



 Stichting  
Wergroep  
Antibioticabeleid 

# Veranderingen in EUCAST 2022




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WAMM

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## Inhoud presentatie

- Doseringstabel
- Antibacteriële middelen
  - “BP in Brackets”
  - Aparte screeningsbreekpunten
  - DD voor anaeroben
  - Nieuwe breekpunten
- Antifungale middelen

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## Doseringen

- Opmerking geplaatst “The high exposure dosing regimen pertains to the severity of the infection or drug exposure at the site of infection”
  - Oxacilline
  - Cloxacilline
  - Dicloxacilline
  - Flucloxacilline
  - Clindamycine
- Rifampicine: hoge dosering is verwijderd (alleen 600mg 1dd)

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## “breakpoints in brackets”

- Onderscheid tussen isolaten met en zonder fenotypisch detecteerbaar resistentie mechanisme.
- Gebaseerd op ECOFF
- Indien meerdere species in 1 groep, dan ‘best fit’ ECOFF.
- Geen klinisch bewijs dat monotherapie effectief is
- Meestal gegeven in combinatie met ander antibioticum

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## “breakpoints in brackets”

| Groep                      | Antibioticum                          |
|----------------------------|---------------------------------------|
| Enterobacterales           | Colistine                             |
| Pseudomonas                | Colistine                             |
| Acinetobacter              | Colistine                             |
| Stafylokokken              | Aminoglycosiden                       |
| Bacteroides                | clindamycine                          |
| <i>Reeds in tabel 2021</i> |                                       |
| Enterobacterales           | Amikacine, tobramycine en gentamicine |
| Pseudomonas                | Amikacine en tobramycine              |

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## Aparte screeningsbreekpunten



- Screeningstest gebruikt 1 antibioticum om resistentie tegen een of middelen van dezelfde klasse te voorspellen.
- Vaak gevoeliger en/of robuster dan het testen van een individueel middel
- Minder testen nodig

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## Algemene interpretatie



- Negative screening test:
  - MIC below or equal to or zone diameter above or equal to the susceptible breakpoint for the screening agent. No resistance mechanisms to the antimicrobial class detected.
- Positive screening test:
  - MIC above or zone diameter below the resistant breakpoint for the screening agent. Resistance mechanisms to the antimicrobial class detected.

Instructies om te handelen bij individuele testen staat bij de 'Note' van de betreffende test.

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## Aparte screeningsbreekpunten

| groep                            | Screening    |
|----------------------------------|--------------|
| Stafylokokken                    | Erytromycine |
| Stafylokokken                    | Tetracycline |
| Streptokokken A,B,C,G            | Tetracycline |
| Pneumokokken                     | Tetracycline |
| <i>Burkholderia pseudomallei</i> | Tetracycline |

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## Voorbeeld screeningsbreekpunt

**Staphylococcus spp.**  
Expert Rules and Intrinsic Resistance Tables

| Macrolides, lincosamides and streptogramins | MIC breakpoints (mg/L) |                |     | Disk content (µg) | Zone diameter breakpoints (mm) |                   |     |
|---|------------------------|----------------|-----|-------------------|--------------------------------|-------------------|-----|
|   | S ≤                    | R >            | ATU |                   | S ≥                            | R <               | ATU |
| Azithromycin                                | 2 <sup>1</sup>         | 2 <sup>1</sup> |     |                   | Note <sup>A</sup>              | Note <sup>A</sup> |     |
| Clarithromycin                              | 1 <sup>1</sup>         | 2 <sup>1</sup> |     |                   | Note <sup>A</sup>              | Note <sup>A</sup> |     |
| Erythromycin                                | 1                      | 2              |     | 15                | 21                             | 18                |     |
| Erythromycin (screen only)                  | 1 <sup>1</sup>         | 1 <sup>1</sup> |     | 15                | 21 <sup>A</sup>                | 21 <sup>A</sup>   |     |



**Getallen anders!!**

- 1/A. Erythromycin can be used to screen for macrolide resistance in staphylococci. Isolates categorised as **screen negative** can be reported **susceptible to azithromycin, clarithromycin and roxithromycin**. Isolates categorised as **screen positive** should be **tested for susceptibility to individual agents or reported resistant**.

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## Disk diffusie voor anaeroben

- Gedetailleerde info: seminar van de EUCAST van 9 december 2021 (beschikbaar via EUCAST website)
- Project loopt nog
- Nu informatie beschikbaar over 5 species en een beperkt aantal antibiotica
- In de loop van 2022 volgen voor deze species meer antibiotica
- Daarna andere species en andere incubatietijden

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## Momenteel beschikbaar

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### Species and antimicrobial agents

- 5 commonly isolated anaerobic bacteria
  - *Bacteroides* spp.
  - *Prevotella* spp.
  - *Fusobacterium necrophorum*
  - *Clostridium perfringens*
  - *Cutibacterium acnes*
- Clinically relevant antimicrobial agents
  - Benzylpenicillin 1 unit
  - Piperacillin-tazobactam 30-6 µg
  - Meropenem 10 µg
  - Vancomycin 5 µg
  - Clindamycin 2 µg
  - Metronidazole 5 µg

Dia van EUCAST seminar 9-12-2021

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## De methode in het kort

### Disk diffusion methodology

- **Medium:** Fastidious Anaerobe Agar (FAA) with 5% mechanically defibrinated horse blood
  - Agar depth  $4.0 \pm 0.5$  mm
  - Plates must be dried prior to inoculation
- **Inoculum:** McF 1.0 (overnight culture from non-selective media)
- **Incubation:** Anaerobic environment  
35-37°C for 16-20 h

Dia van EUCAST seminar 9-12-2021

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## Methode (2)

### Streaking of plates and application of disks

- For *Bacteroides* spp., remove excess fluid by turning the swab against the inside of the tube to avoid over-inoculation.
- Spread the inoculum evenly over the entire agar surface, ensuring that there are no gaps between streaks.
  - This is particularly important for *Cutibacterium acnes*, which grows with small colonies and poor contrast to the FAA media.
- Limit the number of disks on each plate to allow good growth and to avoid overlapping of zones.

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## Hulp bij het aflezen van de zones

**EUCAST**  
EUROPEAN COMMITTEE  
ON ANTIMICROBIAL  
SUSCEPTIBILITY TESTING  
European Society of Clinical Microbiology and Infectious Diseases

### Reading guide

EUCAST disk diffusion for selected rapidly growing anaerobic bacteria on Fastidious Anaerobe Agar (FAA)

Version 1.0  
September 2021

*Bacteroides* spp.

Piperacillin-tazobactam    Piperacillin-tazobactam    Piperacillin-tazobactam    Meropenem

Meropenem    Meropenem    Clindamycin    Metronidazole

6 mm

*Fusobacterium necrophorum*

Benzylpenicillin    Benzylpenicillin    Piperacillin-tazobactam    Piperacillin-tazobactam



Meropenem    Clindamycin    Metronidazole    Metronidazole

*Clostridium perfringens*

Benzylpenicillin    Benzylpenicillin    Piperacillin-tazobactam    Piperacillin-tazobactam

Meropenem    Vancomycin    Clindamycin    Metronidazole

Dia van EUCAST seminar 9-12-2021

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## Voorbeeld uit breekpuntentabel 2022

**Anaerobic bacteria** EUCAST Clinical Breakpoint Tables v. 12.0, valid from 2022-01-01

For species not listed below, see EUCAST Guidance Document on how to test and interpret results when there are no breakpoints  
Expert Rules and Intrinsic Resistance Tables

**MIC determination (agar dilution)**  
Medium: Fastidious Anaerobe Agar (FAA)  
Inoculum: 10<sup>7</sup> CFU/spot  
Incubation: Anaerobic environment, 35-37°C, 48h  
Reading: Unless otherwise stated, read MICs at the lowest concentration of the agent where a noticeable difference is seen in visible growth between the test and control plate.  
Quality control: *Bacteroides fragilis* ATCC 25285 and *Clostridium perfringens* ATCC 13124.  
*Clostridium perfringens*: For control of the inhibitor component of beta-lactam inhibitor combinations, see EUCAST QC Tables.  
*Clostridium perfringens* DSM 25589 with a metronidazole 5 µg disk to monitor the anaerobic atmosphere.



**Disk diffusion (EUCAST standardised disk diffusion method)**  
Medium: Fastidious Anaerobe Agar (FAA). The plates should be dried prior to inoculation (at 20-25°C overnight or at 35°C, with the lid removed, for 15 min).  
Inoculum: McFarland 1.0  
Incubation: Anaerobic environment, 35-37°C, 18-24h  
Reading: Unless otherwise stated, read zone edges as the point showing no growth viewed from the front of the plate with the lid removed and with reflected light. See pictures below and the EUCAST Reading Guide for disk diffusion of anaerobic bacteria for further information.  
Quality control: *Bacteroides fragilis* ATCC 25285 and *Clostridium perfringens* ATCC 13124. For control of the inhibitor component of beta-lactam inhibitor combination disks, see EUCAST QC Tables.  
*Clostridium perfringens* DSM 25589 with a metronidazole 5 µg disk to monitor the anaerobic atmosphere.

**Bacteroides spp.**

| Antimicrobial agent                            | MIC breakpoints (mg/L) |                  |     | Disk content (µg) | Zone diameter breakpoints (mm) |                     |     | Notes   |
|--|------------------------|------------------|-----|-------------------|--------------------------------|---------------------|-----|---|
|  | S ≤                    | R >              | ATU |                   | S ≤                            | R <                 | ATU |   |
| Piperacillin-tazobactam                        | 8 <sup>1</sup>         | 8 <sup>1</sup>   |     | 38-6              | 20                             | 20                  |     | Notes<br>Numbered notes relate to general comments and/or MIC breakpoints.<br>Lettered notes relate to the disk diffusion method.<br>1. For susceptibility testing purposes, the concentration of tazobactam is fixed at 4 mg/L.<br>2A. The meropenem zone diameter breakpoint will detect all cfaA gene mediated carbapenem resistance in <i>Bacteroides fragilis</i> . Some isolates with an MIC of 1 mg/L may harbour the cfaA gene.<br>3/B. For information on how to use breakpoints in brackets, see <a href="https://www.eucast.org/eucastguidancedocuments/">https://www.eucast.org/eucastguidancedocuments/</a> .<br>C. Examine zones carefully for colonies within zones. Colonies should be taken into account when reading. |
| Piperacillin-tazobactam, β-lactamase sensitive | IE                     | IE               |     |                   | IE                             | IE                  |     |   |
| Meropenem                                      | 1 <sup>1</sup>         | 1 <sup>1</sup>   |     | 10                | 20 <sup>1</sup>                | 28 <sup>1</sup>     |     |   |
| Clindamycin                                    | (8) <sup>1</sup>       | (4) <sup>1</sup> |     | 2                 | (10) <sup>1,2</sup>            | (10) <sup>1,2</sup> |     |   |
| Metronidazole                                  | 4                      | 4                |     | 5                 | 25                             | 25                  |     |   |

**Prevotella spp.**



| Antimicrobial agent     | MIC breakpoints (mg/L) |                  |     | Disk content (µg) | Zone diameter breakpoints (mm) |                 |     | Notes   |
|-------------------------|------------------------|------------------|-----|-------------------|--------------------------------|-----------------|-----|---|
|                         | S ≤                    | R >              | ATU |                   | S ≤                            | R <             | ATU |   |
| Benzylpenicillin        | 0.5                    | 0.5              |     | 1 unit            | 20                             | 20              |     | Notes<br>Numbered notes relate to general comments and/or MIC breakpoints.<br>Lettered notes relate to the disk diffusion method.<br>1. For susceptibility testing purposes, the concentration of tazobactam is fixed at 4 mg/L.<br>A. Examine zones carefully for colonies within zones. Colonies should be taken into account when reading. |
| Piperacillin-tazobactam | 0.5 <sup>1</sup>       | 0.5 <sup>1</sup> |     | 38-6              | 26                             | 26              |     |   |
| Meropenem               | 0.25                   | 0.25             |     | 10                | 34                             | 34              |     |   |
| Clindamycin             | 0.25                   | 0.25             |     | 2                 | 31 <sup>1</sup>                | 31 <sup>1</sup> |     |   |
| Metronidazole           | 4                      | 4                |     | 5                 | 22                             | 22              |     |   |

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## Nieuwe breekpunten



- Meropenem/vaborbactam DD
  - Enterobacterales
  - Pseudomonas
- Meropenem-non-meningitis: apart breekpunt voor *Pseudomonas non-aeruginosa*
- S aureus* en Delafloxacin: apart breekpunt voor CAP en een ander voor huidinfecties
- Vibrio spp*
- PK/PD breakpoint: temocilline toegevoegd (en oritavancin verwijderd)
- anaeroben



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## Andere veranderingen

- Waarden in verschillende breekpunten
- Tekstuele veranderingen
- Schema's pneumokokken en haemophilus


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## Voorbeeld bij pneumokokken


| Penicillins <sup>1</sup>  | MIC breakpoints (mg/L) |       |     | Disk content (µg) | Zone diameter breakpoints (mm) |                   |     |
|---|------------------------|-------|-----|-------------------|--------------------------------|-------------------|-----|
|   | S ≤                    | R >   | ATU |                   | S ≥                            | R <               | ATU |
| Benzympenicillin (indications other than meningitis) <sup>2</sup> | 0.06                   | 2     |     |                   | Note <sup>A</sup>              | Note <sup>A</sup> |     |
| Benzympenicillin (meningitis)                                     | 0.06                   | 0.06  |     |                   | Note <sup>A</sup>              | Note <sup>A</sup> |     |
| Ampicillin (indications other than meningitis)                    | 0.5                    | 1     |     | 2                 | 22                             | 19                |     |
|   |                        |       |     |                   |                                |                   |     |
| Rifampicin  | 0.125                  | 0.125 |     | 5                 | 22                             | 22                |     |

Oud: 2 Oud: 16


Oud: 0.5 Oud: 17



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## Stafylokokken

| Penicillins <sup>1</sup>   | MIC breakpoints (mg/L) |                       |     | Disk content (µg) | Zone diameter breakpoints (mm) |                       |     |
|--|------------------------|-----------------------|-----|-------------------|--------------------------------|-----------------------|-----|
|  | S ≤                    | R >                   | ATU |                   | S ≥                            | R <                   | ATU |
| Benzylicillin, <i>S. aureus</i>  | 0.125 <sup>1</sup>     | 0.125 <sup>1</sup>    |     | 1 unit            | 26 <sup>A,B</sup>              | 26 <sup>A,B</sup>     |     |
| Benzylicillin, <i>S. lugdunensis</i>   | 0.125                  | 0.125                 |     | 1 unit            | 26                             | 26                    |     |
| Benzylicillin, other staphylococci   | Note <sup>2</sup>      | Note <sup>2</sup>     |     |                   | Note <sup>C</sup>              | Note <sup>C</sup>     |     |
| Ampicillin, <i>S. saprophyticus</i>  | Note <sup>2,3</sup>    | Note <sup>2,3</sup>   |     | 2                 | 18 <sup>D</sup>                | 18 <sup>D</sup>       |     |
| Ampicillin-sulbactam   | Note <sup>1,2,3</sup>  | Note <sup>1,2,3</sup> |     |                   | Note <sup>A,C,D</sup>          | Note <sup>A,C,D</sup> |     |
| Amoxicillin  | Note <sup>1,2,3</sup>  | Note <sup>1,2,3</sup> |     |                   | Note <sup>A,C,D</sup>          | Note <sup>A,C,D</sup> |     |
| Amoxicillin-clavulanic acid  | Note <sup>1,2,3</sup>  | Note <sup>1,2,3</sup> |     |                   | Note <sup>A,C,D</sup>          | Note <sup>A,C,D</sup> |     |
| Piperacillin   | Note <sup>1,2,3</sup>  | Note <sup>1,2,3</sup> |     |                   | Note <sup>A,C,D</sup>          | Note <sup>A,C,D</sup> |     |
| Piperacillin-tazobactam  | Note <sup>1,2,3</sup>  | Note <sup>1,2,3</sup> |     |                   | Note <sup>A,C,D</sup>          | Note <sup>A,C,D</sup> |     |
| Ticarcillin  | Note <sup>1,2</sup>    | Note <sup>1,2</sup>   |     |                   | Note <sup>A,C</sup>            | Note <sup>A,C</sup>   |     |
| Ticarcillin-clavulanic acid  | Note <sup>1,2</sup>    | Note <sup>1,2</sup>   |     |                   | Note <sup>A,C</sup>            | Note <sup>A,C</sup>   |     |
| Temocillin   | -                      | -                     |     |                   | -                              | -                     |     |
| Phenoxymethylpenicillin, <i>S. aureus</i>  | Note <sup>1</sup>      | Note <sup>1</sup>     |     |                   | Note <sup>A</sup>              | Note <sup>A</sup>     |     |
| Phenoxymethylpenicillin, Coagulase-negative staphylococci  | - <sup>2</sup>         | - <sup>2</sup>        |     |                   | Note <sup>C</sup>              | Note <sup>C</sup>     |     |
| Oxacillin (screen only), <i>S. pseudintermedius</i> , <i>S. schleiferi</i> and <i>S. coagulans</i> | NA                     | NA                    |     | 1                 | 20 <sup>F</sup>                | 20 <sup>F</sup>       |     |


Oxacilline screening: *S. coagulans* toegevoegd

| Cephalosporins <sup>1</sup>   | MIC breakpoints (mg/L) |                     |     | Disk content (µg) | Zone diameter breakpoints (mm) |                   |     |
|---|------------------------|---------------------|-----|-------------------|--------------------------------|-------------------|-----|
|   | S ≤                    | R >                 | ATU |                   | S ≥                            | R <               | ATU |
| Cefoxitin (screen only), <i>S. aureus</i> and coagulase-negative staphylococci except <i>S. epidermidis</i> and <i>S. lugdunensis</i> | Note <sup>3,4</sup>    | Note <sup>3,4</sup> |     | 30                | 22 <sup>B</sup>                | 22 <sup>B</sup>   |     |
| Cefoxitin (screen only), <i>S. epidermidis</i> and <i>S. lugdunensis</i>  | Note <sup>4</sup>      | Note <sup>4</sup>   |     | 30                | 27 <sup>A,B</sup>              | 27 <sup>A,B</sup> | 27  |
| Cefoxitin (screen only), <i>S. pseudintermedius</i> , <i>S. schleiferi</i> and <i>S. coagulans</i>                                    | Note <sup>5</sup>      | Note <sup>5</sup>   |     |                   | Note <sup>C</sup>              | Note <sup>C</sup> |     |


Cefoxitin screening: *S. lugdunensis* toegevoegd aan *S. epidermidis*



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## Neisseria meningitidis

| Penicillins <sup>1</sup>        | MIC breakpoints (mg/L) |      |     |
|---------------------------------|------------------------|------|-----|
|                                 | S ≤                    | R >  | ATU |
| Benzylicillin (all indications) | 0.25                   | 0.25 |     |

All indications

|   |       |       |  |
|---|-------|-------|--|
| Cefotaxime (all indications) <sup>1</sup> | 0.125 | 0.125 |  |
|---|-------|-------|--|

All indications

|  |       |       |  |
|--|-------|-------|--|
| Ceftriaxone (all indications including prophylaxis) <sup>1</sup> | 0.125 | 0.125 |  |
|--|-------|-------|--|

All indications including prophylaxis

| Meropenem (indications other than meningitis) | Note <sup>2</sup> | Note <sup>2</sup> |
|---|-------------------|-------------------|
| Meropenem (all indications) <sup>1,2</sup>    | 0.25              | 0.25              |

All indications: eerder stond er dat je voor ernstige infecties het meningitis breekpunt kon gebruiken

|                                  |      |      |      |
|----------------------------------|------|------|------|
| Ciprofloxacin (prophylaxis only) | 0.03 | 0.03 | 0.03 |
|----------------------------------|------|------|------|


Prophylaxis only stond eerder als opmerking onder note

|                                |                |                |  |
|--------------------------------|----------------|----------------|--|
| Minocycline (prophylaxis only) | 1 <sup>1</sup> | 1 <sup>1</sup> |  |
| Tetracycline (screen only)     | 2 <sup>1</sup> | 2 <sup>1</sup> |  |


Idem  
Screeningsbreekpunt

|                               |      |      |  |
|-------------------------------|------|------|--|
| Rifampicin (prophylaxis only) | 0.25 | 0.25 |  |
|-------------------------------|------|------|--|


Prophylaxis only stond eerder als opmerking onder note



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## Oude 2021 schema Pneumokokken

**Streptococcus pneumoniae** EUCAST Clinical Breakpoint Tables v. 11.0, valid from 2021-01-01

Expert Rules and Intrinsic Resistance Tables

An MIC breakpoint of  $\leq 0.061$  mg/L is an arbitrary, "off scale" breakpoint (corresponding to a zone diameter breakpoint of " $\geq 38$  mm") which categorises wild-type organisms (organisms without phenotypically detectable resistance mechanisms to the agent) as "Susceptible, increased exposure" (I). For these organism-agent combinations, never report "Susceptible, standard dosing regimen" (S).

**Screening for beta-lactam resistance in *S. pneumoniae***

**Oxacillin 1 µg disk test or benzylpenicillin MIC**

Oxacillin zone diameter  $\geq 20$  mm or benzylpenicillin MIC  $\leq 0.06$  mg/L  
Excludes all beta-lactam resistance mechanisms

Report susceptible (S) to any beta-lactam agents for which clinical breakpoints are available, including those with "Note", except for cefaclor, which if reported, should be reported "susceptible, increased exposure" (I)

Benzylpenicillin (meningitis) and phenoxymethylpenicillin (all indications)

Report resistant (R)

Benzylpenicillin (indications other than meningitis)

Determine the MIC and interpret according to the clinical breakpoints

Oxacillin zone diameter  $< 20$  mm or benzylpenicillin MIC  $> 0.06$  mg/L  
Beta-lactam resistance mechanism detected

See the EUCAST warning on the use of benzylpenicillin gradient tests at <http://www.eucast.org/warnings/>.

Ampicillin, amoxicillin and piperacillin (without and with beta-lactamase inhibitor), cefepime, cefotaxime, ceftaroline, ceftobiprole and ceftazidime

Oxacillin zone  $\geq 8$  mm

Report susceptible (S)

For intravenous ampicillin, amoxicillin and piperacillin (without and with inhibitor), infer susceptibility from ampicillin

Oxacillin zone  $< 8$  mm

Report susceptible (S)


For oral amoxicillin (without and with inhibitor), see breakpoint recommendations

Other beta-lactam agents


Determine the MIC and interpret according to the clinical breakpoints

For cefepime, cefotaxime, ceftaroline, ceftobiprole and ceftazidime, determine the MIC and interpret according to the clinical breakpoints


\* In meningitis confirm by determining the MIC for the agent considered for clinical use.



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## Nieuwe schema pneumokokken

**Streptococcus pneumoniae** EUCAST Clinical Breakpoint Tables v. 12.0, valid from 2022-01-01

Expert Rules and Intrinsic Resistance Tables

**Streptococcus pneumoniae: Flow chart based on the oxacillin screen test for beta-lactam resistance mechanisms to reduce the number of specific tests for beta-lactam agents**

Oxacillin 1 µg zone diameter  $\geq 20$  mm (or benzylpenicillin MIC  $\leq 0.06$  mg/L)

**Mechanism:** excludes all beta-lactam resistance mechanisms

**Report:** susceptible (S) to beta-lactam agents for which clinical breakpoints are available, including those with "Note", and those with meningitis breakpoints. **Exception:** Cefaclor is reported "susceptible, increased exposure" (I).

**No further testing required.**

Oxacillin 1 µg zone diameter  $< 20$  mm (or benzylpenicillin MIC  $> 0.06$  mg/L)

**Mechanism:** beta-lactam resistance detected

**Report:** resistant (R) to benzylpenicillin (meningitis) and phenoxymethylpenicillin (all indications). For benzylpenicillin (indications other than meningitis), perform and interpret MIC according to breakpoints.

For other beta-lactam agents, see below.

Oxacillin 1 µg zone diameter 9-19 mm

Report susceptible (S) without further testing to: ampicillin, amoxicillin and piperacillin (without and with beta-lactamase inhibitor), cefepime, cefotaxime, ceftaroline, ceftobiprole, ceftazidime, imipenem and meropenem.

For other beta-lactam agents, perform susceptibility testing for the relevant agent and interpret according to breakpoints.

This guidance is also valid for meningitis breakpoints.

Oxacillin 1 µg zone diameter  $< 9$  mm

Perform susceptibility testing for the relevant agent and interpret according to breakpoints.

This guidance is also valid for meningitis breakpoints.

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# Nieuwe schema pneumokokken

*Streptococcus pneumoniae* EUCAST Clinical Breakpoint Tables v. 12.0, valid from 2022-01-01

**Streptococcus pneumoniae: Flow chart based on the oxacillin screen test for beta-lactam resistance mechanisms to reduce the number of specific tests for beta-lactam agents**

See the EUCAST warning on the use of benzylpenicillin gradient tests at <http://www.eucast.org/warnings/>.

**Oxacillin 1 µg zone diameter ≥20 mm (or benzylpenicillin MIC ≤0.06 mg/L)**

**Mechanism:** excludes all beta-lactam resistance mechanisms

**Report:** susceptible (S) to beta-lactam agents for which clinical breakpoints are available, including those with "Note" and those with meningitis breakpoints. **Exception:** Cefaclor is reported "susceptible, increased exposure" (I).

**No further testing required.**

**Oxacillin 1 µg zone diameter <20 mm (or benzylpenicillin MIC >0.06 mg/L)** Onveranderd

**Mechanism:** beta-lactam resistance detected

**Report:** resistant (R) to benzylpenicillin (meningitis) and phenoxymethylpenicillin (all indications).  
For benzylpenicillin (indications other than meningitis), perform and interpret MIC according to breakpoints.  
For other beta-lactam agents, see below.

**Oxacillin 1 µg zone diameter 9-19 mm**

**Report:** susceptible (S) without further testing to ampicillin, amoxicillin and piperacillin (without and with beta-lactamase inhibitor) cefepime, cefotaxime, ceftazidime, ceftiofur, ceftriaxone, imipenem and meropenem.

For other beta-lactam agents, perform susceptibility testing for the relevant agent and interpret according to breakpoints.

This guidance is also valid for meningitis breakpoints.

Toegevoegd

**Oxacillin 1 µg zone diameter <9 mm**

Perform susceptibility testing for the relevant agent and interpret according to breakpoints.

This guidance is also valid for meningitis breakpoints.

Was 8mm

Aparte blokje over amoxi-oraal is weg.

Erasmus MC **SWAB** Stichting Werkgroep Antibioticabeleid H+ MC

# 2021 haemophilus influenzae schema

*Haemophilus influenzae* EUCAST Clinical Breakpoint Tables v. 11.0, valid from 2021-01-01

**Screening for beta-lactam resistance in *H. influenzae***

**Benzylpenicillin (PCG) 1 unit disk test**  
Always perform in parallel with testing of other beta-lactam agents

**PCG 1 unit zone diameter ≥ 12 mm**  
Excludes all beta-lactam resistance mechanisms

Report susceptible (S) to any beta-lactam agents for which clinical breakpoints are available, including those with "Note", except for the oral preparations of amoxicillin, amoxicillin-clavulanic acid and cefuroxime, which if reported, should be reported as "susceptible, increased exposure" (I).

**PCG 1 unit zone diameter < 12 mm\***  
Beta-lactam resistance mechanism detected (Beta-lactamase and/or PBP3 mutations)

**Test for beta-lactamase**

**Beta-lactamase positive**  
With or without PBP3 mutations

**Beta-lactamase negative**  
PBP3 mutations only

**Report ampicillin, amoxicillin and piperacillin (without beta-lactamase inhibitor) resistant (R)**

**Other beta-lactam agents**

**Amoxicillin-clavulanic acid 2-1 µg ≥ 15 mm**  
Beta-lactamase only

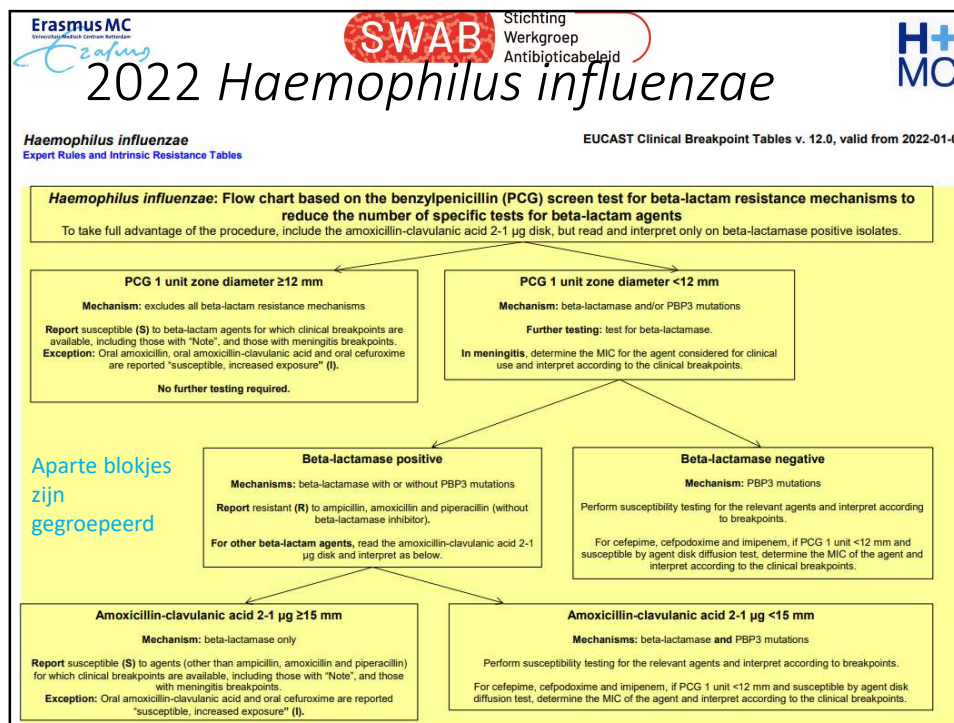
**Amoxicillin-clavulanic acid 2-1 µg < 15 mm**  
Beta-lactamase and PBP3 mutations

Report susceptible (S) to any beta-lactam agents for which clinical breakpoints are available, including those with "Note", except for the oral preparations of amoxicillin-clavulanic acid and cefuroxime, which if reported, should be reported as "susceptible, increased exposure" (I).

Report according to the clinical breakpoints for the agent in question. For cefepime, cefpodoxime and imipenem, see below.\*\*

\*\* For cefepime, cefpodoxime and imipenem, if resistant by both screen and agent disk diffusion test, report resistant. If resistant by screen test and susceptible by agent disk diffusion test, determine the MIC of the agent and interpret according to the clinical breakpoints.

\* In meningitis confirm by determining the MIC for the agent considered for clinical use.



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## Antifungale middelen

- Opbouw van de tabel is veranderd
- Geen veranderde waarden in de breekpunten
- Aantal andere ECOFF waarden

Erasmus MC  
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## Nieuwe opbouw van de tabel

Version 3.0, valid from 2022-01-18

| Species                | Drug           | Clinical Breakpoints (mg/L) |       |            |   |       | Recommendation for area of technical uncertainty (ATU) results |
|------------------------|----------------|-----------------------------|-------|------------|---|-------|--|
|                        |                | ECOFF (mg/L)                | WT S  | S S        | I | R >   |  |
| <i>C. albicans</i>     | Amphotericin B | 1                           | 1     |            |   | 1     |  |
|                        | Anidulafungin  | 0.03                        | 0.03  |            |   | 0.03  |  |
|                        | Micafungin     | 0.016                       | 0.016 |            |   | 0.016 | 0.03   |
|                        | Fluconazole    | 0.5                         | 2     | 4          |   | 4     |  |
|                        | Itraconazole   | 0.03                        | 0.06  |            |   | 0.06  |  |
|                        | Posaconazole   | 0.06                        | 0.06  |            |   | 0.06  |  |
|                        | Voriconazole   | 0.03                        | 0.06  | 0.125-0.25 |   | 0.25  |  |
| <i>C. dubliniensis</i> | Amphotericin B | 0.25                        | 1     |            |   | 1     |  |
|                        | Anidulafungin  | ND                          |       |            |   |       |  |
|                        | Micafungin     | ND                          |       |            |   |       |  |
|                        | Fluconazole    | (0.5) <sup>a</sup>          | 2     | 4          |   | 4     |  |
|                        | Itraconazole   | 0.06                        | 0.06  |            |   | 0.06  |  |
|                        | Posaconazole   | 0.06                        | 0.06  |            |   | 0.06  |  |
|                        | Voriconazole   | 0.03                        | 0.06  | 0.125-0.25 |   | 0.25  |  |
| <i>C. glabrata</i>     | Amphotericin B | 1                           | 1     |            |   | 1     |  |
|                        | Anidulafungin  | 0.06                        | 0.06  |            |   | 0.06  |  |
|                        | Micafungin     | 0.03                        | 0.03  |            |   | 0.03  |  |
|                        | Fluconazole    | 16                          | 0.001 | ≤16        |   | 16    |  |
|                        | Itraconazole   | 2                           | ND    |            |   | ND    |  |
|                        | Posaconazole   | 1                           | ND    |            |   | ND    |  |
|                        | Voriconazole   | 1                           | ND    |            |   | ND    |  |
| <i>C. krusei</i>       | Amphotericin B | 1                           | 1     |            |   | 1     |  |
|                        | Anidulafungin  | 0.06                        | 0.06  |            |   | 0.06  |  |
|                        | Micafungin     | 0.25                        | ND    |            |   | ND    |  |
|                        | Fluconazole    | 128                         | ND    |            |   | ND    |  |
|                        | Itraconazole   | 1                           | ND    |            |   | ND    |  |
|                        | Posaconazole   | 0.5                         | ND    |            |   | ND    |  |
|                        | Voriconazole   | 1                           | ND    |            |   | ND    |  |

If S to anidulafungin, report as S and add the following comment: Isolates susceptible to anidulafungin with micafungin MIC of 0.03 mg/L do not harbour an *fkx* mutation conferring resistance to the echinocandins.  
If not S to anidulafungin, report as R and refer to reference laboratory for *fkx* sequencing and confirmation of MICs.

Erasmus MC  
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## Conclusie

- Grootste veranderingen antibacteriële middelen tabel:
  - Aantal antibiotica heeft breekpunten tussen haakjes
  - Aparte screeningsbreekpunten met eigen waarden
  - Nieuwe methode anaerobe disk diffusie
- Kleine aanpassingen in de waarden en in het pneumokokken schema