



EUCAST

European Committee
on Antimicrobial
Susceptibility Testing

Streptococcus pneumoniae

EUCAST rapid antimicrobial susceptibility testing (RAST)

Calibration of zone diameter breakpoints to MIC
values.

EUCAST RAST breakpoints version 9.0
January 2026

MIC and zone diameter correlates

- The following histograms present inhibition zone diameter distributions from EUCAST rapid antimicrobial susceptibility testing (RAST).
- The reference method is MIC with broth microdilution.
- In addition, SIR interpretations from standard disk diffusion have been used as a reference for isolates for which MICs are lacking.
- In most, the different colours of the bars indicate different MIC values. In some, the colours of the bars indicate a resistance gene or a resistance mechanism. When SIR interpretation from standard disk diffusion have been used as a reference this is shown as striped bars.
- This presentation is based on EUCAST RAST Clinical Breakpoint Table v. 9.0 (based on EUCAST Breakpoint Tables version 16.0).

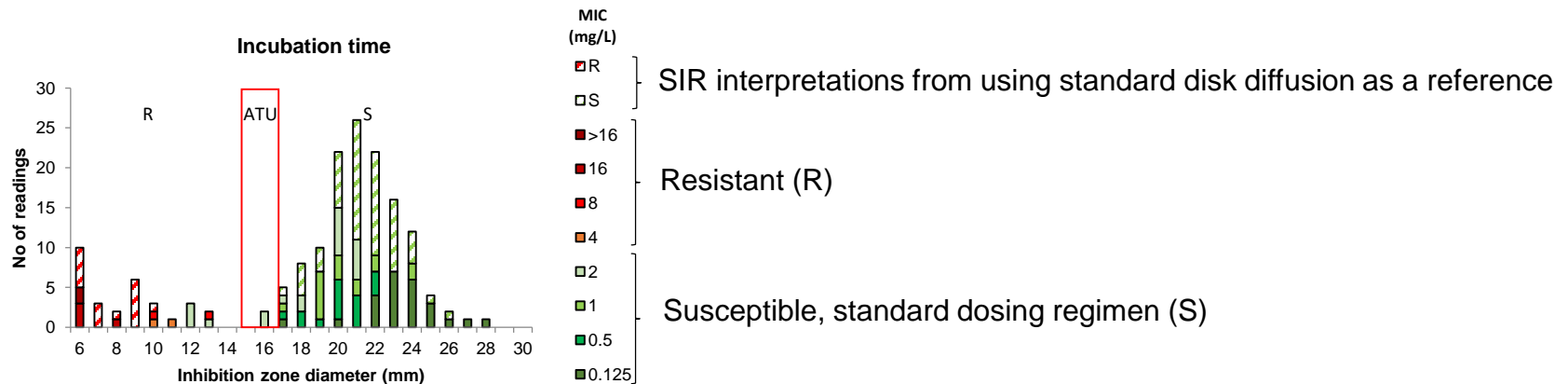
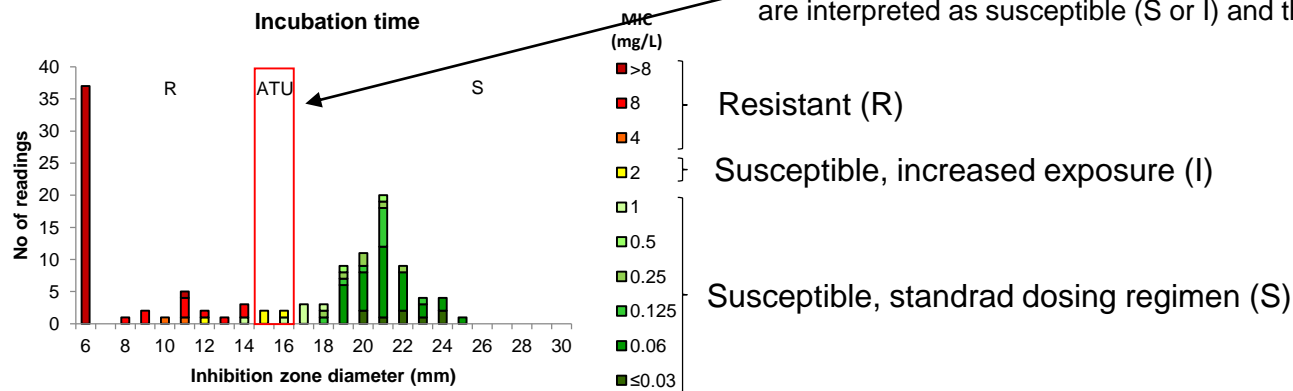
Changes from previous version

Changes
<ul style="list-style-type: none">• New distributions for benzylpenicillin.

Explanation of graphs:

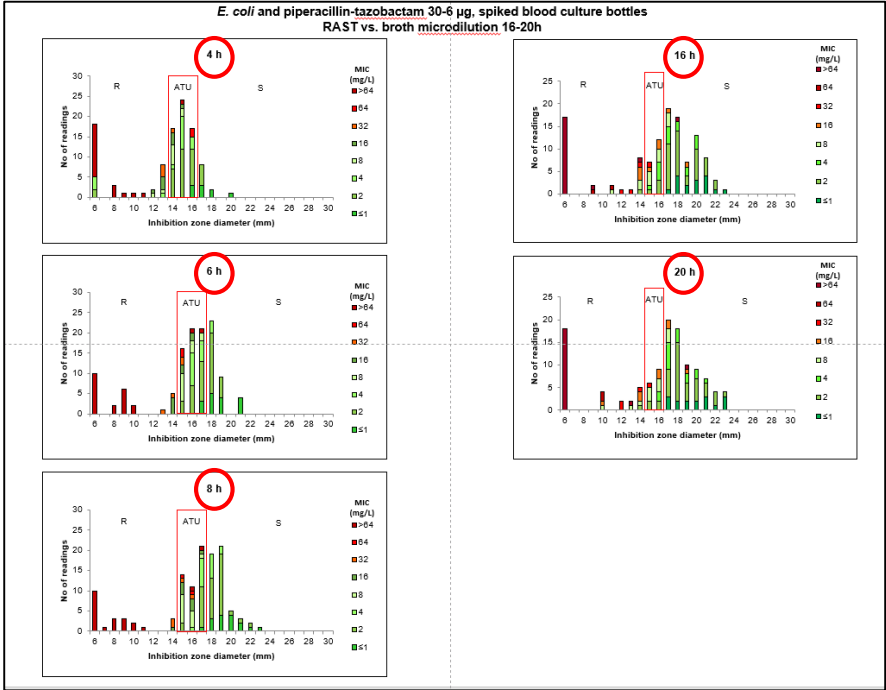
- These graphs show zone diameter distributions with MIC values or resistance mechanisms as coloured bars. Colours are related to current EUCAST MIC breakpoints.

Area of Technical Uncertainty (ATU), inhibition zone diameters above the ATU are interpreted as susceptible (S or I) and those below as resistant (R).



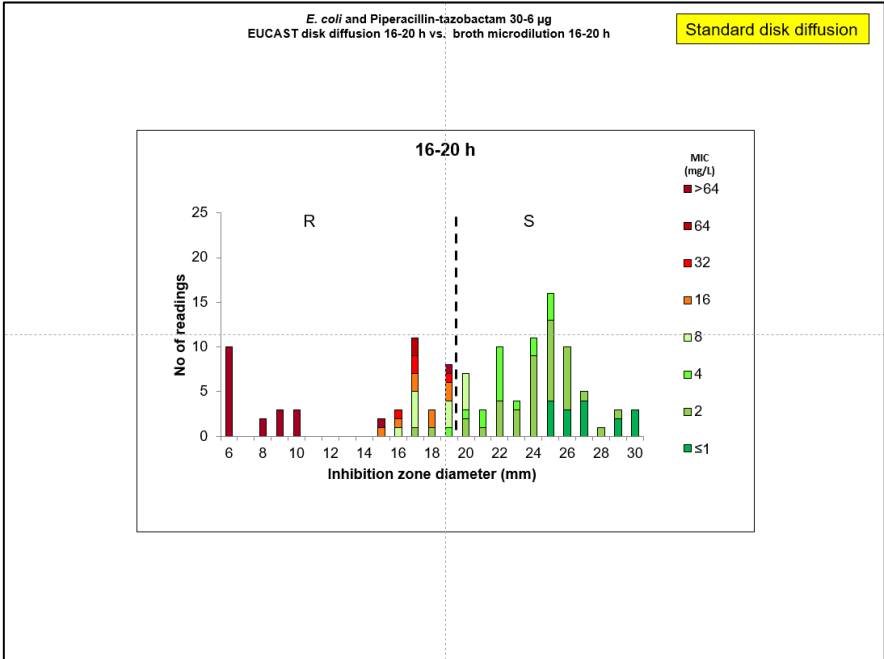
For each species-agent combination, the first slide shows RAST graphs versus reference method and the second slide shows data for the same isolates tested with EUCAST standard disk diffusion method versus reference method*. Graphs with RAST data are shown per incubation time; data for 16-20 hours incubation are shown as two graphs one for 16 and one for 20 hours.

*This slide will not be available for species-agent combinations where EUCAST standard disk diffusion is used as the reference.



← RAST versus reference method, one graph per available incubation time.

Standard disk diffusion versus reference method.



Material and method

- Isolates have been tested from spiked blood culture bottles.
- All isolates have been tested on media agar from two manufacturers. The number of tests are therefore twice the number of isolates except for enterococci where some tests were repeated more than once.

Streptococcus pneumoniae

The proportion of readable zone diameters

The proportion of zone diameters (%) which are possible to read* after 4, 6, 8 and 16-20 h of incubation.

Organism	4 hours (%)	6 hours (%)	8 hours (%)	16-20 hours (%)
<i>Streptococcus pneumoniae</i>	68	83	95	100

*The table displays “possible to read”, not “possible to interpret”, since some of the zone diameters will be in the ATU.

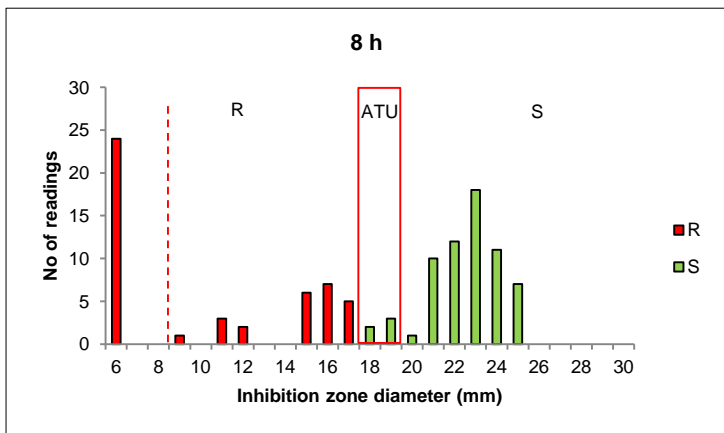
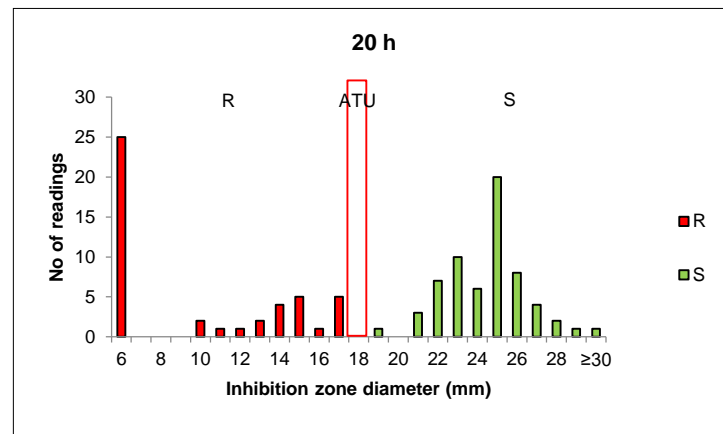
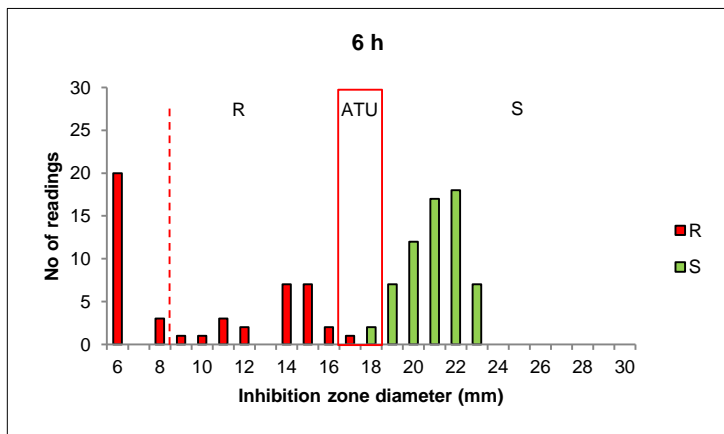
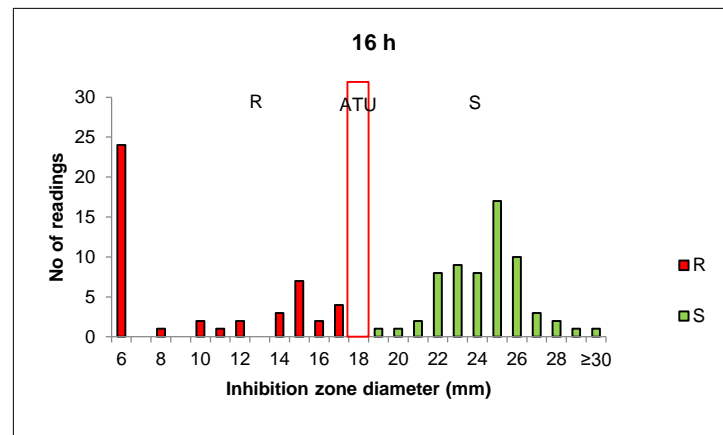
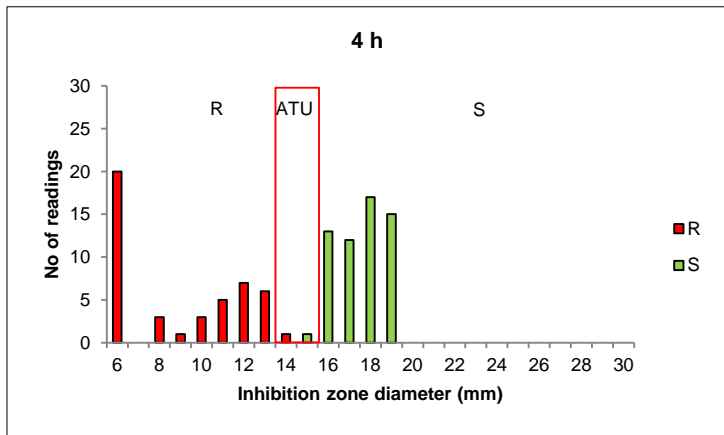
Streptococcus pneumoniae

Antimicrobial agent and number of tested isolates

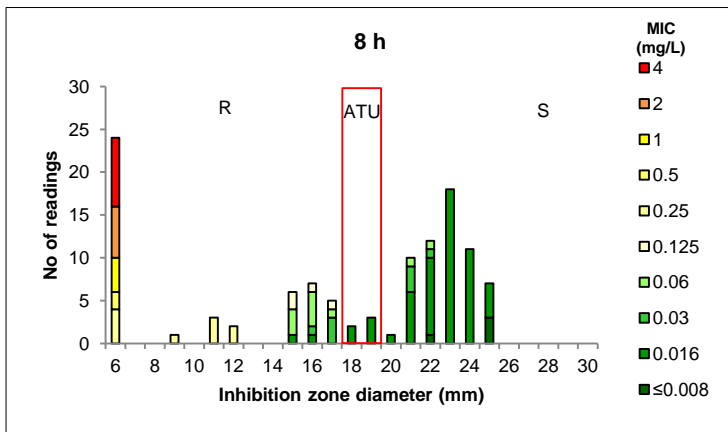
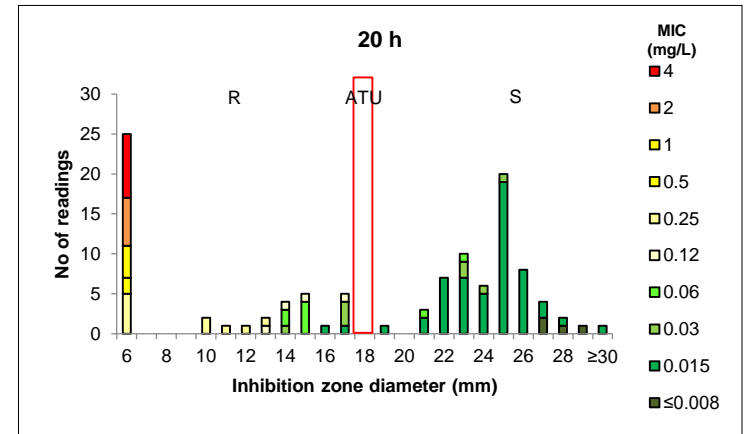
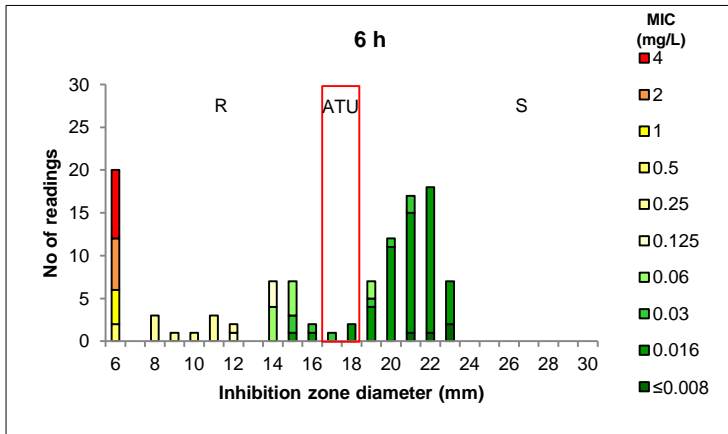
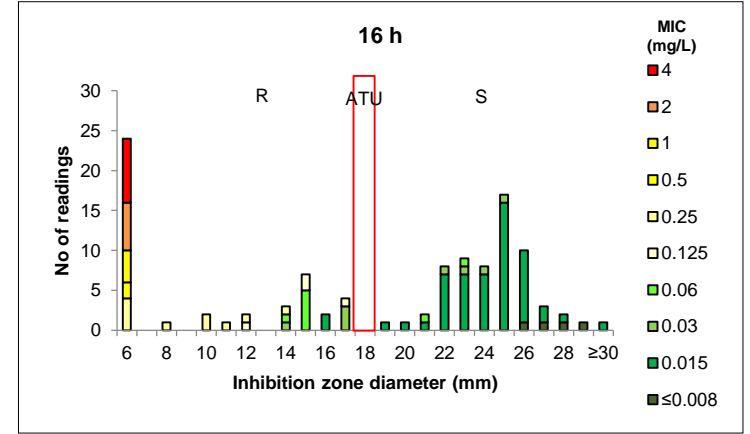
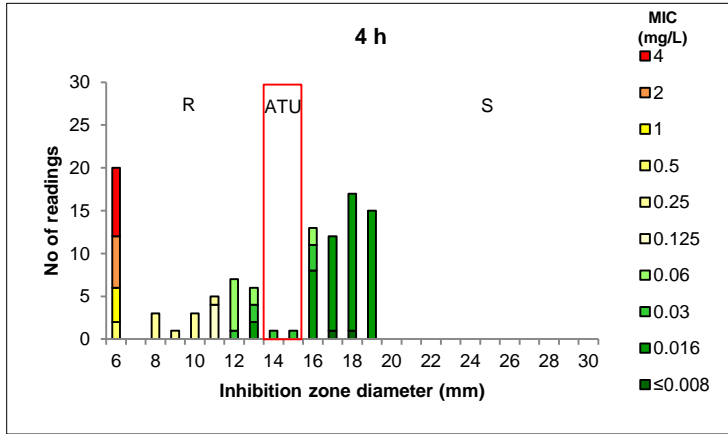
Antimicrobial agent	Number of tested isolates (number of tests)
Oxacillin*	56 (112)
Benzylopenicillin	50 (100)
Norfloxacin	56 (112)
Erythromycin	56 (112)
Clindamycin	56 (112)
Trimethoprim-sulfamethoxazole	56 (112)

*Oxacillin inhibition zones are shown versus: Oxacillin EUCAST standard disk diffusion 16-20 h and benzylopenicillin MIC.

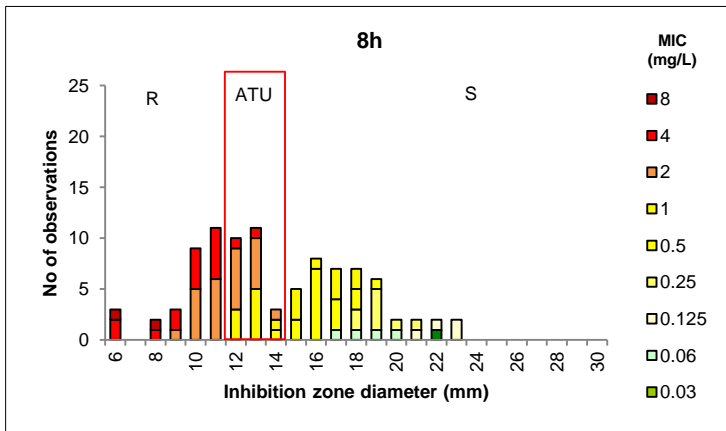
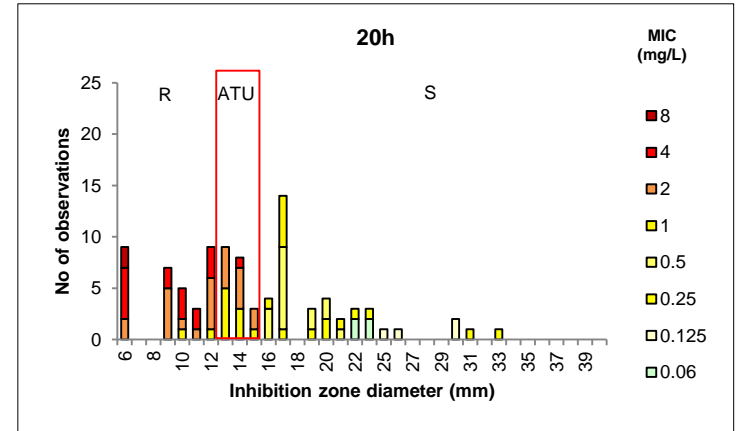
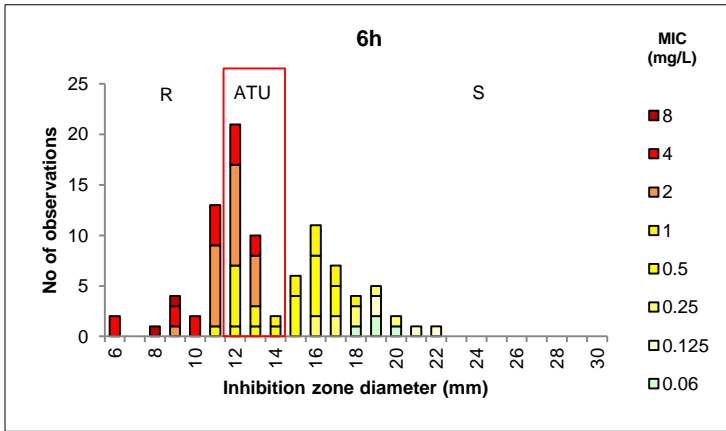
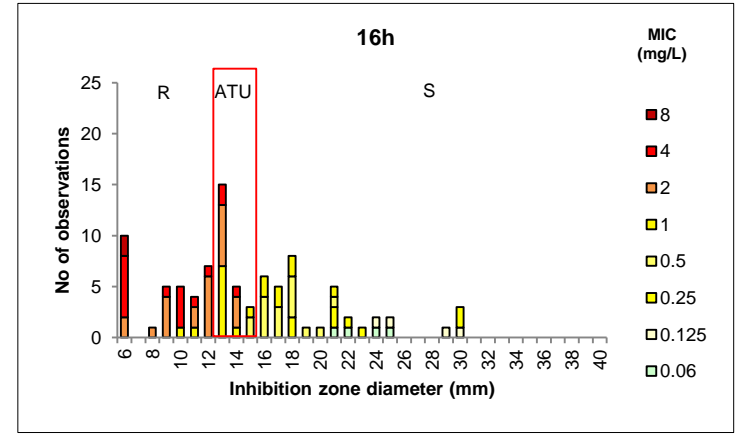
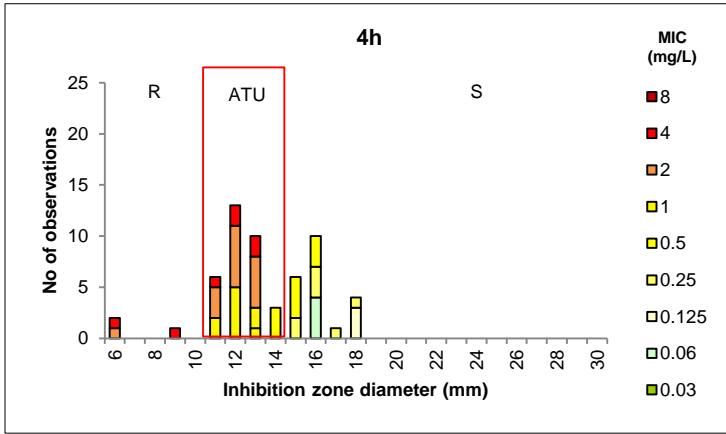
***S. pneumoniae* and oxacillin 1 µg, spiked blood culture bottles
RAST vs. EUCAST disk diffusion 16-20 h**



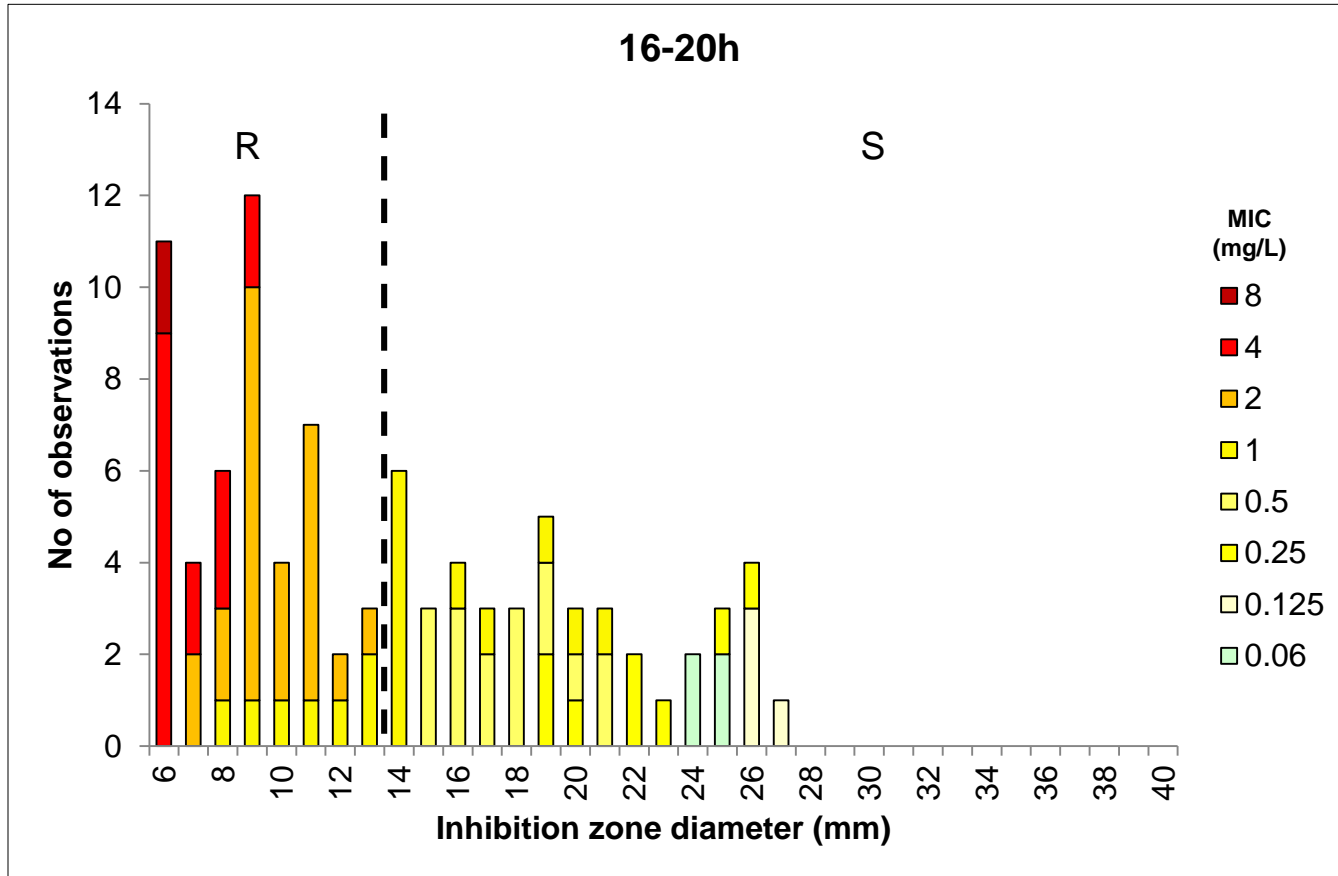
***S. pneumoniae* and oxacillin 1 µg, spiked blood culture bottles
RAST vs. benzylpenicillin broth microdilution 16-20 h**



***S. pneumoniae* and benzylpenicillin 1 unit, spiked blood culture bottles
RAST vs. broth microdilution**

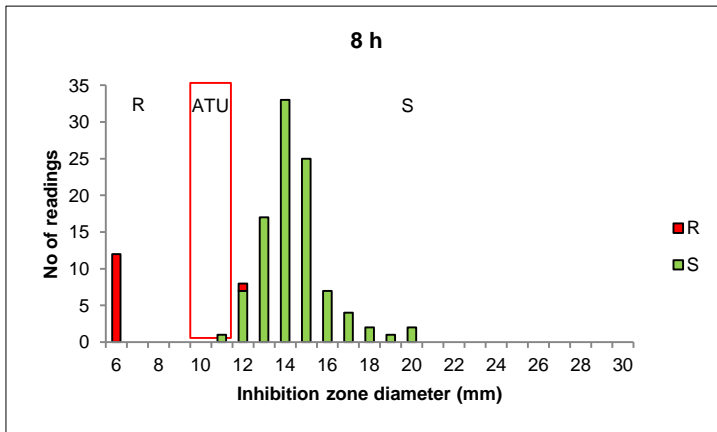
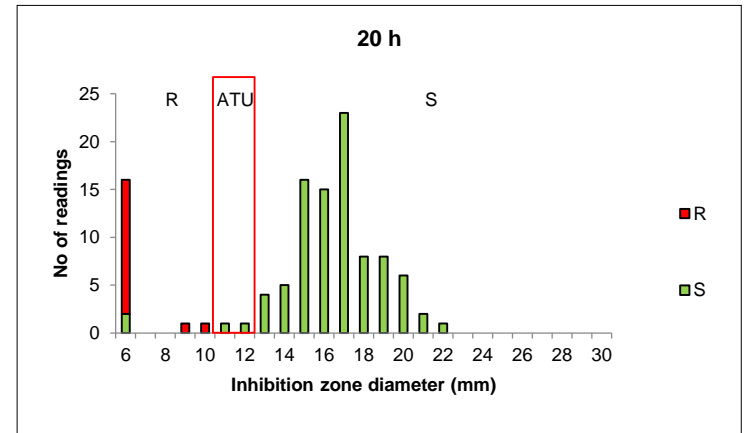
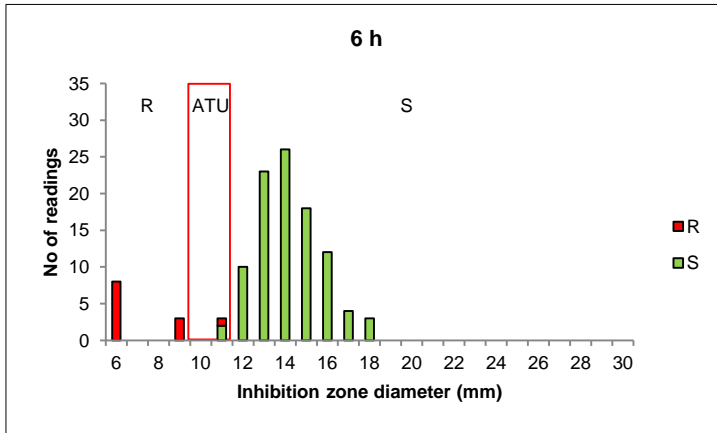
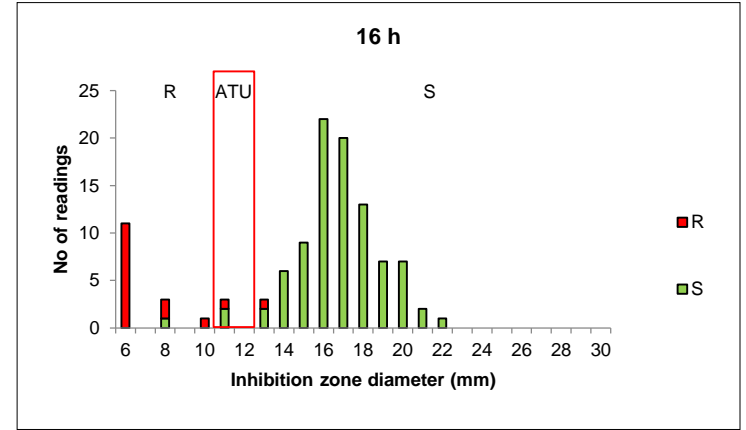
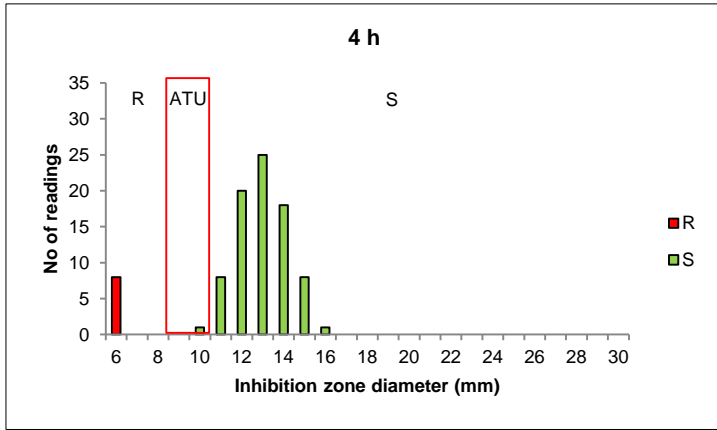


These graphs show results for oxacillin-resistant isolates only.

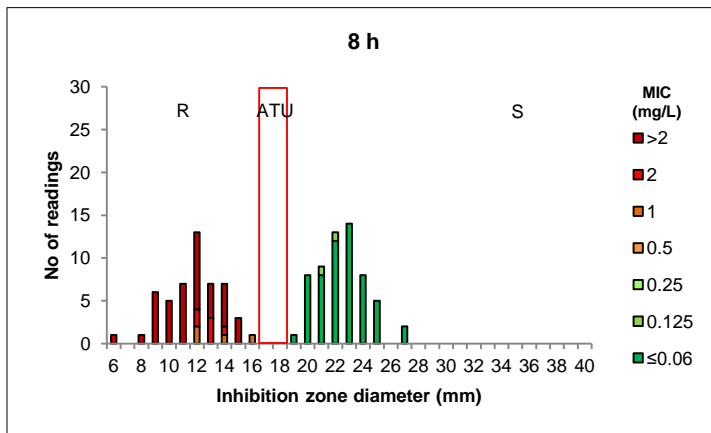
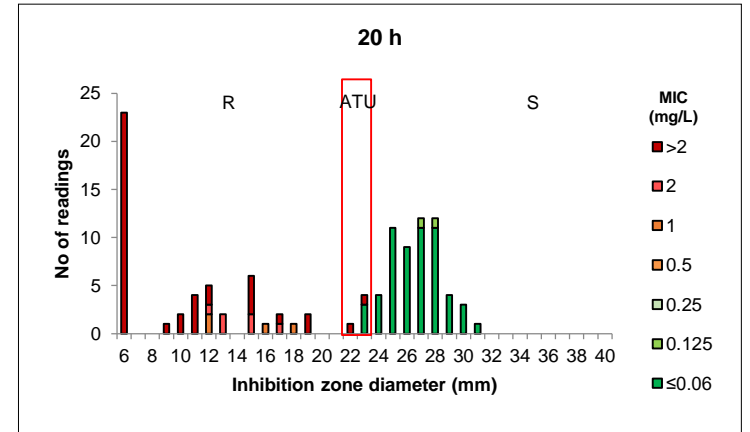
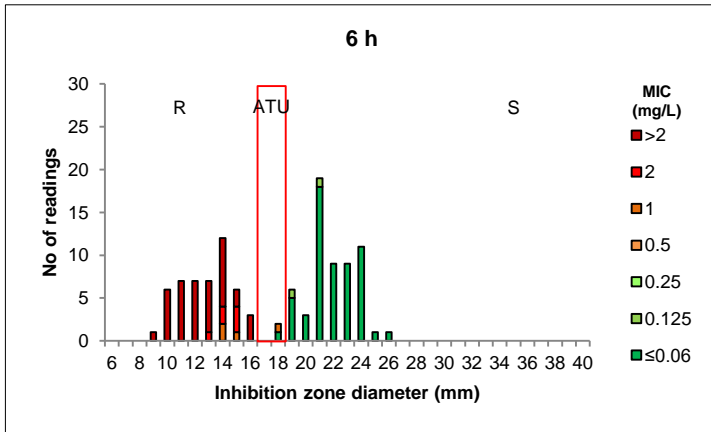
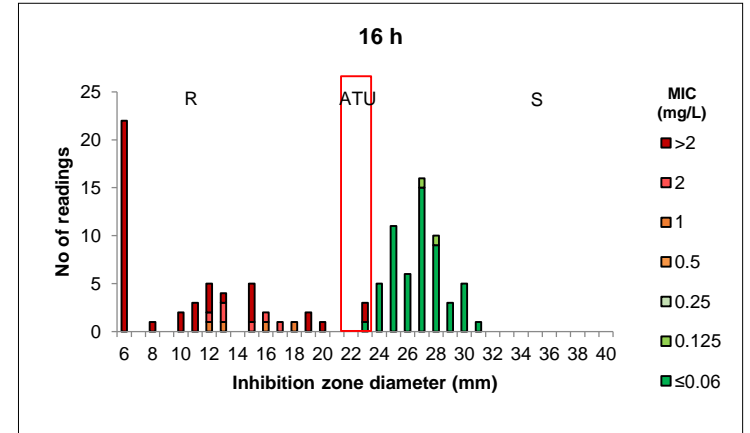
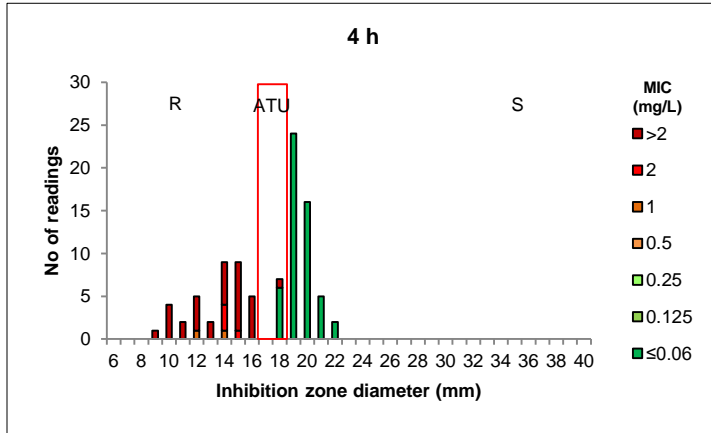


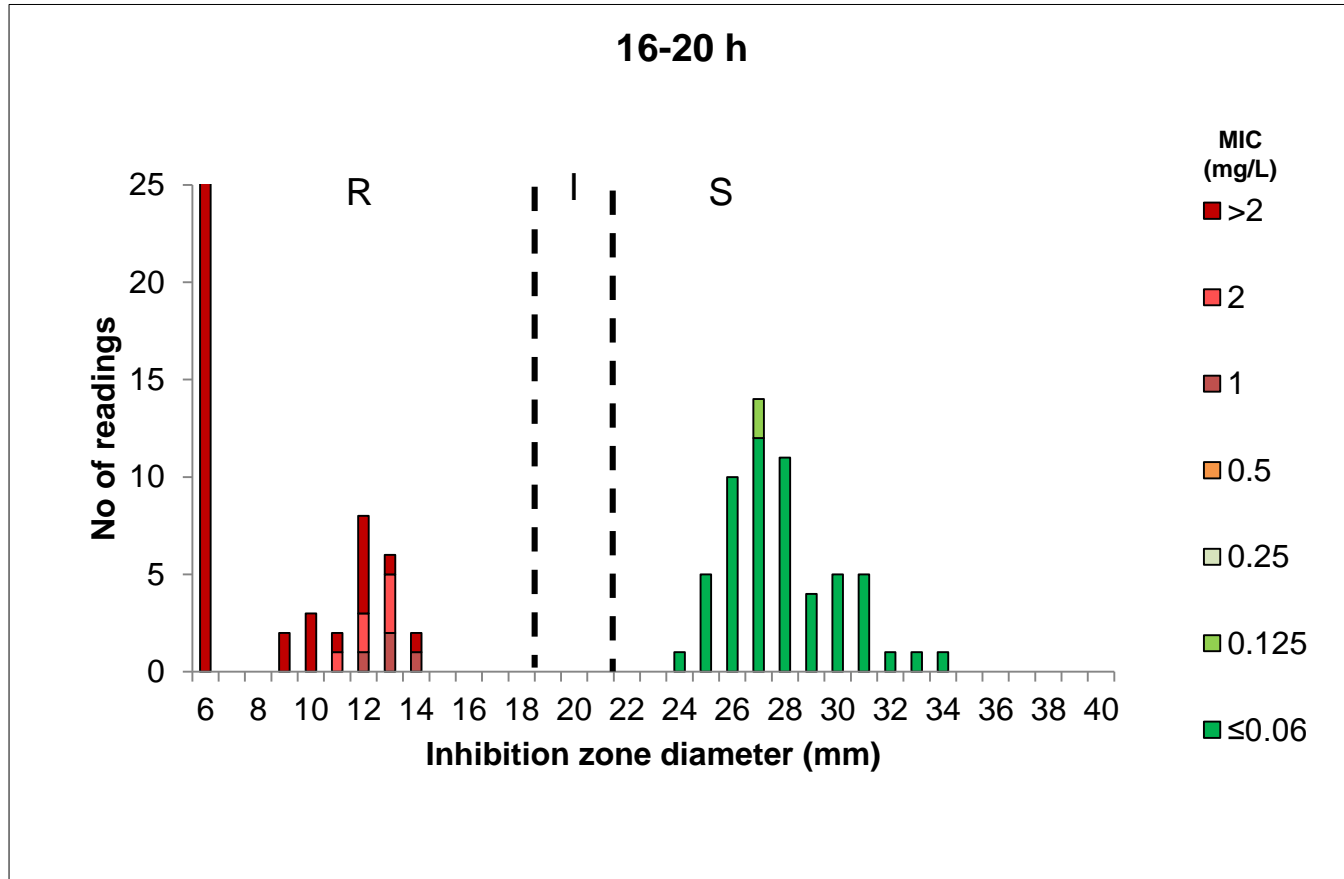
This graph show results for oxacillin-resistant isolates only.

***S. pneumoniae* and norfloxacin 10 µg, spiked blood culture bottles
RAST vs. EUCAST disk diffusion 16-20 h**

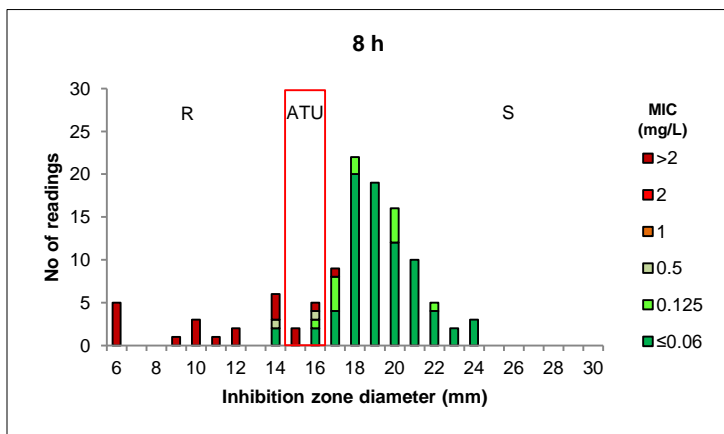
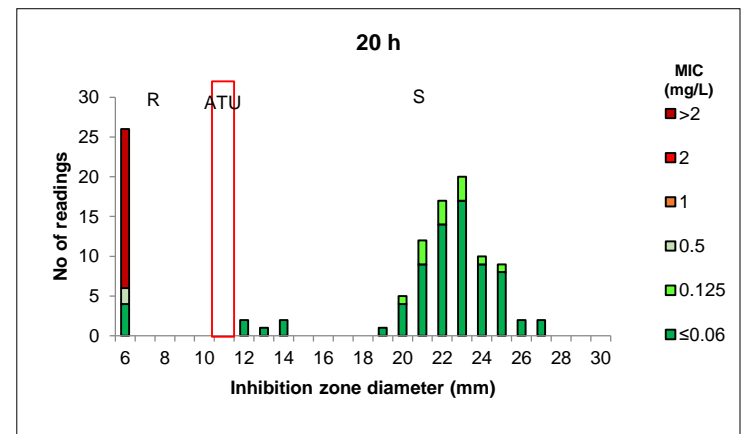
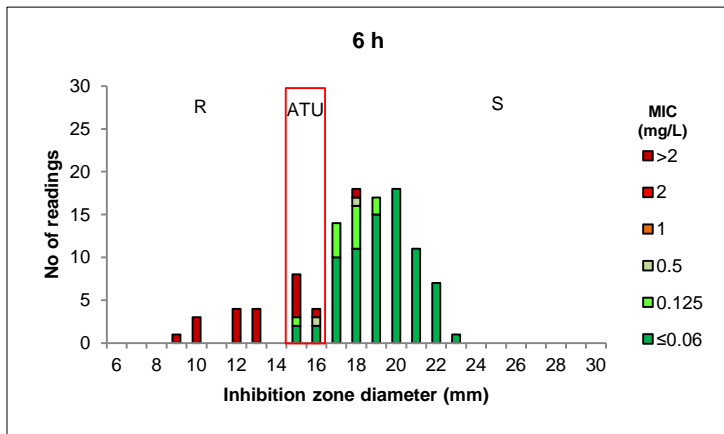
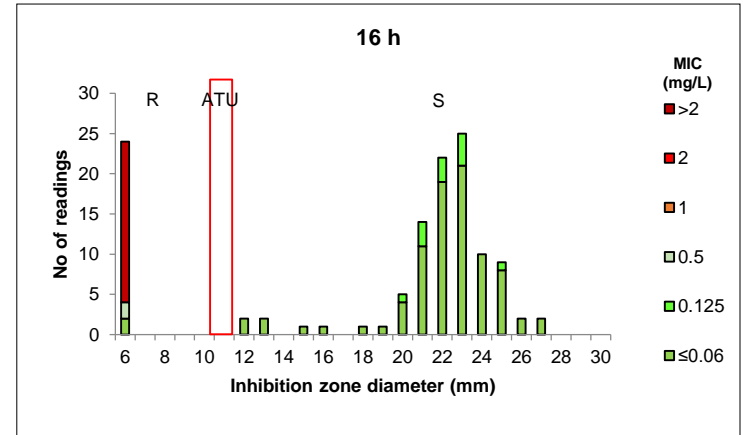
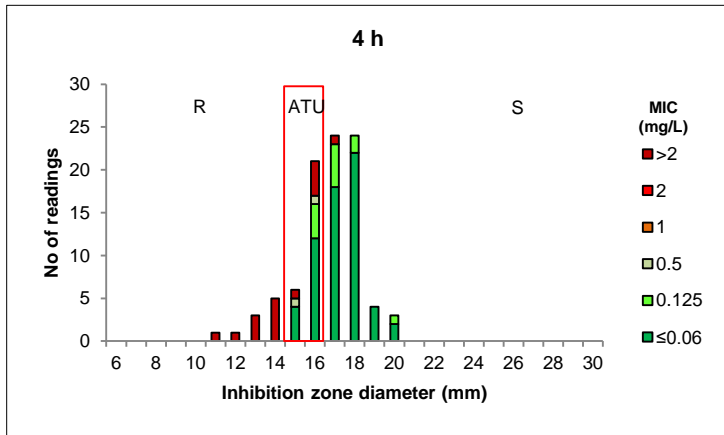


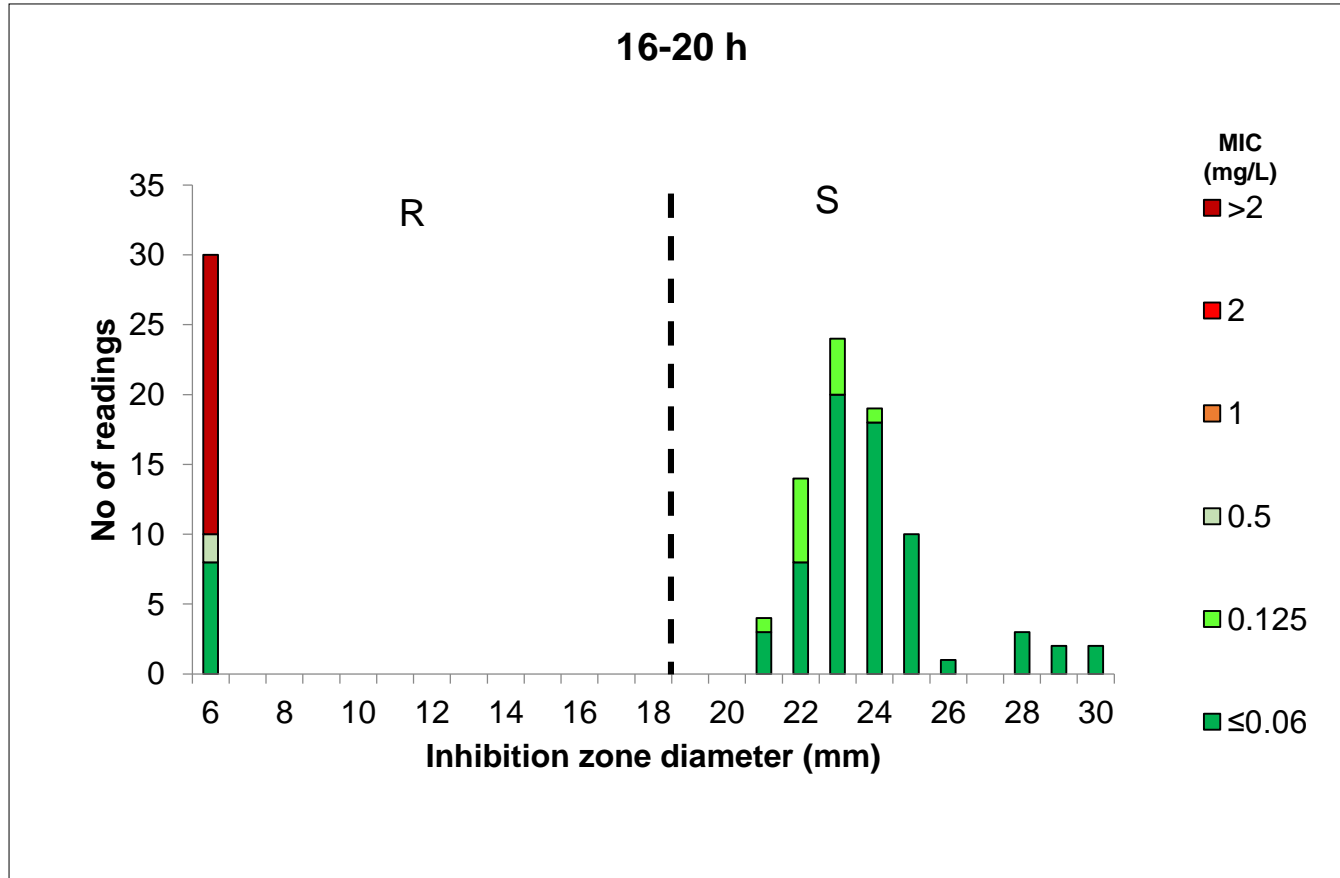
S. pneumoniae and erythromycin 15 µg, spiked blood culture bottles
RAST versus broth microdilution 16-20 h





***S. pneumoniae* and clindamycin 2 µg, spiked blood culture bottles
RAST versus broth microdilution 16-20 h**





***S. pneumoniae* and trimethoprim-sulfamethoxazole 1.25-23.75 µg, spiked blood culture bottles
RAST versus broth microdilution 16-20 h**

