

Polymyxin – A review

Mechanisms of resistance

- Intrinsic resistance
- Acquired resistance due to changes in the cell membrane
- Chromosomally encoded resistance traits
- Acquired resistance due to plasmid mediated resistance genes

Factors affecting Susceptibility testing

- Poor and slow diffusion of the antibiotic
- The inherent cationic properties of polymyxin B
- The occurrence of hetero resistance
- the lack of a reliable reference method that may allow reliable comparisons of commercial tests.

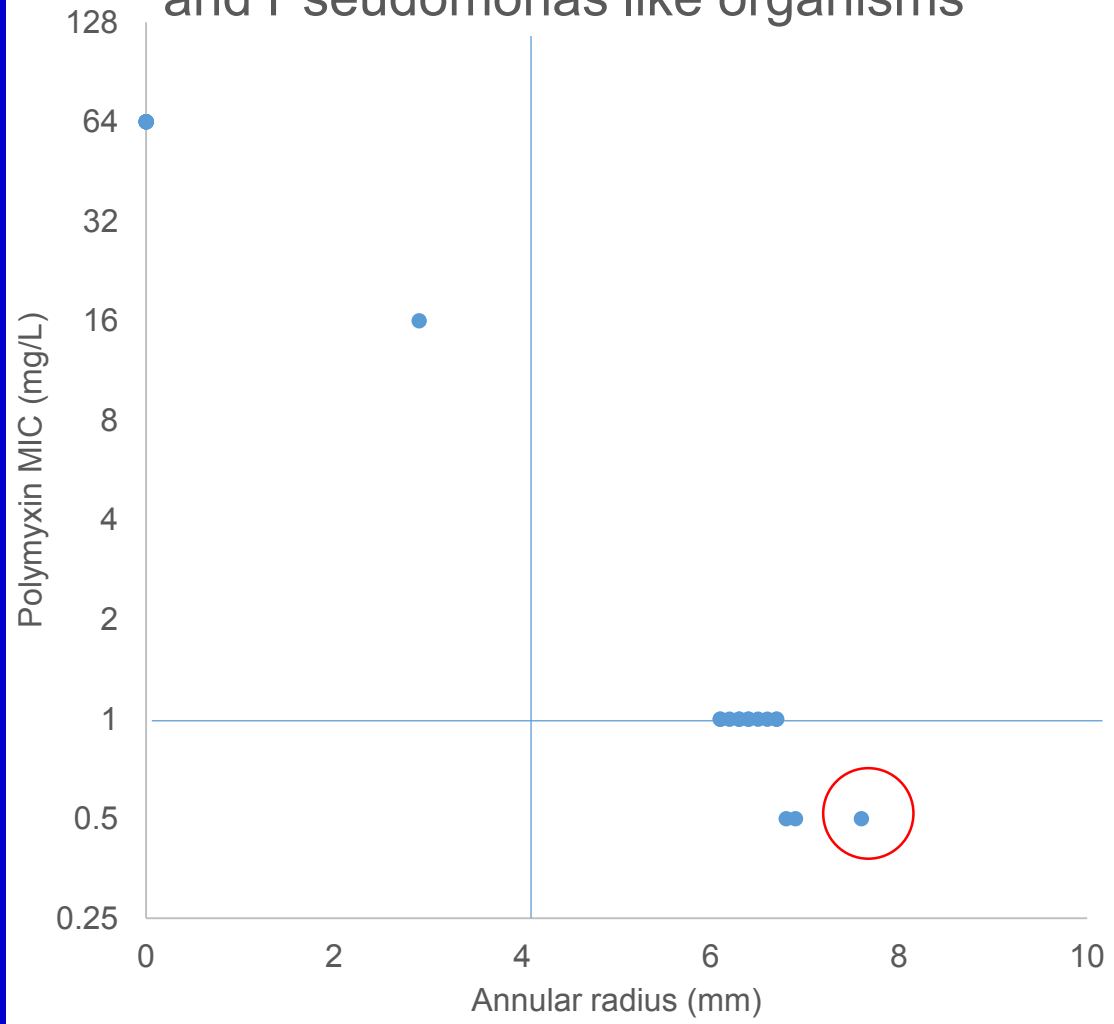
CDS Interpretation

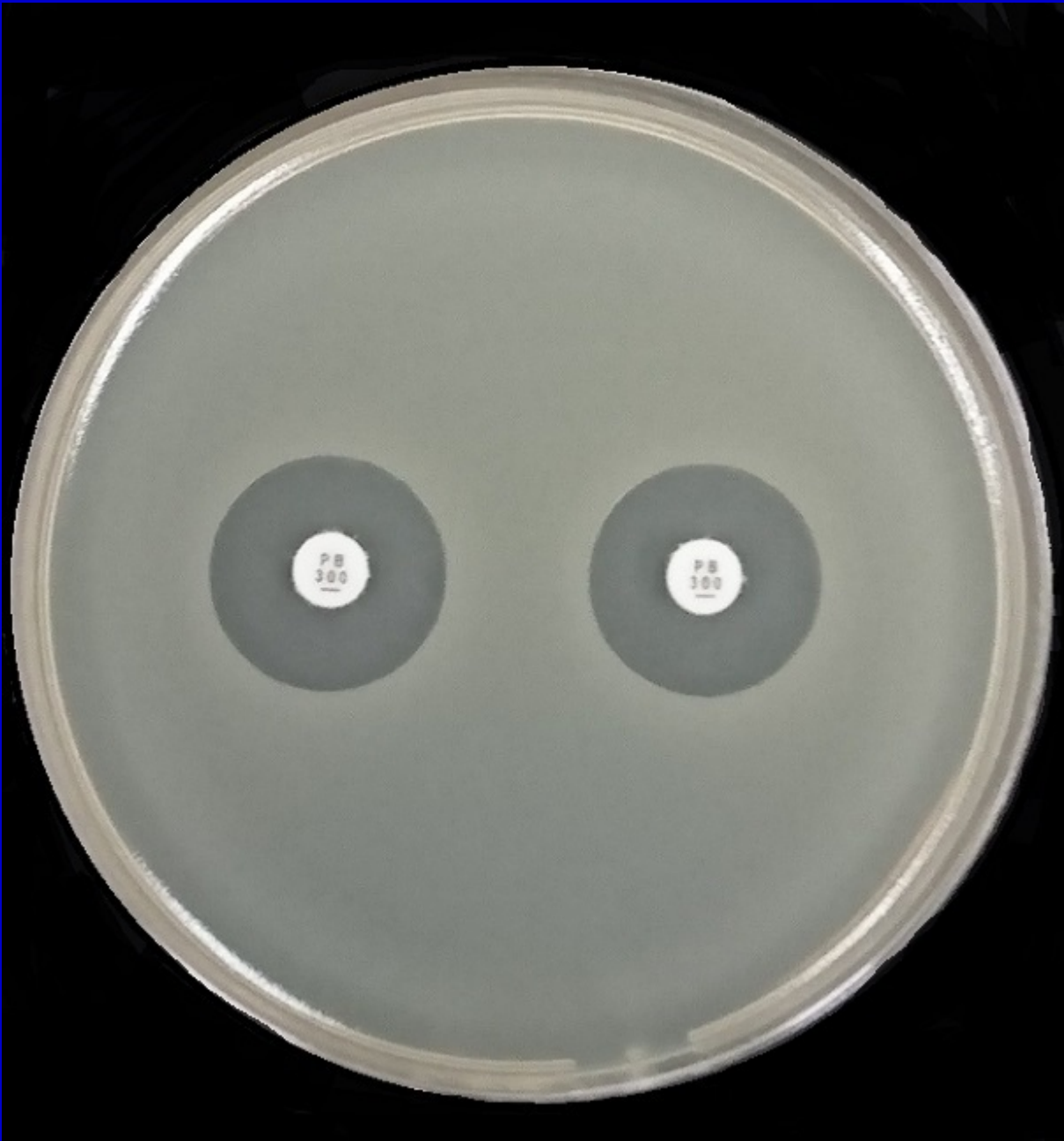
Pseudomonas and Enterobacteriaceae

MIC of susceptible strains ≤ 1.0 mg/L

Annular radius of susceptible strains ≥ 4 mm

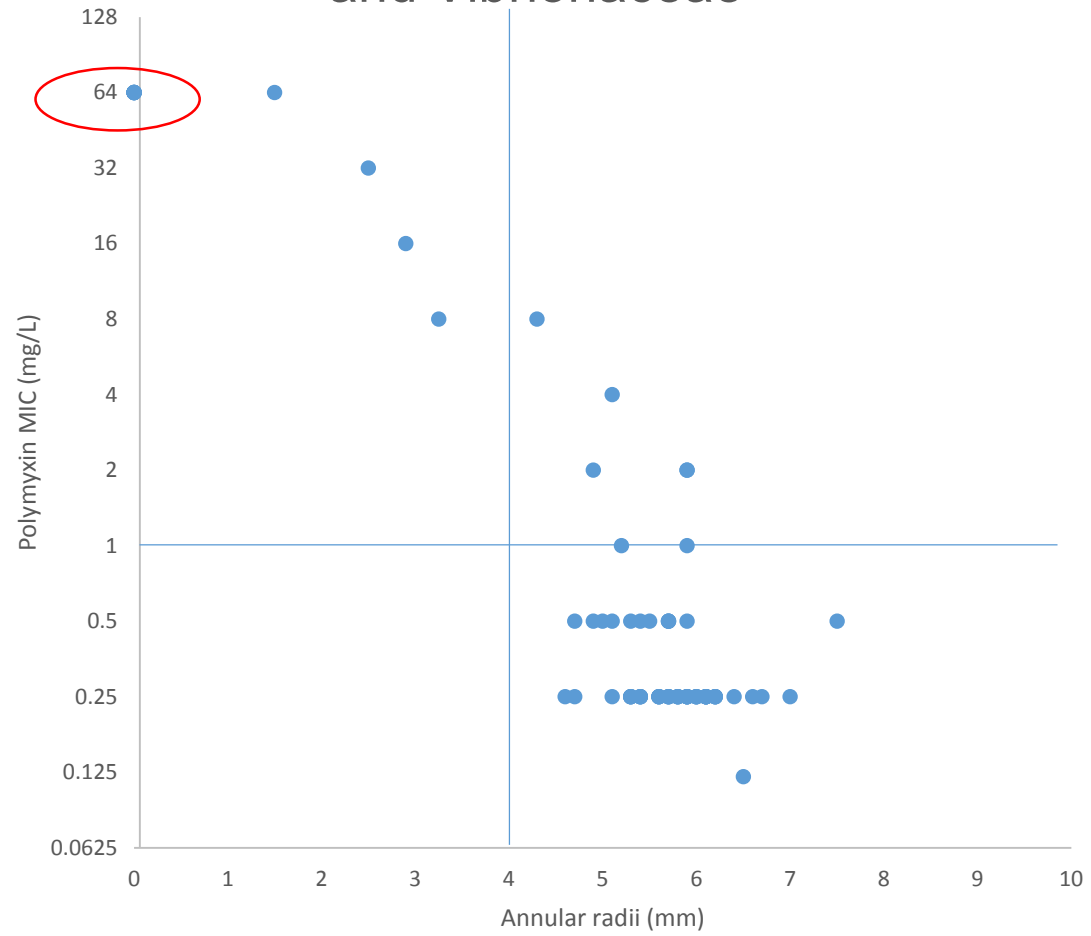
Polymyxin 300u & Pseudomonas and Pseudomonas like organisms

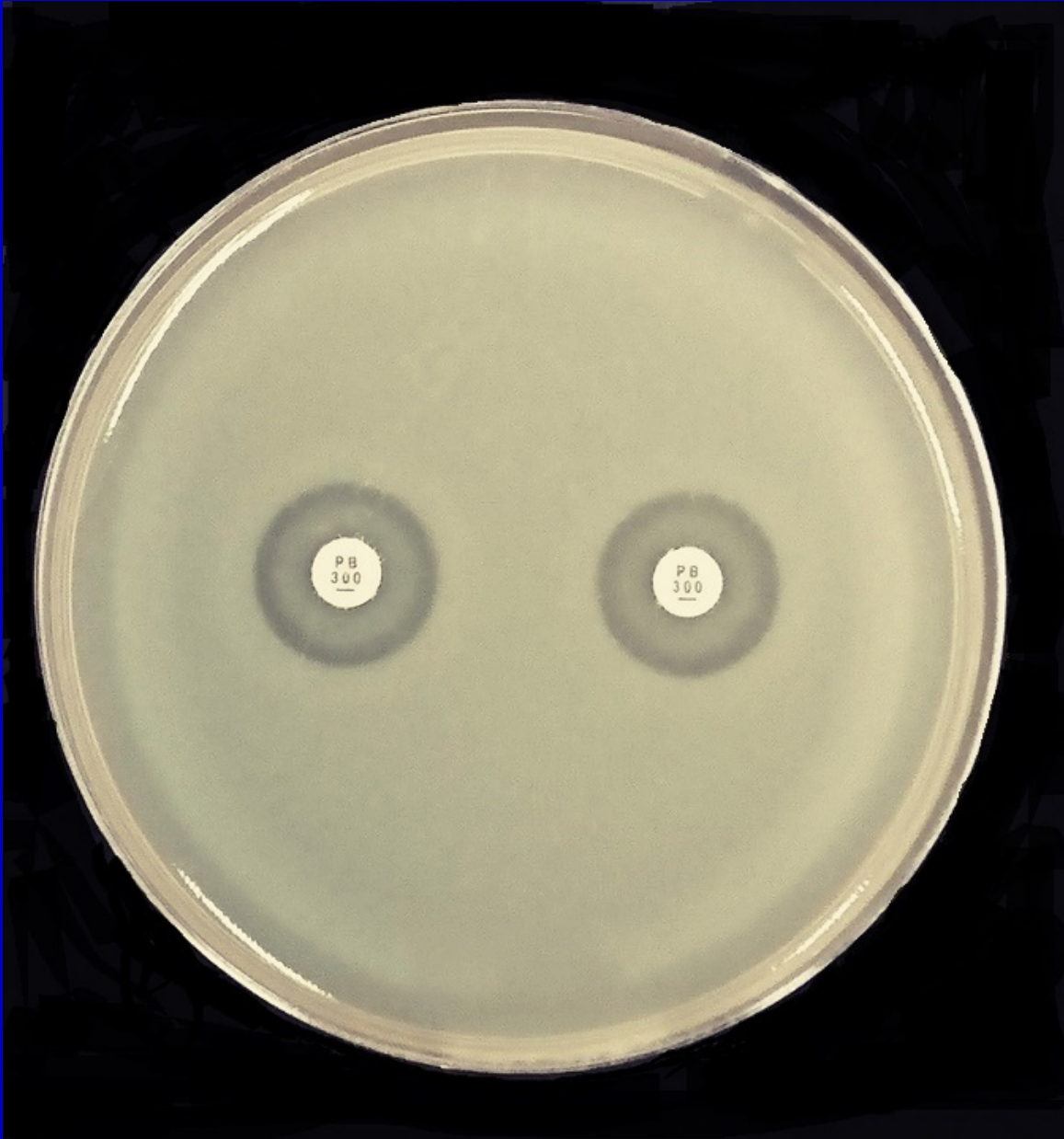




Sensitive
Pseudomonas
aeruginosa

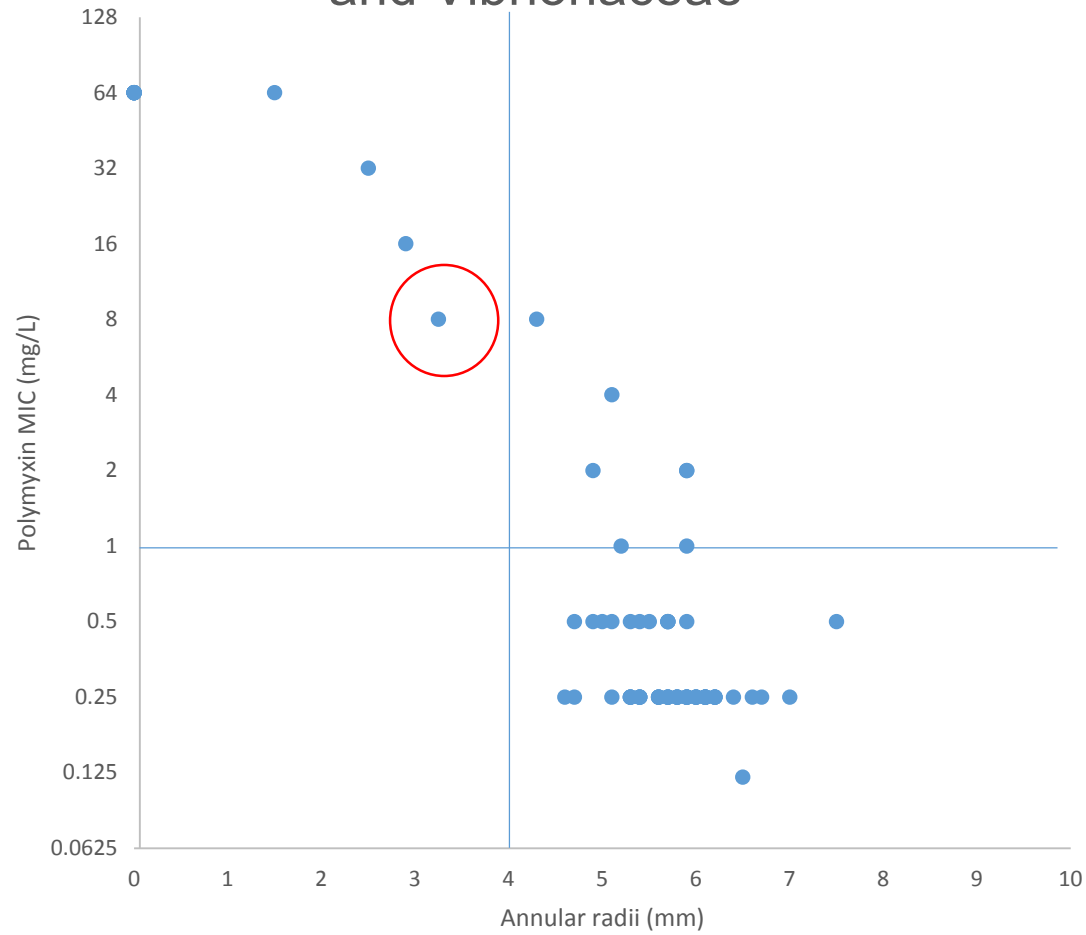
Calibration of Polymyxin 300u with Acinetobacter, Enterobacteriaceae and Vibrionaceae

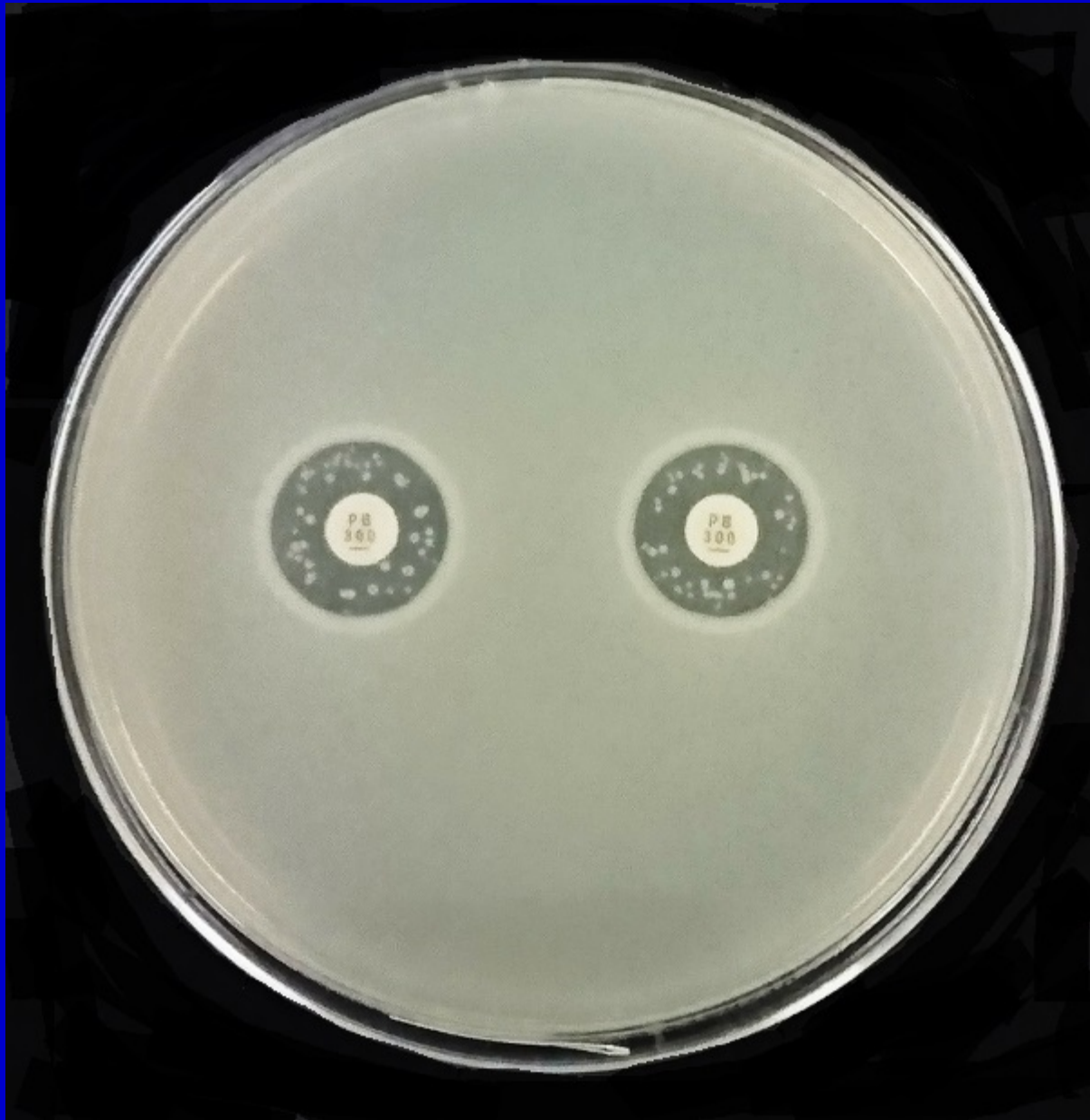




Intrinsic resistance
Serratia
marcescens

Calibration of Polymyxin 300u with Acinetobacter, Enterobacteriaceae and Vibrionaceae





Changes in cell
wall resulting in
resistance –
*Enterobacter
cloacae*

Factors affecting MIC results

- Choice of technique
- Medium used
- Inoculum size
- Incubation conditions
- Precision of antibiotic concentrations prepared

Susceptibility Testing of the Polymyxins: Where Are We Now?

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Published in "Clinical Microbiology Reviews 30(2): 557–596, 2017"
which should be cited to refer to this work.

Polymyxins: Antibacterial Activity, Susceptibility Testing, and Resistance Mechanisms Encoded by Plasmids or Chromosomes

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JOURNAL OF CLINICAL MICROBIOLOGY, Jan. 2001, p. 183–190
0095-1137/01/\$04.00+0 DOI: 10.1128/JCM.39.1.183-190.2001
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Vol. 39, No. 1

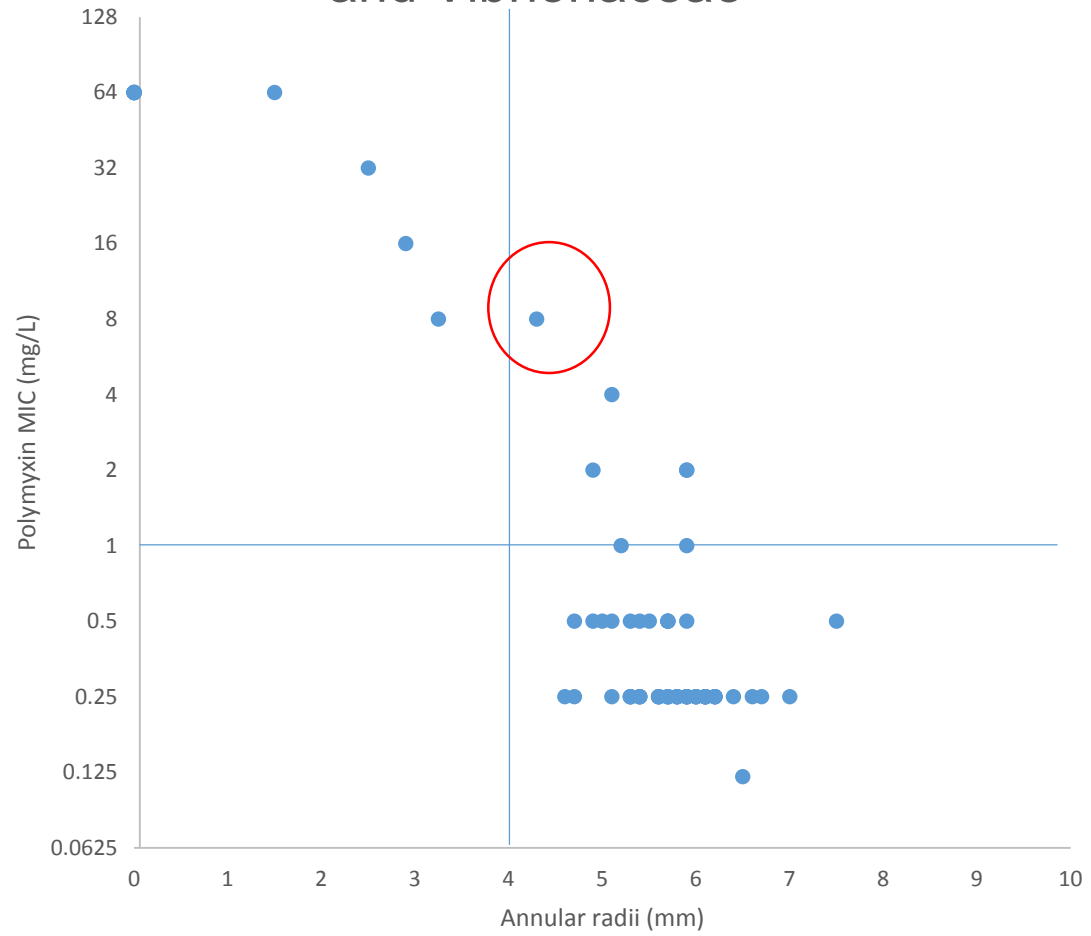
Contemporary Assessment of Antimicrobial Susceptibility Testing Methods for Polymyxin B and Colistin: Review of Available Interpretative Criteria and Quality Control Guidelines

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Received 29 June 2000/Returned for modification 4 September 2000/Accepted 16 October 2000

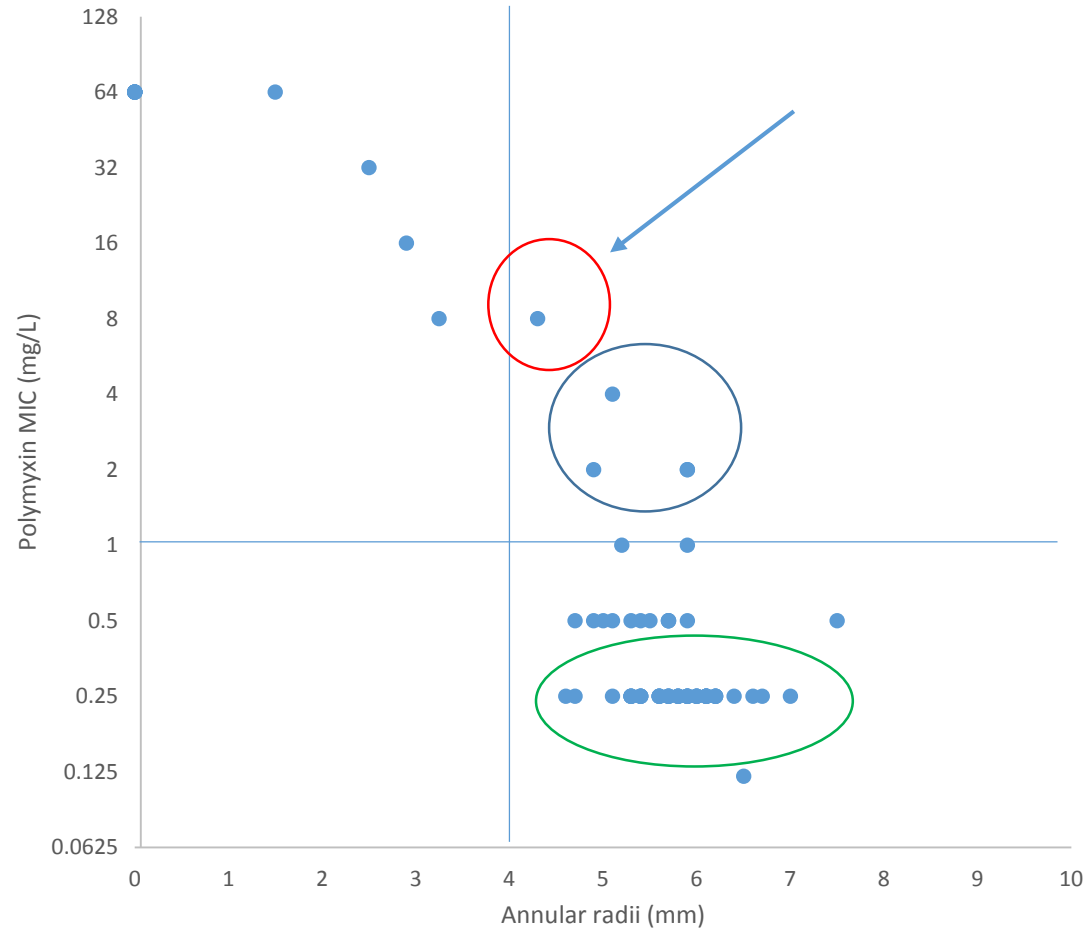
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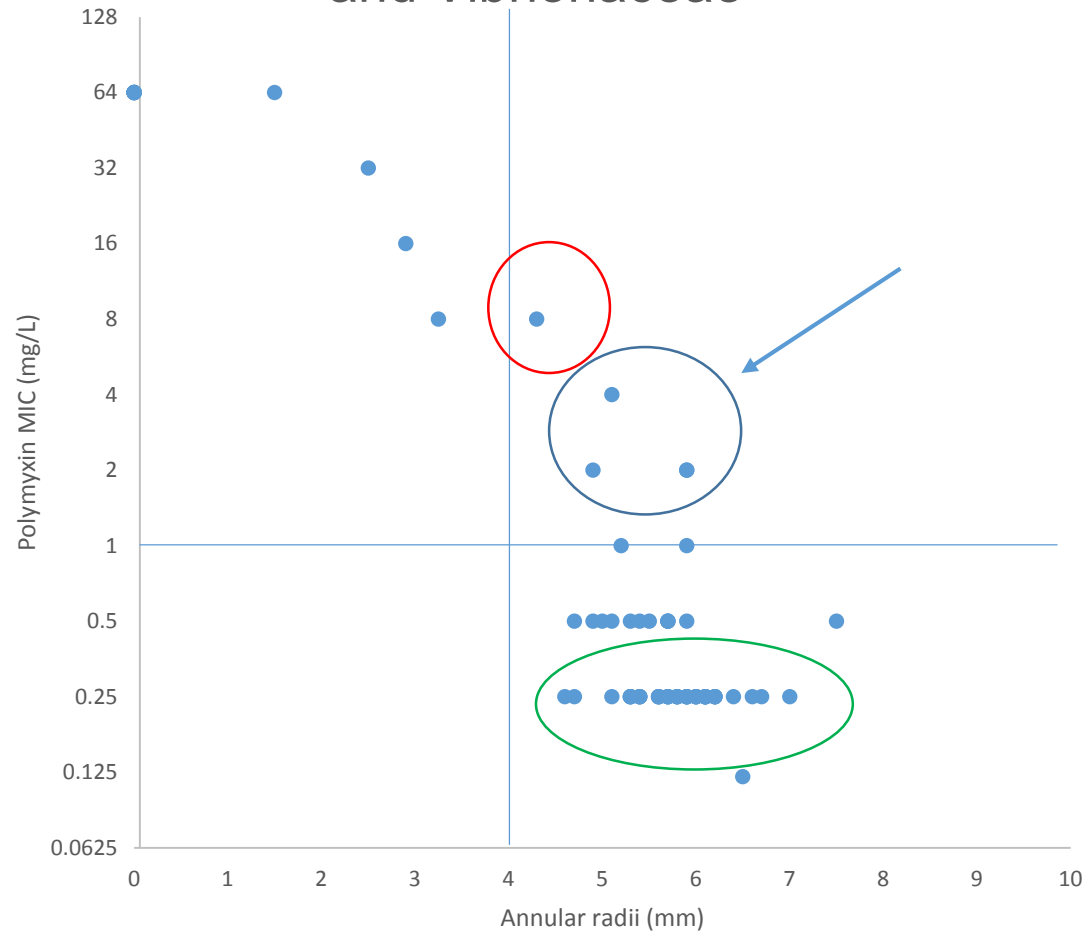


Acquired plasmid
mediated
resistance – *E coli*
mcr-1

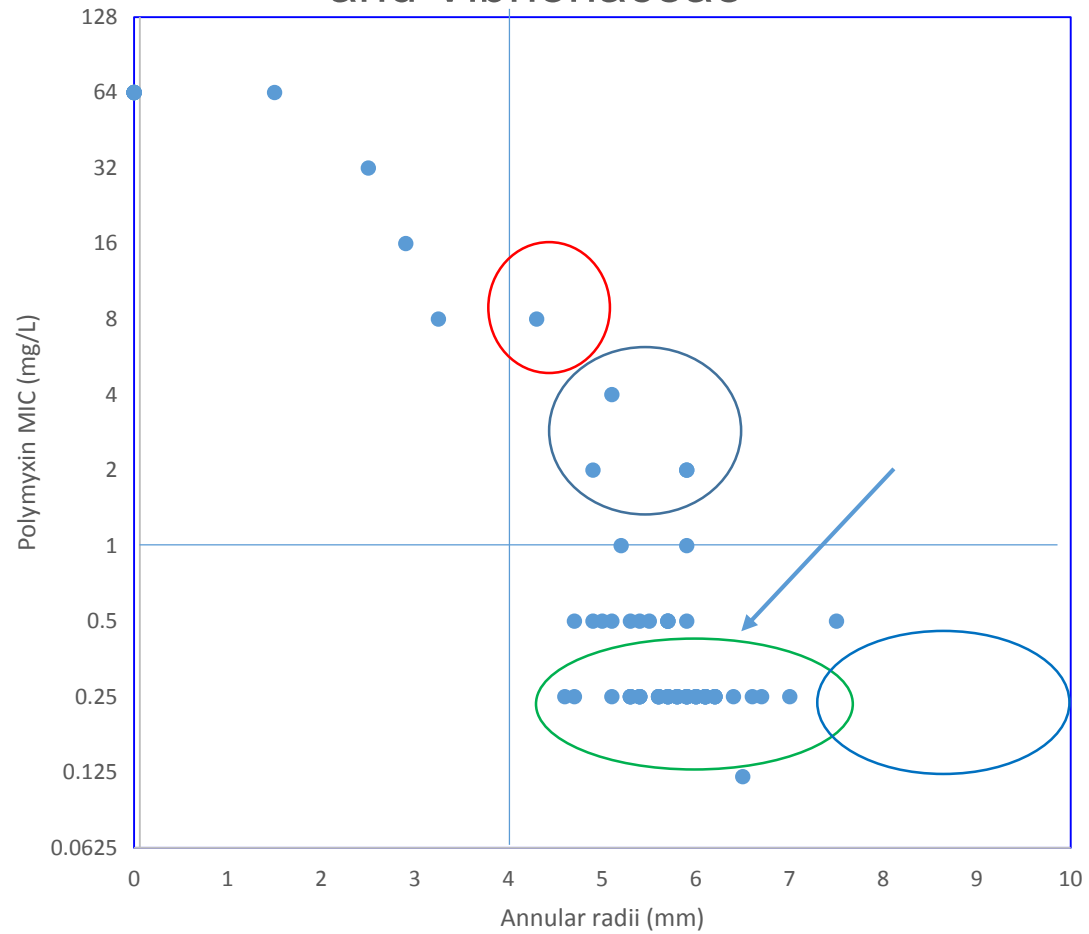
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Summary

- **Pseudomonas species shows a satisfactory correlation.**
- **MRO organisms should be referred to a reference laboratory for further investigations.**

References

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5. Bakthavatchalam Y.D., Pragasam A.K., Biswas I., Veeraraghavan B. *Journal of Global Antimicrobial Resistance* 12: 124-136, 2018
6. Humphries R.M., *Pharmacotherapy* 35(1) 22-27, 2015