



EUCAST

EUROPEAN COMMITTEE  
ON ANTIMICROBIAL  
SUSCEPTIBILITY TESTING

European Society of Clinical Microbiology and Infectious Diseases

# Update on EUCAST breakpoints and methods

EW10

Gunnar Kahlmeter

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## The European Committee on Antimicrobial Susceptibility Testing – EUCAST

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Clinical breakpoints

### Clinical breakpoints

See [Information on Clinical breakpoint tables](#).

 [Clinical breakpoints - bacteria \(v 4.0\) - pdf file for printing \(2014-01-01\)](#)

 [Clinical breakpoints - bacteria \(v 4.0\) - excel file for screen \(2014-01-01\)](#)

*Breakpoints published in Addendum during the year will be part of the next version of the full Clinical breakpoint tables valid from early January each year.*

 [Clinical breakpoints - fungi \(v 6.1\) - pdf file for printing \(2013-03-11\)](#)

 [Clinical breakpoints - fungi \(v 6.1\) - excel file for screen \(2013-03-11\)](#)

Errata in v 6.0 (2013-03-01) were corrected in v 6.1

[Previous versions of breakpoint tables.](#)

 [definitions of clinical breakpoints and epidemiological cut off values](#)

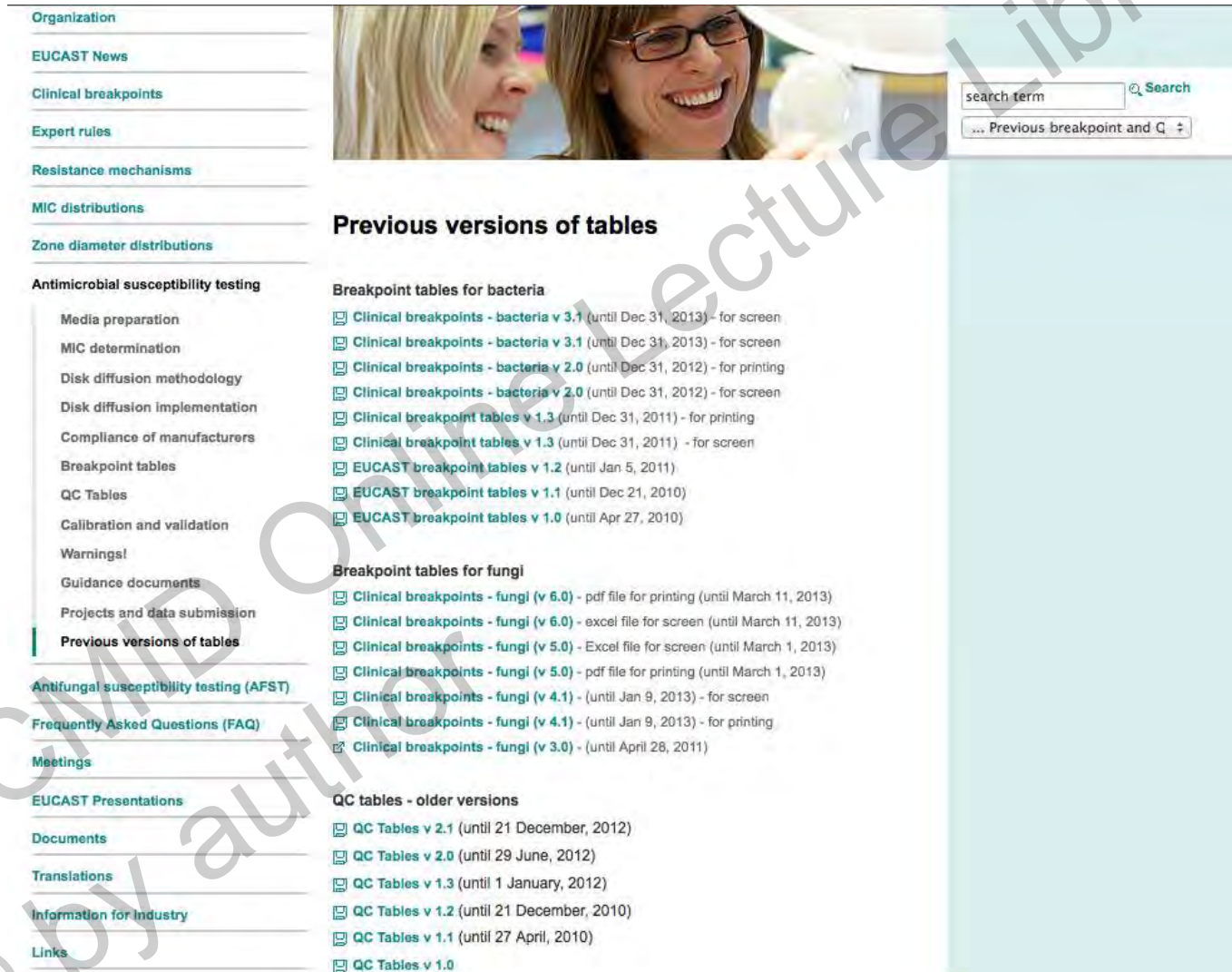
 [procedure for harmonizing and defining breakpoints](#)

Last update: 06 April 2013

 [Recommend page](#)

A new breakpoint table is published the first week of January every year.

# Previous breakpoint tables are available in the archive!



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... Previous breakpoint and Q

## Previous versions of tables

### Breakpoint tables for bacteria

- [Clinical breakpoints - bacteria v 3.1 \(until Dec 31, 2013\) - for screen](#)
- [Clinical breakpoints - bacteria v 3.1 \(until Dec 31, 2013\) - for screen](#)
- [Clinical breakpoints - bacteria v 2.0 \(until Dec 31, 2012\) - for printing](#)
- [Clinical breakpoints - bacteria v 2.0 \(until Dec 31, 2012\) - for screen](#)
- [Clinical breakpoint tables v 1.3 \(until Dec 31, 2011\) - for printing](#)
- [Clinical breakpoint tables v 1.3 \(until Dec 31, 2011\) - for screen](#)
- [EUCAST breakpoint tables v 1.2 \(until Jan 5, 2011\)](#)
- [EUCAST breakpoint tables v 1.1 \(until Dec 21, 2010\)](#)
- [EUCAST breakpoint tables v 1.0 \(until Apr 27, 2010\)](#)

### Breakpoint tables for fungi

- [Clinical breakpoints - fungi \(v 6.0\) - pdf file for printing \(until March 11, 2013\)](#)
- [Clinical breakpoints - fungi \(v 6.0\) - excel file for screen \(until March 11, 2013\)](#)
- [Clinical breakpoints - fungi \(v 5.0\) - Excel file for screen \(until March 1, 2013\)](#)
- [Clinical breakpoints - fungi \(v 5.0\) - pdf file for printing \(until March 1, 2013\)](#)
- [Clinical breakpoints - fungi \(v 4.1\) - \(until Jan 9, 2013\) - for screen](#)
- [Clinical breakpoints - fungi \(v 4.1\) - \(until Jan 9, 2013\) - for printing](#)
- [Clinical breakpoints - fungi \(v 3.0\) - \(until April 28, 2011\)](#)

### QC tables - older versions

- [QC Tables v 2.1 \(until 21 December, 2012\)](#)
- [QC Tables v 2.0 \(until 29 June, 2012\)](#)
- [QC Tables v 1.3 \(until 1 January, 2012\)](#)
- [QC Tables v 1.2 \(until 21 December, 2010\)](#)
- [QC Tables v 1.1 \(until 27 April, 2010\)](#)
- [QC Tables v 1.0](#)



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# Breakpoint table v 4.0

2014-01-01

New breakpoints and methods

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# TAB 1

## EUCAST breakpoints, 2014 (version 4.0)

- Improved format with links to **table tabs** and **EUCAST documents**
  - guidance documents
  - expert rules
  - detection of resistance mechanisms

Content	Page	Additional information
Notes	1	
<a href="#">Guidance on reading EUCAST breakpoint tables</a>	2	
Changes	3	
Enterobacteriaceae	4	
<i>Pseudomonas</i> spp.	9	
<i>Stenotrophomonas maltophilia</i>	13	<a href="#">Link to guidance document on <i>Stenotrophomonas maltophilia</i></a>
<i>Burkholderia cepacia</i>	-	<a href="#">Link to guidance document on <i>Burkholderia cepacia</i> group</a>
<i>Acinetobacter</i> spp.	14	
<i>Staphylococcus</i> spp.	18	
<i>Enterococcus</i> spp.	23	
Streptococcus groups A, B, C and G	28	
<i>Streptococcus pneumoniae</i>	33	
Viridans group streptococci	38	
<i>Haemophilus influenzae</i>	43	
<i>Moraxella catarrhalis</i>	48	
<i>Neisseria gonorrhoeae</i>	52	
<i>Neisseria meningitidis</i>	56	
Gram-positive anaerobes	60	
<i>Clostridium difficile</i>	64	
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<i>Listeria monocytogenes</i>	70	
<i>Pasteurella multocida</i>	71	
<i>Campylobacter jejuni</i> and <i>coli</i>	73	
<i>Corynebacterium</i> spp.	74	
PK/PD (Non-species related) breakpoints	76	
Expert Rules	-	<a href="#">Link to EUCAST Expert Rules</a>
Detection of Resistance Mechanisms	-	<a href="#">Link to EUCAST Guidelines on Detection of Resistance Mechanisms</a>



# TAB 2

## EUCAST breakpoints, 2014 (version 4.0)

### Description of all changes since previous table

Version 4.0, 2014-01-01	Changes (cells containing a change, a deletion or an addition) from v 3.1 are marked yellow
<b>General</b>	<ul style="list-style-type: none"> <li>• Links added to each table in the list of contents.</li> <li>• A table with guidance on reading EUCAST breakpoint tables added.</li> <li>• Links to guidance documents and expert rules added.</li> </ul>
<b>Notes</b>	<ul style="list-style-type: none"> <li>• Explanation on MIC scale added, Note 10.</li> </ul>
<b>Enterobacteriaceae</b>	<ul style="list-style-type: none"> <li>• New breakpoints: Amoxicillin-clavulanate (uncomplicated UTI only), ciprofloxacin (<i>Salmonella</i> spp.) and pefloxacin screen (<i>Salmonella</i> spp.).</li> <li>• Revised breakpoints: Amoxicillin-clavulanate (zone diameter breakpoints for systemic infections), doripenem (MIC and zone diameter) and fosfomycin iv and oral (Note replaced with IP for zone diameter breakpoints).</li> <li>• New comment: Pefloxacin.</li> <li>• Revised comments: Ciprofloxacin (comment moved to row for <i>Salmonella</i> spp. and Note A added).</li> </ul>
<b><i>Pseudomonas</i> spp.</b>	<ul style="list-style-type: none"> <li>• Revised breakpoints: Zone diameter breakpoints for piperacillin, piperacillin-tazobactam, ticarcillin, ticarcillin-clavulanate and cefepime. Doripenem (MIC and zone diameter).</li> <li>• New comment: Doripenem.</li> <li>• Revised comment: Cefepime (dosage removed).</li> </ul>
<b><i>Stenotrophomonas maltophilia</i></b>	<ul style="list-style-type: none"> <li>• General information with link to EUCAST guidance document added.</li> </ul>
<b><i>Acinetobacter</i> spp.</b>	<ul style="list-style-type: none"> <li>• Revised breakpoints: Doripenem (MIC and zone diameter).</li> <li>• New comments: Doripenem and imipenem (dosage removed).</li> </ul>
<b><i>Staphylococcus</i> spp.</b>	<ul style="list-style-type: none"> <li>• Clarification regarding ceftioxitin (screen) added in antibiotic agent column.</li> <li>• New breakpoints: Benzylpenicillin (<i>S. lugdunensis</i>), benzylpenicillin (coagulase negative staphylococci) and ceftioxitin screen (<i>S. pseudintermedius</i>).</li> <li>• Revised breakpoints: Ampicillin (zone diameter).</li> <li>• New comment: Benzylpenicillin (coagulase negative staphylococci).</li> <li>• Revised comments: Benzylpenicillin, ampicillin, ampicillin-sulbactam, amoxicillin, amoxicillin-clavulanate, piperacillin, piperacillin-tazobactam, ceftaroline, clindamycin and mupirocin.</li> </ul>
<b><i>Enterococcus</i> spp.</b>	<ul style="list-style-type: none"> <li>• New breakpoints: Ciprofloxacin (uncomplicated UTI only), levofloxacin (uncomplicated UTI only) and norfloxacin (screen).</li> <li>• New comments: Fluoroquinolones Note A and Note B.</li> </ul>
<b>Streptococcus groups A, B, C and G</b>	<ul style="list-style-type: none"> <li>• New comments: Cloxacillin, dicloxacillin and flucloxacillin.</li> <li>• Revised comments: Penicillins Note 1/A and clindamycin.</li> </ul>
<b><i>Streptococcus pneumoniae</i></b>	<ul style="list-style-type: none"> <li>• Revised comment: Clindamycin.</li> <li>• Supplementary table for interpretation of the oxacillin screen updated: Clarification regarding interpretation of cefaclor. Piperacillin (without and with beta-lactamase inhibitor) and ceftaroline added. Clarification regarding meningitis.</li> </ul>
<b>Viridans group streptococci</b>	<ul style="list-style-type: none"> <li>• New comments: Aminoglycosides Notes 1 and 2. Screening test for high-level aminoglycoside resistance added.</li> <li>• Revised comment: Clindamycin.</li> </ul>
<b><i>Haemophilus influenzae</i></b>	<ul style="list-style-type: none"> <li>• Revised breakpoints and comments: Cefaclor (breakpoints and comment removed).</li> <li>• Supplementary table for interpretation of the benzylpenicillin screen updated: Clarification regarding interpretation of cefaclor and cefuroxime oral. Clarification regarding beta-lactam resistance mechanisms for isolates with benzylpenicillin 1 unit zone diameters &lt; 12 mm.</li> </ul>
<b><i>Moraxella catarrhalis</i></b>	<ul style="list-style-type: none"> <li>• Revised breakpoints and comments: Cefaclor (breakpoints and comment removed).</li> </ul>
<b><i>Pasteurella multocida</i></b>	<ul style="list-style-type: none"> <li>• Recommended QC strain changed to <i>Haemophilus influenzae</i> NCTC 8468.</li> </ul>
<b><i>Corynebacterium</i> spp.</b>	<ul style="list-style-type: none"> <li>• New table. All breakpoints and comments new.</li> </ul>
<b>PK/PD (Non-species related) breakpoints</b>	<ul style="list-style-type: none"> <li>• Revised breakpoint: Doripenem.</li> <li>• Revised comment: Doripenem.</li> </ul>

# TAB 3

## EUCAST breakpoints, 2014 (version 4.0)

### Guidance on reading EUCAST breakpoint tables

#### Guidance on reading EUCAST Breakpoint Tables

EUCAST Clinical Breakpoint Table v. 4.0, valid from 2014-01-01

Breakpoints with a species name apply only to that particular species (in this example *S. aureus*)

The intermediate category is not listed but is inferred as the values between the S and the R breakpoints. If the S and R breakpoints are the same value there is no intermediate category.

Agent A: No intermediate category  
 Agent B: Intermediate category: 4 mg/L, 23-25 mm  
 Agent G: Intermediate category: 1-2 mg/L, 24-29 mm

Disk diffusion (EUCAST standardized disk diffusion method)  
 Medium:  
 Inoculum:  
 Incubation:  
 Reading:  
 Quality control:

EUCAST method for antimicrobial susceptibility testing by disk diffusion and recommendations for quality control

Antimicrobial agent	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Antimicrobial agent A	1 <sup>1</sup>	1 <sup>1</sup>	X	20 <sup>A</sup>	20 <sup>A</sup>	1. Comment on MIC breakpoints A. Comment on disk diffusion
Antimicrobial agent B, <i>S. aureus</i>	2	4	Y	26	23	
Antimicrobial agent C	IE	IE		IE	IE	
Antimicrobial agent D	-	-		-	-	
Antimicrobial agent E	IP	IP		IP	IP	
Antimicrobial agent F (screen)	NA	NA		25	25	
Antimicrobial agent G	0.5	2	Z	30	24	

Screening breakpoint to differentiate between isolates without and with resistance mechanisms

Not Applicable

Changes from previous version highlighted in yellow

In Preparation

No breakpoints. Susceptibility testing is not recommended

Link to MIC distribution if highlighted in blue

Link to zone diameter distribution if highlighted in blue

Link to rationale document if highlighted in blue

Insufficient evidence that the species in question are a good target for therapy with the drug

**New breakpoint!**

**New UTI breakpoints for  
amoxicillin-clavulanic acid**

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# Amoxicillin-clavulanic acid

Two breakpoints for amoxicillin-clavulanic acid:

1. Systemic infections 8/8 mg/L
2. Uncomplicated UTI: 32/32 mg/L

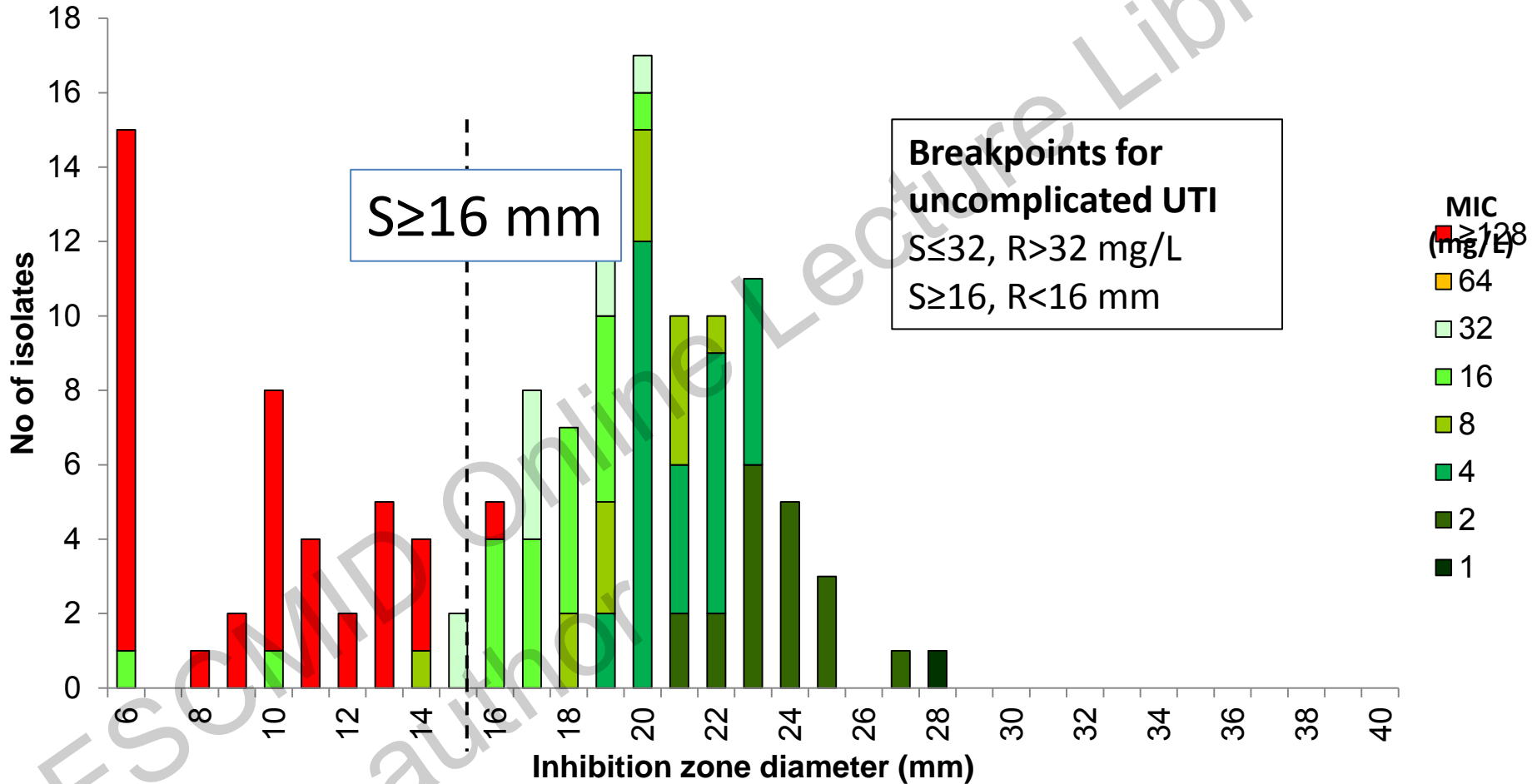
For countries where this agent is used for both systemic infections and uncomplicated UTI, the report should look like one of these:

	Isolate 1	Isolate 2	Isolate 3
Amoxicillin-clav/UTI	S	S	R
Amoxicillin-clav/Systemic	S	R	R

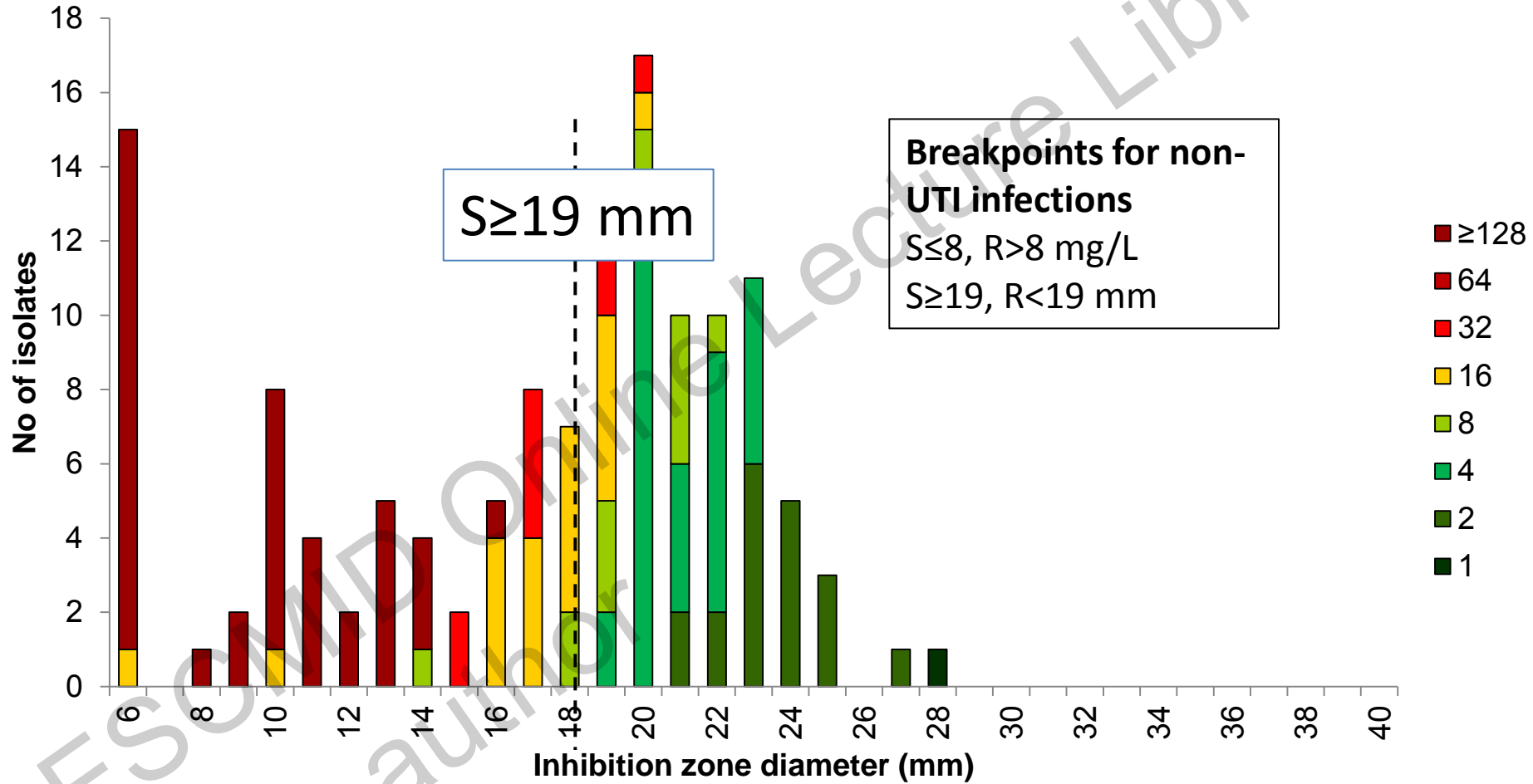




# Amoxicillin-clavulanate 20-10 µg vs MIC (constant 2 mg/L) *Escherichia coli*, 133 clinical isolates



# Amoxicillin-clavulanate 20-10 µg vs MIC (constant 2 mg/L) *Escherichia coli*, 133 clinical isolates



New screening method!

Detection of fluoroquinolone  
resistance mechanisms in  
Salmonella spp

R. Skov et al, poster 0285

E. Matuschek et al, poster 0279



## Screen for the detection of fluoroquinolone resistance mechanisms/low level ciprofloxacin resistance in *Salmonella* spp.

- *Salmonella* spp ciprofloxacin breakpoints are 0.06/0.06 mg/L.
- Nalidixic acid (the often used 30 mcg disk) will detect most but not all FQ resistance mechanisms.
- MIC-determination is cumbersome and expensive and not necessarily correct with the methods at hand.

# Screening for FQ resistance mechanisms

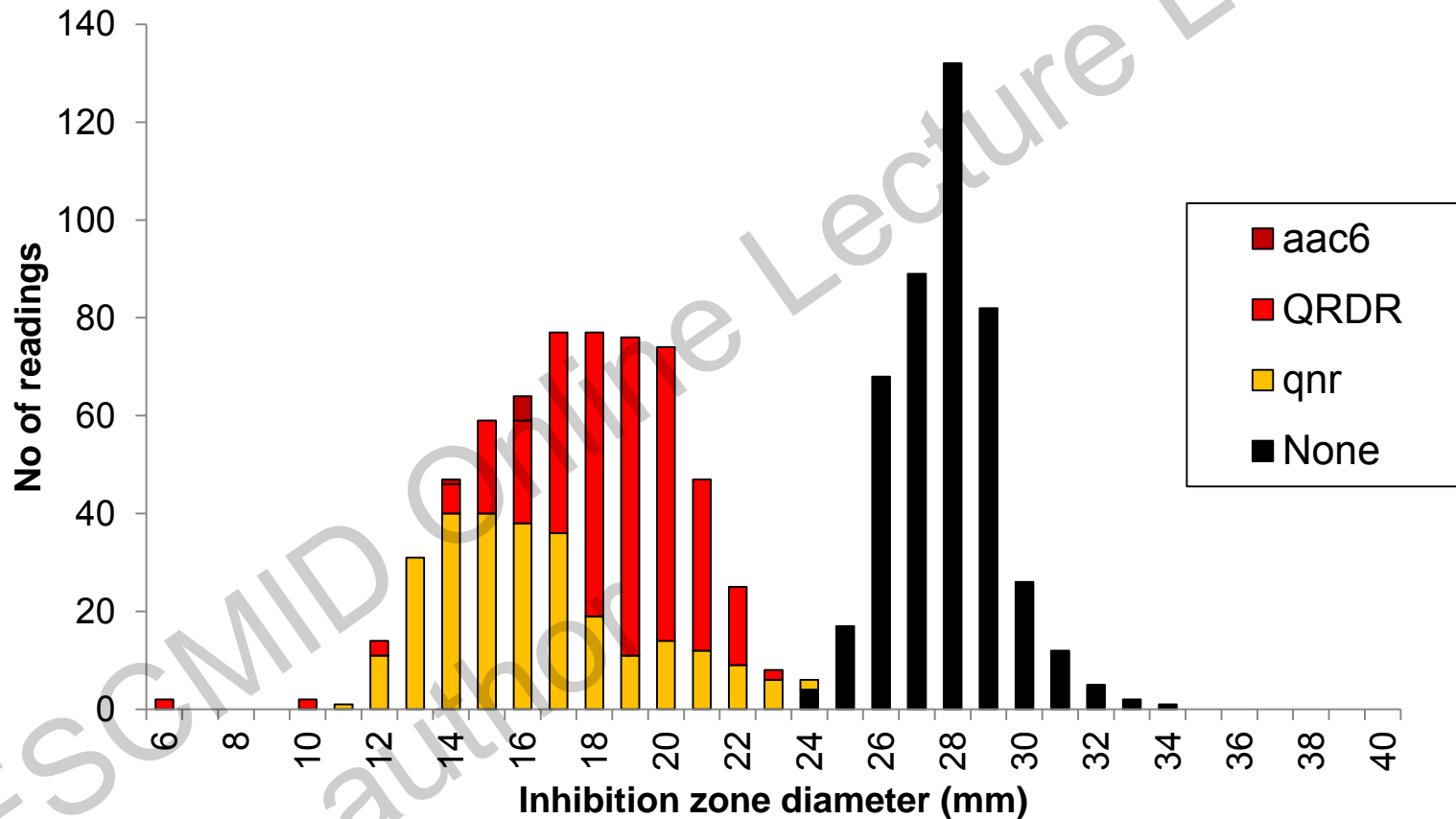
Skov et al, Poster 0285

Antimicrobial agent	Disk (µg)	Zone diameters for Ciprofloxacin (MIC)		Readings (%) in overlapping interval
		≤0.06	>0.06	
Ciprofloxacin	1	26-36	15-28	6
Ciprofloxacin	5	31-40	21-34	24
Enoxacin	10	26-34	14-25	0
Enrofloxacin	5	28-37	14-29	3
Gatifloxacin	2	25-37	13-27	14
Gatifloxacin	5	27-38	16-29	19
Levofloxacin	1	23-33	9-24	4
Levofloxacin	5	28-39	18-29	12
Lomefloxacin	10	27-37	17-29	9
Nalidixic acid	5	6-21	6-14	16
Nalidixic acid	10	9-25	6-17	38
Nalidixic acid	30	19-30	12-23	20
Norfloxacin	2	26-36	14-24	0
Ofloxacin	5	27-37	16-28	5
Pefloxacin	5	26-35	6-26	1
Sparfloxacin	5	27-38	14-31	22

# Salmonella and FQ resistance mechanisms

Erika Matuschek et al, Poster 0279

**Pefloxacin 5 µg vs. FQ resistance mechanism**  
***Salmonella* spp., 126 isolates (1044 readings)**

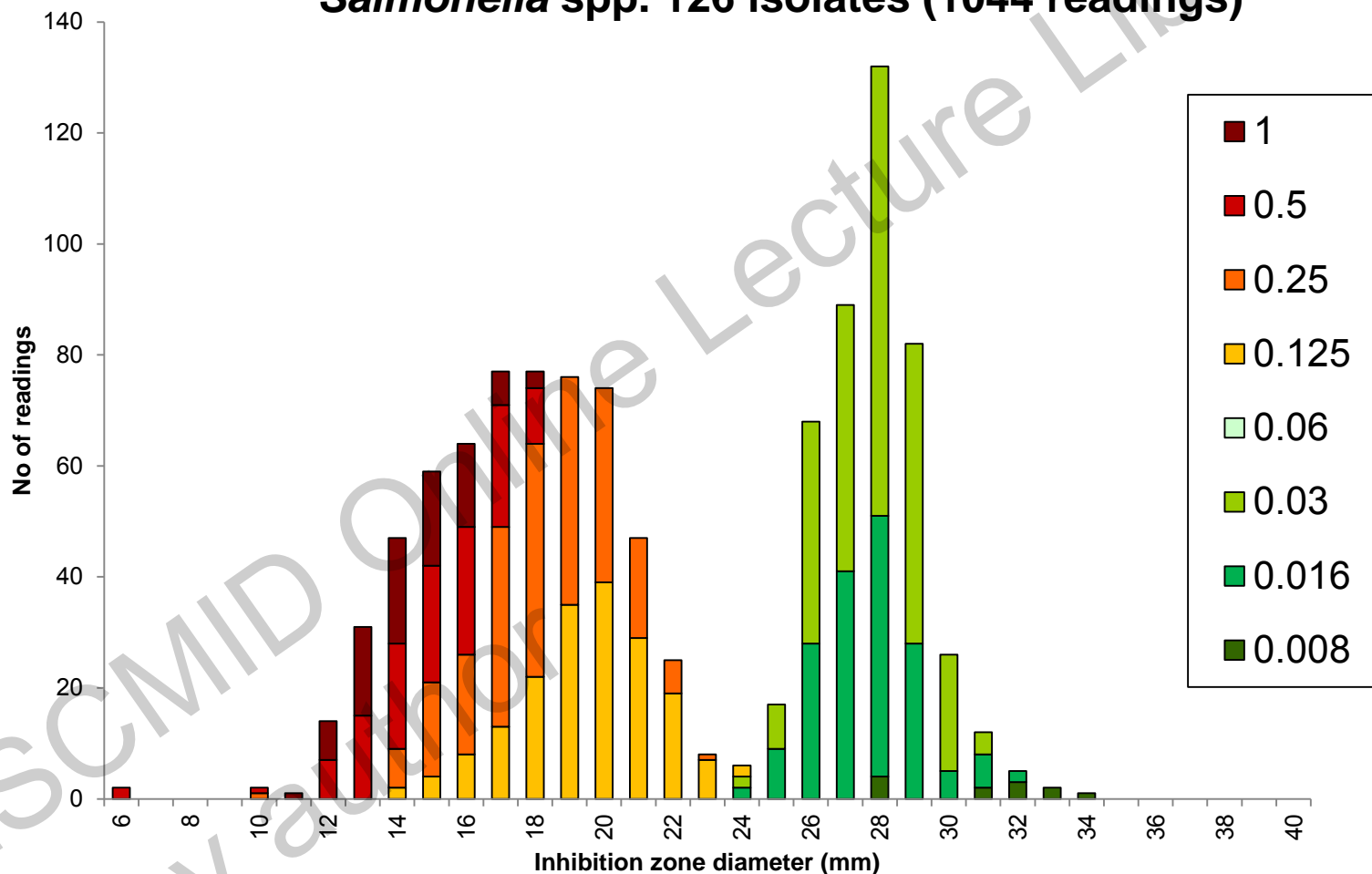


4 media manufacturers, 3 disk manufacturers, 3 testing sites, 6 readers  
Testing coordinated by the EUCAST AST Development Laboratory, Växjö, Sweden

# Salmonella and ciprofloxacin resistance

Erika Matuschek et al, Poster 0279

## Pefloxacin 5 µg vs. Ciprofloxacin MIC *Salmonella* spp. 126 isolates (1044 readings)



4 media manufacturers, 3 disk manufacturers, 3 testing sites, 6 readers  
Testing coordinated by the EUCAST AST Development Laboratory, Växjö, Sweden

## Ciprofloxacin and pefloxacin and *Salmonella* spp.

Fluoroquinolones	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)	
	S ≤	R >		S ≥	R <
Ciprofloxacin	0.5	1	5	22	19
Ciprofloxacin, <i>Salmonella</i> spp. <sup>1</sup>	0.06	0.06		Note <sup>A</sup>	Note <sup>A</sup>
Pefloxacin (screen), <i>Salmonella</i> spp. <sup>1</sup>	NA	NA	5	24 <sup>B</sup>	24 <sup>B</sup>
Levofloxacin	1	2	5	22	19
Moxifloxacin	0.5	1	5	20	17
Nalidixic acid (screen)	NA	NA		NA	NA
Norfloxacin	0.5	1	10	22	19
Ofloxacin	0.5	1	5	22	19

1. There is clinical evidence for ciprofloxacin to indicate a poor response in systemic infections caused by *Salmonella* spp. with low-level fluoroquinolone resistance (MIC > 0.06 mg/L). The available data relate mainly to *S. typhi* but there are also case reports of poor response with other *Salmonella* species.

A. Tests with a ciprofloxacin 5 µg disk will not reliably detect low-level resistance in *Salmonella* spp. To screen for fluoroquinolone resistance in *Salmonella* spp., use the pefloxacin 5 µg disk. See Note B.

B. Susceptibility of *Salmonella* spp. to ciprofloxacin can be inferred from the pefloxacin disk diffusion susceptibility test result.

# Breakpoints for *P. aeruginosa* validated for several other *Pseudomonas* species.

Jenny Åhman et al, Poster 283

- EUCAST *Pseudomonas* spp breakpoints were based on *Pseudomonas aeruginosa* but for table v 4.0 these were validated for several other *Pseudomonas* species:

The Sentry collection contained 22 different species, which mainly belonged to the *P. putida* (n=113), *P. stutzeri* (n=35) and *P. fluorescens* (n=20) groups.







# Inducible clindamycin resistance in staphylococci and streptococci

<i>Staphylococcus</i> spp.	0.25	0.5	2	22 <sup>B</sup>	19 <sup>B</sup>	<p>2. Inducible clindamycin resistance can be detected by antagonism of clindamycin activity by a macrolide agent. If not detected, then report as susceptible. <b>If detected, then report as resistant</b> and consider adding this comment to the report: "Clindamycin may still be used for short-term therapy of less serious skin and soft tissue infections as full resistance is unlikely to develop during such therapy".</p> <p>B. Place the erythromycin and clindamycin disks <b>12-20 mm</b> apart (edge to edge) and look for antagonism (the D phenomenon).</p>
Streptococci A,B,C,G, <i>S. pneumoniae</i> , Viridans streptococci	0.5	0.5	2	19 <sup>B</sup>	19 <sup>B</sup>	<p>2. Inducible clindamycin resistance can be detected by antagonism of clindamycin activity by a macrolide agent. If not detected, then report as susceptible. <b>If detected, then report as susceptible</b> and add this comment to the report: "Patients with serious infections caused by isolates with inducible clindamycin resistance should not be treated with clindamycin alone as full resistance may develop during therapy".</p> <p>B. Place the erythromycin and clindamycin disks <b>12-16 mm</b> apart (edge to edge) and look for antagonism (the D phenomenon).</p>

# Staphylococcus spp.

Cefoxitin (screen), Coagulase negative staphylococci other than <i>S. lugdunensis</i> and <i>S. saprophyticus</i>	Note <sup>4</sup>	Note <sup>4</sup>	30	25 <sup>A</sup>	25 <sup>A</sup>	4. For coagulase-negative staphylococci other than <i>S. lugdunensis</i> the cefoxitin MIC is a poorer predictor of methicillin resistance than the disk diffusion test.
Cefoxitin (screen), <i>S. pseudintermedius</i>	Note <sup>4</sup>	Note <sup>4</sup>	30	35 <sup>A</sup>	35 <sup>A</sup>	
Cefpodoxime	Note <sup>1</sup>	Note <sup>1</sup>		Note <sup>A</sup>	Note <sup>A</sup>	
Ceftaroline, <i>S. aureus</i>	1 <sup>5</sup>	1 <sup>5</sup>	5	20 <sup>B</sup>	20 <sup>B</sup>	5/B. Methicillin-susceptible isolates can be reported susceptible to ceftaroline without further testing.

- New breakpoints: Benzylpenicillin (*S. lugdunensis*), benzylpenicillin (coagulase negative staphylococci) and cefoxitin screen (*S. pseudintermedius*).
- New comment: Benzylpenicillin (coagulase-negative staphylococci).

Benzylpenicillin, <i>S. lugdunensis</i>	0.12 <sup>1</sup>	0.12 <sup>1,2</sup>	1 unit	26 <sup>A</sup>	26 <sup>A</sup>	
Benzylpenicillin, Coagulase negative staphylococci	- <sup>3</sup>	- <sup>3</sup>		Note <sup>C</sup>	Note <sup>C</sup>	3/C. No currently available method can reliably detect penicillinase production in coagulase-negative staphylococci.

- Revised comments: Benzylpenicillin, ampicillin, ampicillin-sulbactam, amoxicillin, amoxicillin-clavulanate, piperacillin, piperacillin-tazobactam, ceftaroline, clindamycin and mupirocin.

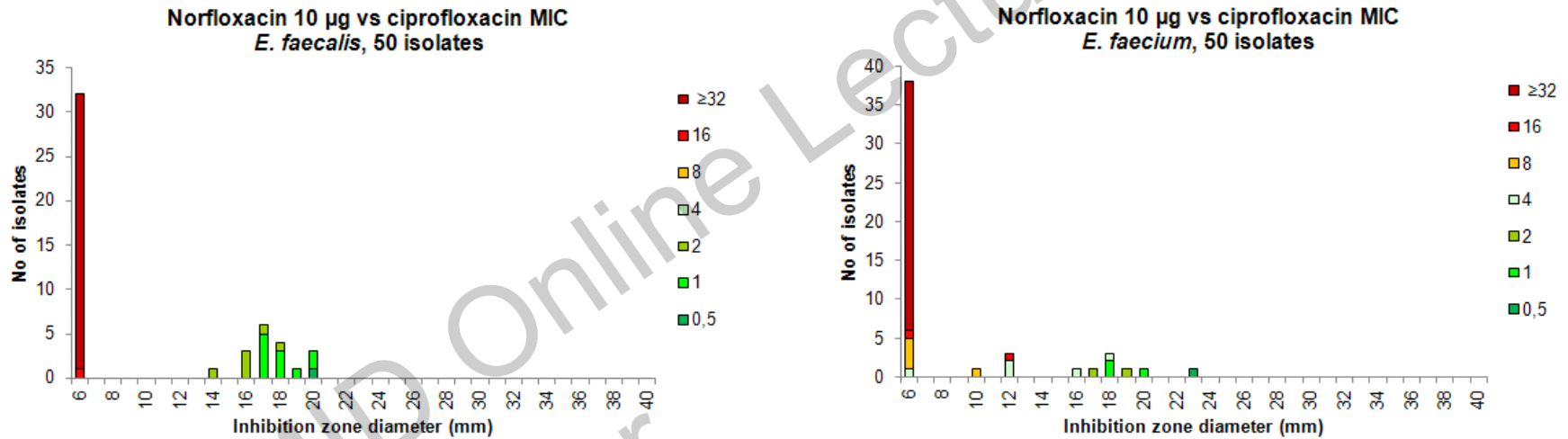
# Enterococcus spp.

- New breakpoints: Ciprofloxacin (uncomplicated UTI only), levofloxacin (uncomplicated UTI only) and norfloxacin (screen).
- New comments: Fluoroquinolones Note A and Note B.

Fluoroquinolones	MIC breakpoint (mg/L)		Disk content (µg)	Zone diameter breakpoint (mm)		Notes Numbers for comments on MIC breakpoints Letters for comments on disk diffusion
	S ≤	R >		S ≥	R <	
Ciprofloxacin (uncomplicated UTI only)	4	4	5	IP <sup>A</sup>	IP <sup>A</sup>	A. The norfloxacin disk diffusion test can be used to screen for fluoroquinolone resistance. See Note B.
Levofloxacin (uncomplicated UTI only)	4	4	5	IP <sup>A</sup>	IP <sup>A</sup>	
Moxifloxacin	-	-		-	-	
Nalidixic acid (screen)	NA	NA		NA	NA	
Norfloxacin (screen)	NA	NA	10	12 <sup>B</sup>	12 <sup>B</sup>	B. Susceptibility of ciprofloxacin and levofloxacin can be inferred from the norfloxacin susceptibility.
Ofloxacin	-	-		-	-	

# To screen for ciprofloxacin resistance in *Enterococcus* spp.

O. Eklund et al, PO282



**Figure 1.** Inhibition zone distributions for (a) *E. faecalis* and (b) *E. faecium* vs. norfloxacin 10 µg . In both graphs, the dotted line indicates the EUCAST screening breakpoint of <12 mm.



# *S. pneumoniae*

## Supplementary table

Oxacillin 1 µg disk Zone diameter	Antimicrobial agent	Further testing and/or interpretation
≥ 20 mm	All beta-lactam agents for which clinical breakpoints are listed (including those with "Note")	Report susceptible irrespective of clinical indication, except for cefaclor, which if reported, should be reported as intermediate.
< 20 mm*	Ampicillin, amoxicillin and piperacillin (without and with beta-lactamase inhibitor), cefepime, cefotaxime, ceftaroline and ceftriaxone	<p>Oxacillin zone diameter &lt; 8 mm: Determine the MIC of the beta-lactam agent intended for clinical use but for ampicillin, amoxicillin and piperacillin (without and with beta-lactamase inhibitor) infer susceptibility from the MIC of ampicillin.</p> <p>Determine the MIC of the agent considered for clinical use and interpret according to the clinical breakpoints.</p>
	Other beta-lactam agents	Determine the MIC of the agent considered for clinical use and interpret according to the clinical breakpoints.

Supplementary table for interpretation of the oxacillin screen updated: minor clarifications; agents added.

# **Breakpoints removed for cefaclor:**

***Haemophilus influenzae***

***Moraxella catarrhalis***

# ***Corynebacterium* spp., except *C. diphtheriae***

- New table listing breakpoints and disk diffusion methodology.

See Erika Matuschek et al, Poster 280

## **List of species**

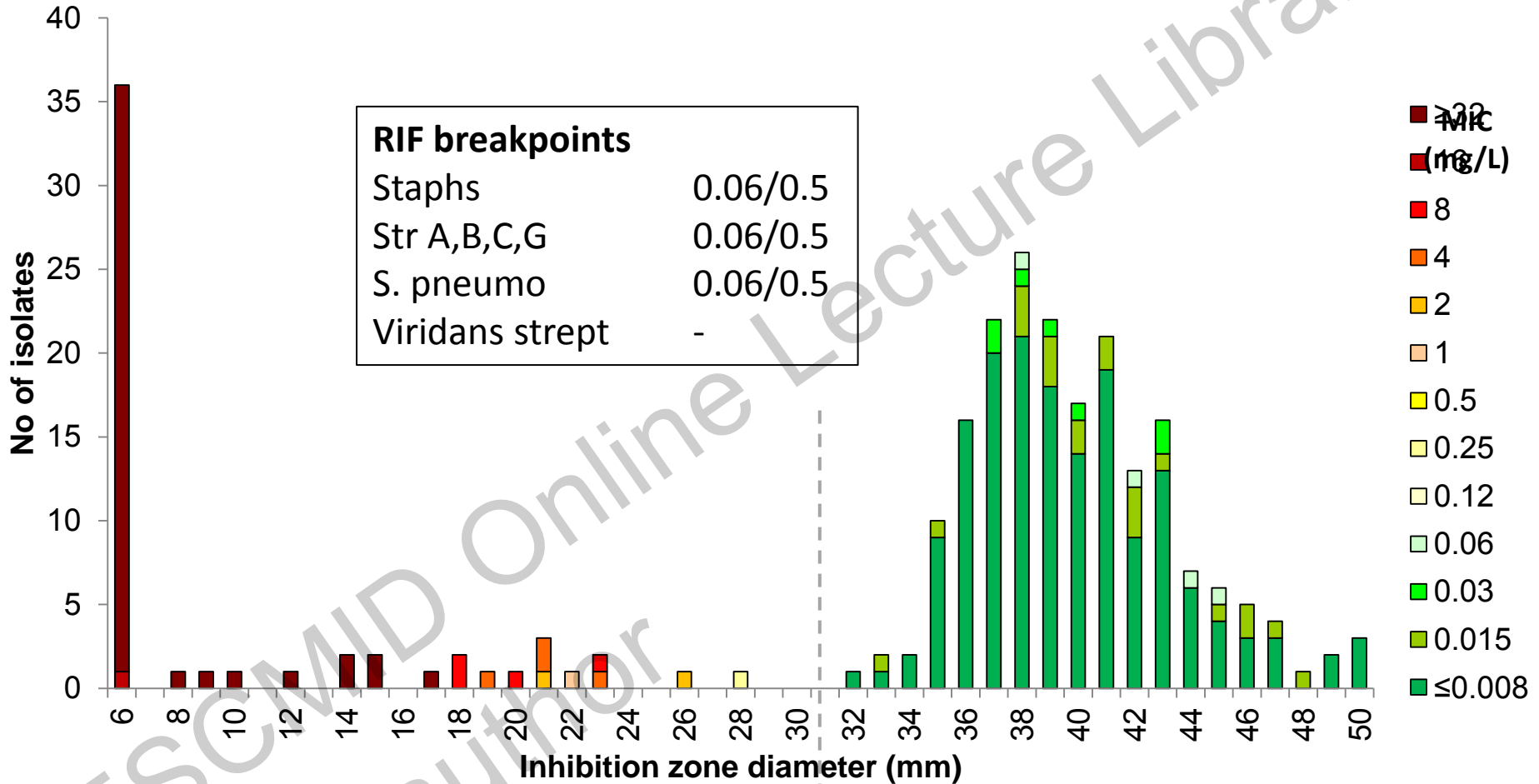
- *C. striatum* (n=78)
- *C. amycolatum* (n=63)
- *C. jeikeium* (n=35)
- *C. pseudodiphtheriticum* (n=20)
- *C. urealyticum* (n=18)
- *C. afermentans* (n=9)
- *C. aurimucosum* (n=8)
- *C. propinquum* (n=5)
- *C. singulare* (n=4)
- Other (n=18): *C. coyleae*, *C. imitans*,  
*C. glucuronolyticum*, *C. minutissimum*,  
*C. xerosis*, *C. freneyi*, *C. mucifaciens*,  
*C. riegelii*, *C. simulans* and *C. ulcerans*.

## **List of breakpoints:**

- Benzylpenicillin
- Ciprofloxacin, moxifloxacin
- Gentamicin
- Vancomycin
- Clindamycin
- Tetracycline
- Linezolid
- Rifampicin


# Rifampicin 5 µg vs. MIC


## *Corynebacterium* spp, 253 clinical isolates



# Adoption of the EUCAST disk diffusion method, April 2014

% Laboratories

 >50%

 10-50%

 <10%

 No information



Countries not on this map:

 Australia

 Iceland

 Israel

 South Africa

 USA

# EUCAST-AFST documents

## News from the subcommittee 2013/14

### Reference Methods

- Yeast
  - E.DEF 7.2 (2012)
  - TN- E.DEF 7.2 (2012)
  - E.DEF 7.1 (2008)
  - TN- E.DEF 7.1 (2008)
- Conidia forming moulds
  - **E.DEF 9.2 (2014 on wide consultation)**
  - E.DEF 9.1 (2008)
  - TN-E.DEF 9.1 (2008)

### Breakpoints

Compound	<i>Candida</i>		<i>Aspergillus</i>	
	Rationale Doc	Techn. Note CMI	Rationale Doc	Techn. Note CMI
Amphotericin	2010	2011	2012	2012
Anidulafungin	2010/ <b>2013</b>	2011/ <b>2014</b>		
Micafungin	<b>2013</b>	<b>2014</b>		
Fluconazole	2007/ <b>2013</b>	2008/ <b>2014</b>	-	-
Itraconazole	<b>Discussion doc</b>		2012	2012
Posaconazole	2010	2011	2012	2012
Voriconazole	2008	2008	2012	<b>2013</b>

# EUCAST Network Laboratories

- Laboratories with expertise in EUCAST AST which have agreed to assist
  - in developing and validating methods
  - in evaluating AST materials
  - in troubleshooting
  - other laboratories to implement EUCAST methods

# EUCAST Network Laboratories

- Statens Serum Institute, Copenhagen, Denmark
- Analyse BioLab GmbH, Linz, Austria
- Hospital Universitario Ramón y Cajal, Madrid, Spain
- Southmead Hospital, Bristol, UK
- Dipartimento di Patologia e Diagnostica, Verona, Italy
- Public Health Wales, Cardiff, UK
- Hosp. Univ. Marqués de Valdecilla, Santander, Spain
- JMI Laboratories, Iowa, USA
- Doyen de la Faculté de Pharmacie, Lille, France
- Abteilung für Medizinische Mikrobiologie, Bochum, Germany
- **...and an increasing number of others!**



# Thank you all!

For enthusiastically helping out!