECOFF	Current MIC breakpoint (BP table v16.0)	Proposed new breakpoint (BP table v16.1)
Ceftazidime-avibactam			
Enterobacterales	1	S ≤8; R>8	S ≤4; R>4
Ertapenem			
Enterobacterales	0.03-0.125	S ≤0.5; R>0.5	S ≤0.25; R>0.25
Meropenem			
Enterobacterales (indications other than meningitis)	0.06-0.25	S ≤2; R>8	S ≤1; R>4
Pseudomonas spp. (indications other than meningitis)	2	S ≤2; R>8	S ≤0.001; R>4
Acinetobacter spp. (indications other than meningitis)	2	S ≤2; R>8	S ≤0.001; R>4
Meropenem-vaborbactam			
Enterobacterales	0.06-0.25	S ≤8; R>8	S ≤4; R>4
P. aeruginosa	2	S ≤8; R>8	S ≤4; R>4

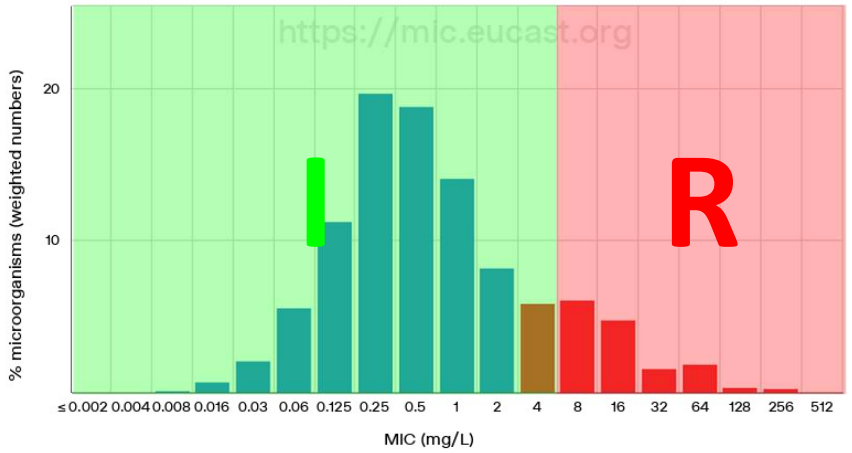
Meropenem-breakpoints for *Acinetobacter* spp. and *Pseudomonas* spp.

Open consultation
(promted by comment from the Swedish NAC to the first consultation)

Meropenem / *P. aeruginosa*



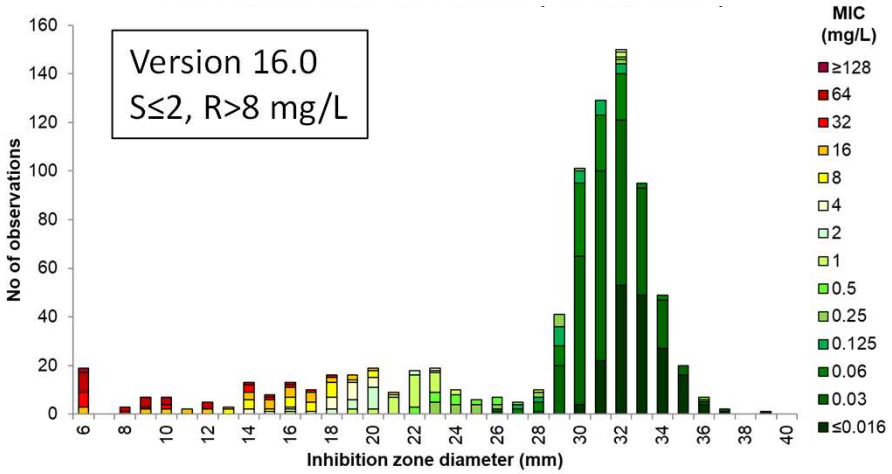
Current breakpoint: S ≤2; R>8 mg/L

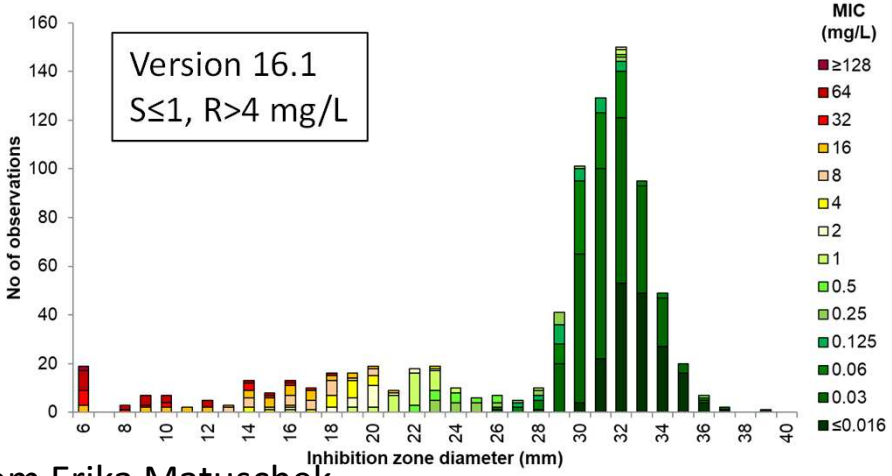


Proposed breakpoint: S ≤0.001; R>4 mg/L

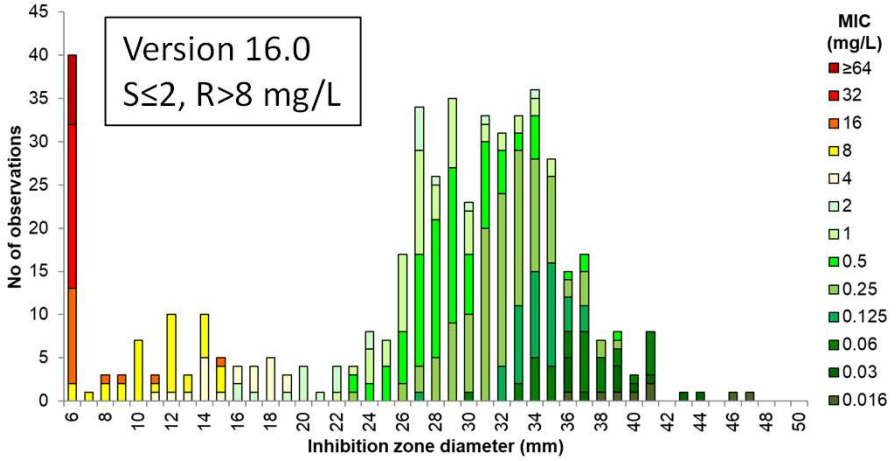
MIC – Zone diameter correlation: Example meropenem

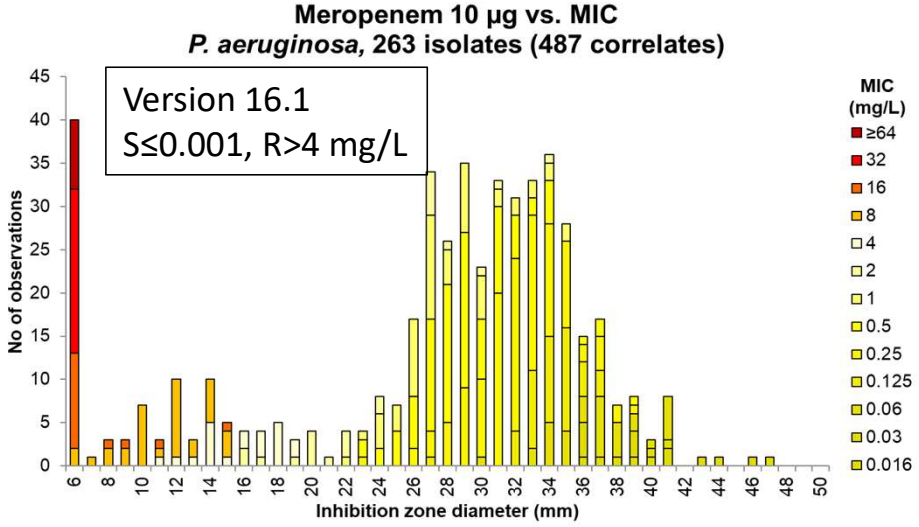
Enterobacterales





P. aeruginosa





Slide from Erika Matuschek

Reporting of CPE which test carbapenem S/I

Review of pre-clinical and clinical data, suggesting uncertainty in clinical outcomes when using carbapenems

EUCAST comment:

If a carbapenemase is detected, the clinical response to treatment with carbapenems (without active beta-lactamase inhibitor for the carbapenemases in question) may be impaired, even if categorised S or I. Other antimicrobials are preferred, especially for complicated infections. If other antimicrobials are unavailable, carbapenems can be used at high exposure in combination with a second active agent.

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Reporting of CPE which test carbapenem S/I

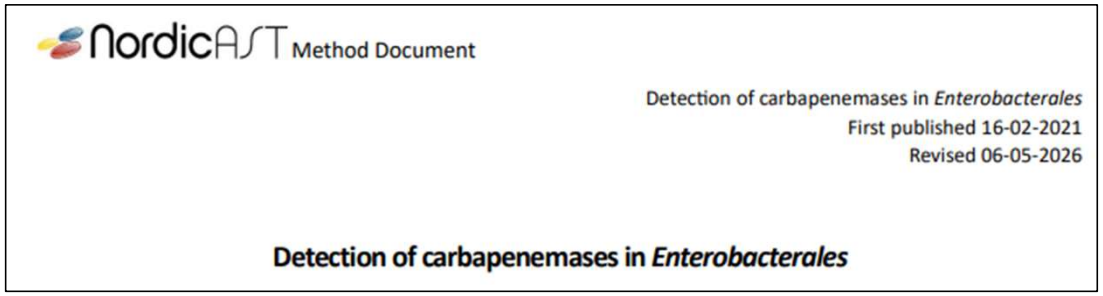
NordicAST recommendations:

Isolates with confirmed carbapenemase production should not be reported as S/I for carbapenems, but with a comment:

“Carbapenemase production detected. Treatment with carbapenems (meropenem, imipenem and ertapenem) should be avoided. Consult with ID or Clinical Microbiologist.”

Follow national NAC guidelines for reporting when available.

See NordicAST Method document: Detection of carbapenemases in Enterobacterales


NordicAST Method Document

Detection of carbapenemases in *Enterobacterales*
First published 16-02-2021
Revised 06-05-2026

Detection of carbapenemases in *Enterobacterales*

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National guidelines

[Rapportering av karbapenemfølsomhet ved påvist karbapenemase | Arbeidsgruppen for antibiotikaspørsmål og metoder for resistensbestemmelse](https://afa-gruppen.no/faq/)

https://afa-gruppen.no/faq/

[Rekommendationer för utsvarning av karbapenemer hos Enterobacterales med påvisad karbapenemasproduktion - RAF]

Comment: *Osoitetun karbapenemaasigeenin vuoksi karbapeneemien teho voi olla alentunut S- tai I-herkkyystulkinnasta huolimatta.*

Because of the carbapenemase gene detected, clinical efficiency of carbapenems may be impaired despite categorization S or I.

Take-home messages

- **Carbapenem breakpoints**
  Lowered
- **Ceftazidime-avibactam breakpoints**
  Lowered for Enterobacterales
- **Carbapenem reporting of carbapenem-susceptible (S/I) CPE**
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