



**EUCAST**

European Committee  
on Antimicrobial  
Susceptibility Testing

# Appendix to EUCAST consultation on breakpoints for anaerobic bacteria

May 2026

# Isolate collection

- Isolates were provided by 6 laboratories and included the following 10 species:
  - *Clostridium innocuum*
  - *Clostridium ramosum*
  - *Clostridium septicum*
  - *Clostridium tertium*
  - *Fusobacterium nucleatum*
  - *Cutibacterium avidum*
  - *Finegoldia magna*
  - *Parvimonas micra*
  - *Peptostreptococcus anaerobius*
  - *Peptoniphilus* spp.

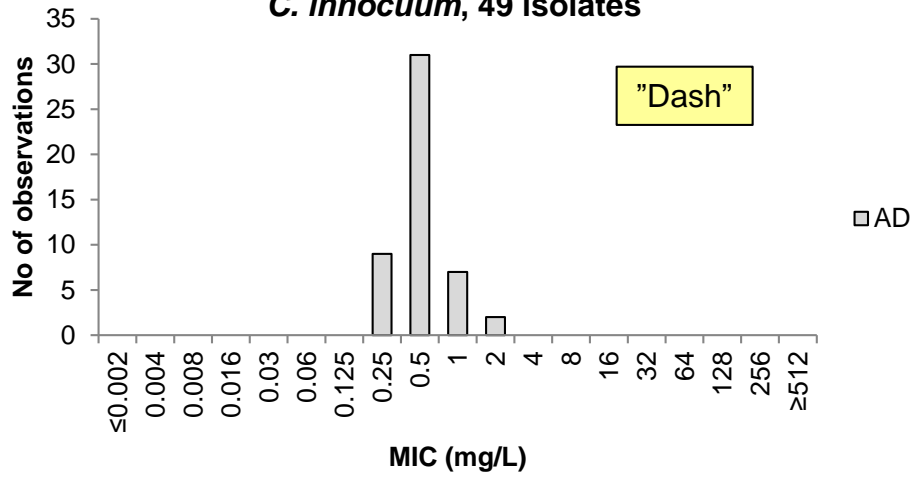
# Presentation of data

- MIC distributions shown are based on agar dilution (AD), except for *Clostridium septicum*, for which all testing was with gradient strips (GS) as AD is not suitable for this species due to heavy swarming.
  - Agar dilution was performed according to EUCAST methodology using FAA-HB medium.
- MIC-zone diameter distributions based on disk diffusion according to EUCAST methodology using FAA-HB medium from two manufacturers.
  - The resulting MIC-zone diameter correlations were used as support in defining the MIC cut-off values.

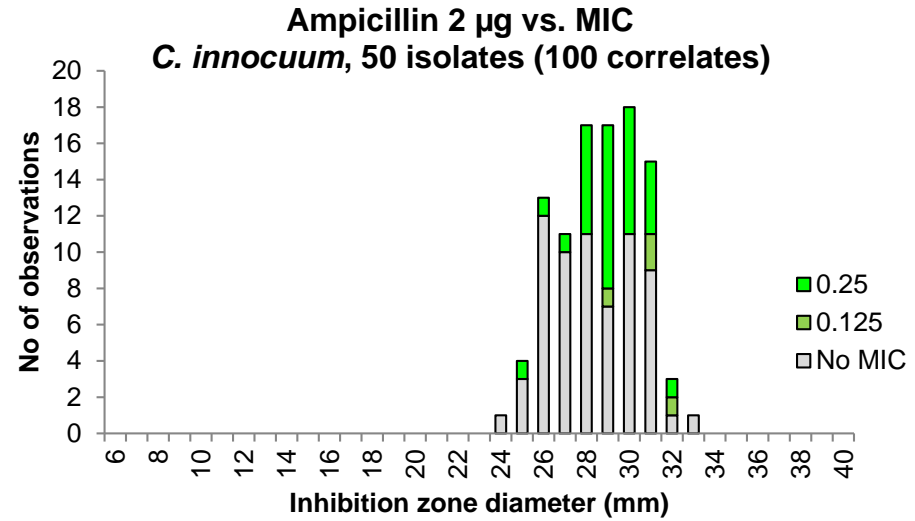
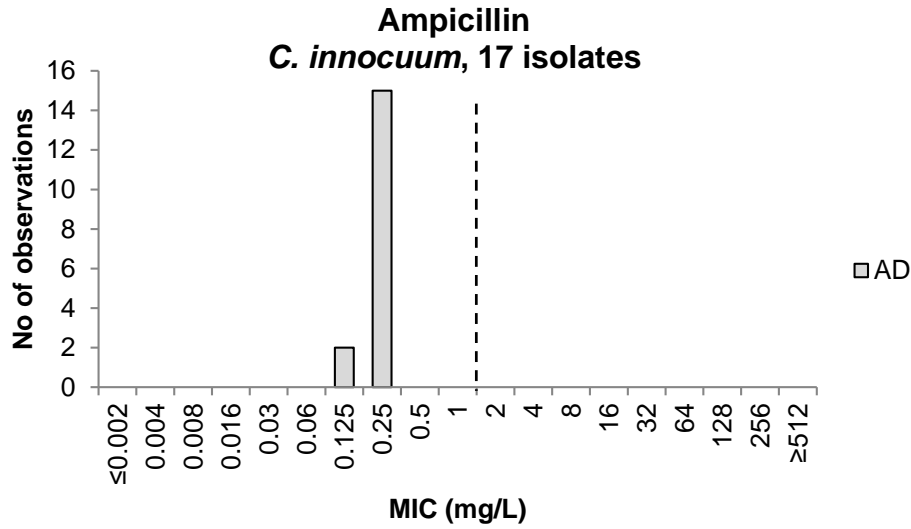
*Clostridium innocuum*

# Benzylpenicillin

**Benzylpenicillin**  
***C. innocuum*, 49 isolates**

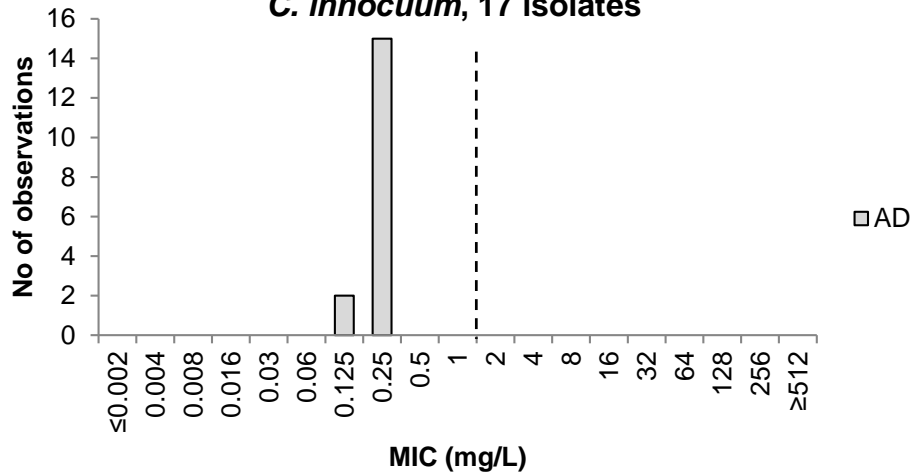


# Ampicillin

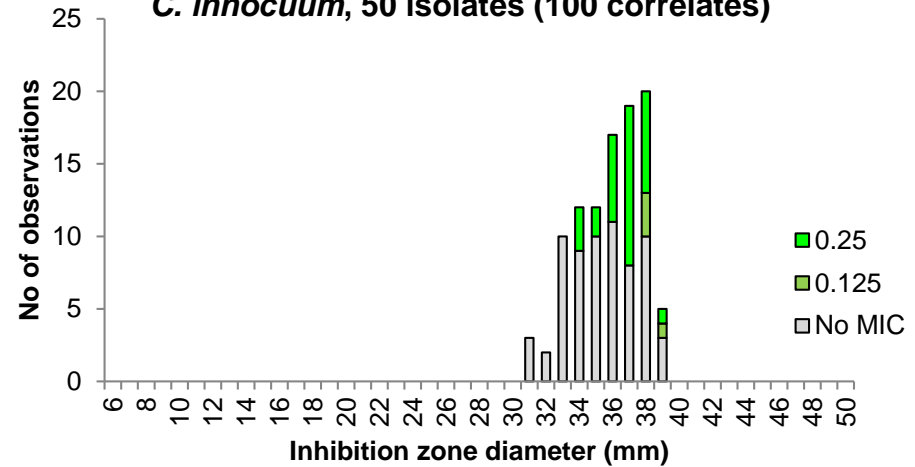


# Ampicillin-sulbactam

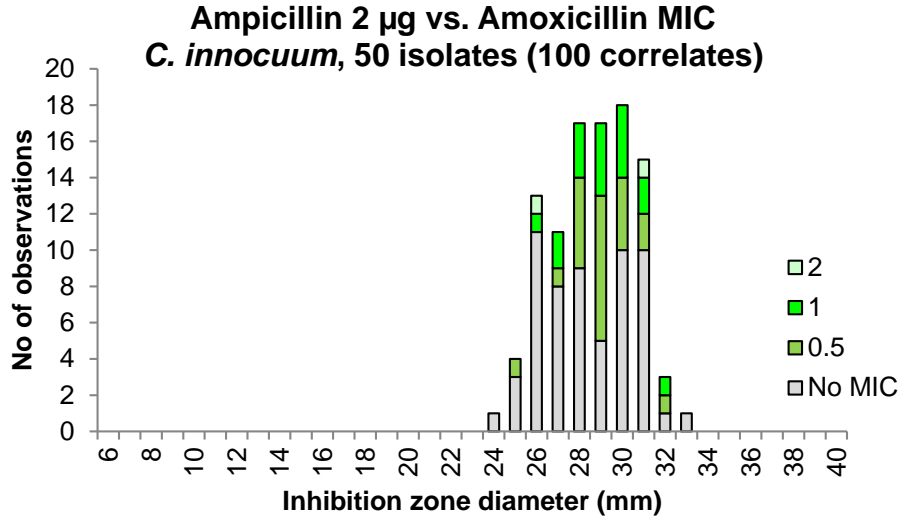
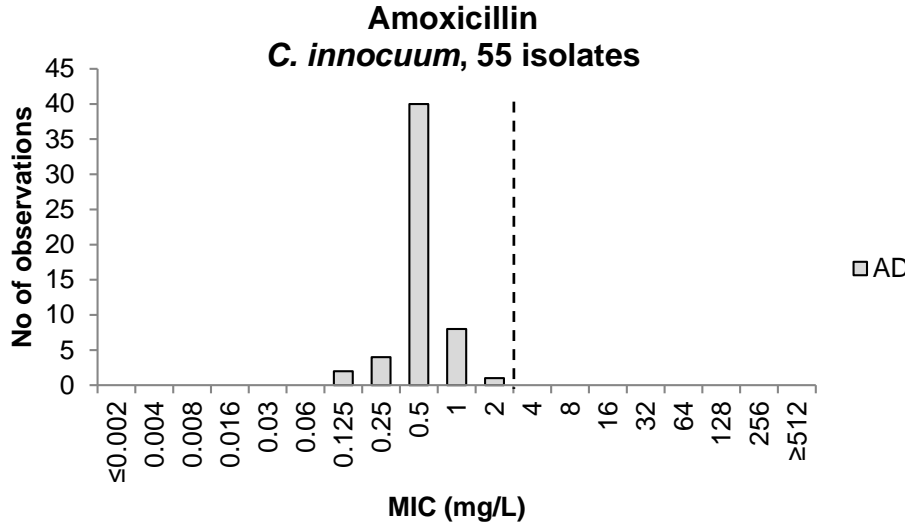
Ampicillin-sulbactam (fixed)  
*C. innocuum*, 17 isolates



Ampicillin-sulbactam 10-10 µg vs. MIC (fixed)  
*C. innocuum*, 50 isolates (100 correlates)



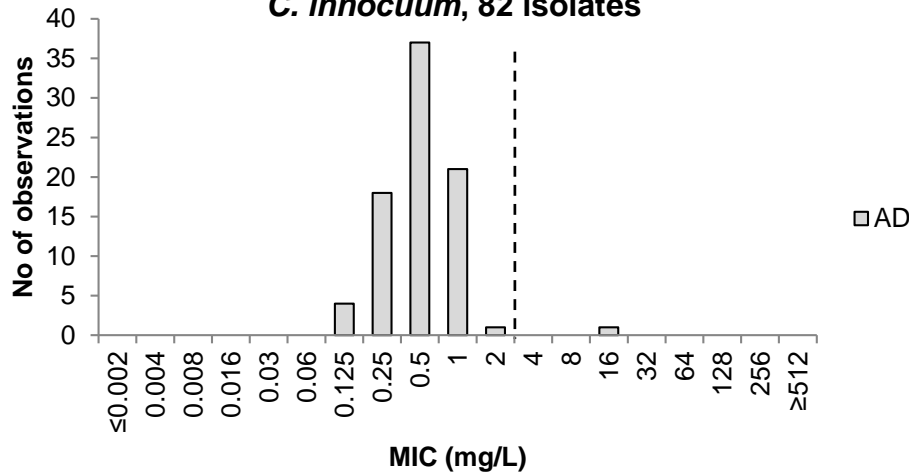
# Amoxicillin



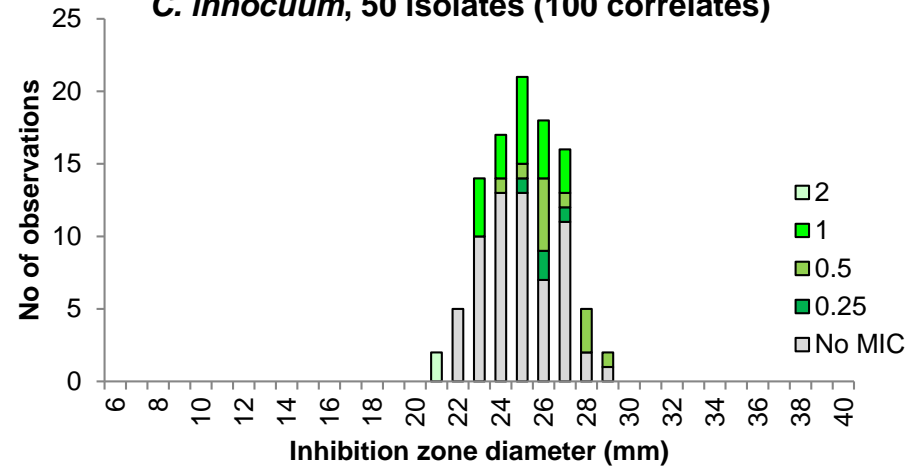
For disk diffusion, amoxicillin susceptibility is inferred from ampicillin.

# Amoxicillin-clavulanic acid

Amoxicillin-clavulanic acid (fixed)  
*C. innocuum*, 82 isolates

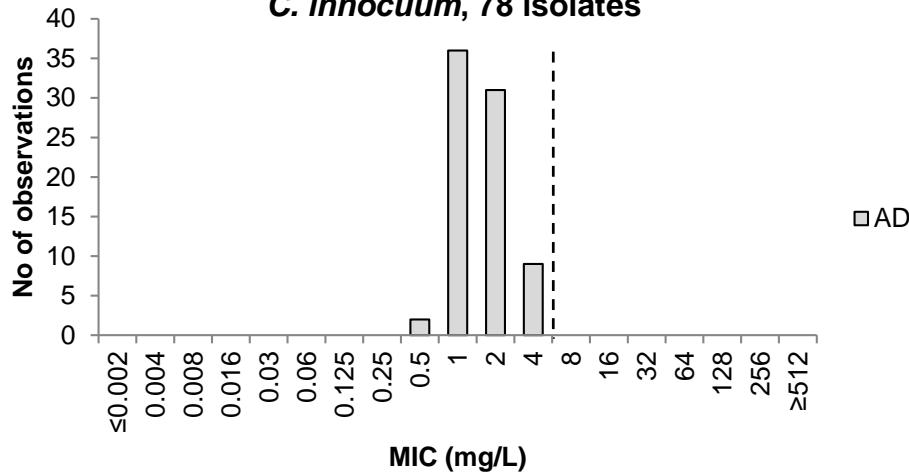


Amoxicillin-clavulanic acid 2-1 µg vs. MIC (fixed)  
*C. innocuum*, 50 isolates (100 correlates)

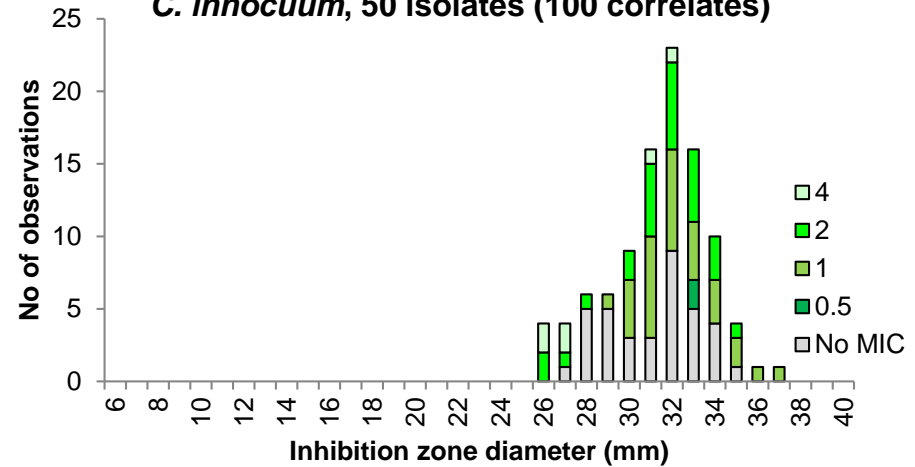


# Piperacillin-tazobactam

Piperacillin-tazobactam  
*C. innocuum*, 78 isolates

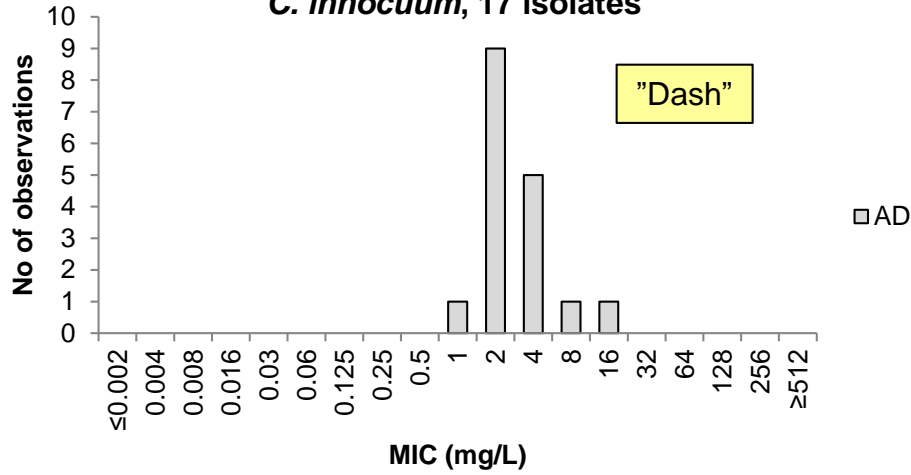


Piperacillin-tazobactam 30-6 µg vs. MIC  
*C. innocuum*, 50 isolates (100 correlates)



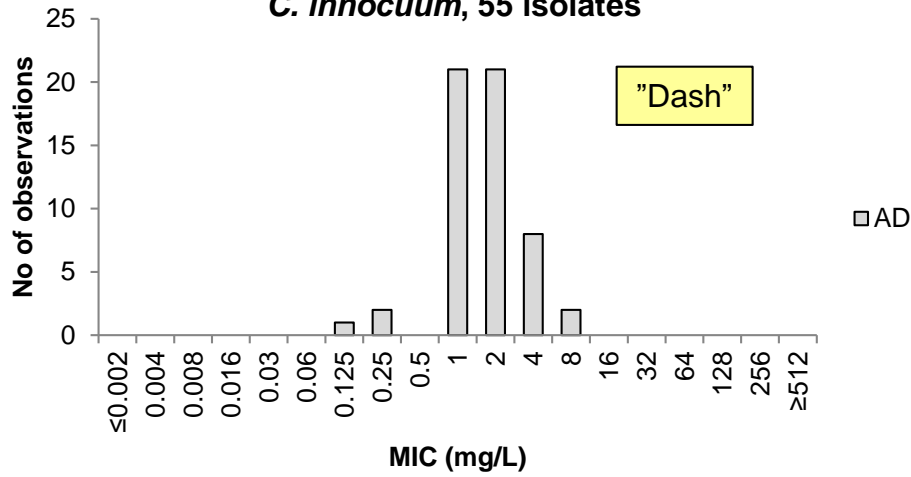
# Ertapenem

Ertapenem  
*C. innocuum*, 17 isolates



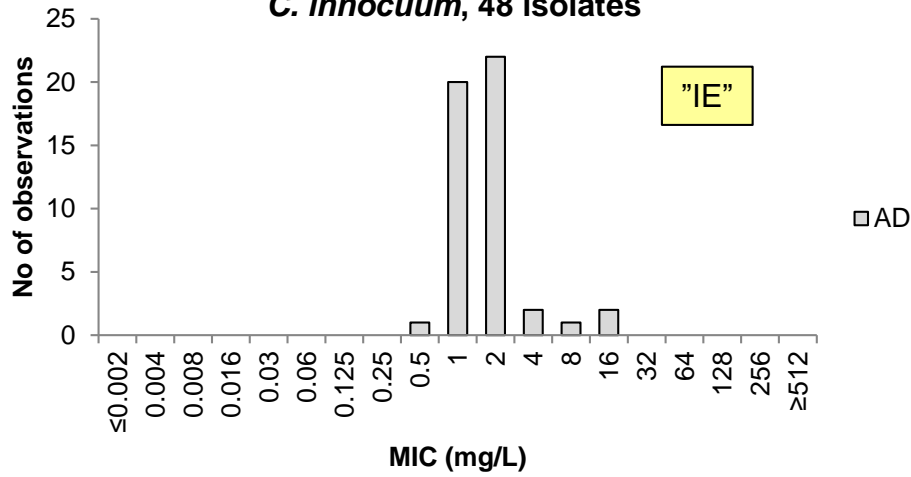
# Imipenem

Imipenem  
*C. innocuum*, 55 isolates



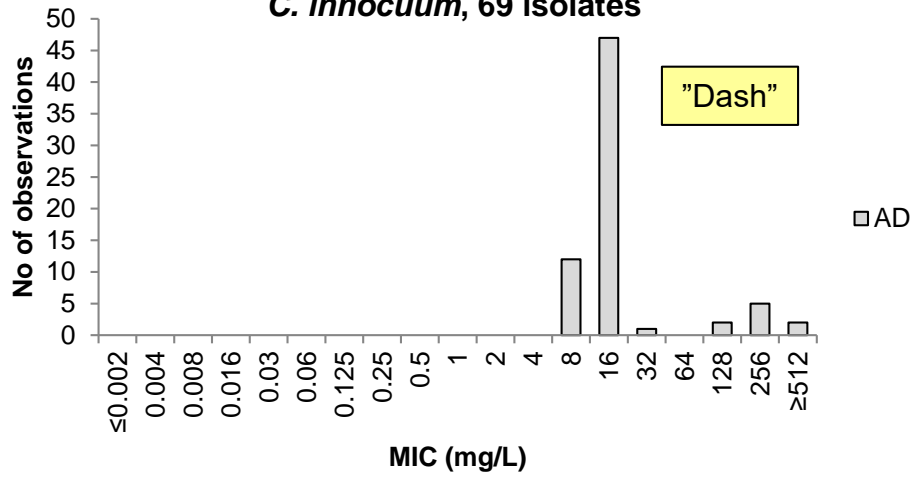
# Meropenem

Meropenem  
*C. innocuum*, 48 isolates



# Vancomycin

Vancomycin  
*C. innocuum*, 69 isolates

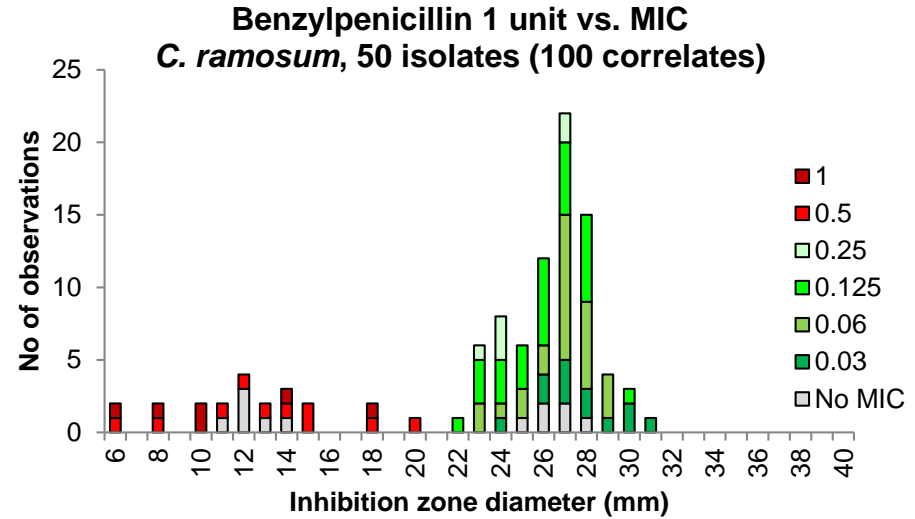
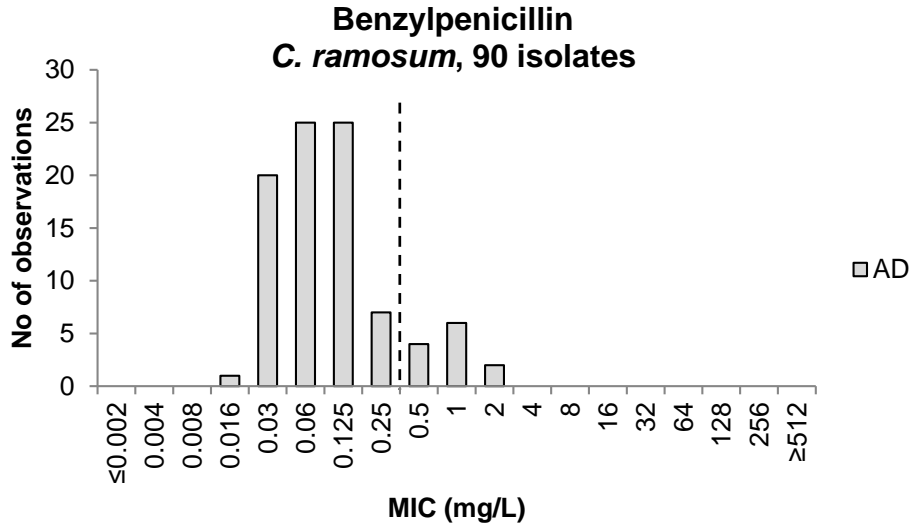






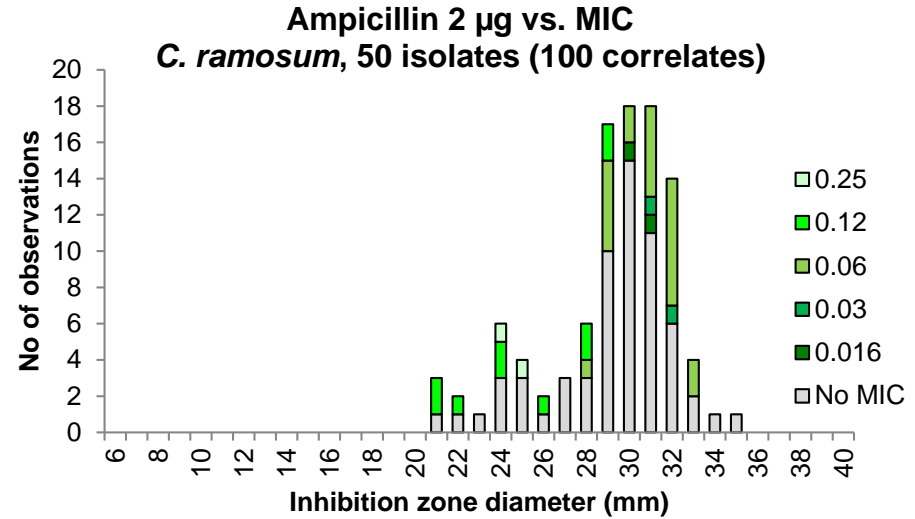
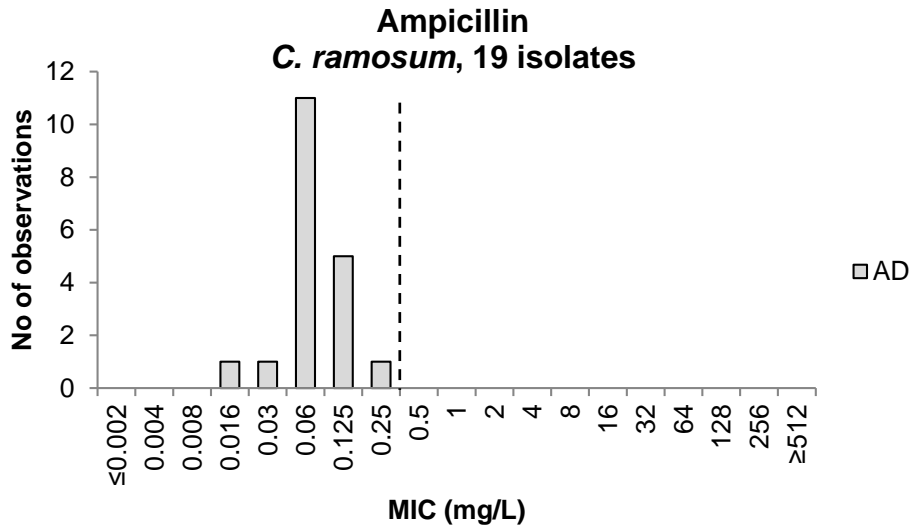
*Clostridium ramosum*

# Benzylpenicillin



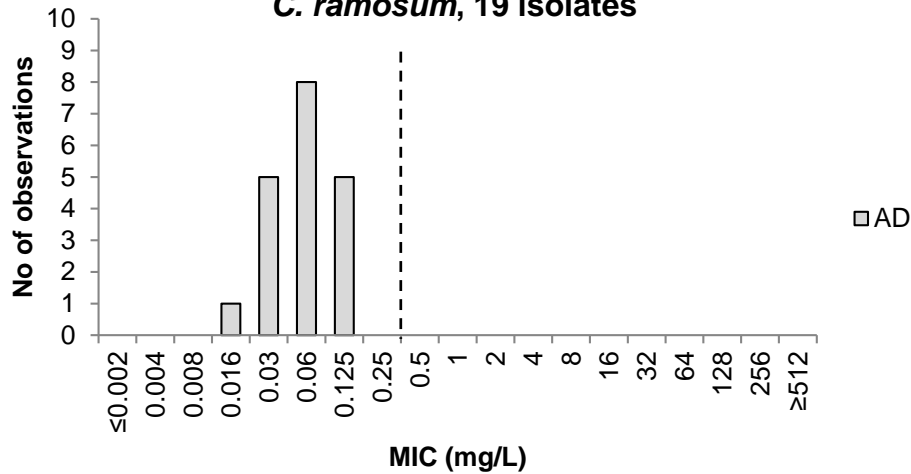
All benzylpenicillin-susceptible isolates are susceptible to all other beta-lactams tested.

# Ampicillin

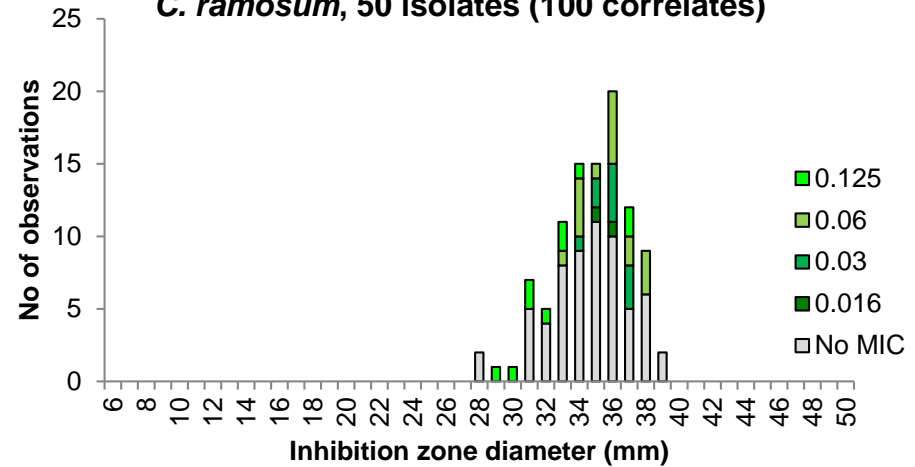


# Ampicillin-sulbactam

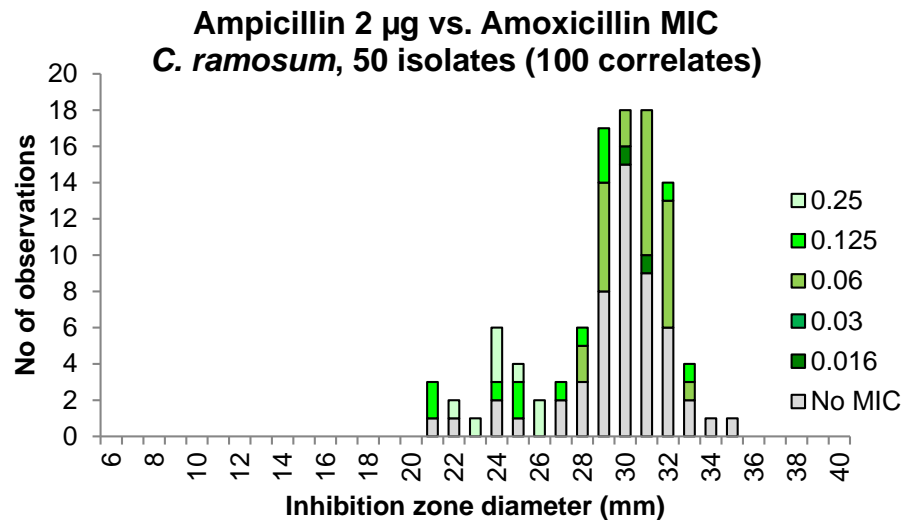
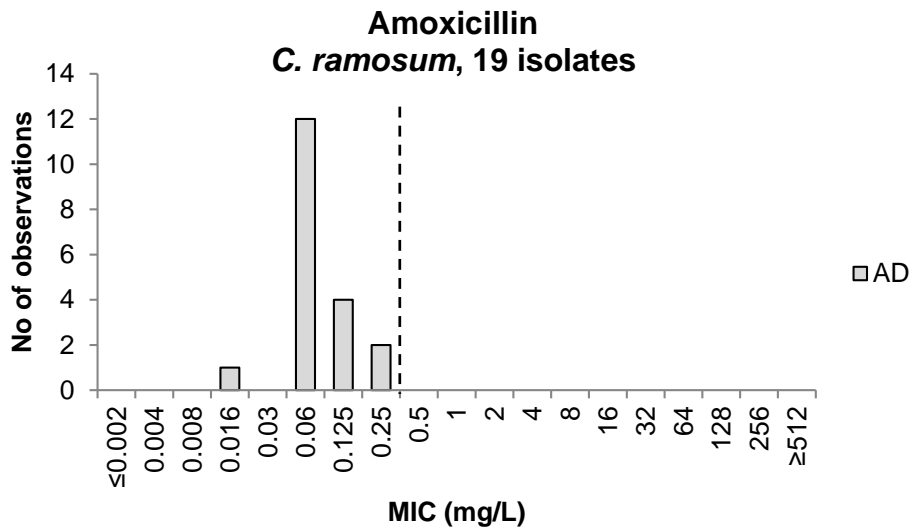
Ampicillin-sulbactam (fixed)  
*C. ramosum*, 19 isolates



Ampicillin-sulbactam 10-10 µg vs. MIC (fixed)  
*C. ramosum*, 50 isolates (100 correlates)



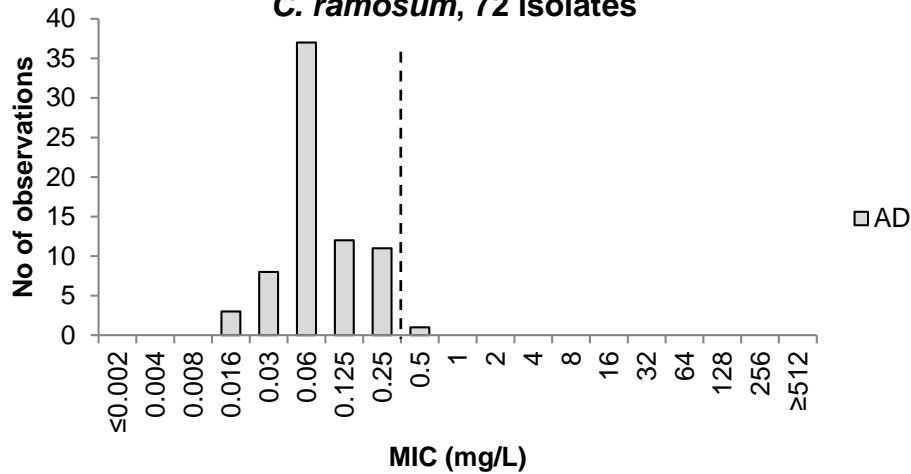
# Amoxicillin



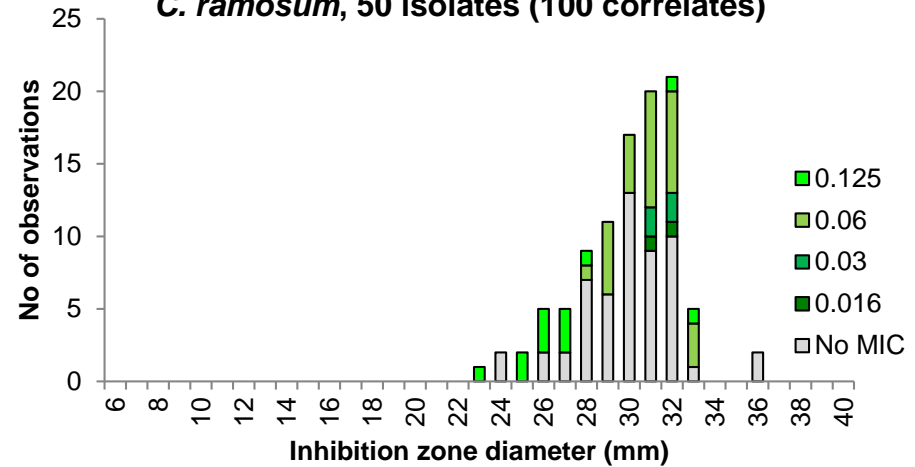
For disk diffusion, amoxicillin susceptibility is inferred from ampicillin.

# Amoxicillin-clavulanic acid

Amoxicillin-clavulanic acid (fixed)  
*C. ramosum*, 72 isolates

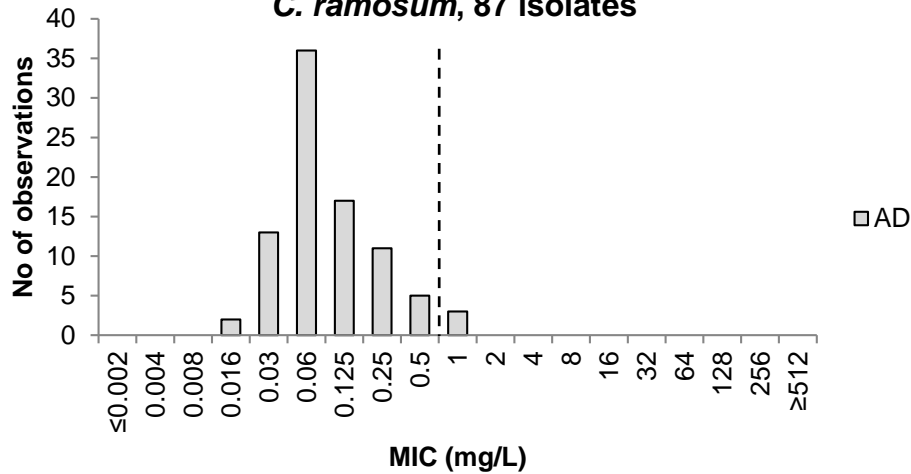


Amoxicillin-clavulanic acid 2-1 µg vs. MIC (fixed)  
*C. ramosum*, 50 isolates (100 correlates)

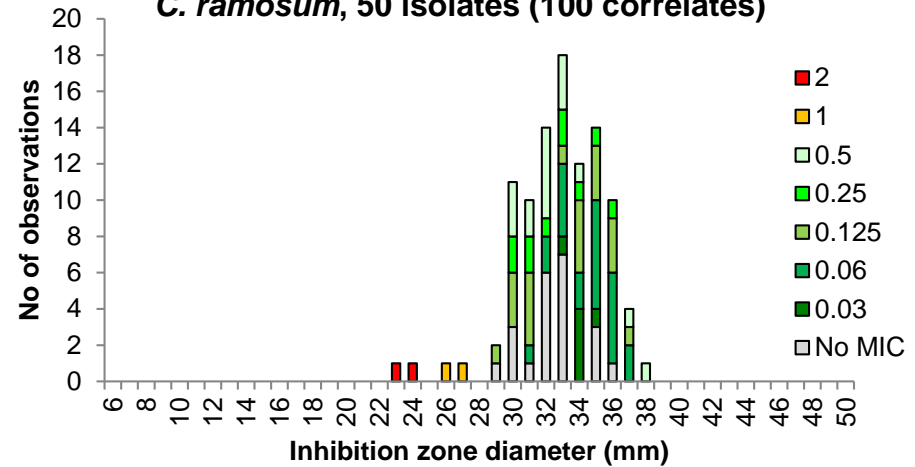


# Piperacillin-tazobactam

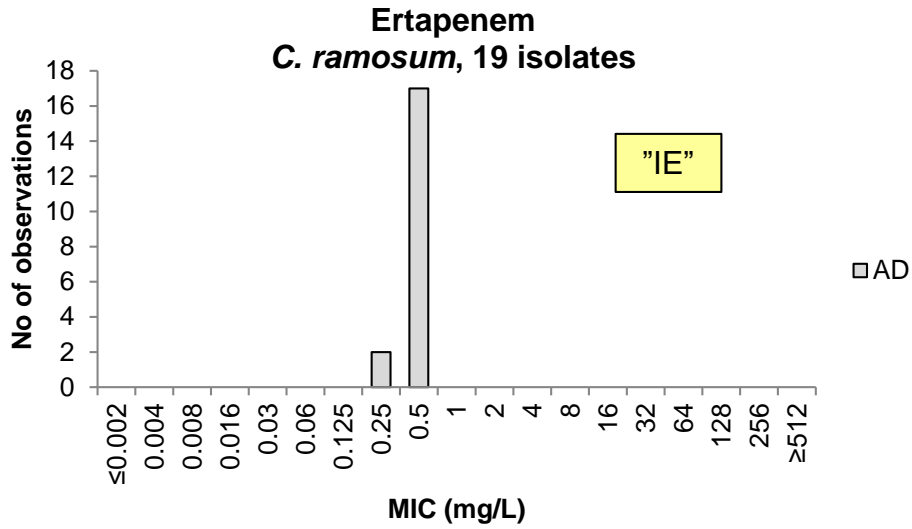
Piperacillin-tazobactam  
*C. ramosum*, 87 isolates



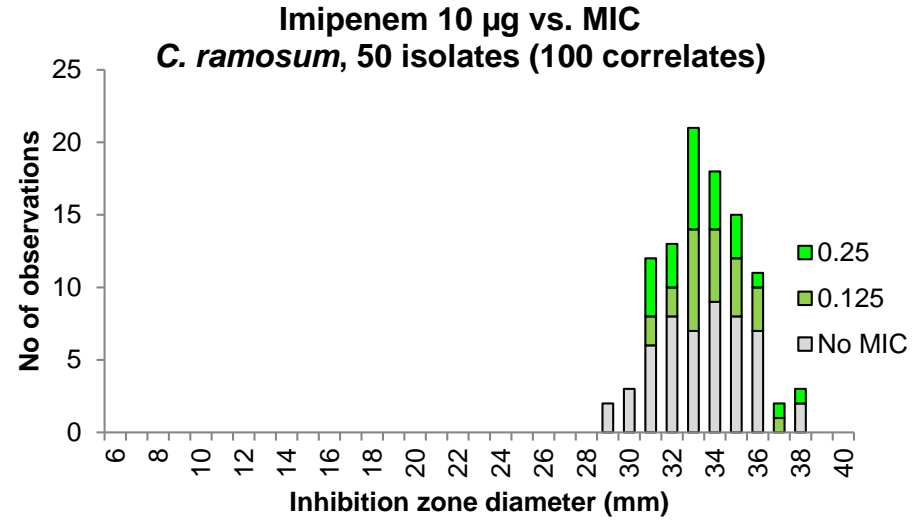
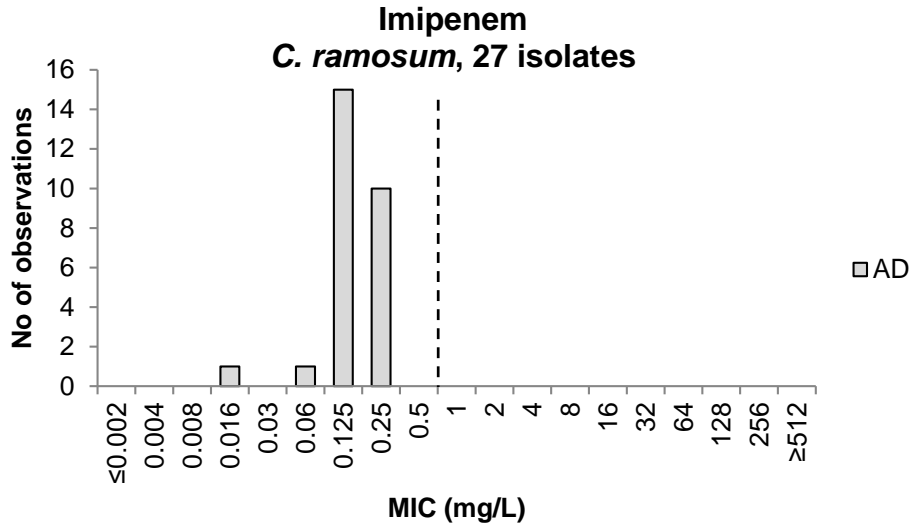
Piperacillin-tazobactam 30-6 µg vs. MIC  
*C. ramosum*, 50 isolates (100 correlates)



# Ertapenem

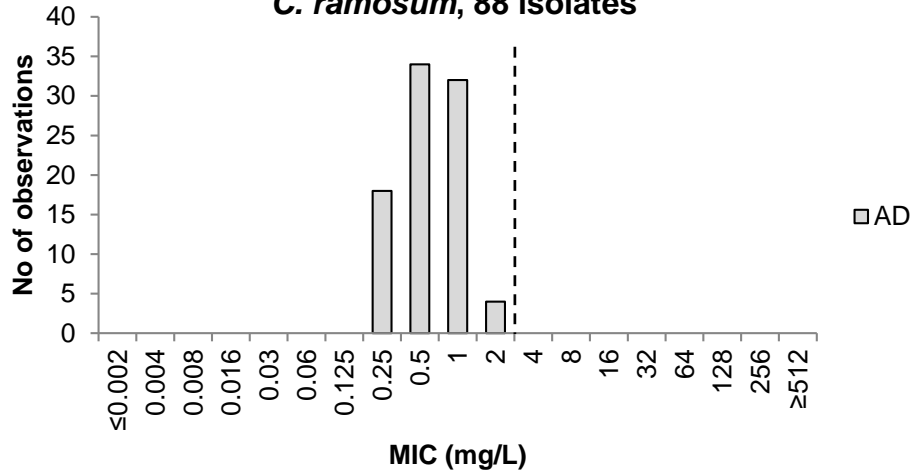


# Imipenem

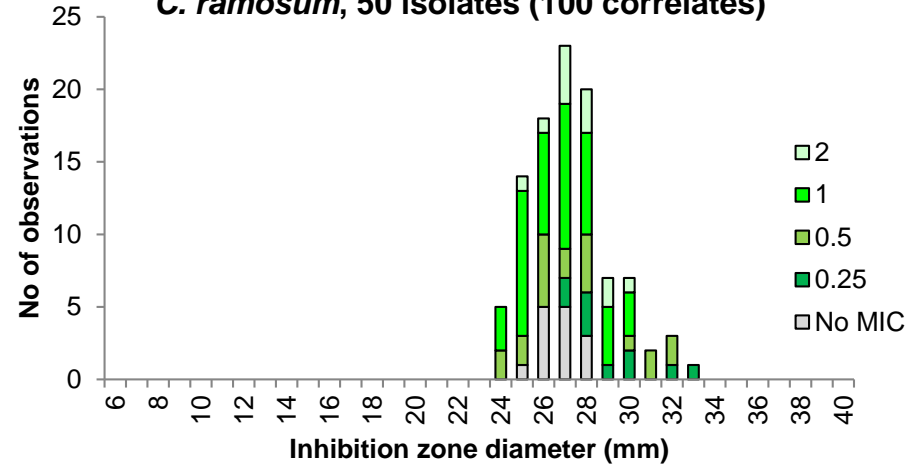


# Meropenem

**Meropenem**  
***C. ramosum*, 88 isolates**

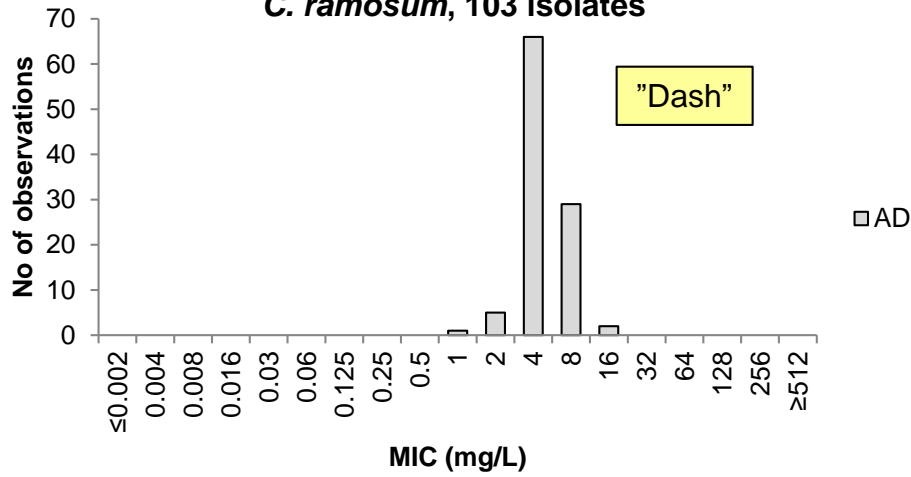


**Meropenem 10 µg vs. MIC**  
***C. ramosum*, 50 isolates (100 correlates)**



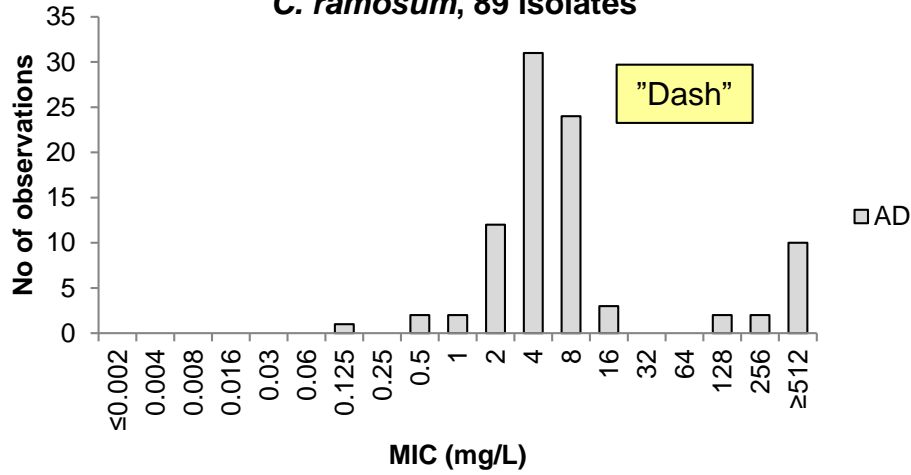
# Vancomycin

Vancomycin  
*C. ramosum*, 103 isolates



# Clindamycin

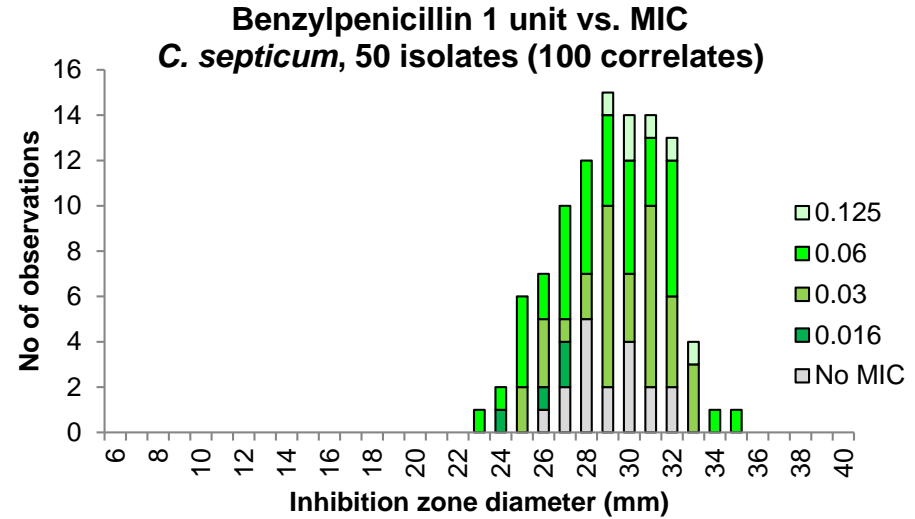
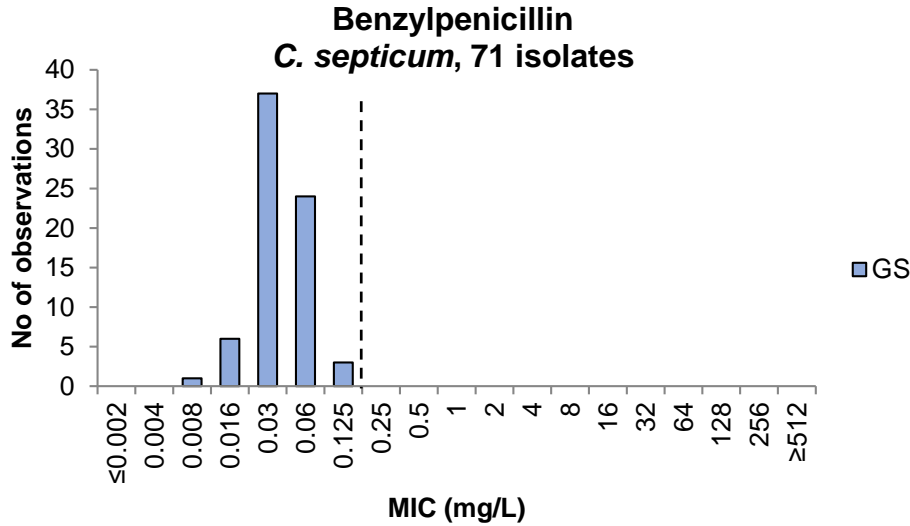
Clindamycin  
*C. ramosum*, 89 isolates





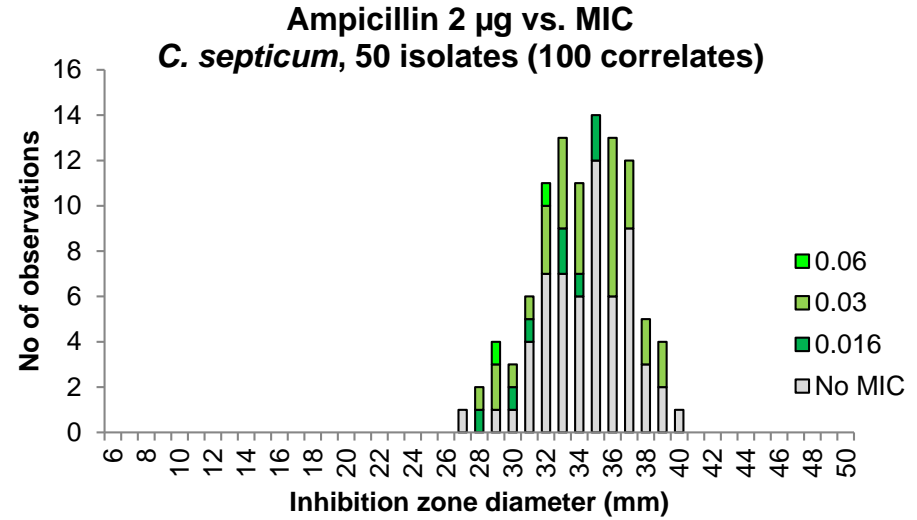
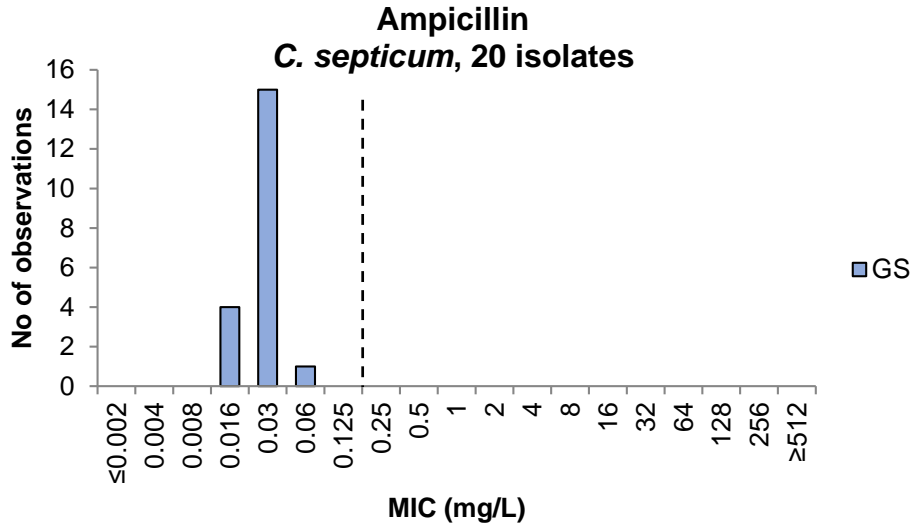
*Clostridium septicum*

# Benzylpenicillin



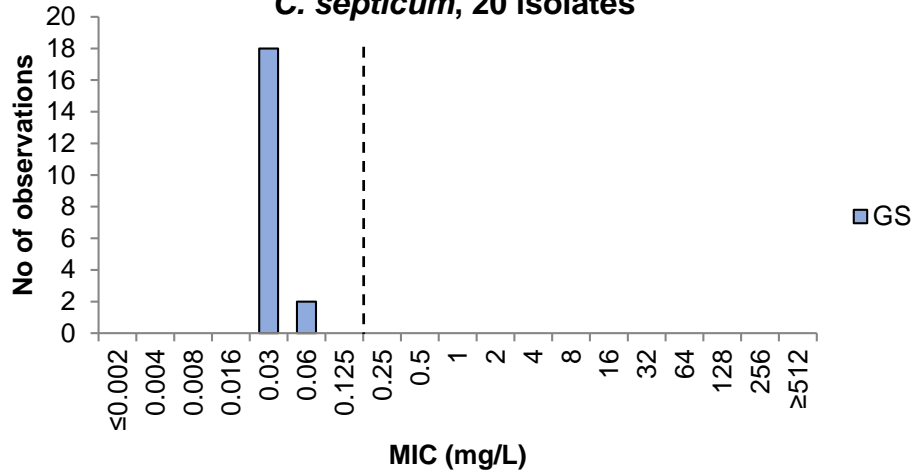
All benzylpenicillin-susceptible isolates are susceptible to all other beta-lactams tested.

# Ampicillin

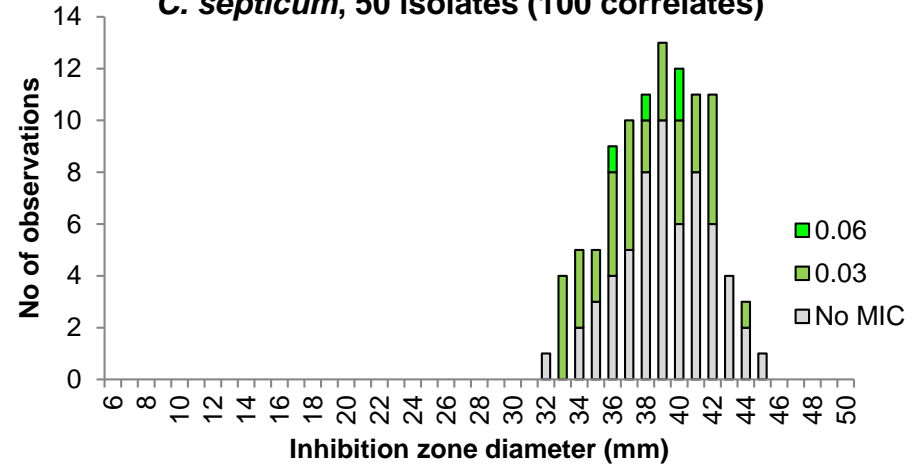


# Ampicillin-sulbactam

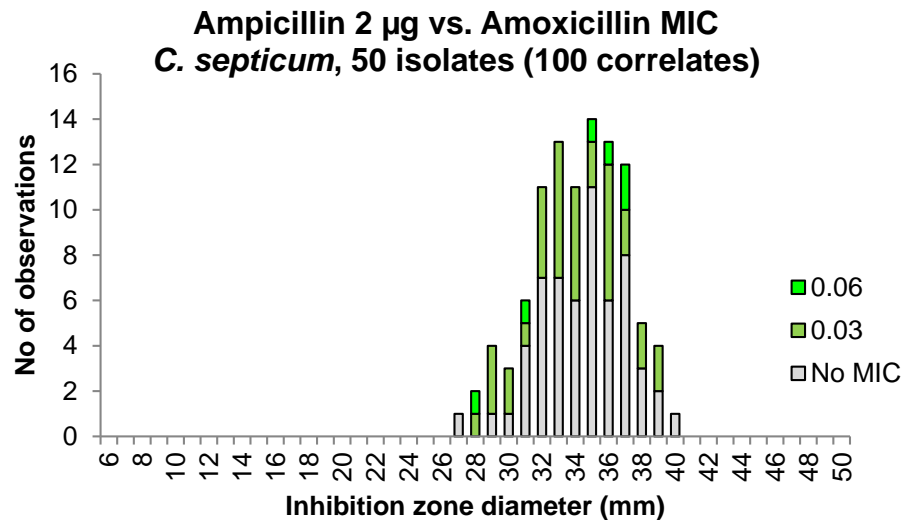
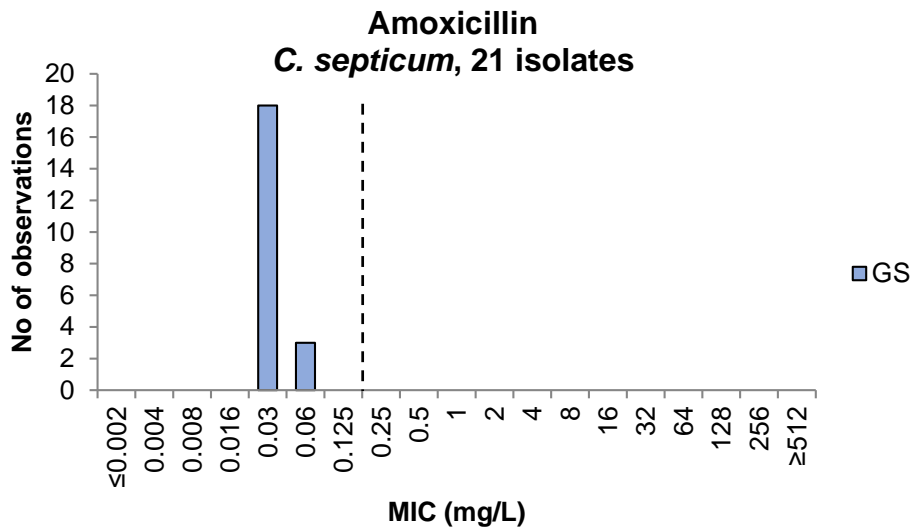
Ampicillin-sulbactam (fixed)  
*C. septicum*, 20 isolates



Ampicillin-sulbactam 10-10 µg vs. MIC (fixed)  
*C. septicum*, 50 isolates (100 correlates)



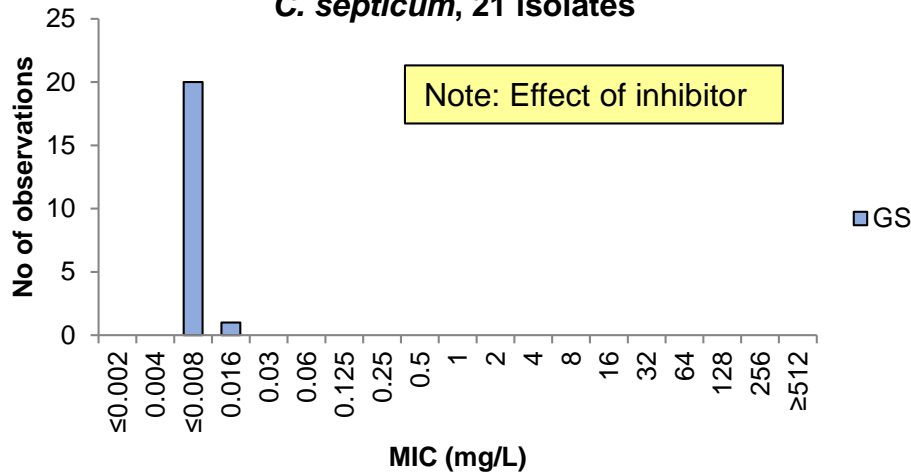
# Amoxicillin



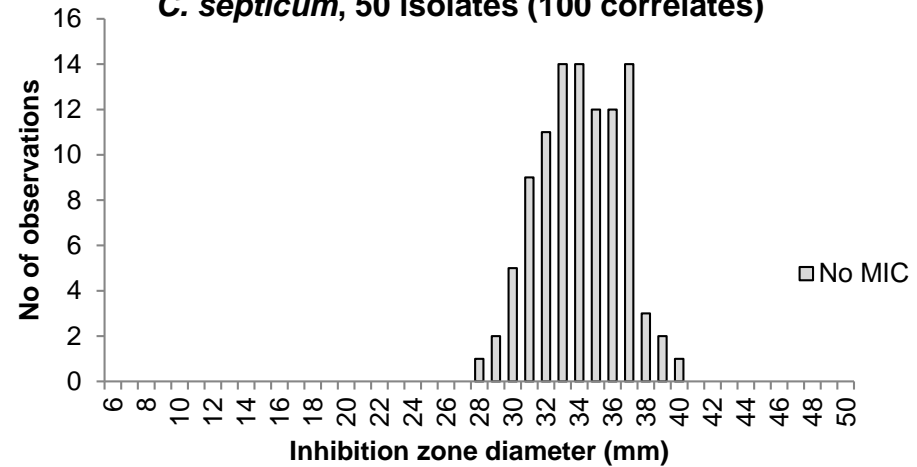
For disk diffusion, amoxicillin susceptibility is inferred from ampicillin.

# Amoxicillin-clavulanic acid

Amoxicillin-clavulanic acid (fixed)  
*C. septicum*, 21 isolates

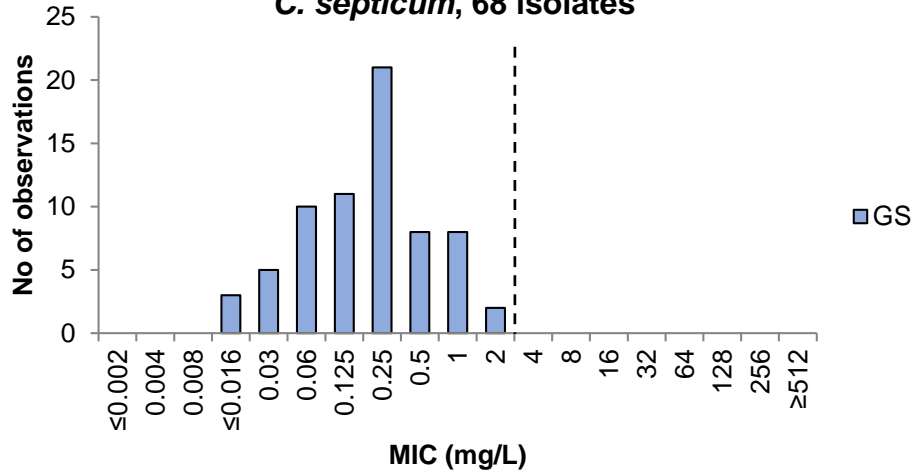


Amoxicillin-clavulanic acid 2-1 vs. MIC (fixed)  
*C. septicum*, 50 isolates (100 correlates)

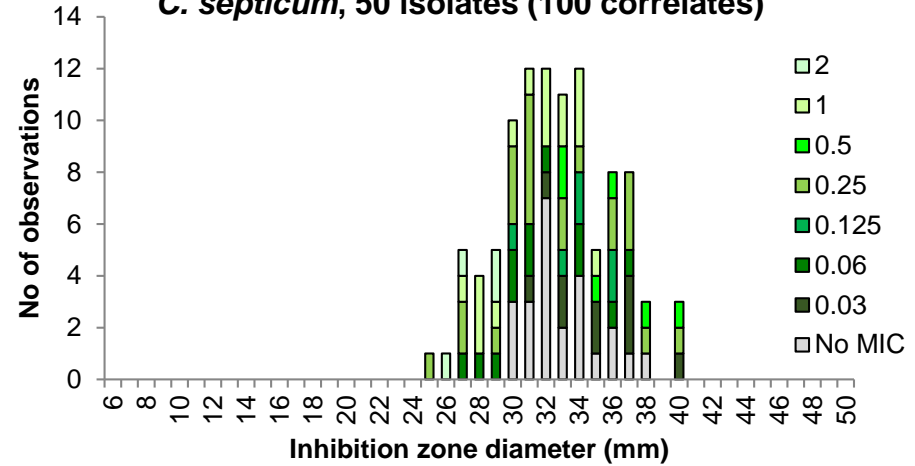


# Piperacillin-tazobactam

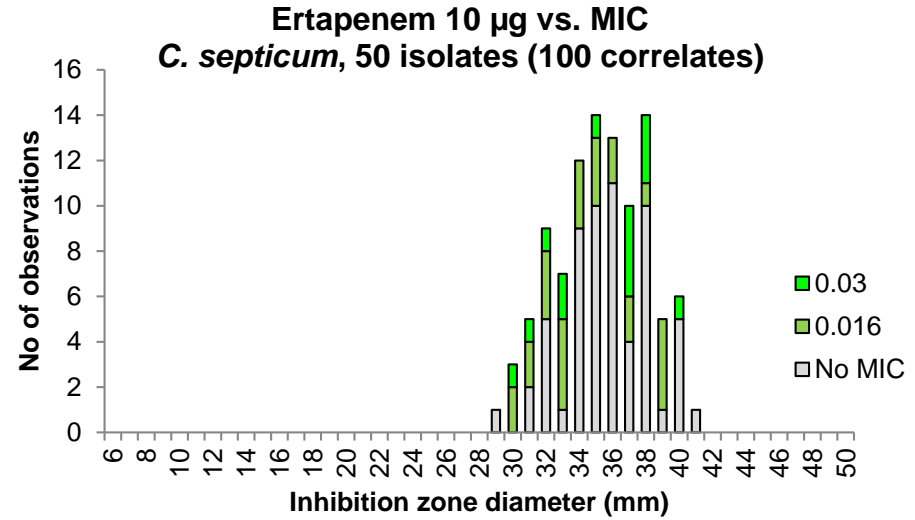
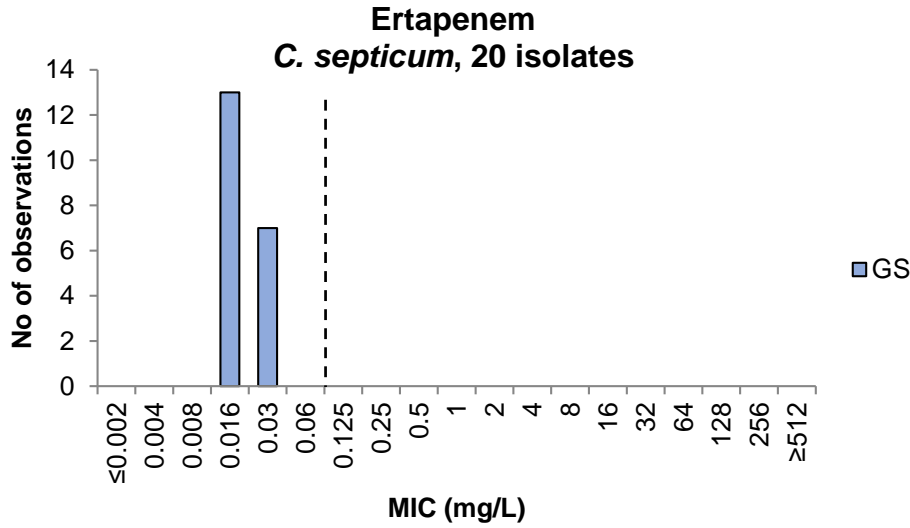
Piperacillin-tazobactam  
*C. septicum*, 68 isolates



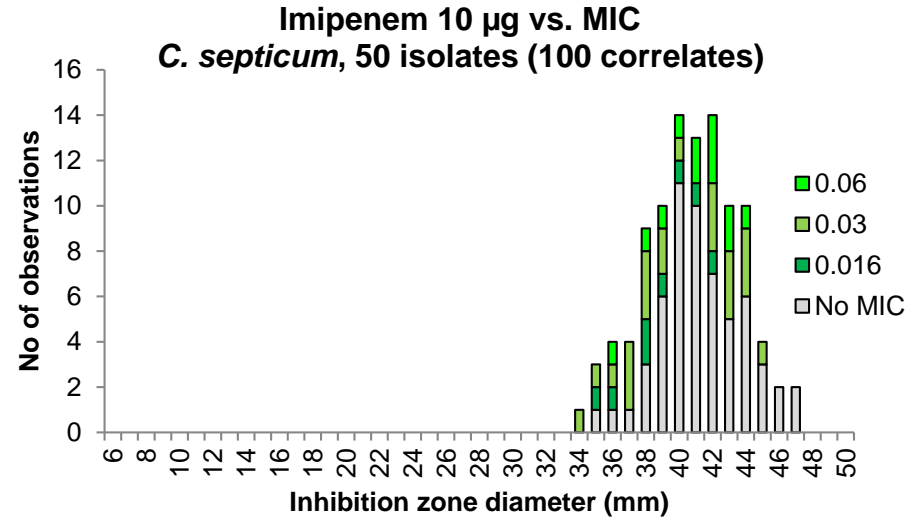
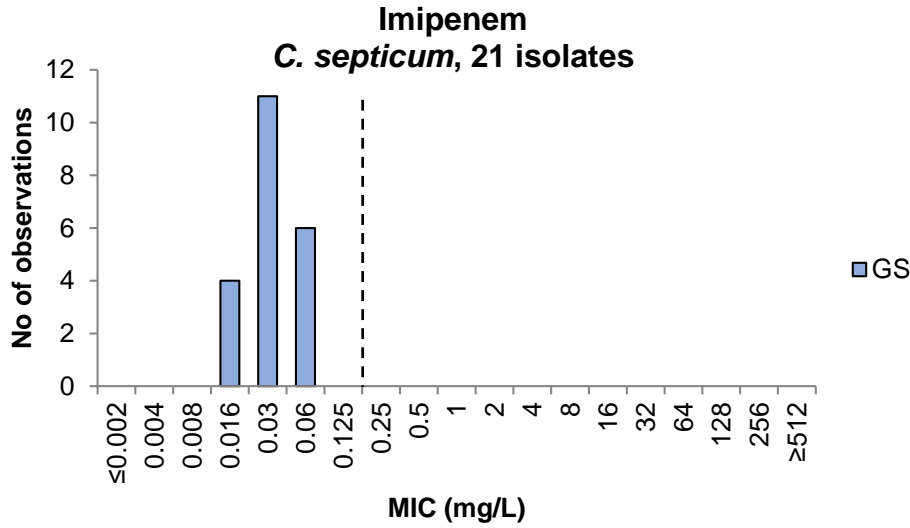
Piperacillin-tazobactam 30-6 µg vs. MIC  
*C. septicum*, 50 isolates (100 correlates)



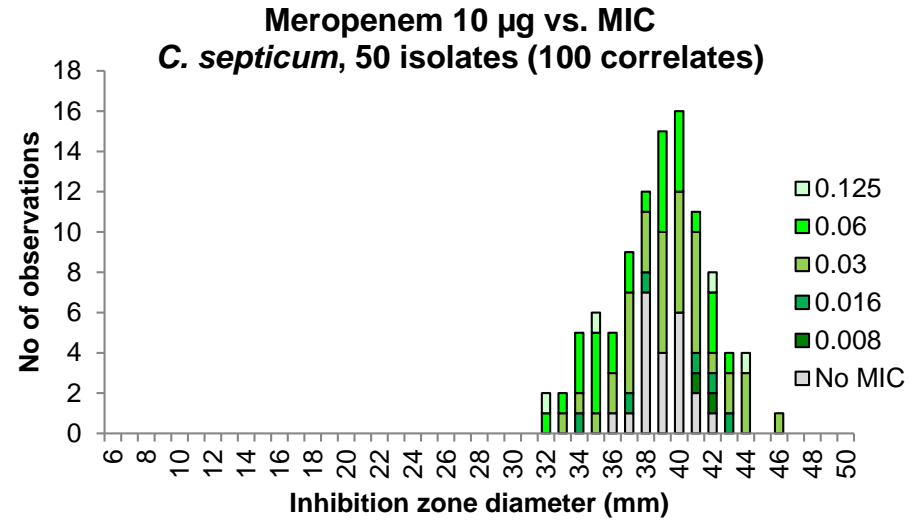
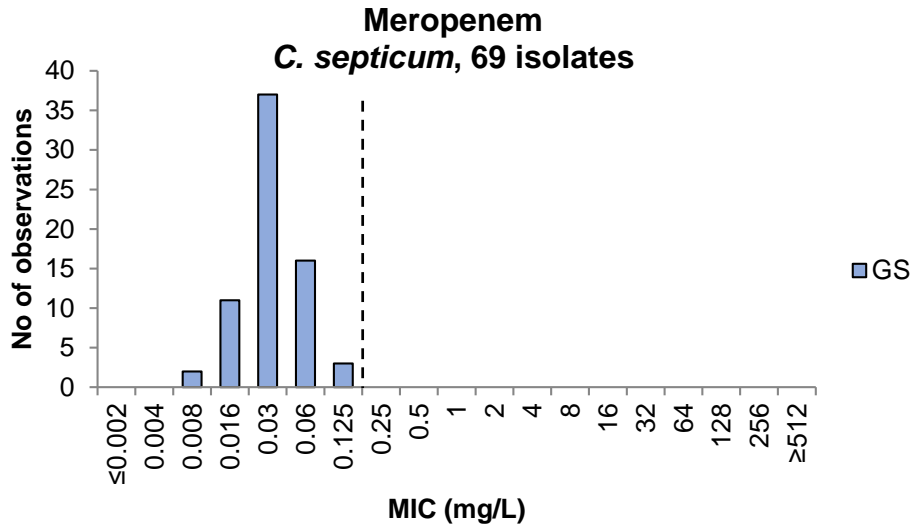
# Ertapenem



# Imipenem

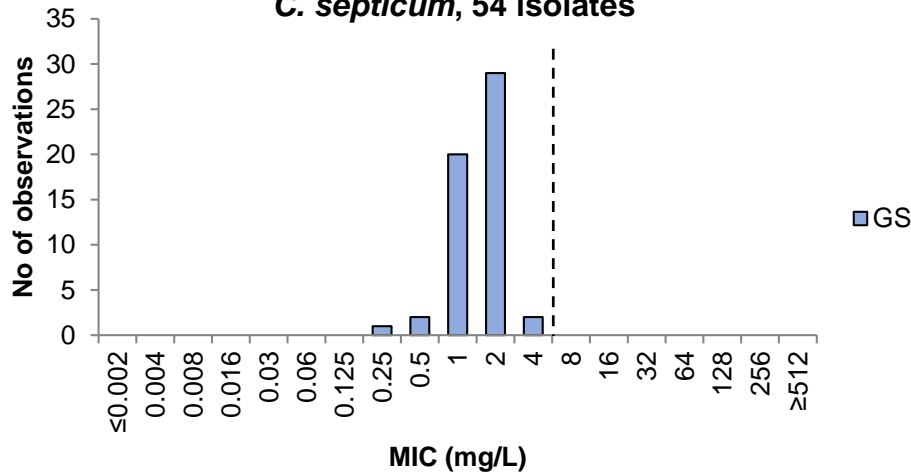


# Meropenem

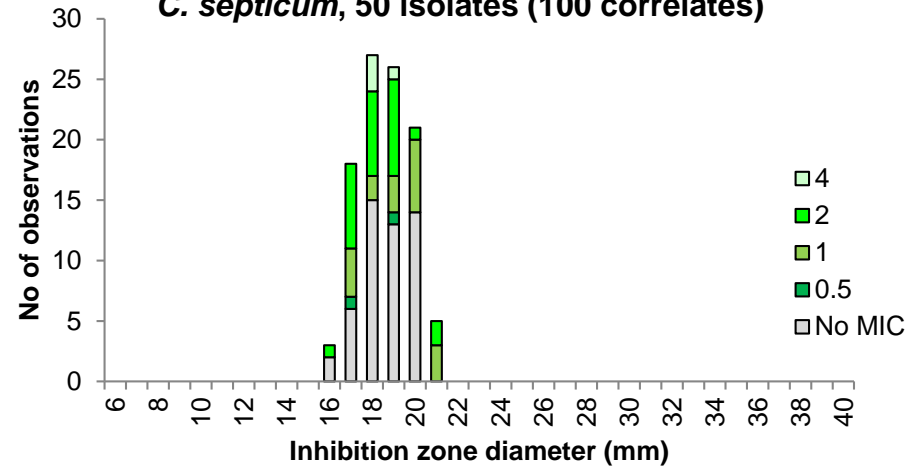


# Vancomycin

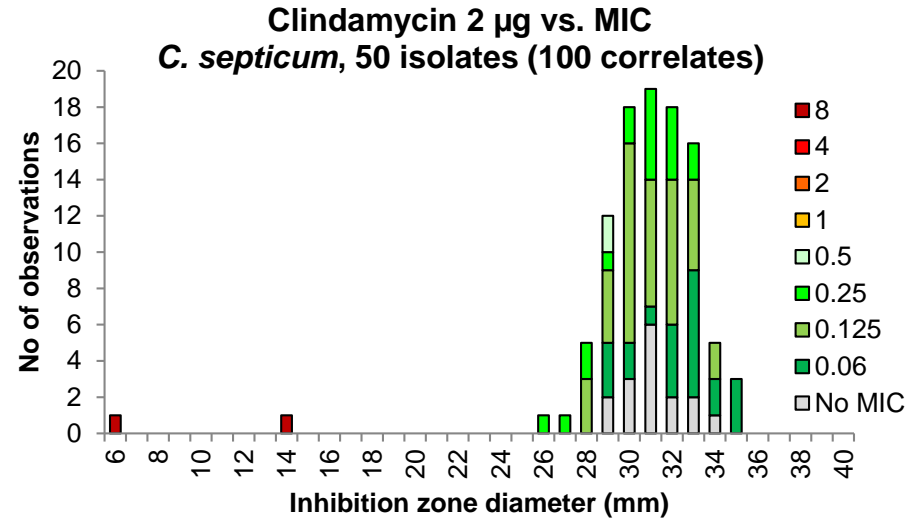
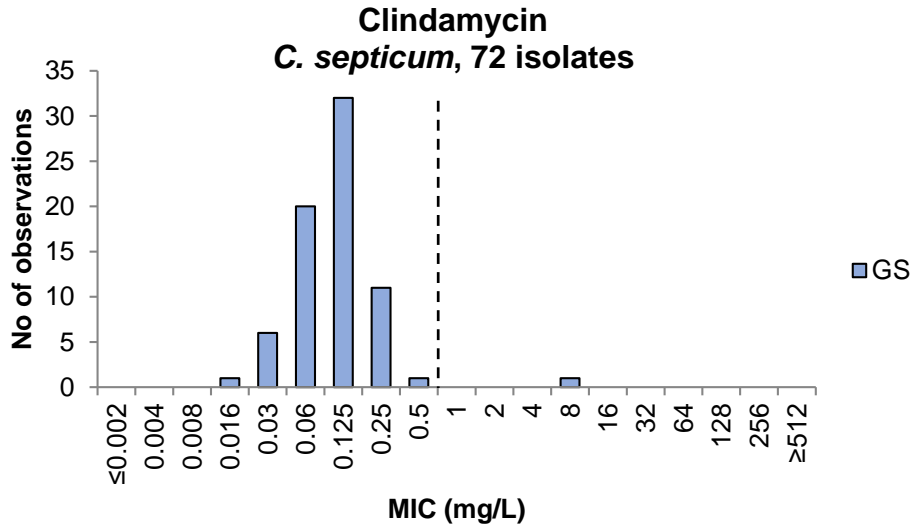
Vancomycin  
*C. septicum*, 54 isolates



Vancomycin 5 µg vs. MIC  
*C. septicum*, 50 isolates (100 correlates)

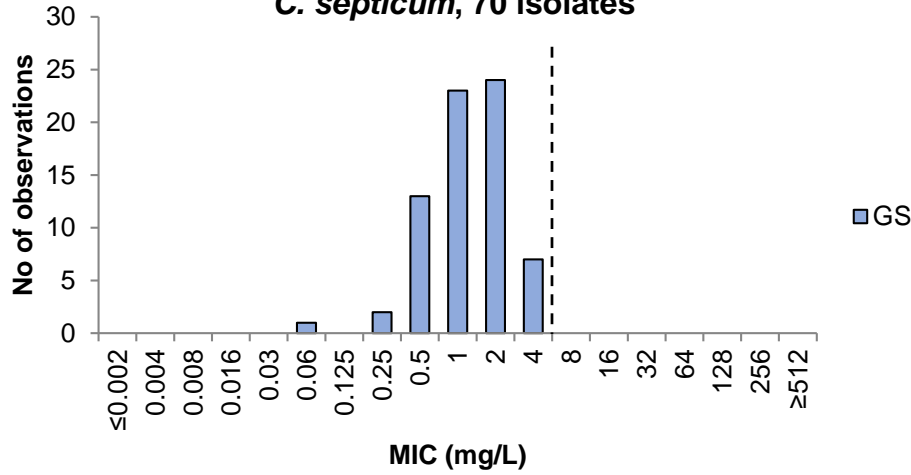


# Clindamycin

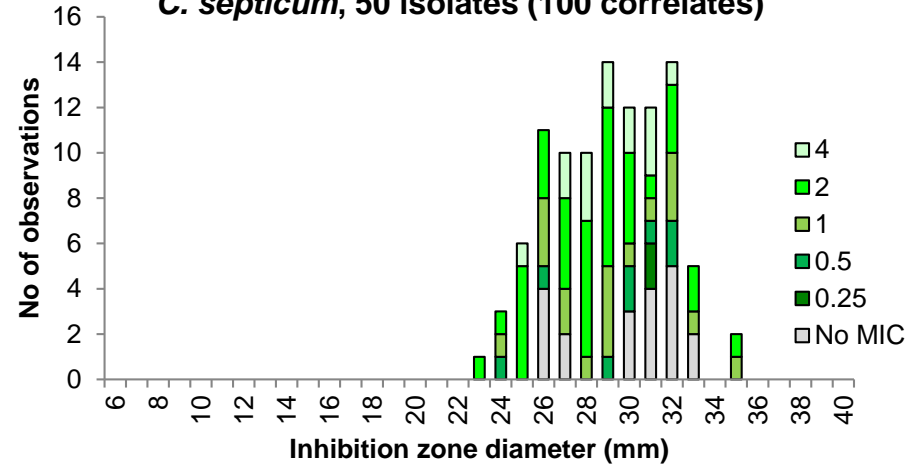


# Metronidazole

Metronidazole  
*C. septicum*, 70 isolates



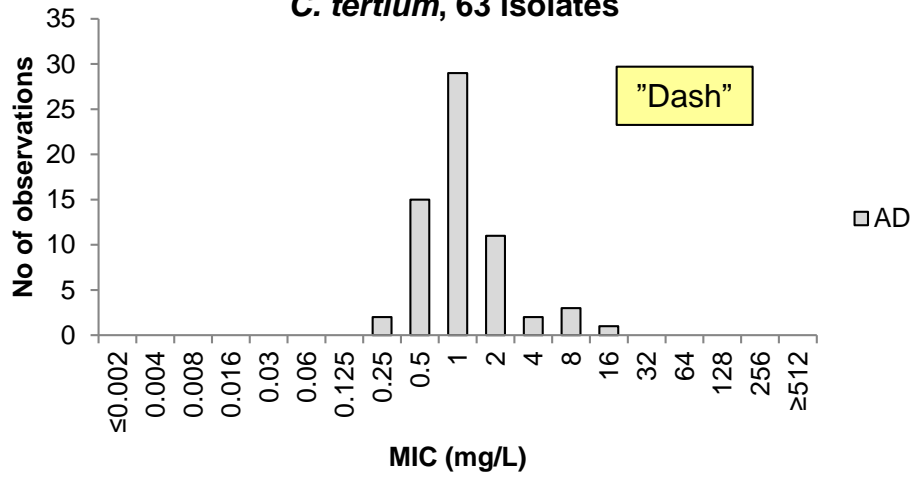
Metronidazole 5 µg vs. MIC  
*C. septicum*, 50 isolates (100 correlates)



*Clostridium tertium*

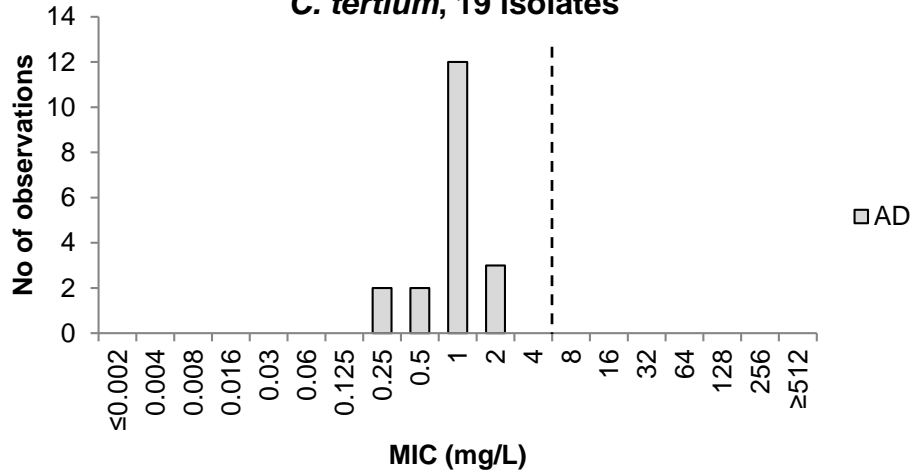
# Benzylpenicillin

**Benzylpenicillin**  
***C. tertium*, 63 isolates**

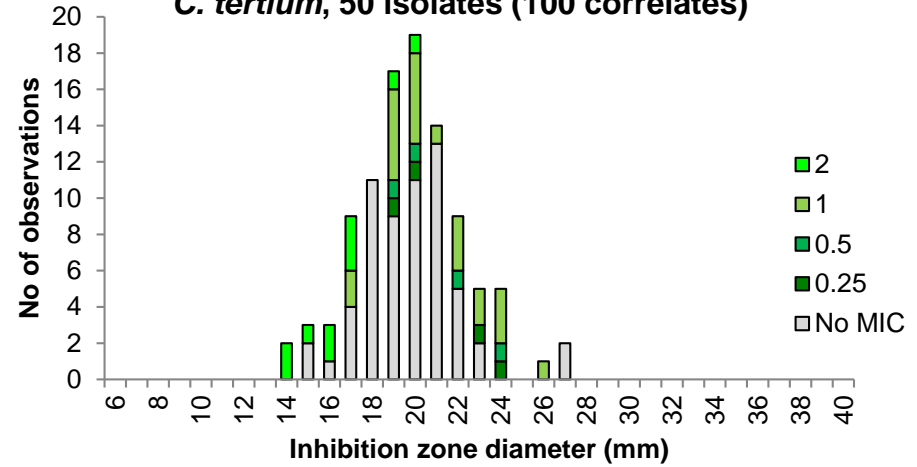


# Ampicillin

**Ampicillin**  
*C. tertium*, 19 isolates

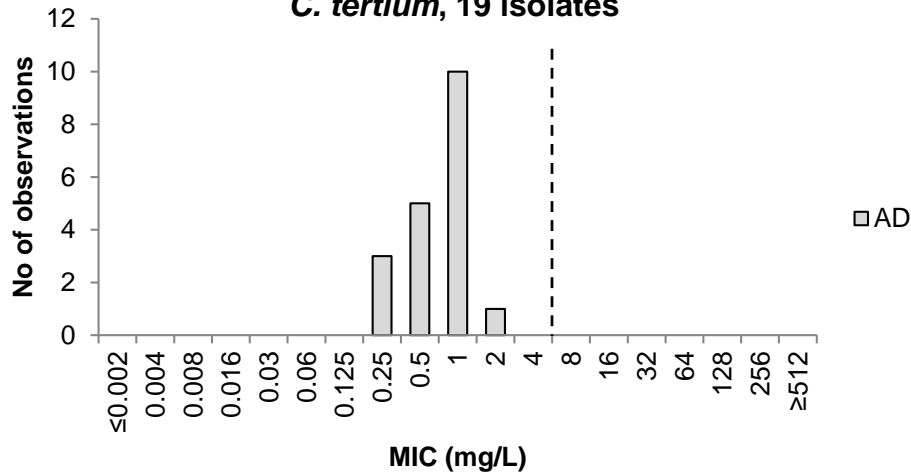


**Ampicillin 2  $\mu$ g vs. MIC**  
*C. tertium*, 50 isolates (100 correlates)

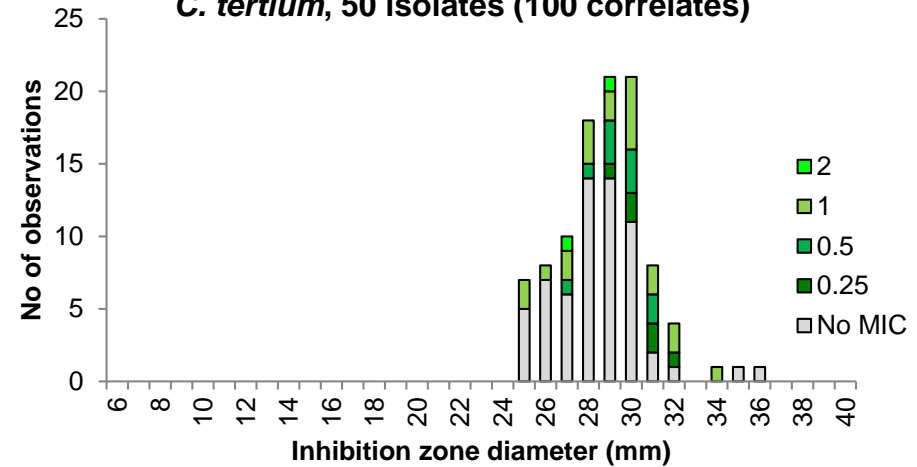


# Ampicillin-sulbactam

Ampicillin-sulbactam (fixed)  
*C. tertium*, 19 isolates

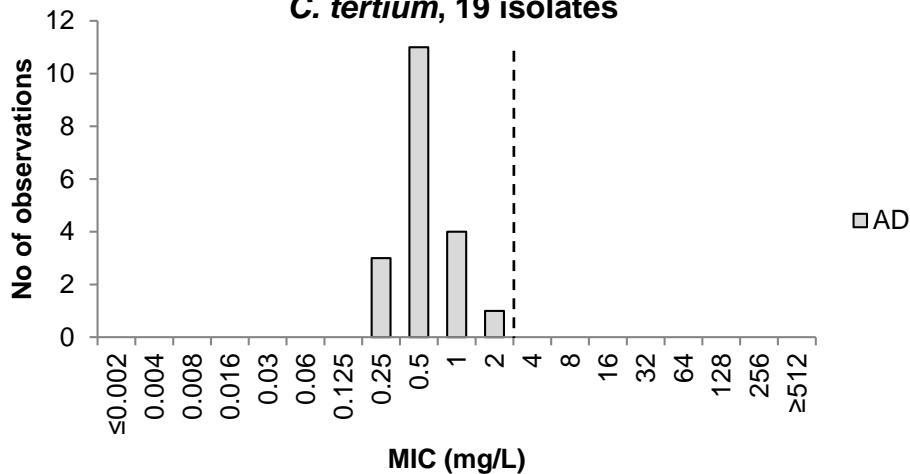


Ampicillin-sulbactam 10-10 µg vs. MIC (fixed)  
*C. tertium*, 50 isolates (100 correlates)

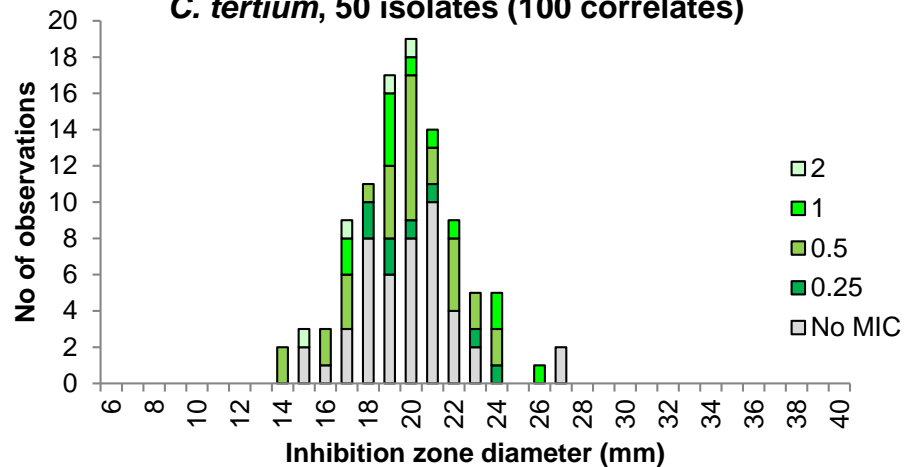


# Amoxicillin

Amoxicillin  
*C. tertium*, 19 isolates



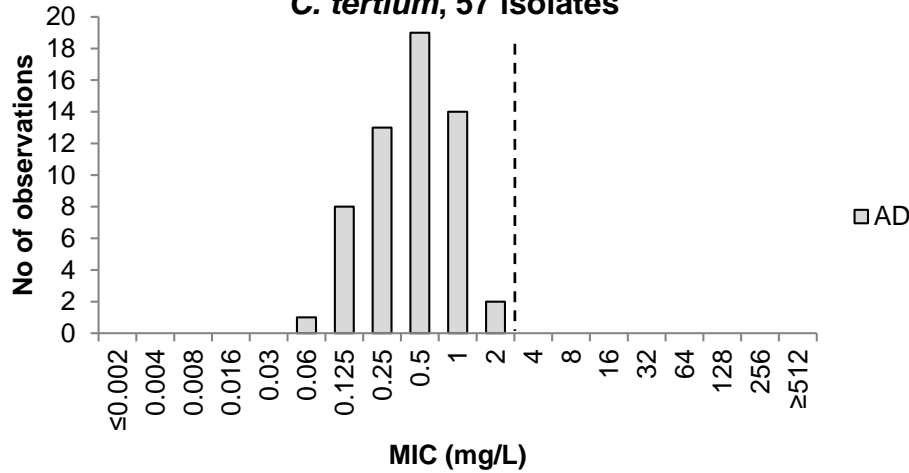
Ampicillin 2 µg vs. Amoxicillin MIC  
*C. tertium*, 50 isolates (100 correlates)



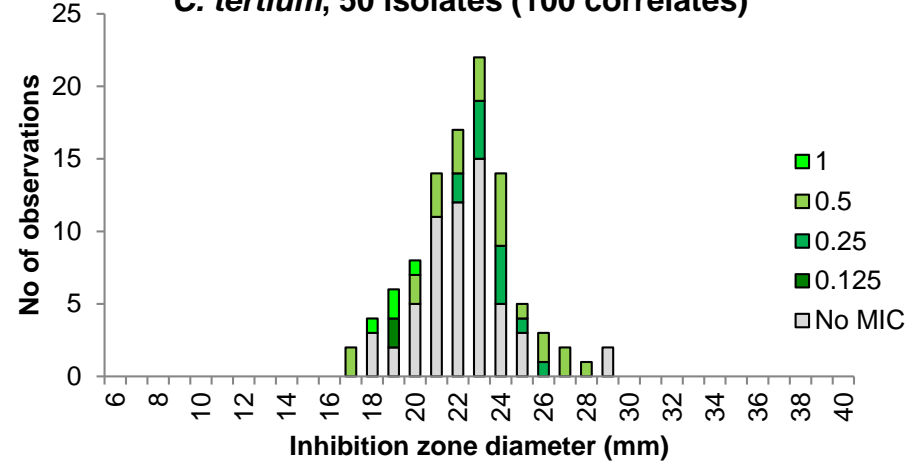
For disk diffusion, amoxicillin susceptibility is inferred from ampicillin.

# Amoxicillin-clavulanic acid

Amoxicillin-clavulanic acid (fixed)  
*C. tertium*, 57 isolates

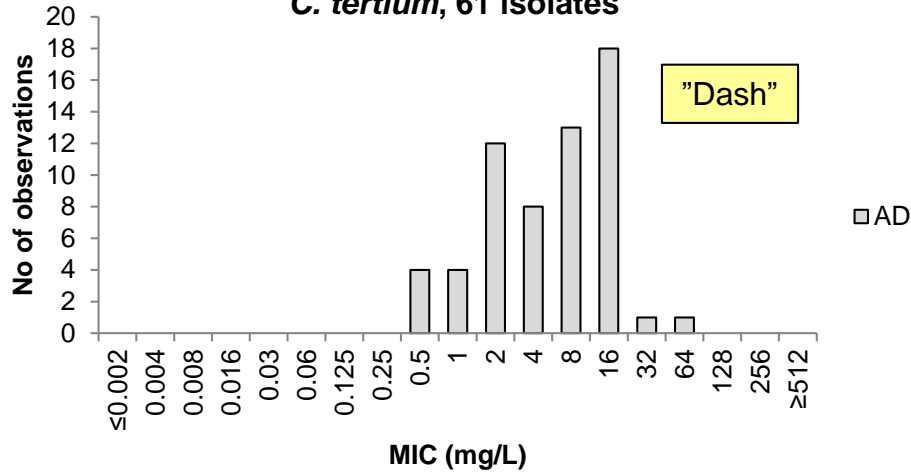


Amoxicillin-clavulanic acid 2-1 µg vs. MIC (fixed)  
*C. tertium*, 50 isolates (100 correlates)



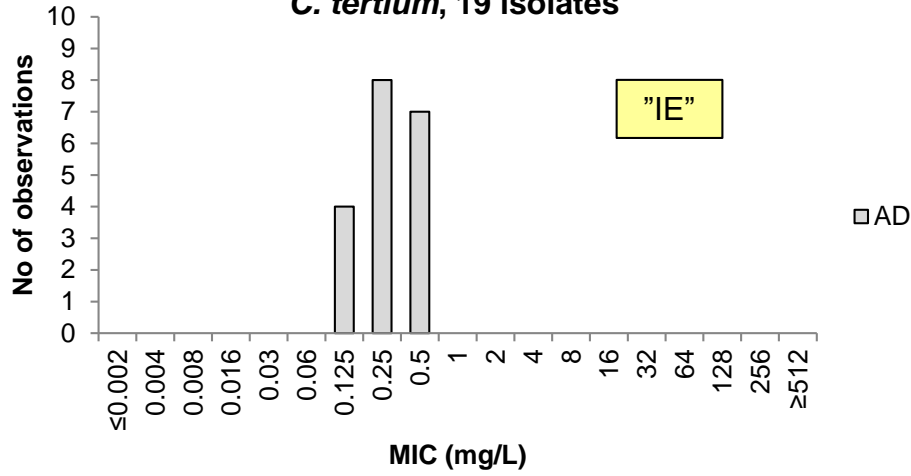
# Piperacillin-tazobactam

Piperacillin-tazobactam  
*C. tertium*, 61 isolates

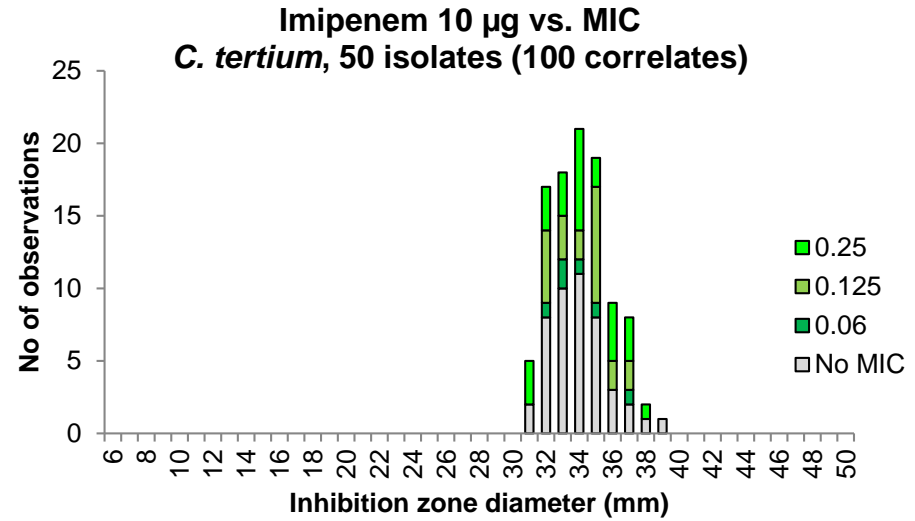
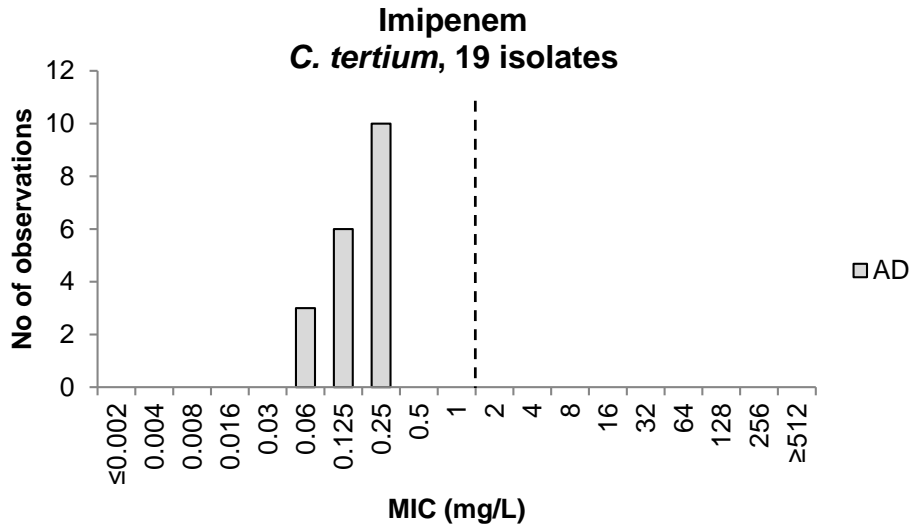


# Ertapenem

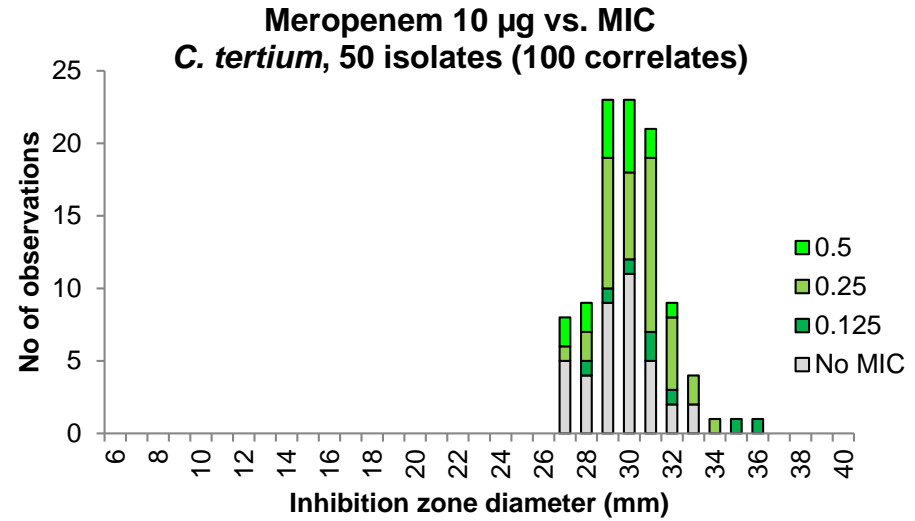
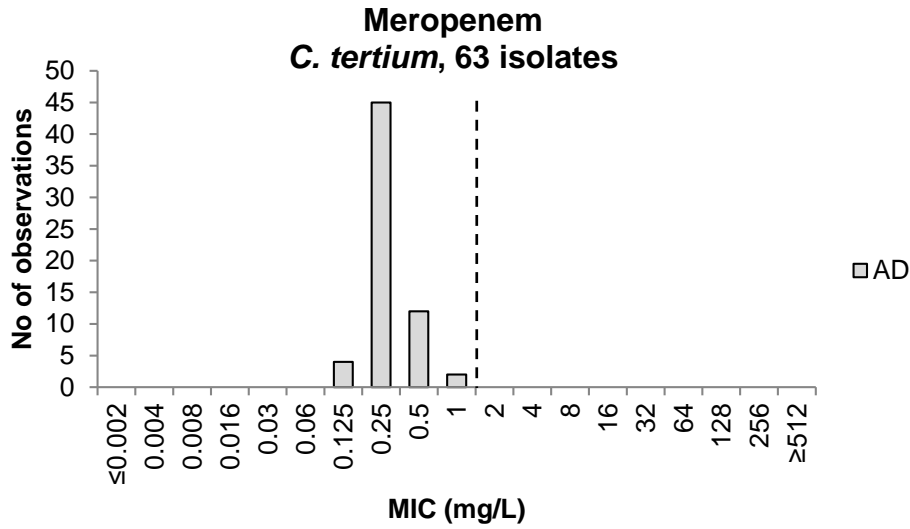
Ertapenem  
*C. tertium*, 19 isolates



# Imipenem

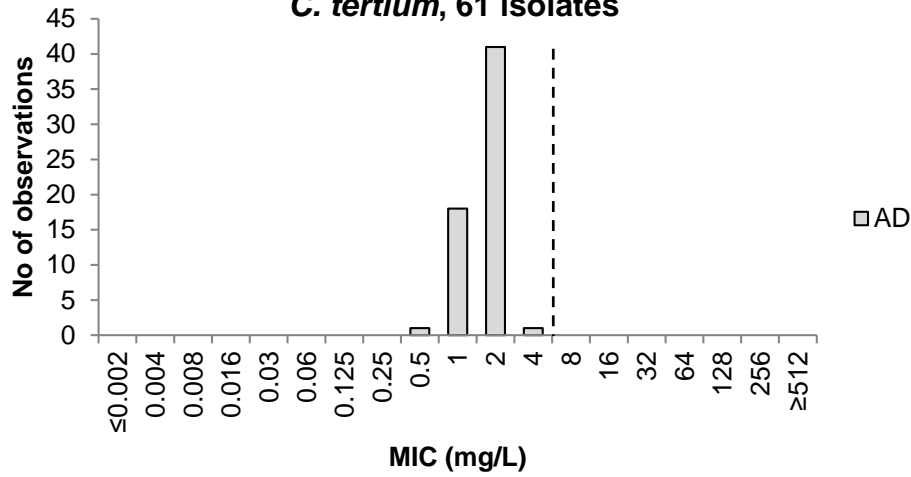


# Meropenem

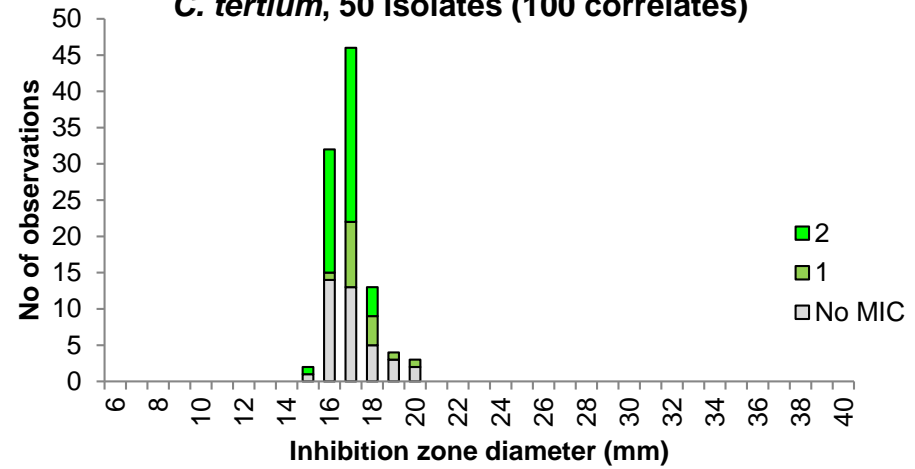


# Vancomycin

Vancomycin  
*C. tertium*, 61 isolates

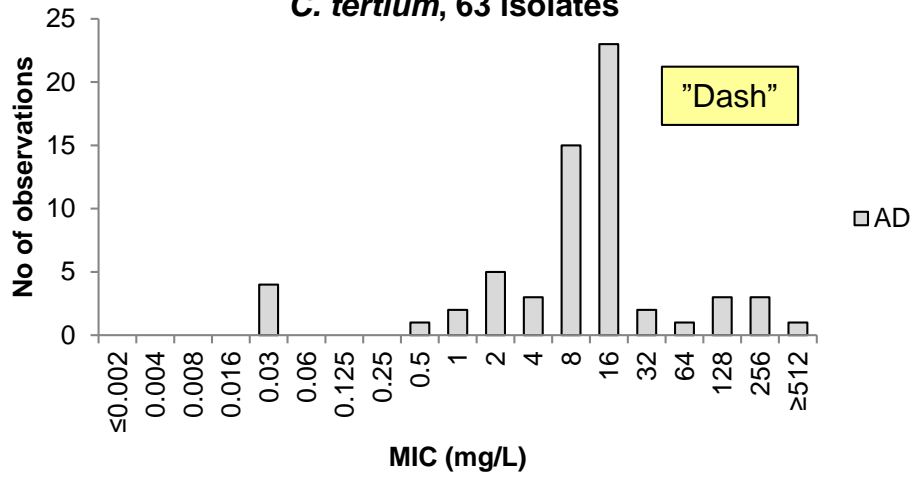


Vancomycin 5 µg vs. MIC  
*C. tertium*, 50 isolates (100 correlates)



# Clindamycin

Clindamycin  
*C. tertium*, 63 isolates



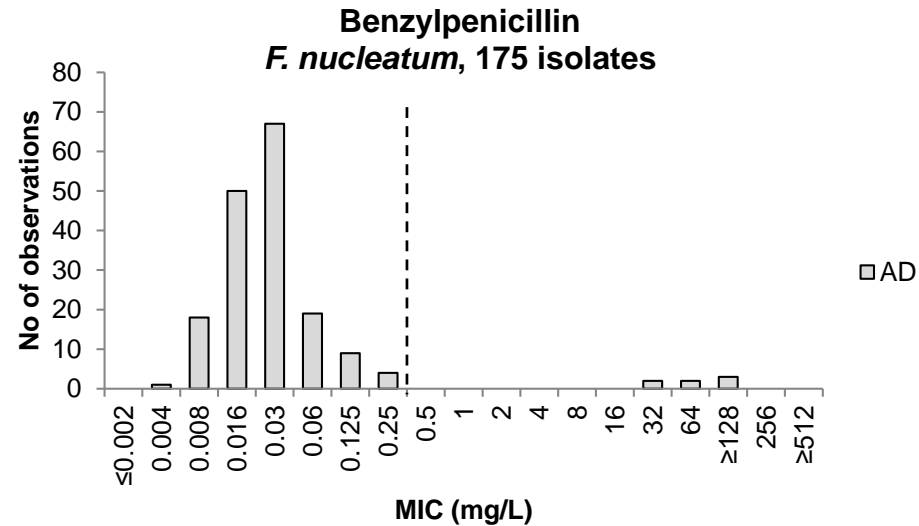
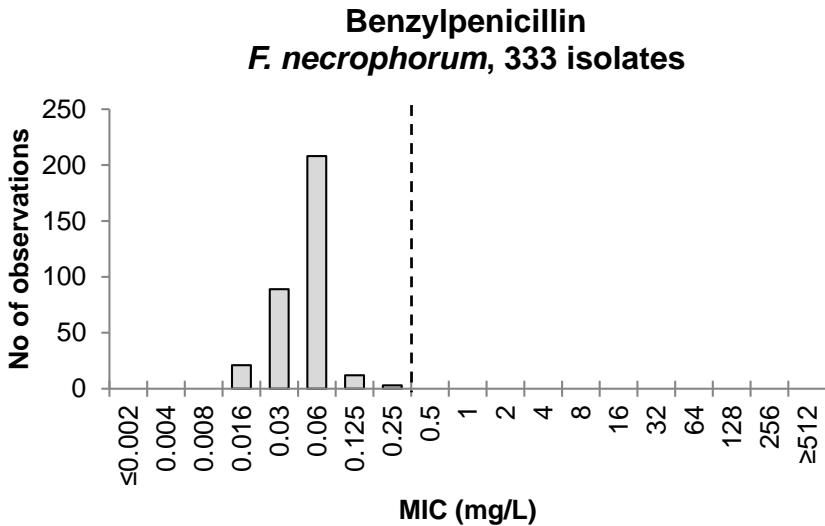
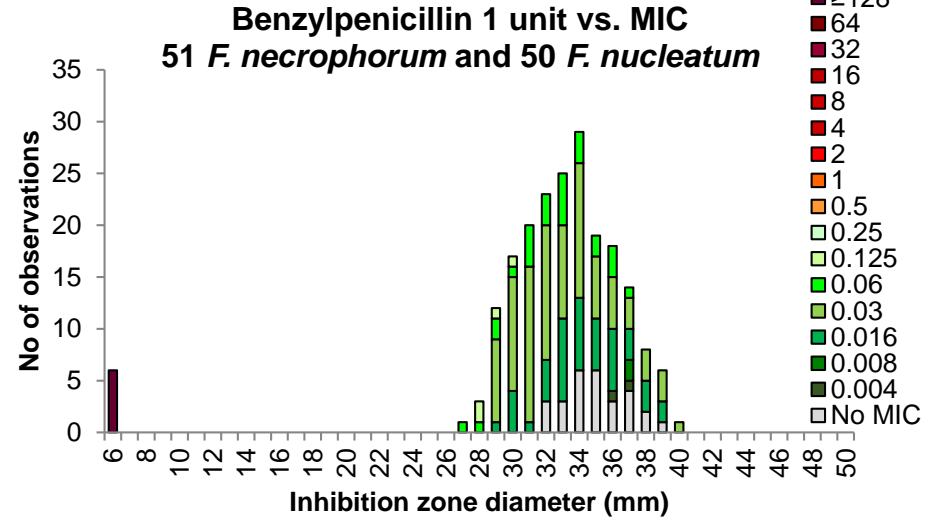
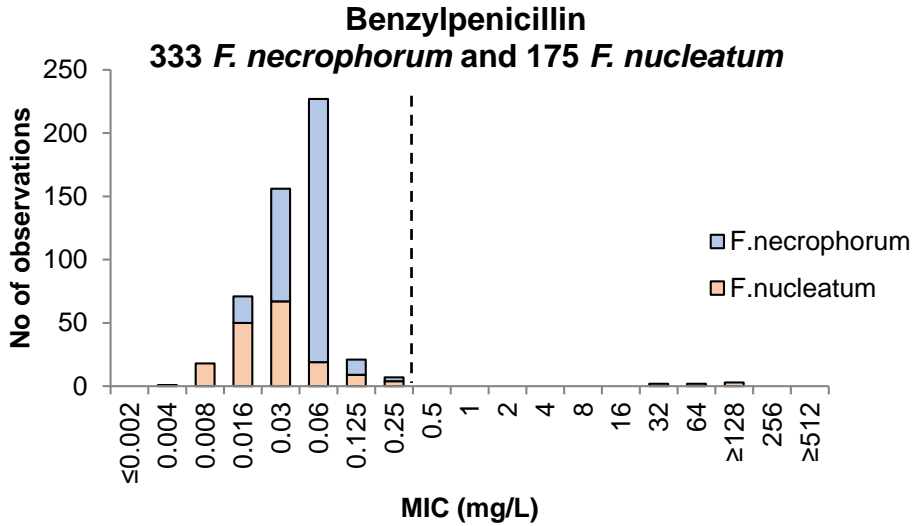


*Fusobacterium necrophorum*  
and *F. nucleatum*

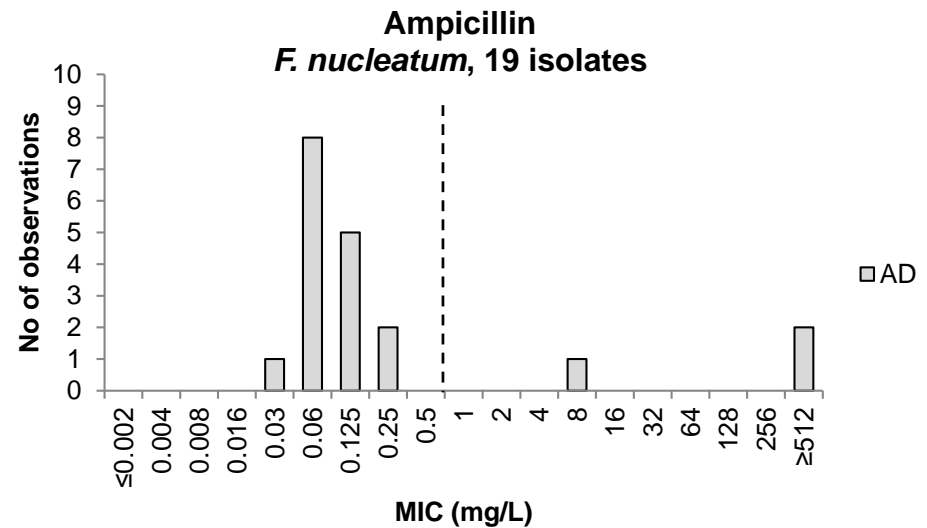
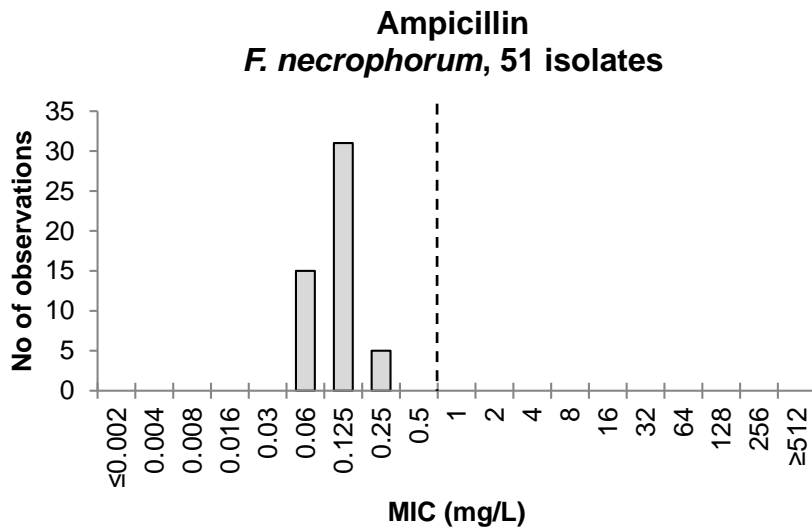
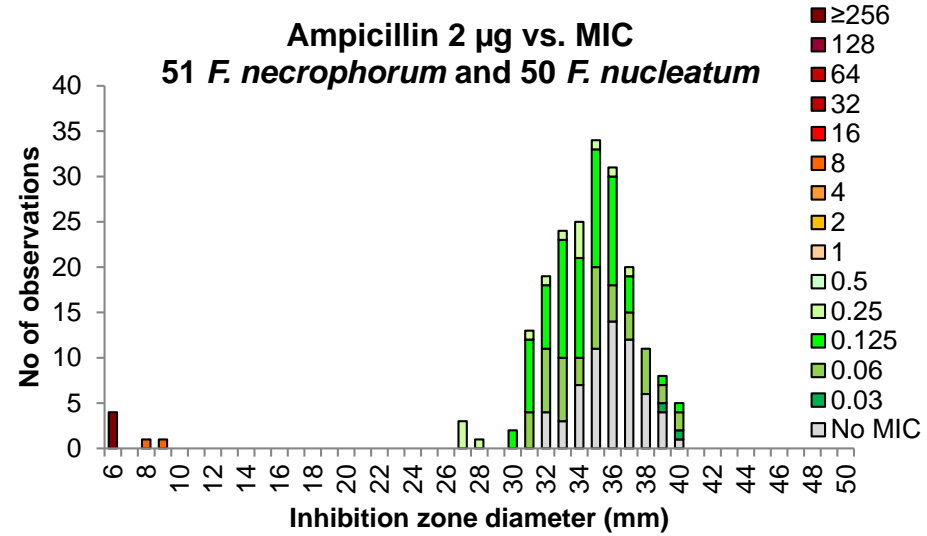
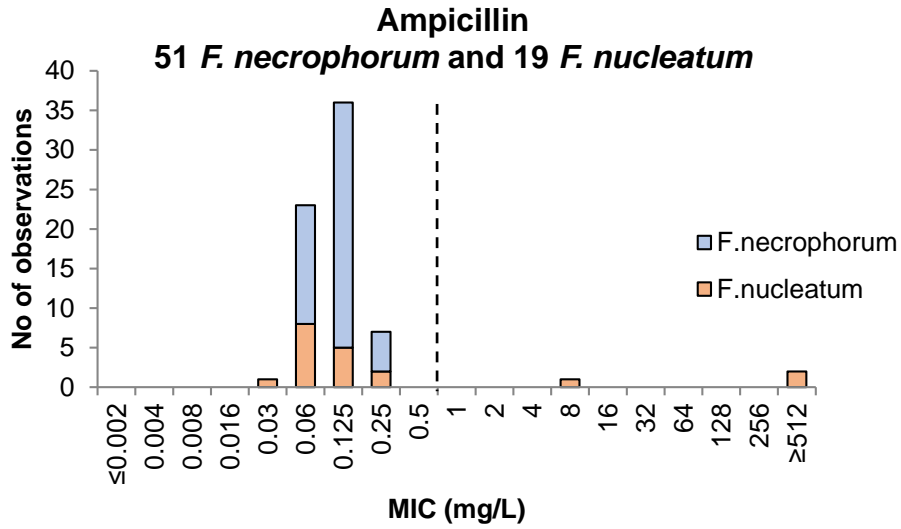
Aggregated data

All benzylpenicillin-susceptible isolates are susceptible to all other beta-lactams tested.

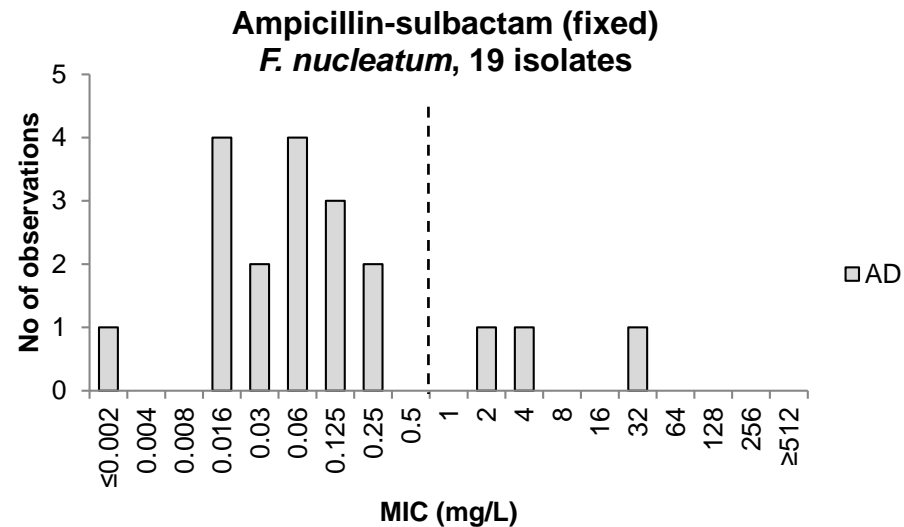
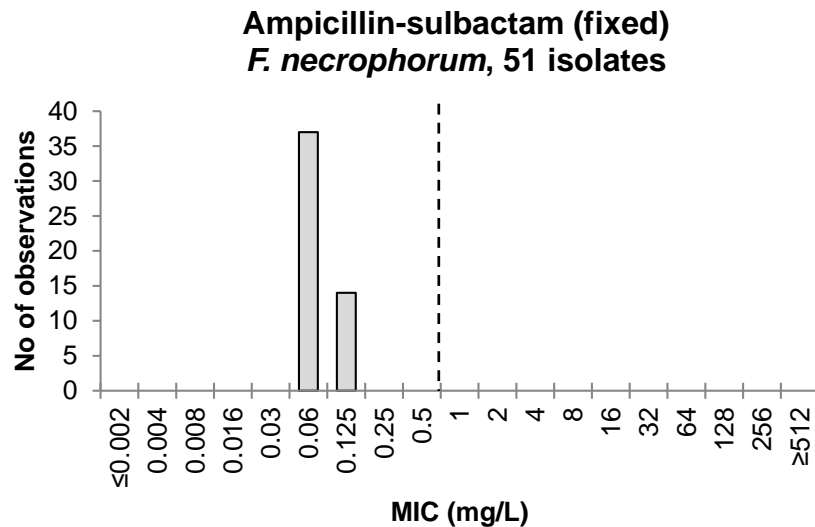
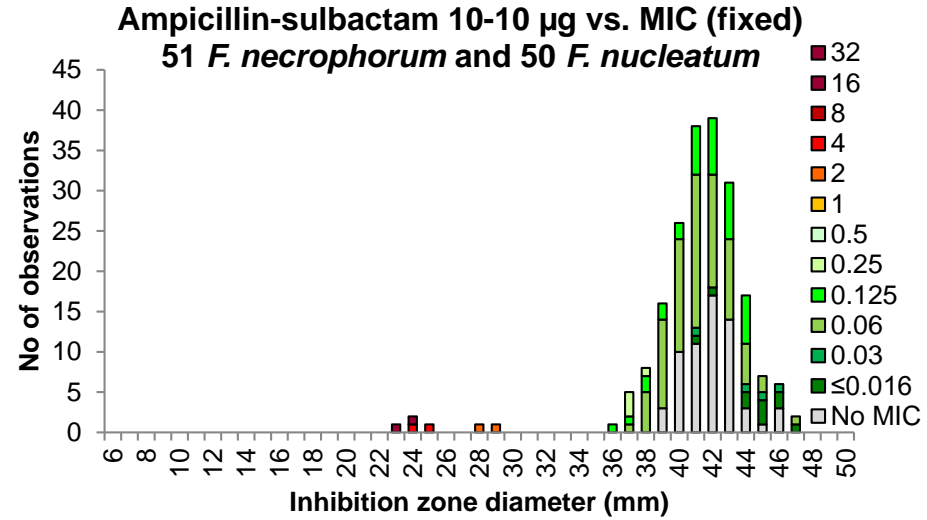
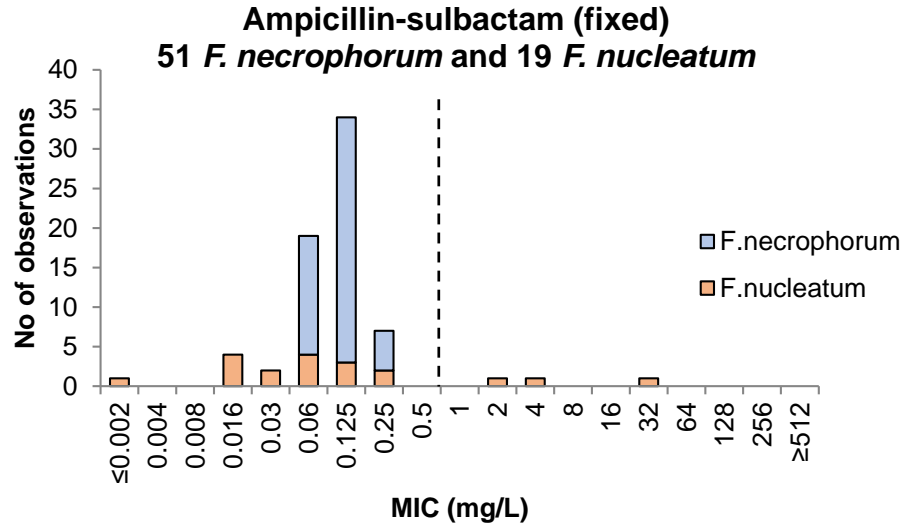
# Benzylpenicillin



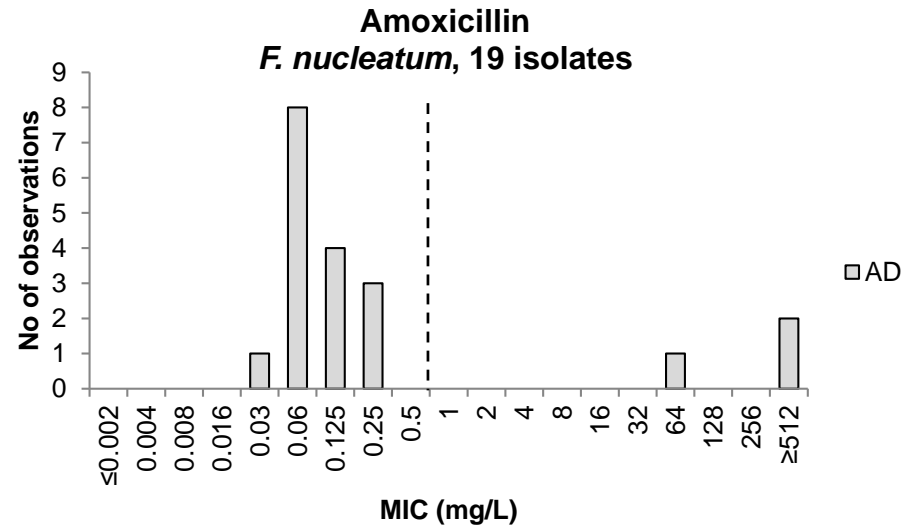
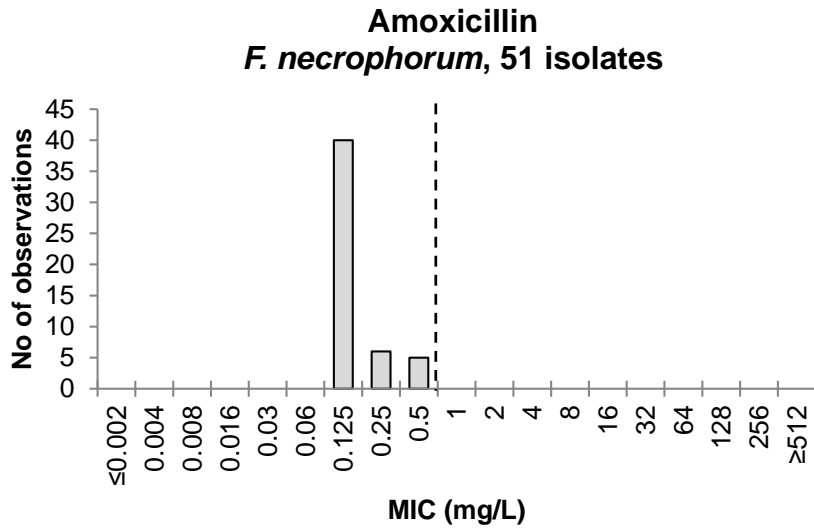
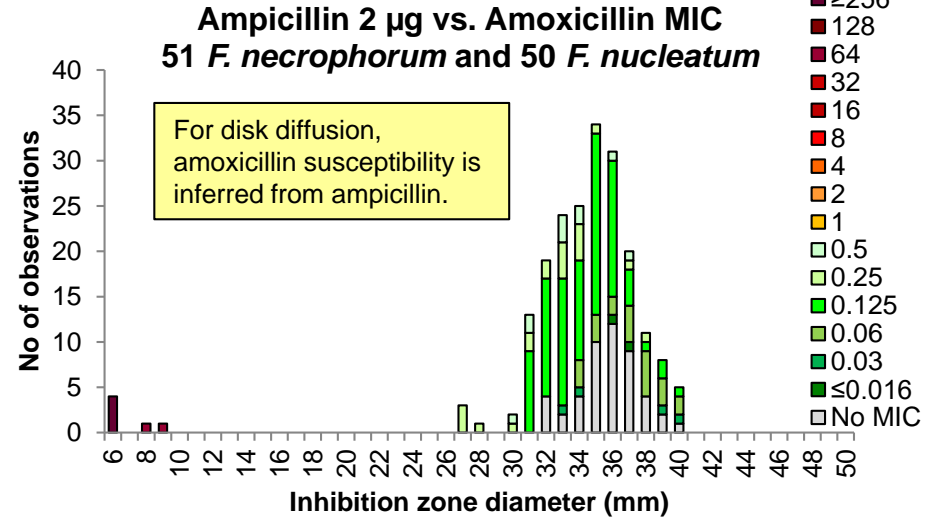
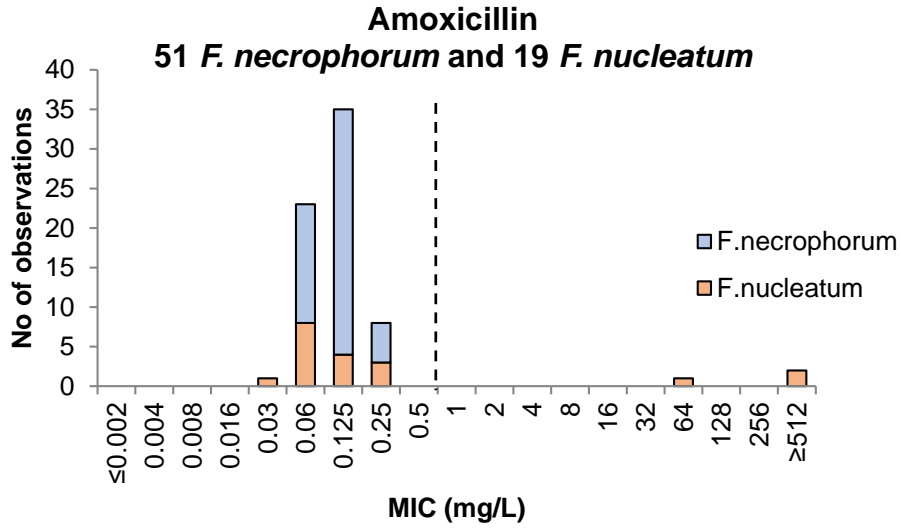
# Ampicillin



# Ampicillin-sulbactam

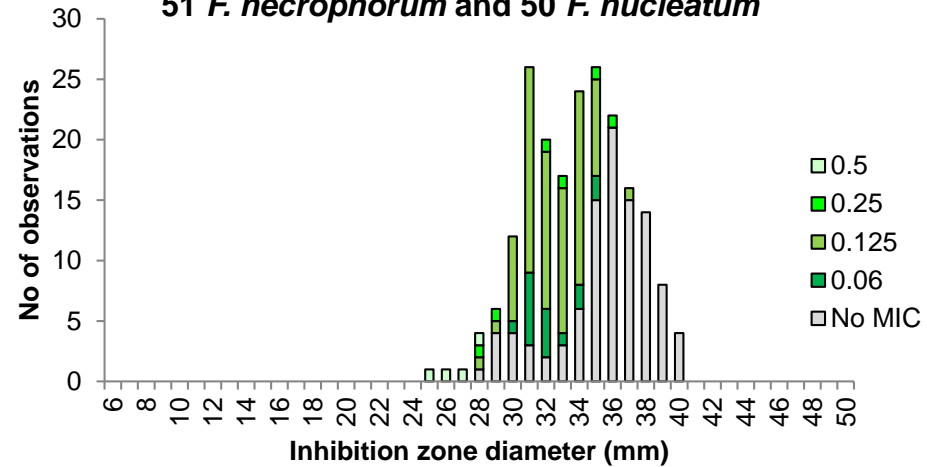


# Amoxicillin

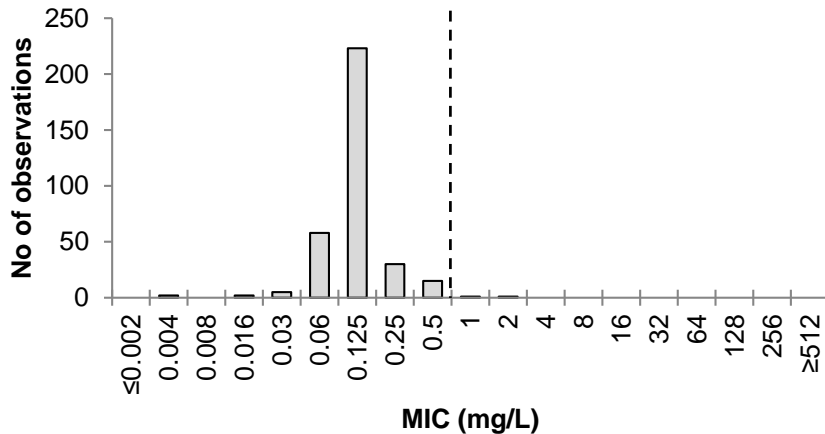


# Amoxicillin-clavulanic acid

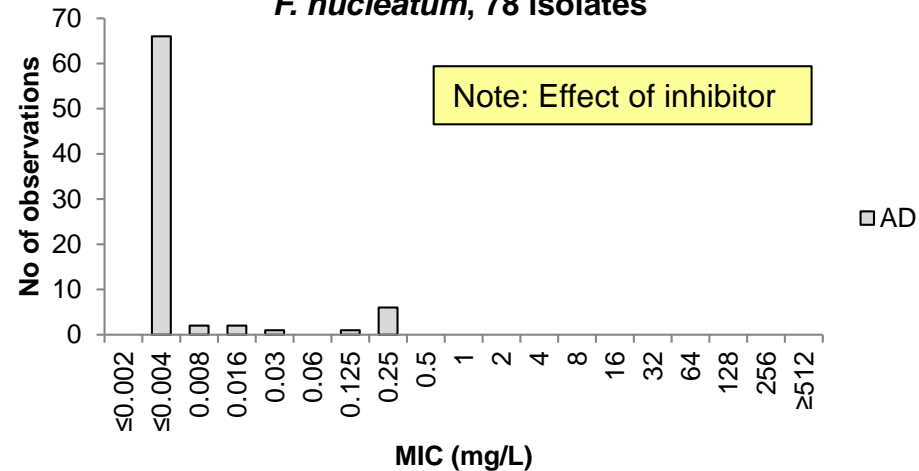
Amoxicillin-clavulanic acid 2-1 µg vs. MIC (fixed)  
51 *F. necrophorum* and 50 *F. nucleatum*



Amoxicillin-clavulanic acid (fixed)  
*F. necrophorum*, 337 isolates

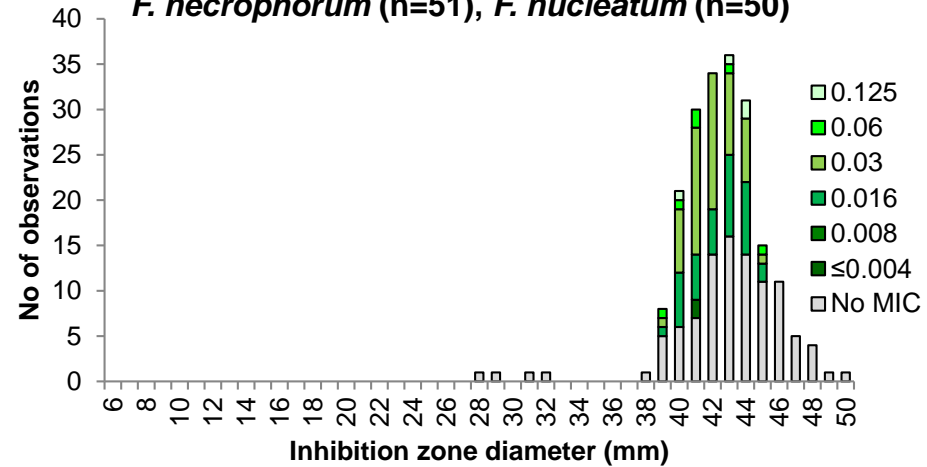


Amoxicillin-clavulanic acid (fixed)  
*F. nucleatum*, 78 isolates

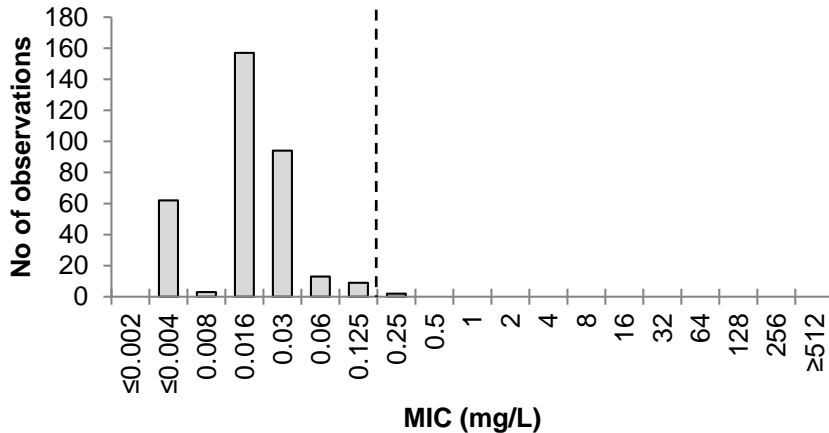


# Piperacillin-tazobactam

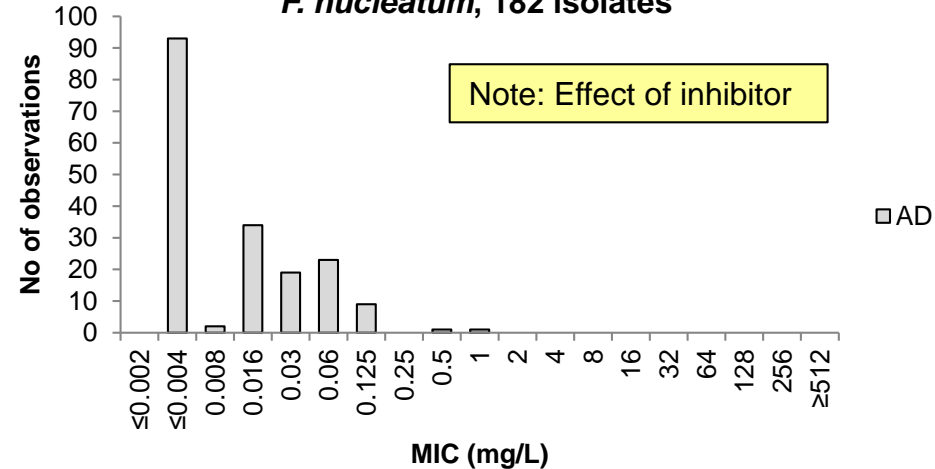
Piperacillin-tazobactam 30-6 µg vs. MIC  
*F. necrophorum* (n=51), *F. nucleatum* (n=50)



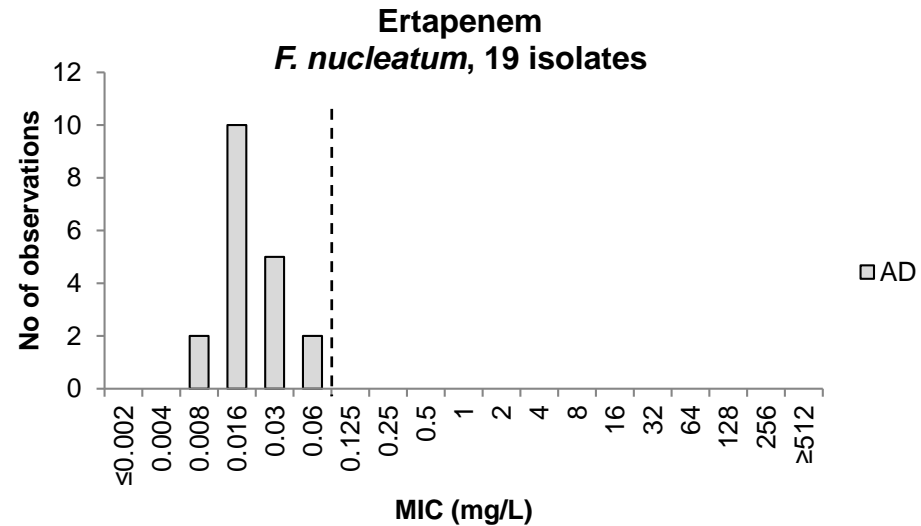
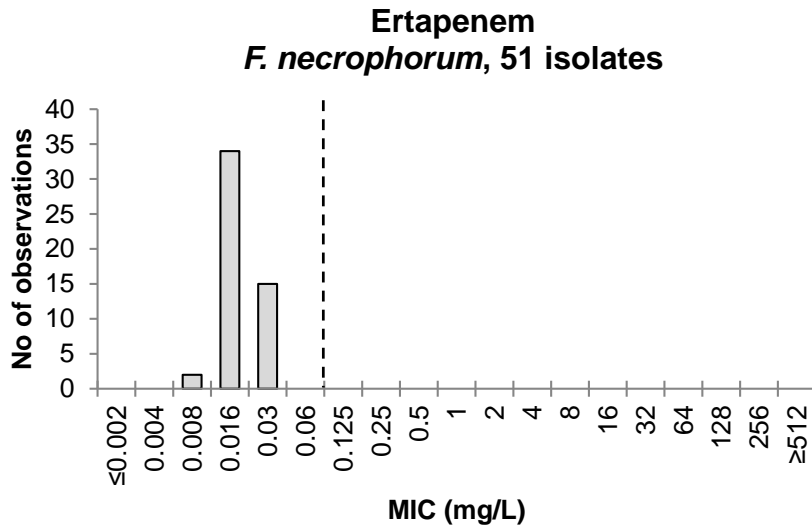
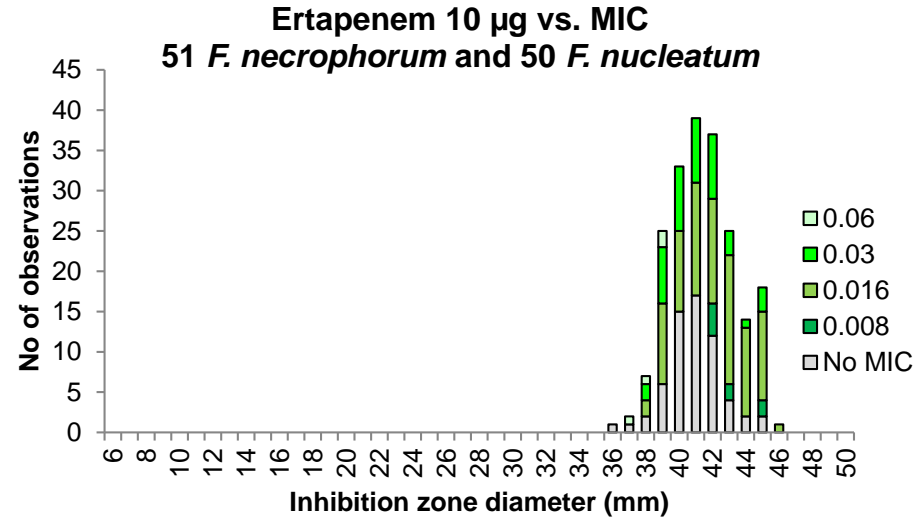
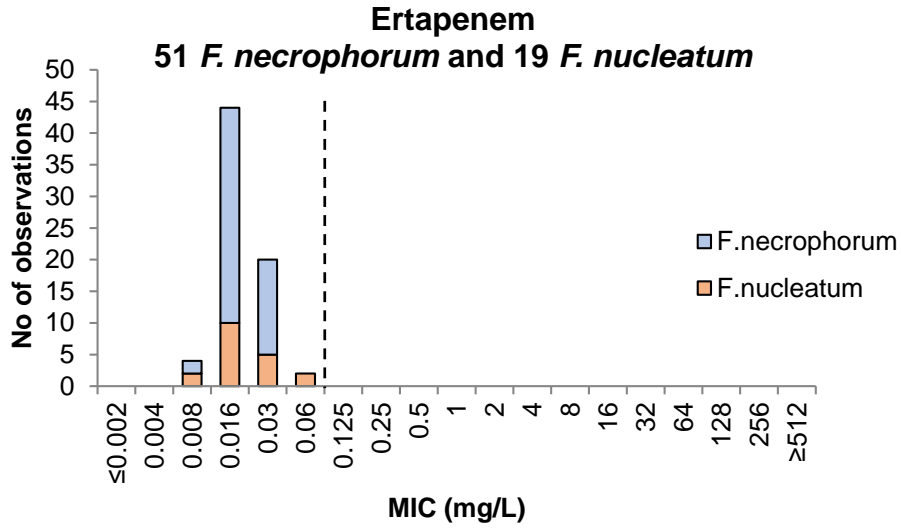
Piperacillin-tazobactam  
*F. necrophorum*, 340 isolates



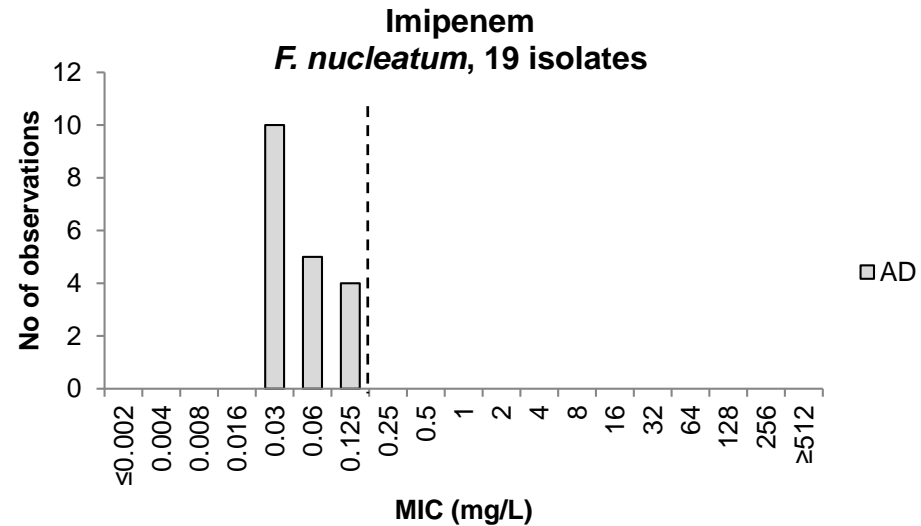
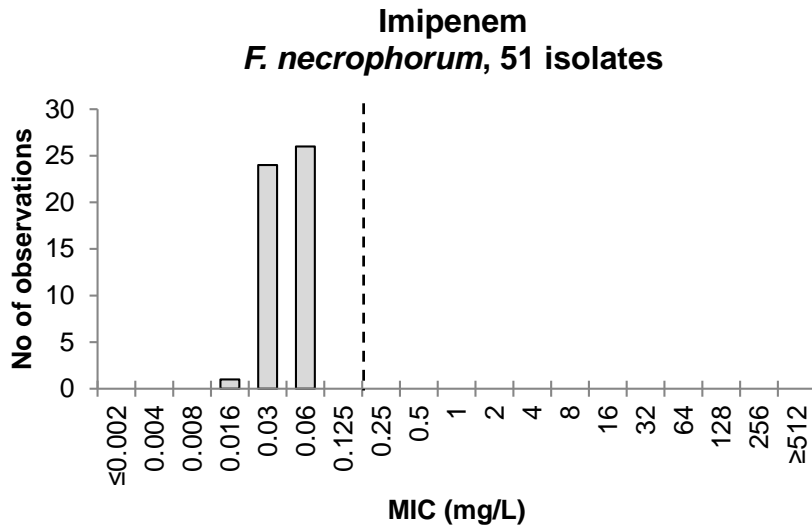
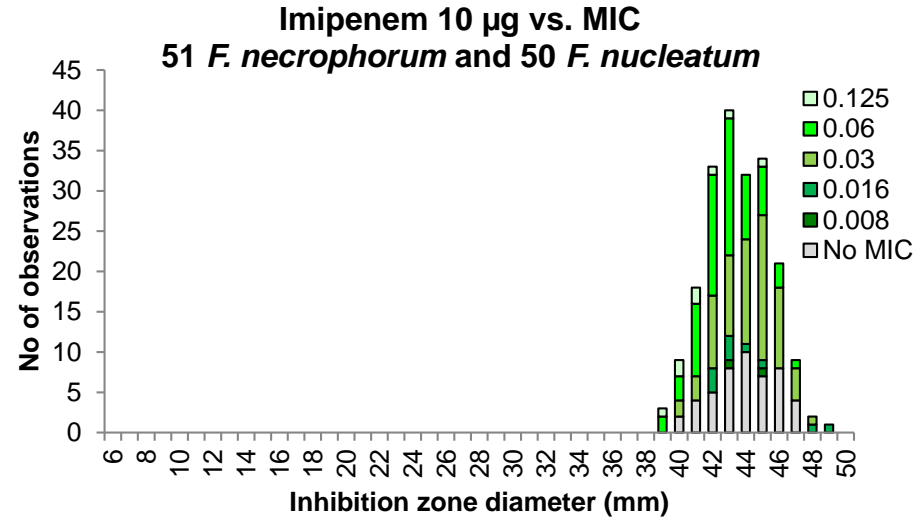
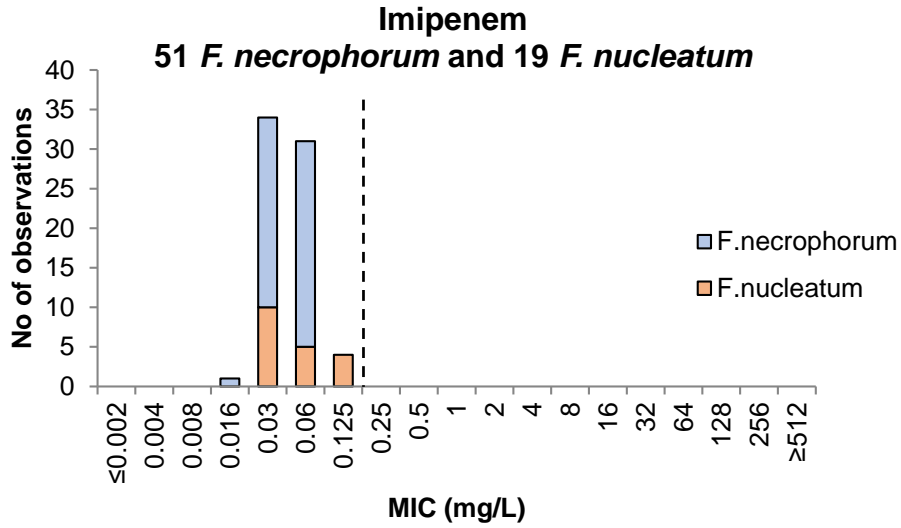
Piperacillin-tazobactam  
*F. nucleatum*, 182 isolates



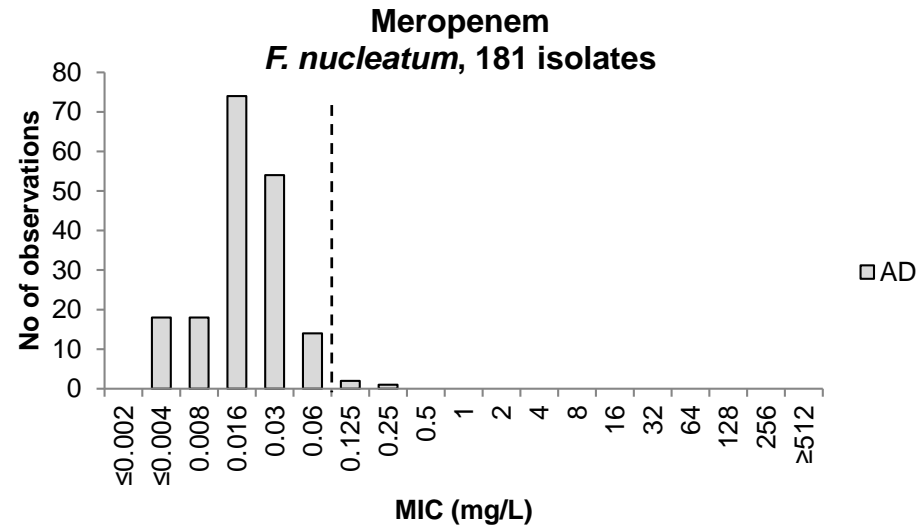
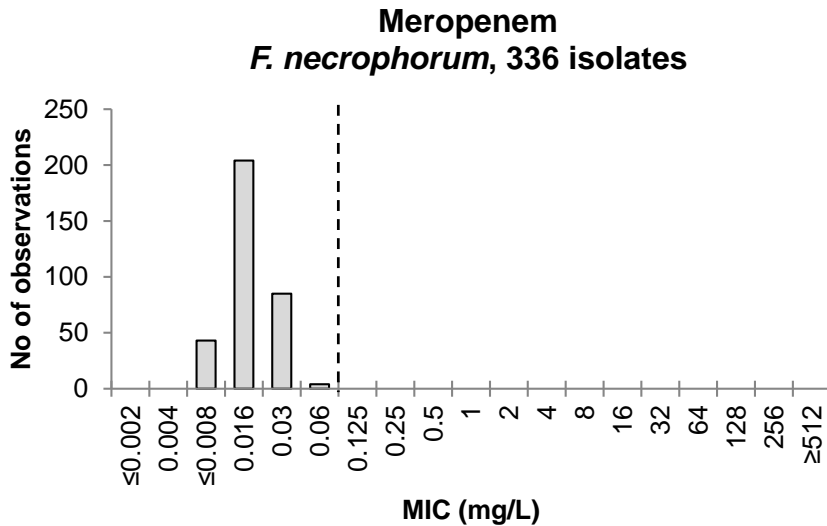
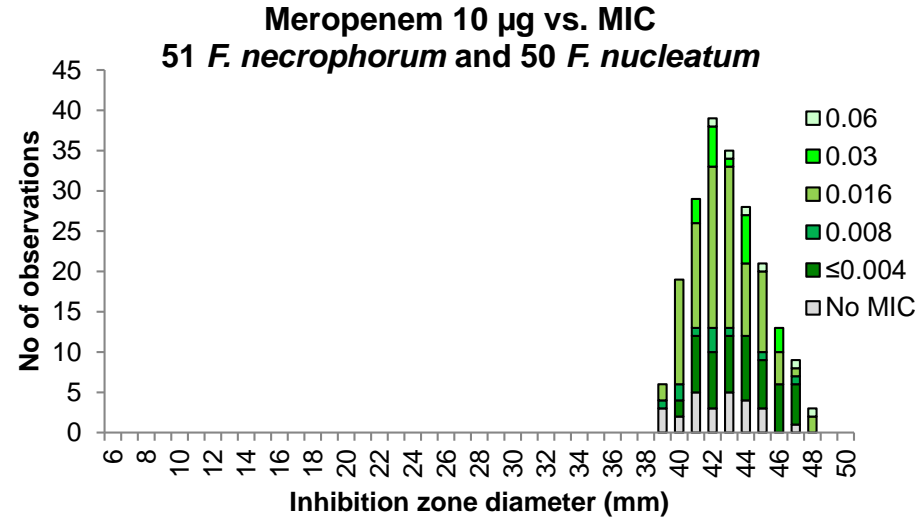
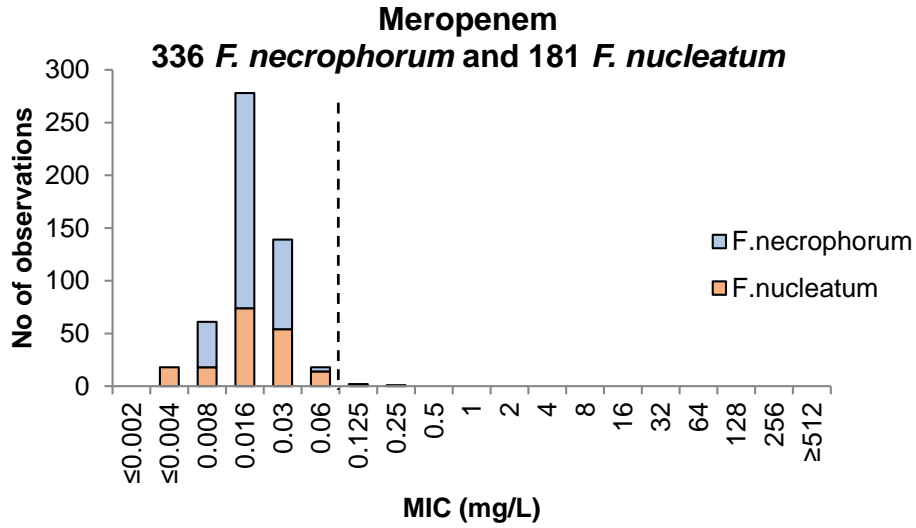
# Ertapenem



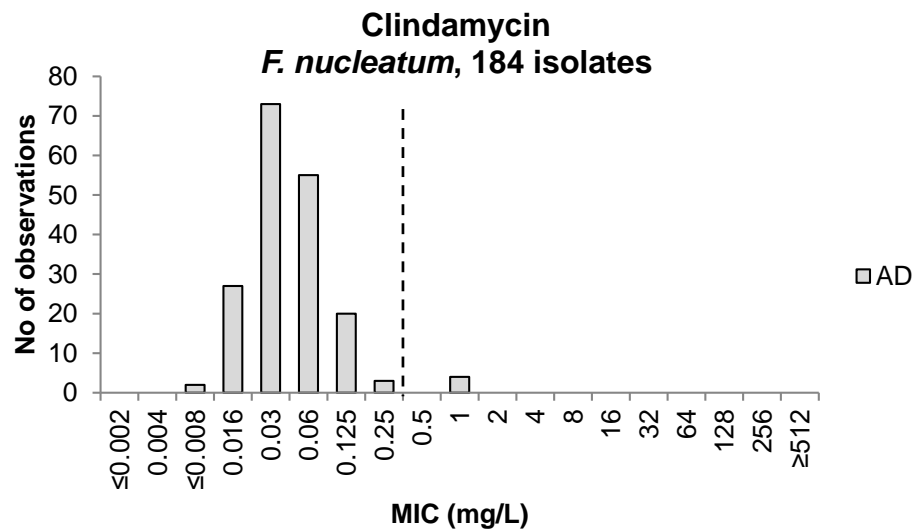
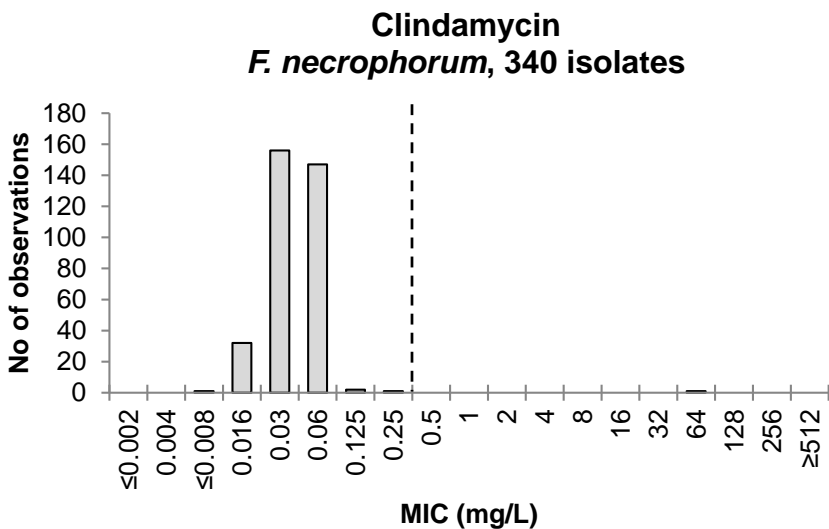
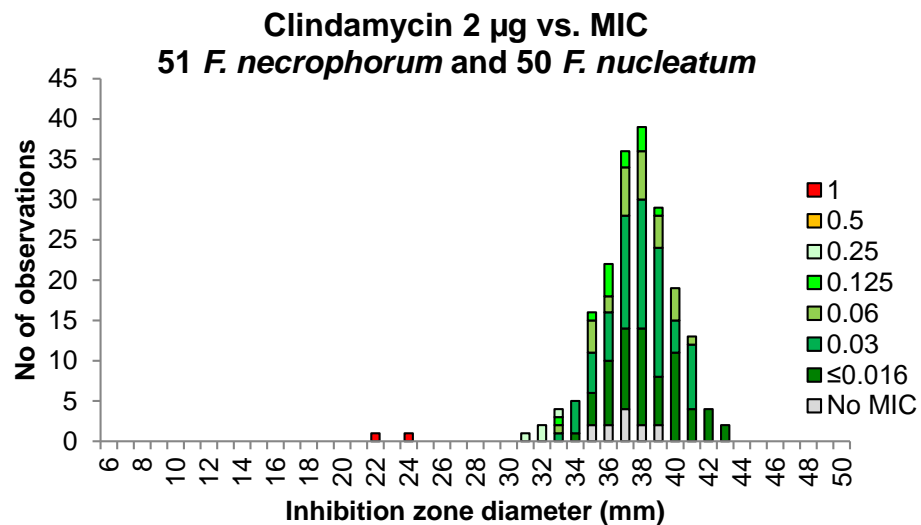
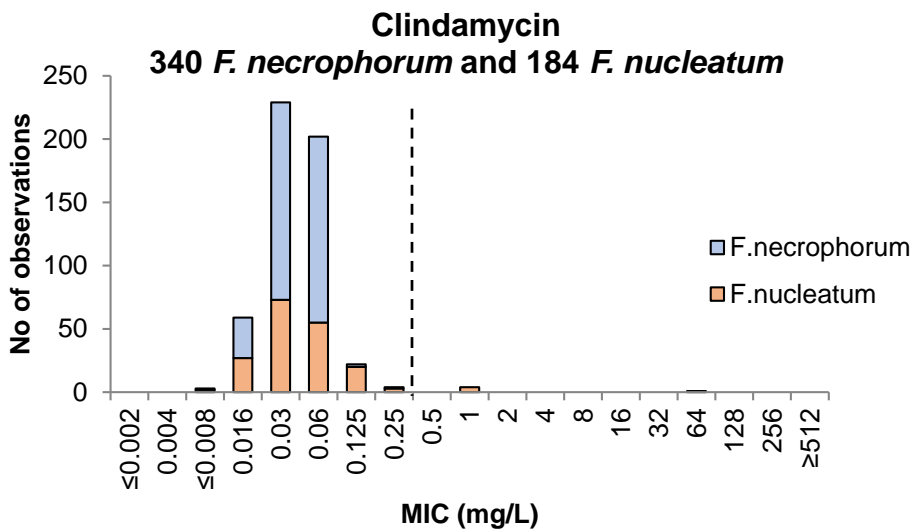
# Imipenem



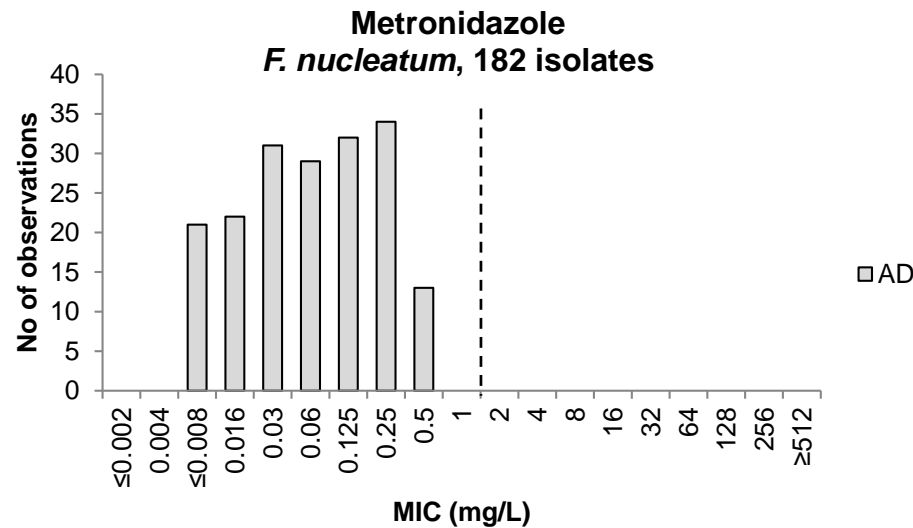
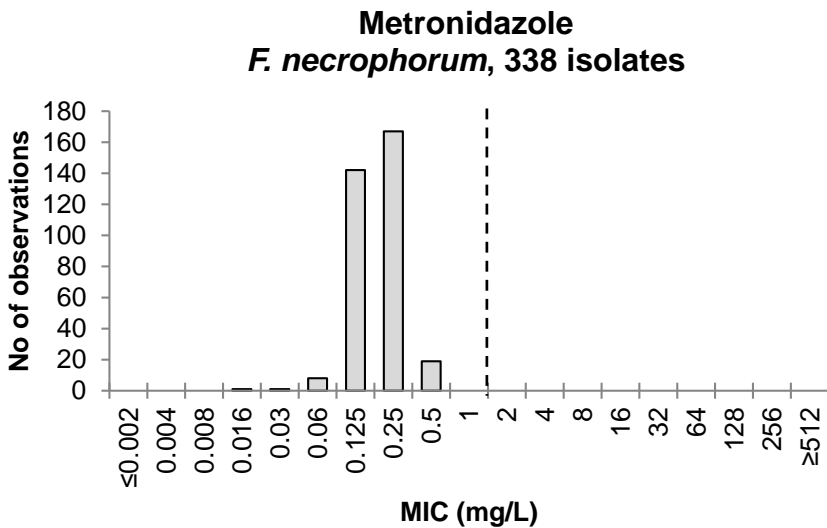
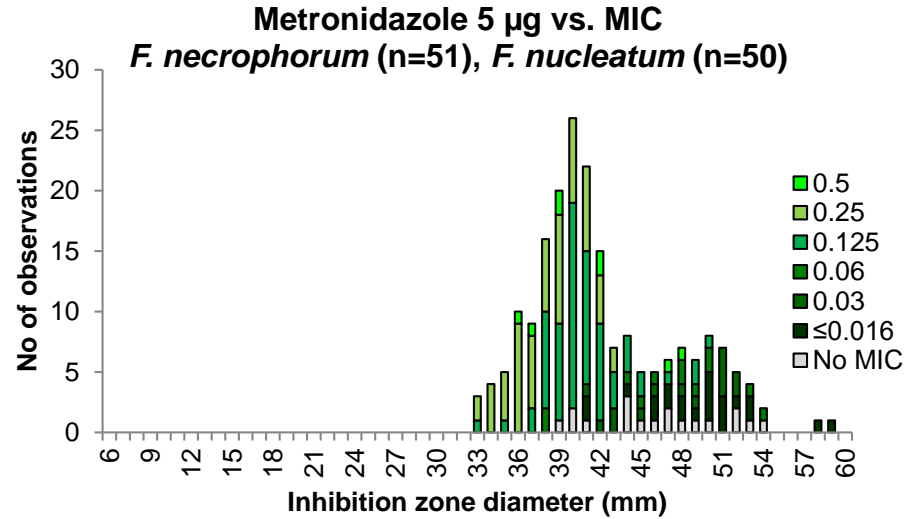
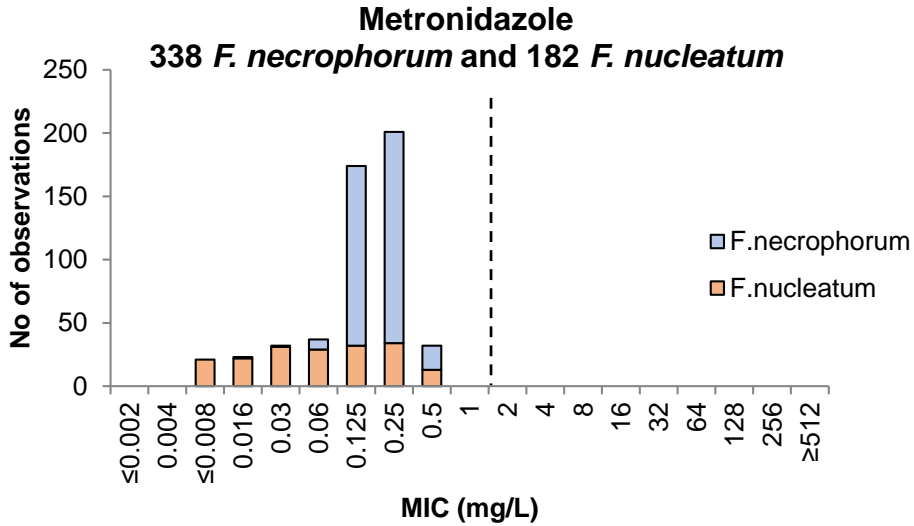
# Meropenem



# Clindamycin

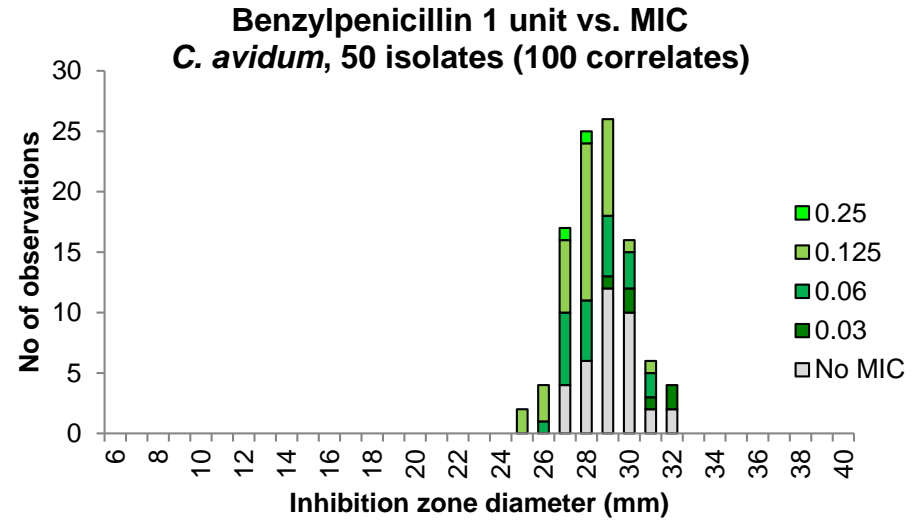
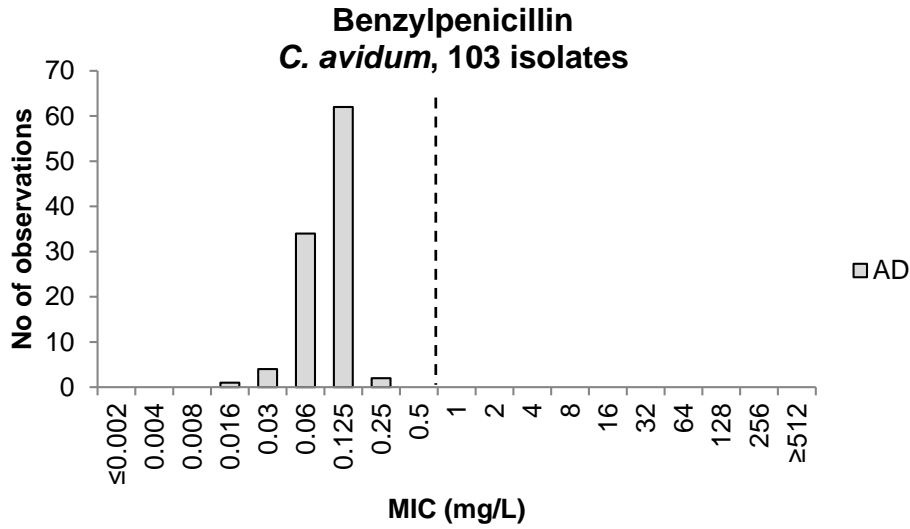


# Metronidazole



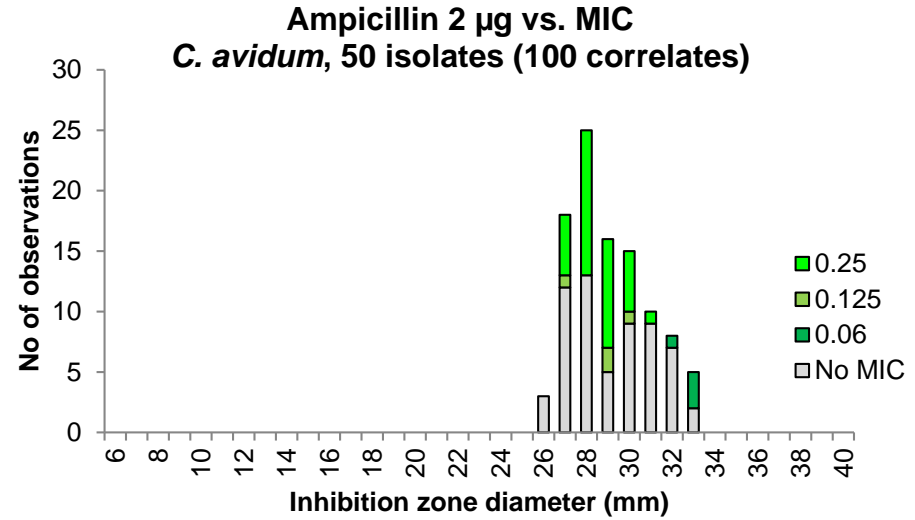
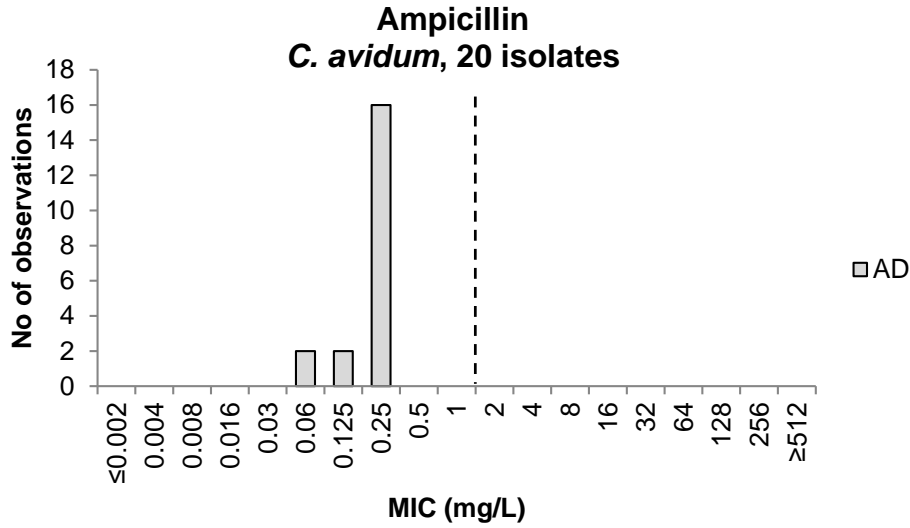
*Cutibacterium avidum*

# Benzylpenicillin



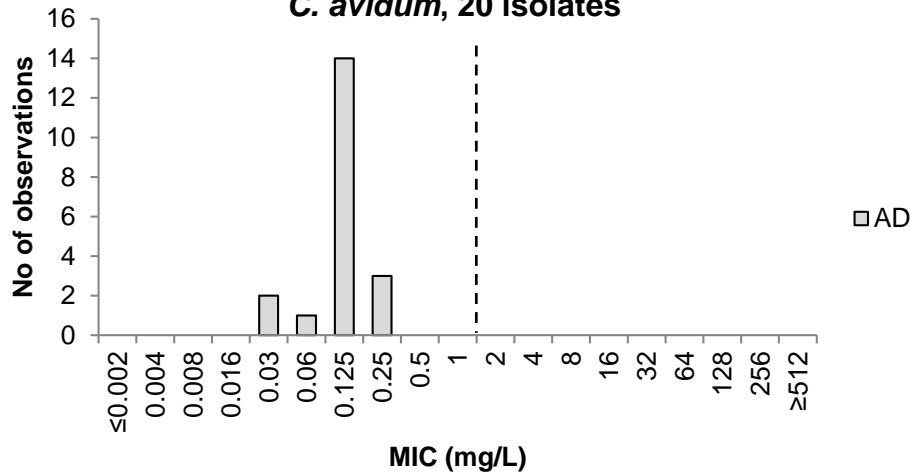
All benzylpenicillin-susceptible isolates are susceptible to all other beta-lactams tested.

# Ampicillin

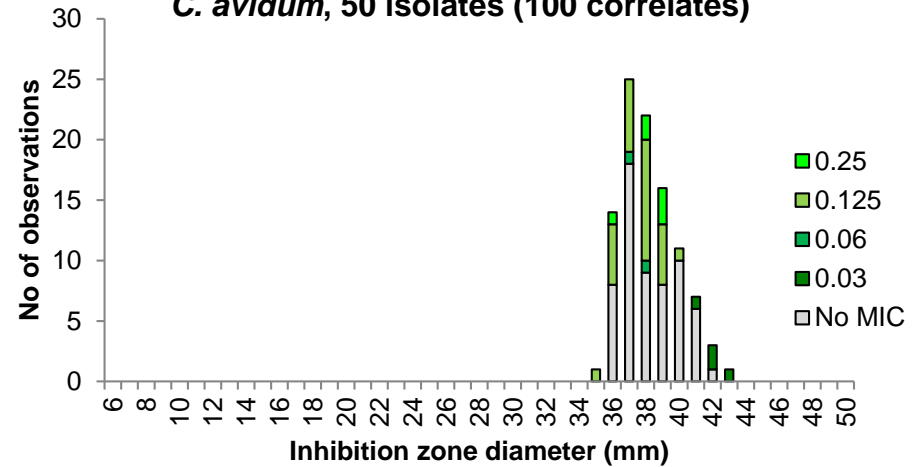


# Ampicillin-sulbactam

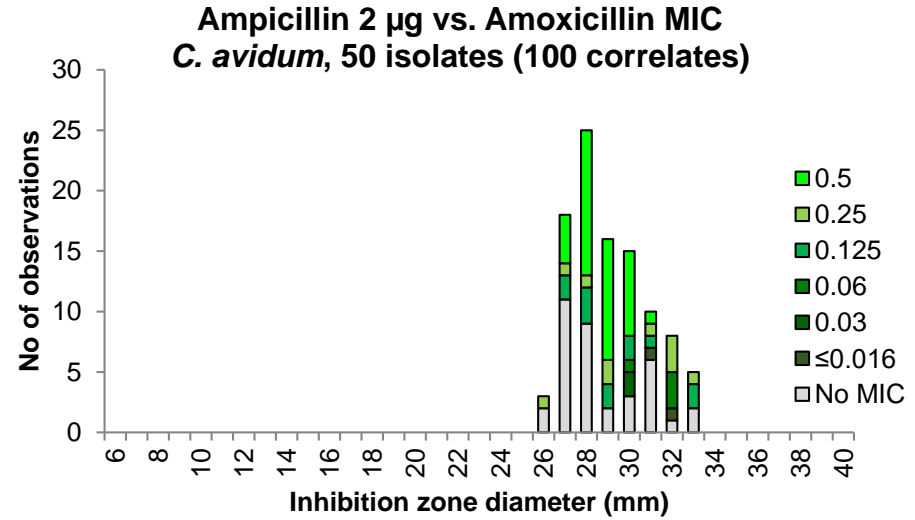
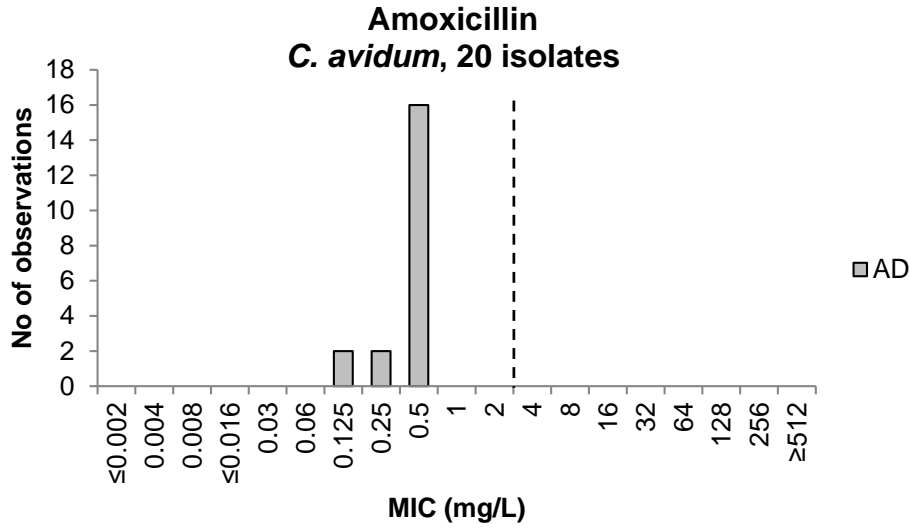
Ampicillin-sulbactam (fixed)  
*C. avidum*, 20 isolates



Ampicillin-sulbactam 10-10 µg vs. MIC (fixed)  
*C. avidum*, 50 isolates (100 correlates)



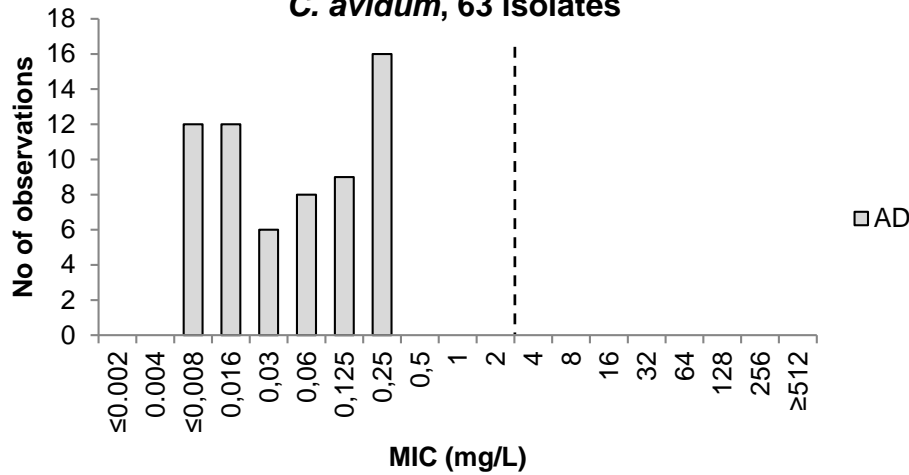
# Amoxicillin



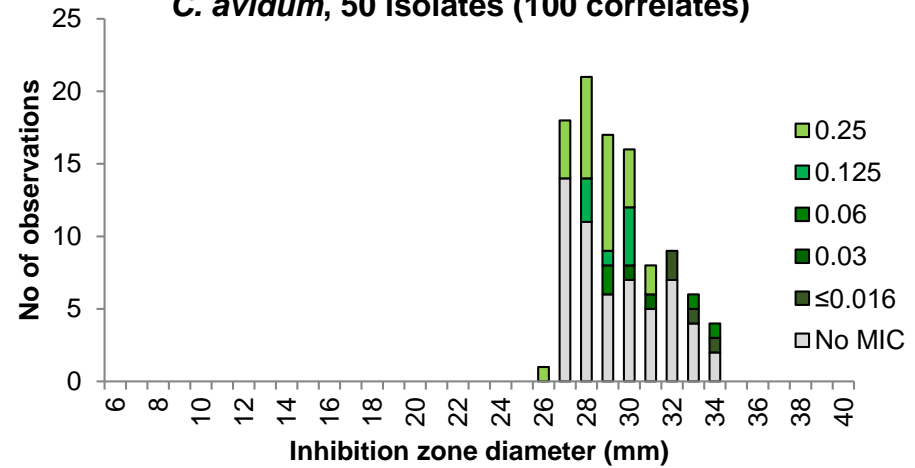
For disk diffusion, amoxicillin susceptibility is inferred from ampicillin.

# Amoxicillin-clavulanic acid

Amoxicillin-clavulanic acid (fixed)  
*C. avidum*, 63 isolates

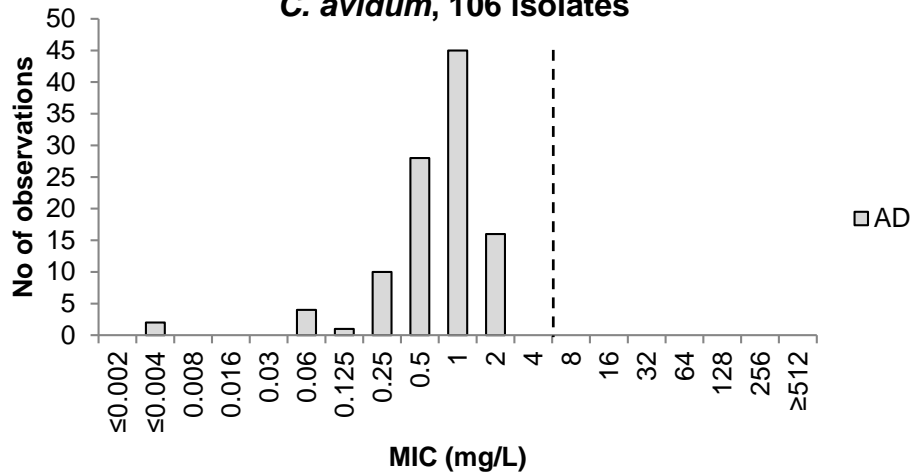


Amoxicillin-clavulanic acid 2-1 µg vs. MIC (fixed)  
*C. avidum*, 50 isolates (100 correlates)

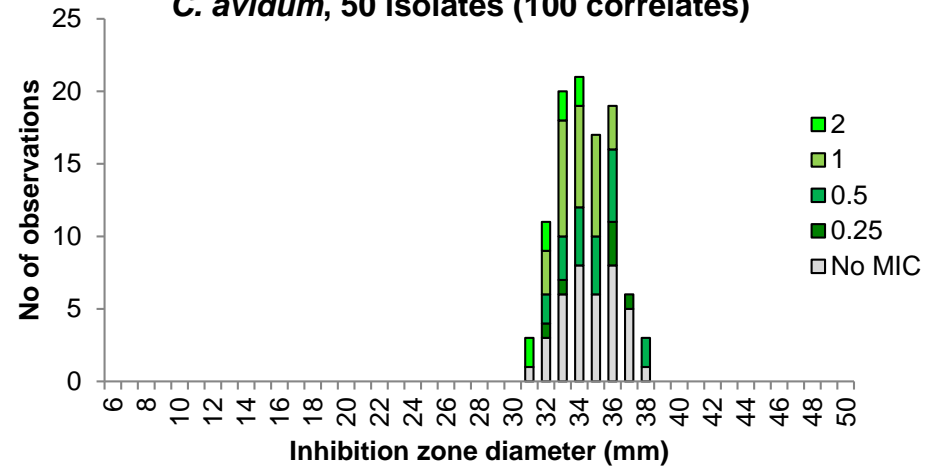


# Piperacillin-tazobactam

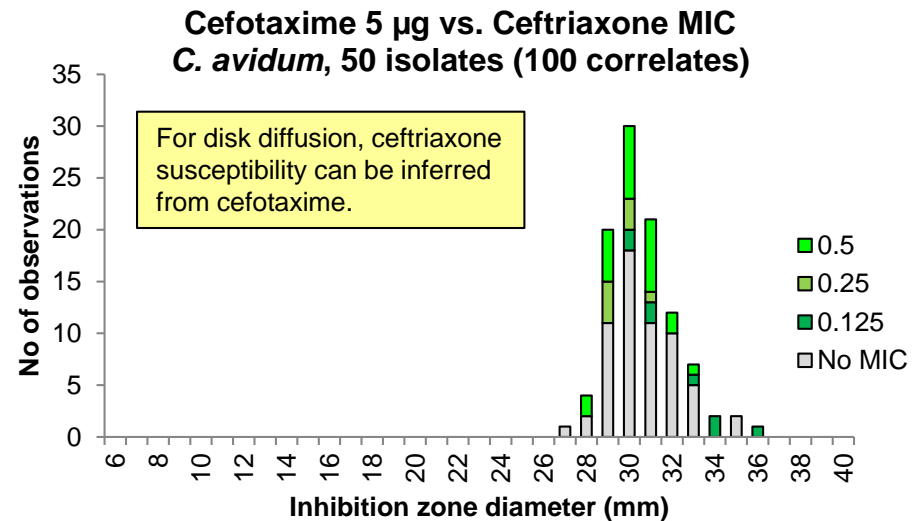
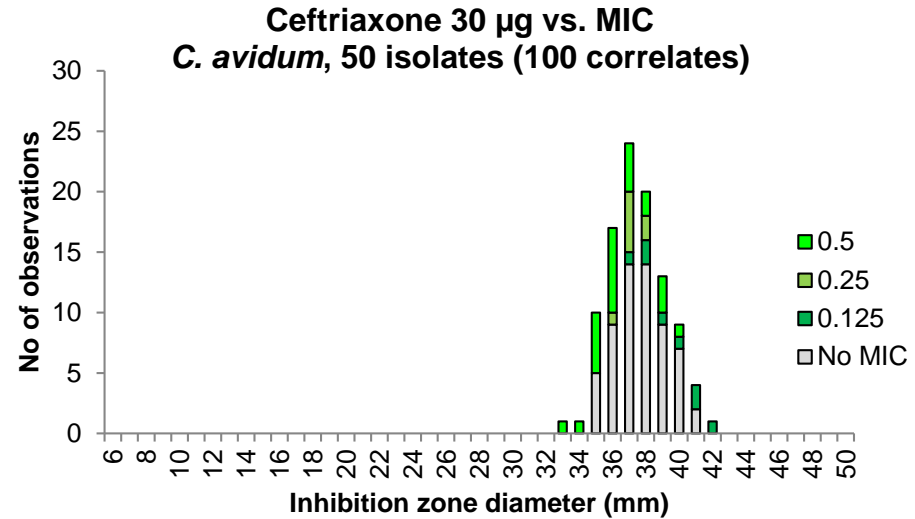
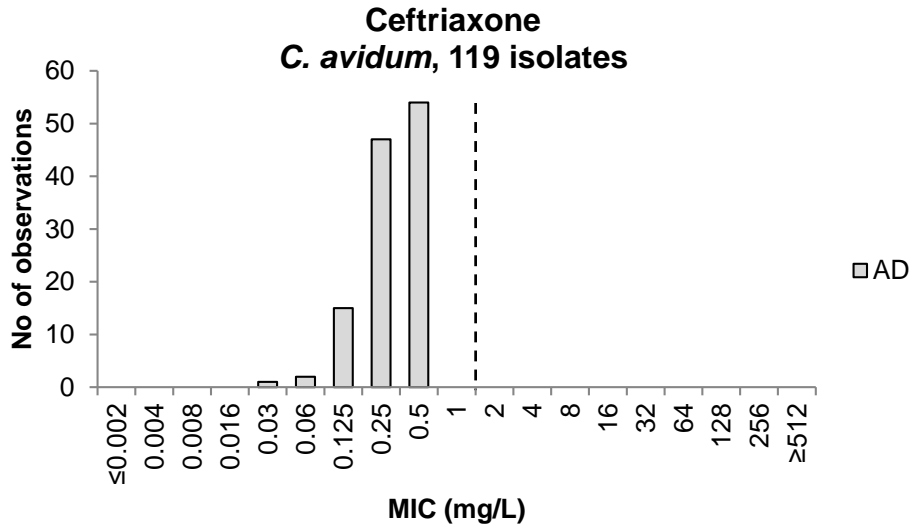
Piperacillin-tazobactam  
*C. avidum*, 106 isolates



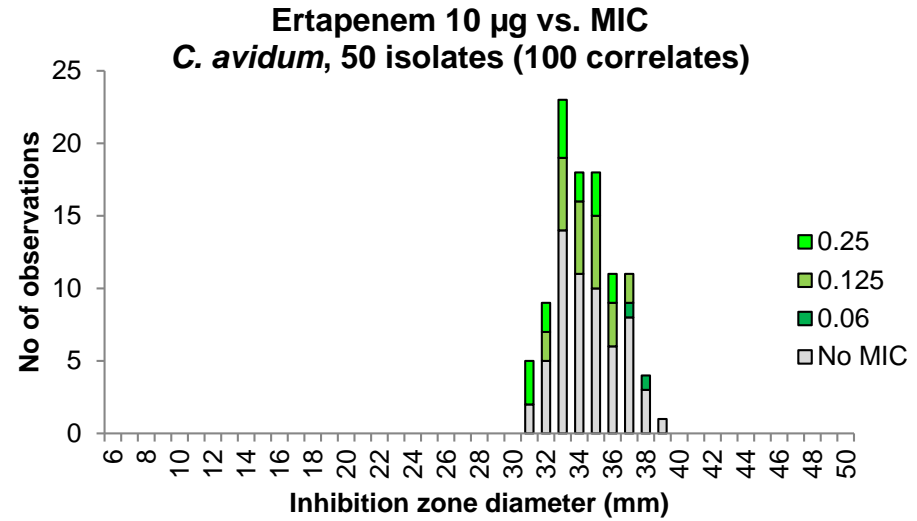
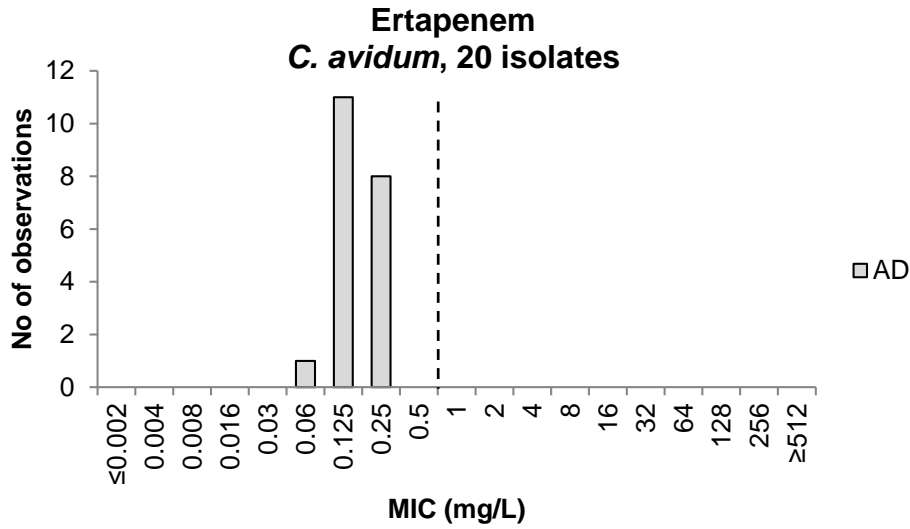
Piperacillin-tazobactam 30-6 µg vs. MIC  
*C. avidum*, 50 isolates (100 correlates)



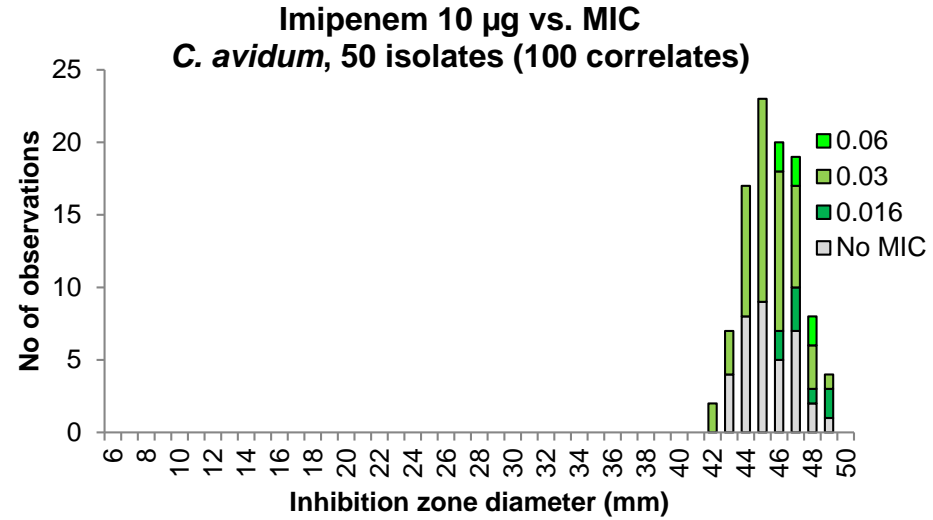
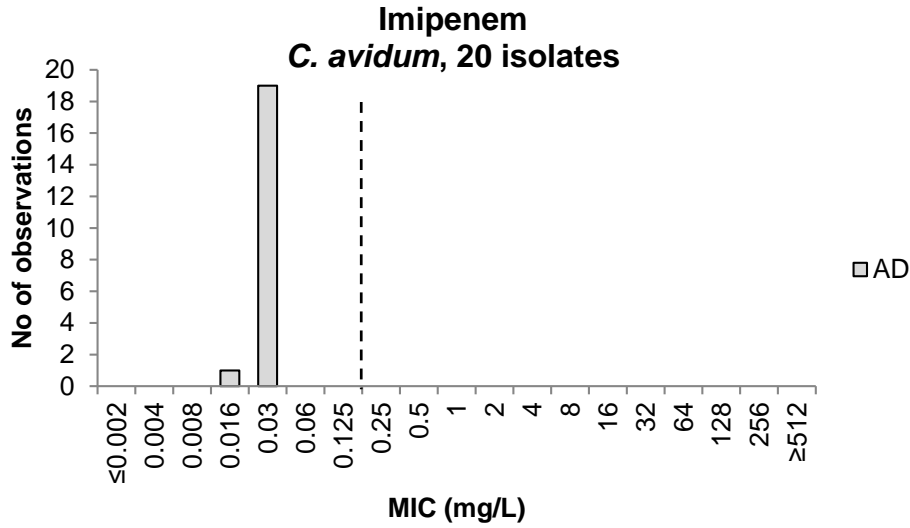
# Ceftriaxone



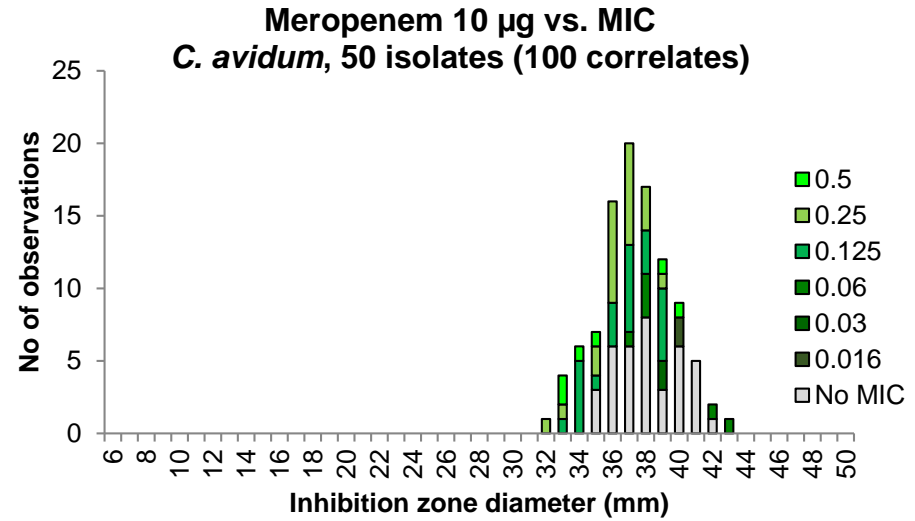
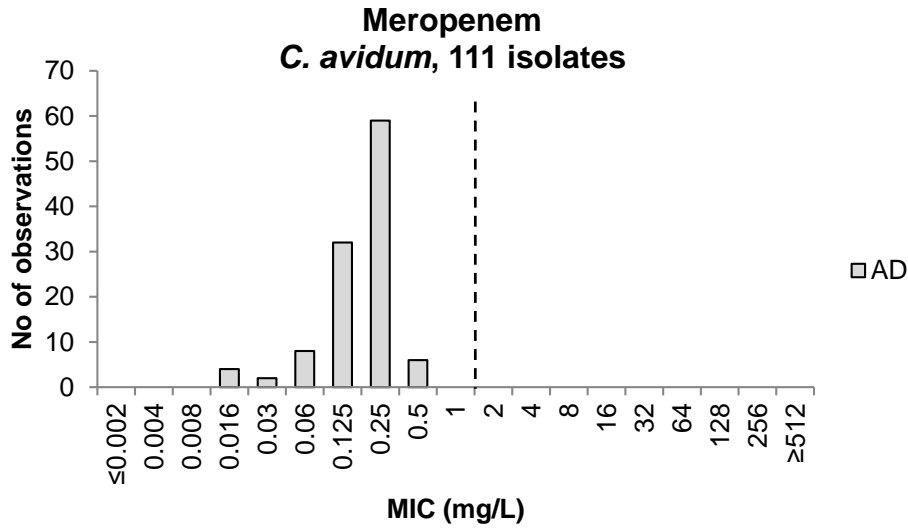
# Ertapenem



# Imipenem

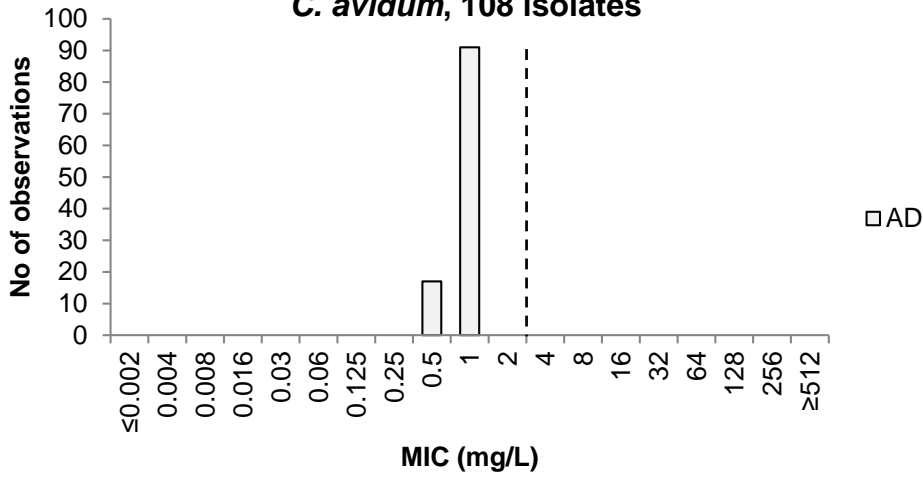


# Meropenem

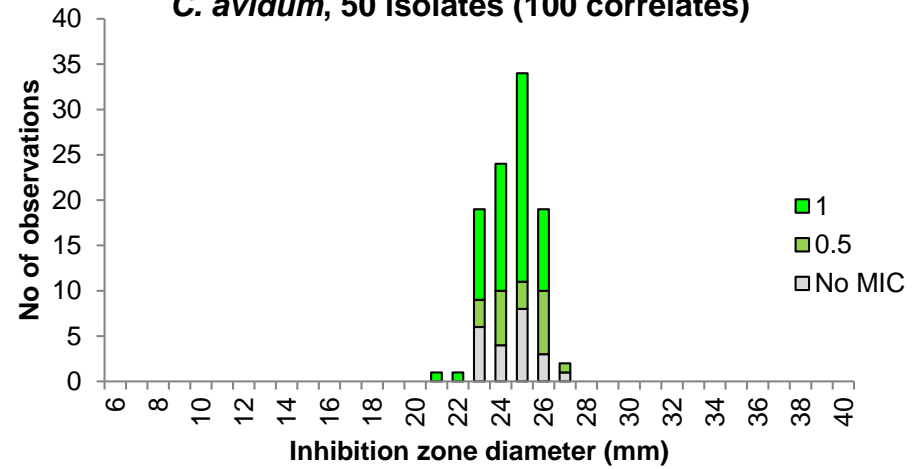


# Vancomycin

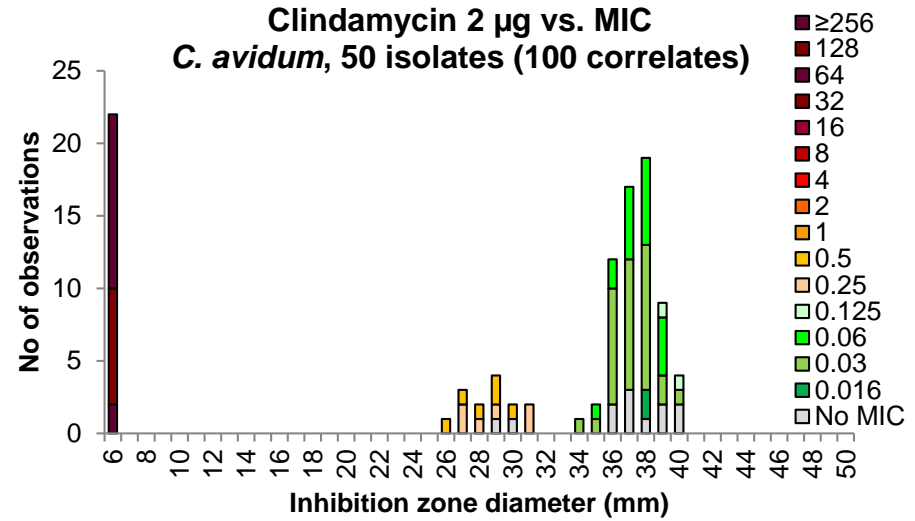
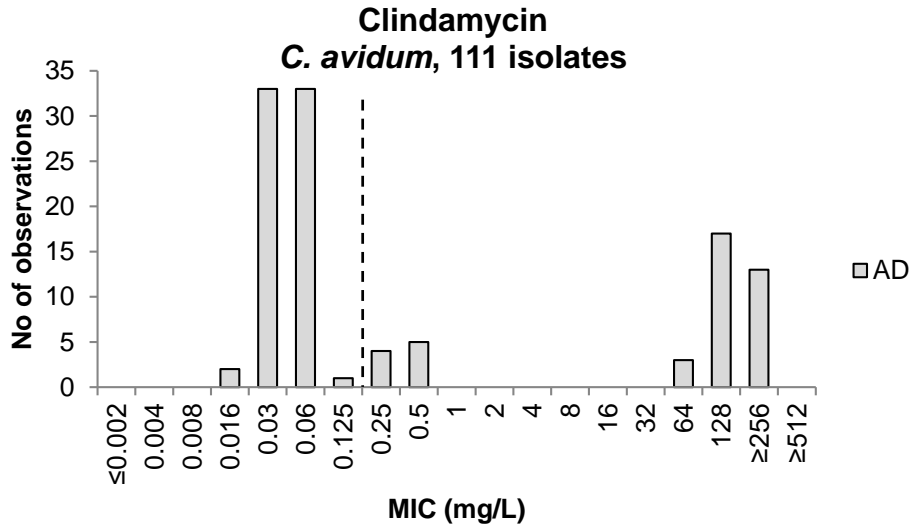
Vancomycin  
*C. avidum*, 108 isolates



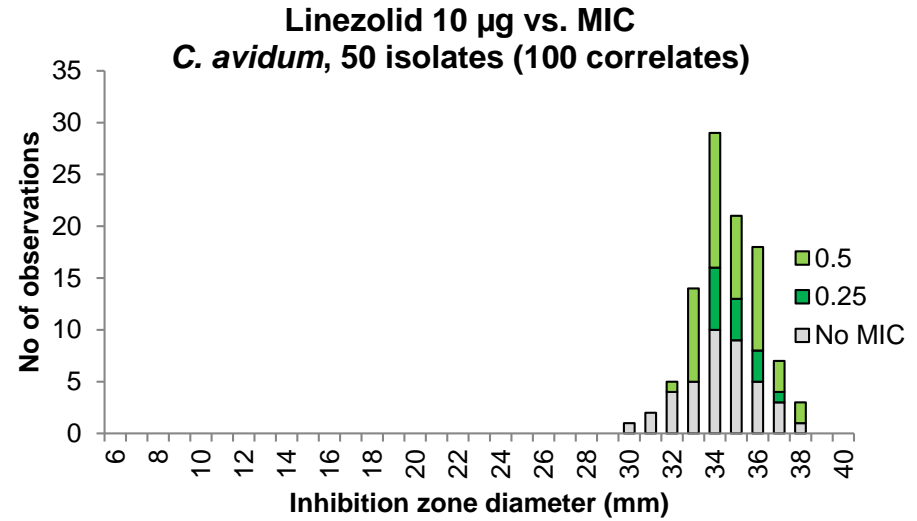
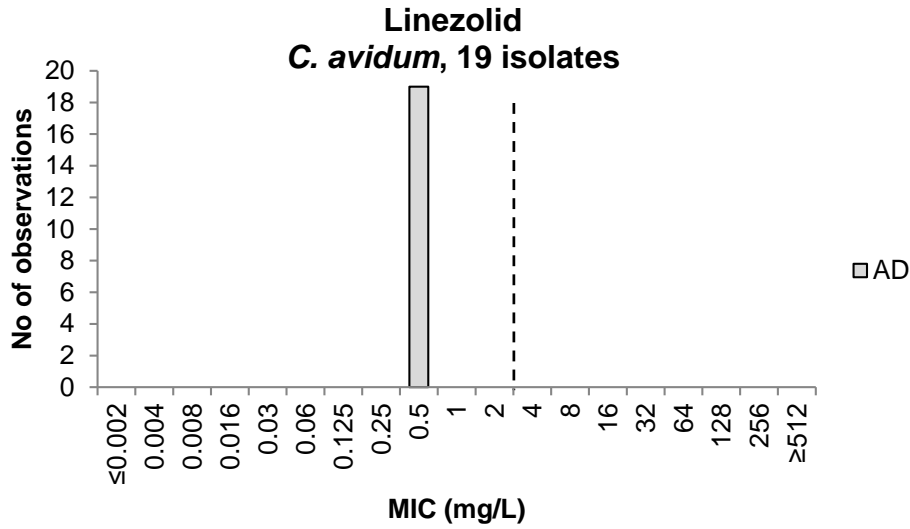
Vancomycin 5 µg vs. MIC  
*C. avidum*, 50 isolates (100 correlates)



# Clindamycin

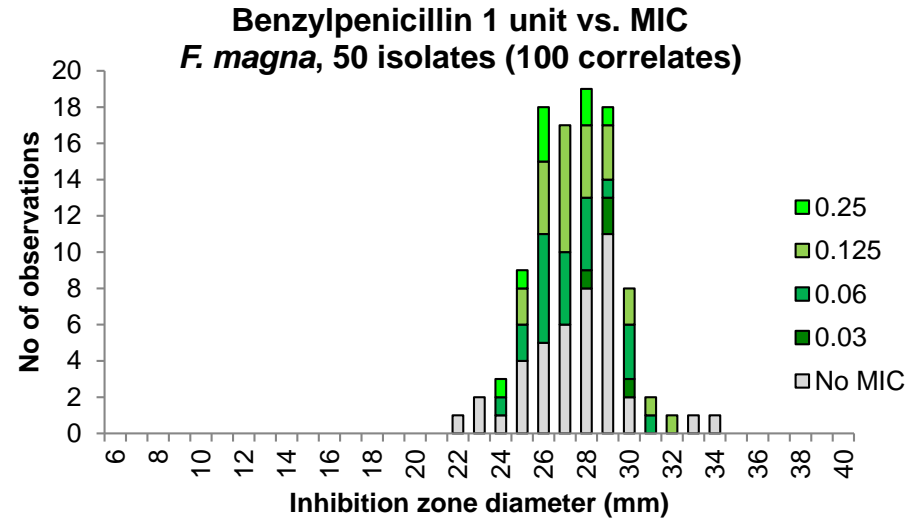
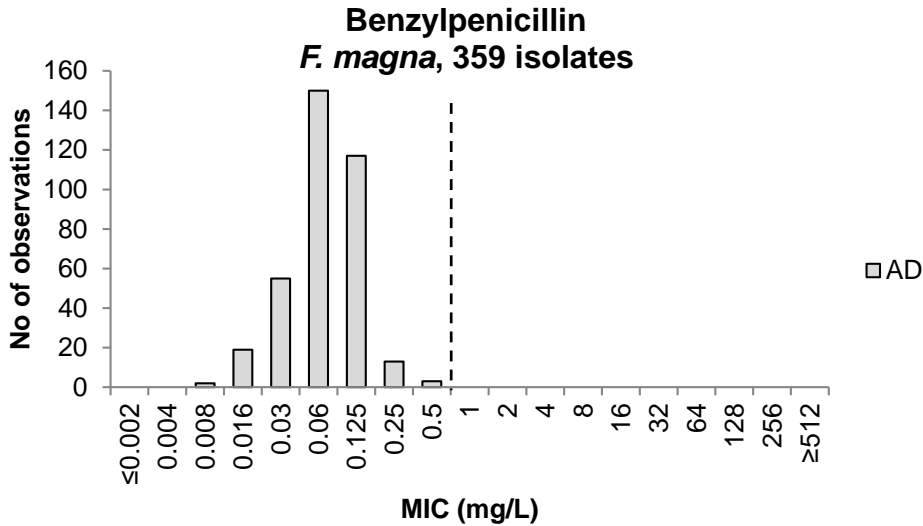


# Linezolid



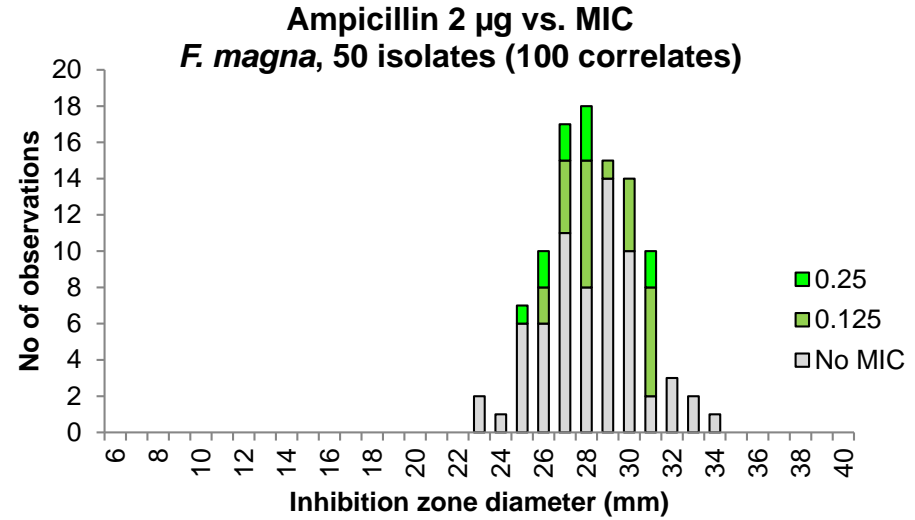
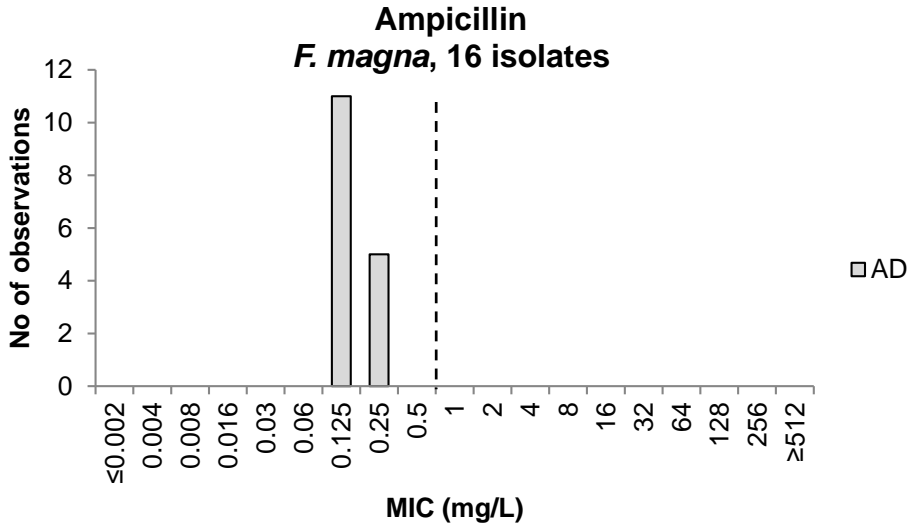
*Finegoldia magna*

# Benzylpenicillin



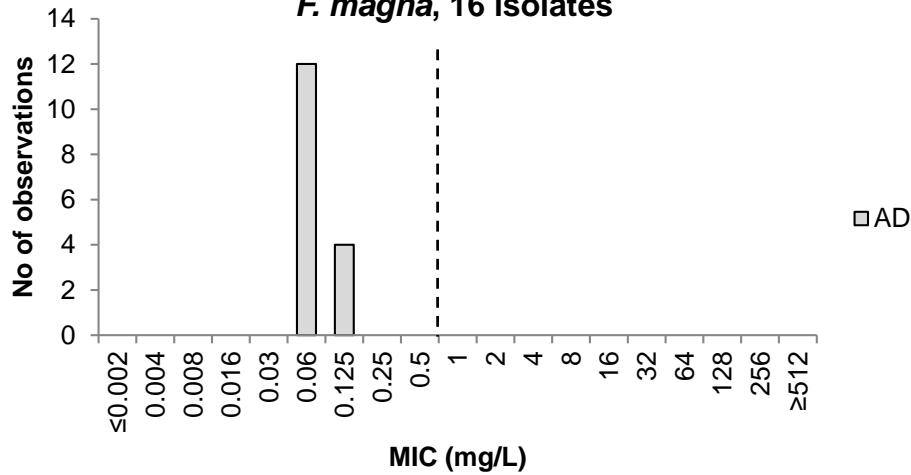
All benzylpenicillin-susceptible isolates are susceptible to all other beta-lactams tested.

# Ampicillin

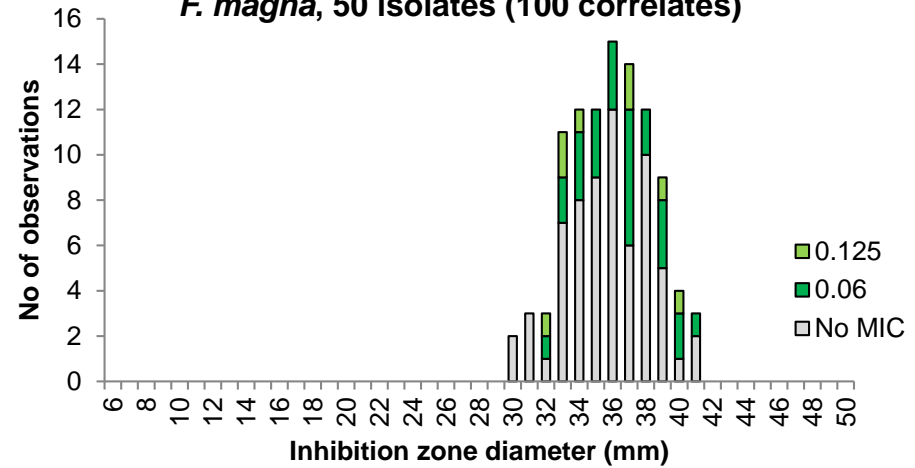


# Ampicillin-sulbactam

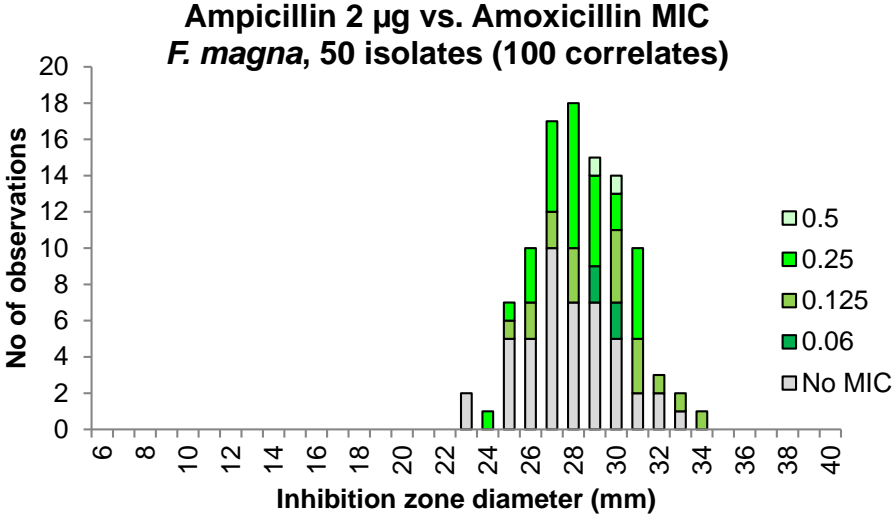
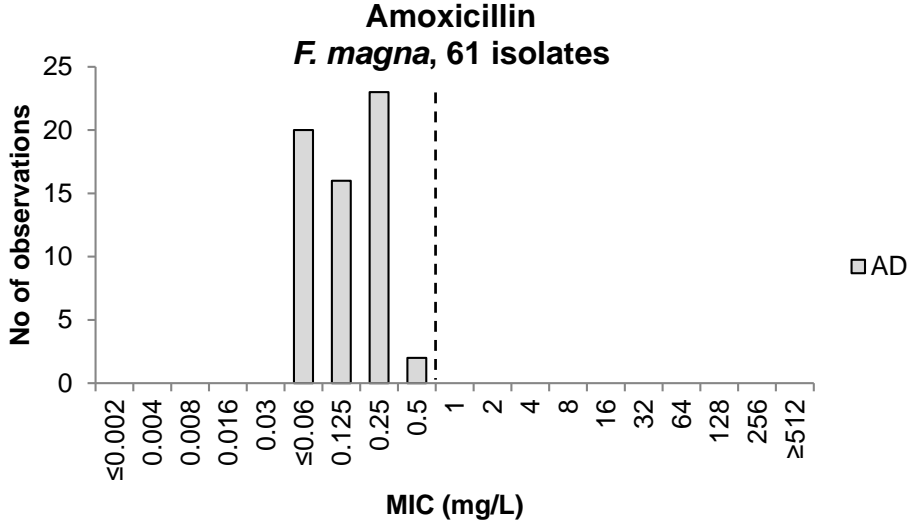
Ampicillin-sulbactam (fixed)  
*F. magna*, 16 isolates



Ampicillin-sulbactam 10-10 µg vs. MIC (fixed)  
*F. magna*, 50 isolates (100 correlates)



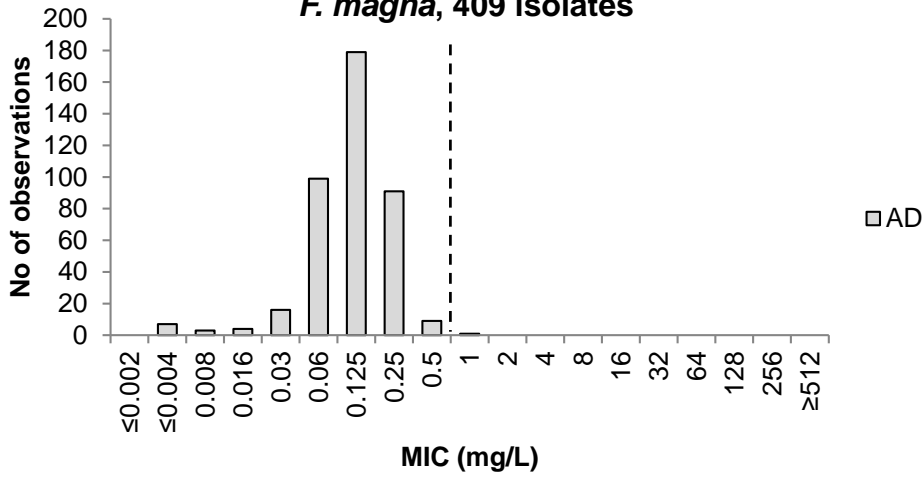
# Amoxicillin



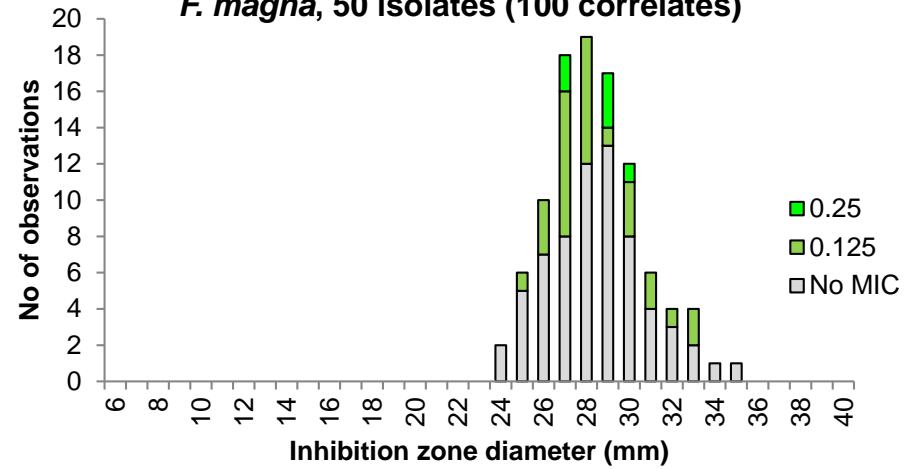
For disk diffusion, amoxicillin susceptibility is inferred from ampicillin.

# Amoxicillin-clavulanic acid

Amoxicillin-clavulanic acid (fixed)  
*F. magna*, 409 isolates

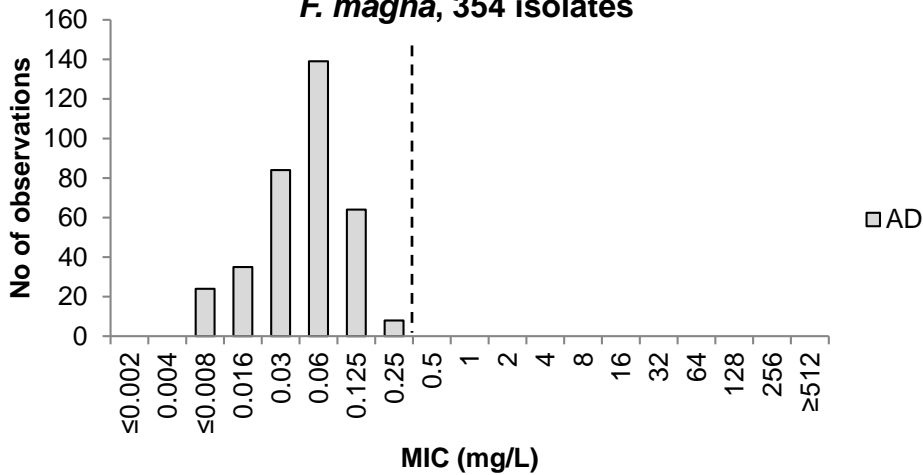


Amoxicillin-clavulanic acid 2-1 µg vs. MIC (fixed)  
*F. magna*, 50 isolates (100 correlates)

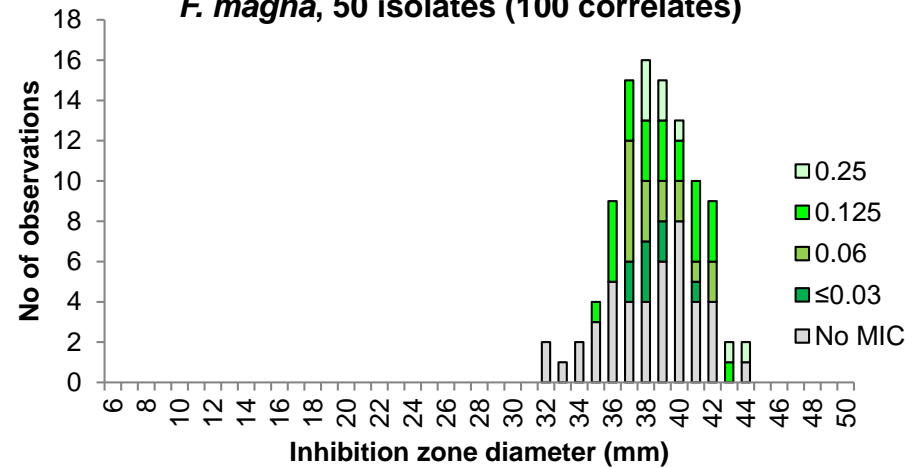


# Piperacillin-tazobactam

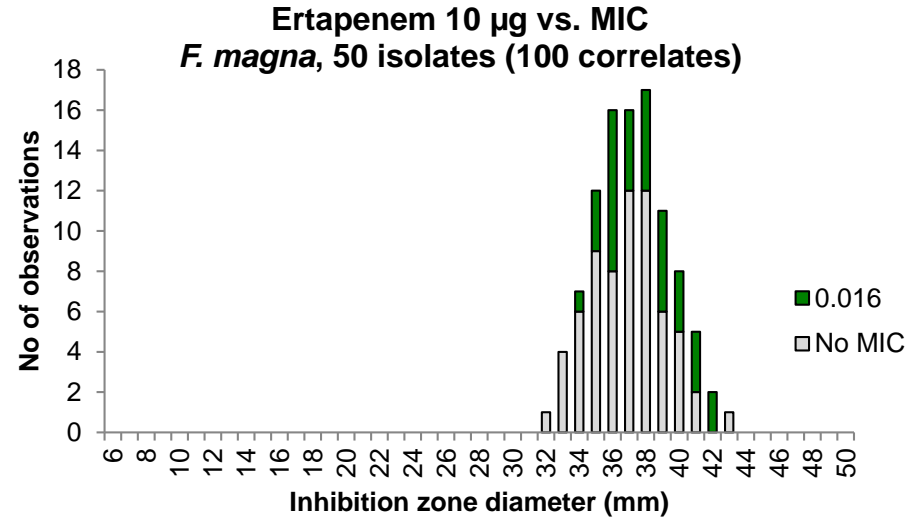
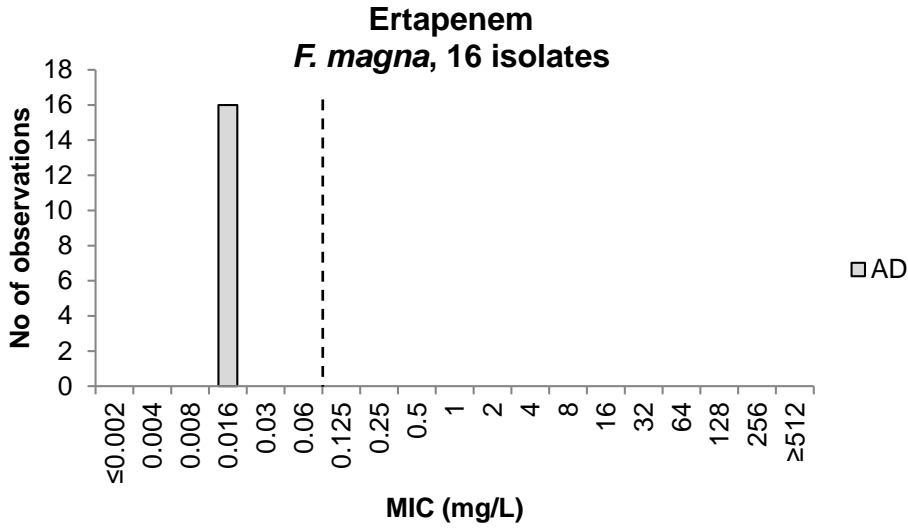
**Piperacillin-tazobactam  
*F. magna*, 354 isolates**



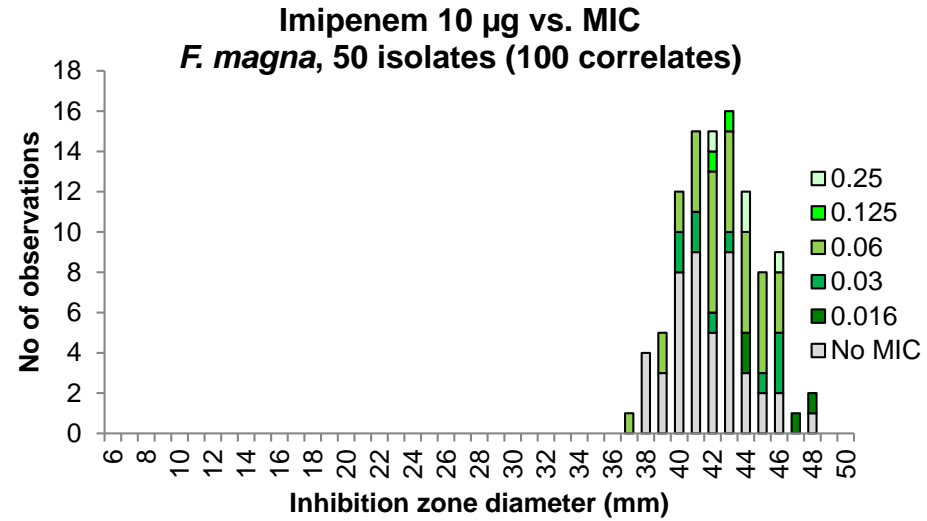
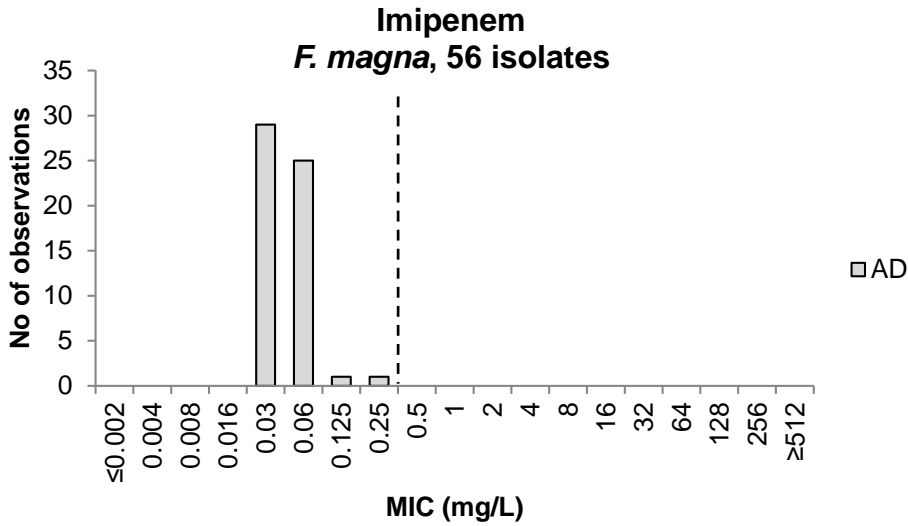
**Piperacillin-tazobactam 30-6 µg vs. MIC  
*F. magna*, 50 isolates (100 correlates)**



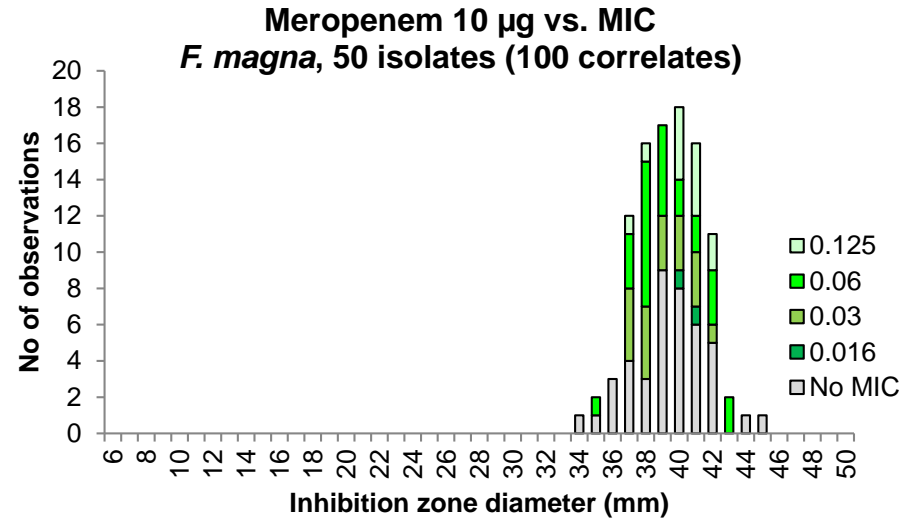
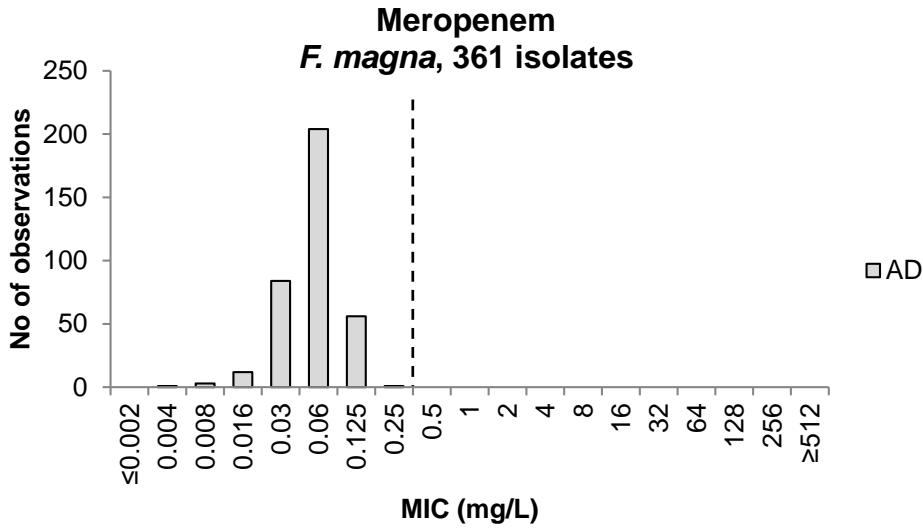
# Ertapenem



# Imipenem

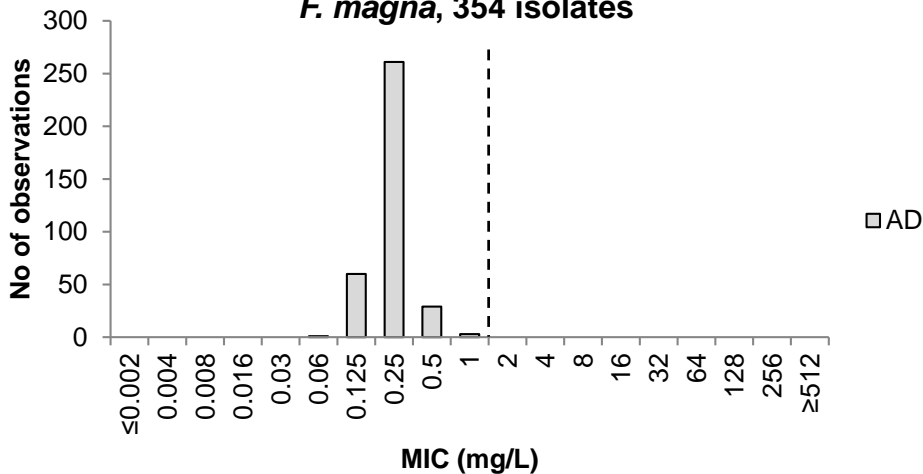


# Meropenem

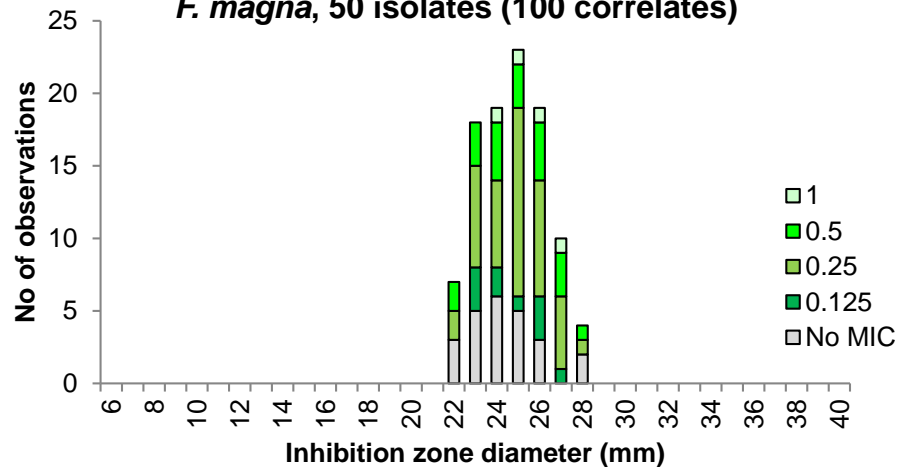


# Vancomycin

Vancomycin  
*F. magna*, 354 isolates



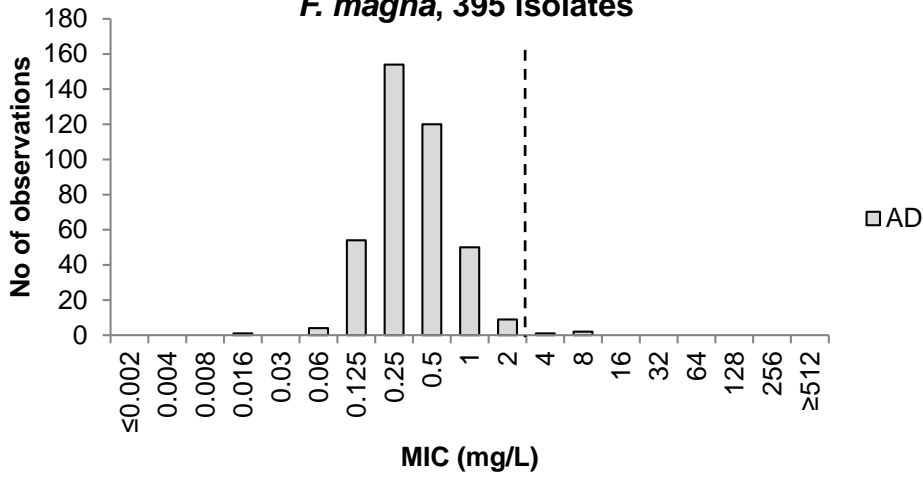
Vancomycin 5 µg vs. MIC  
*F. magna*, 50 isolates (100 correlates)



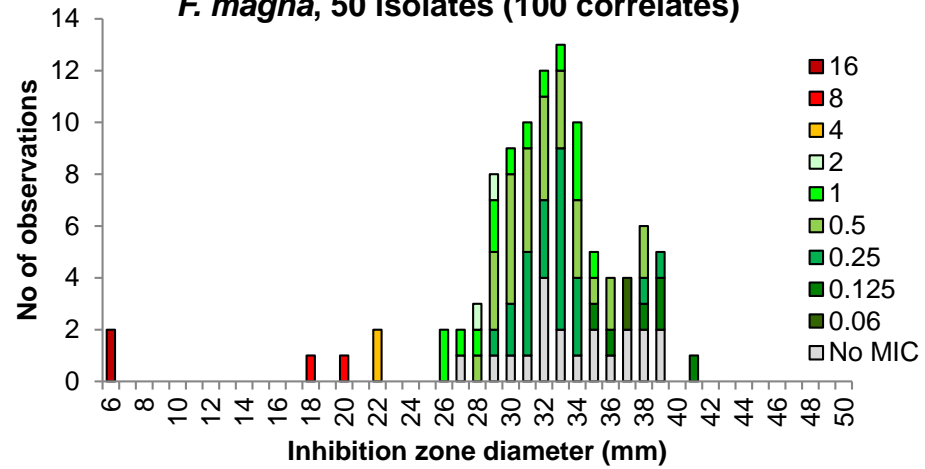


# Metronidazole

**Metronidazole  
*F. magna*, 395 isolates**



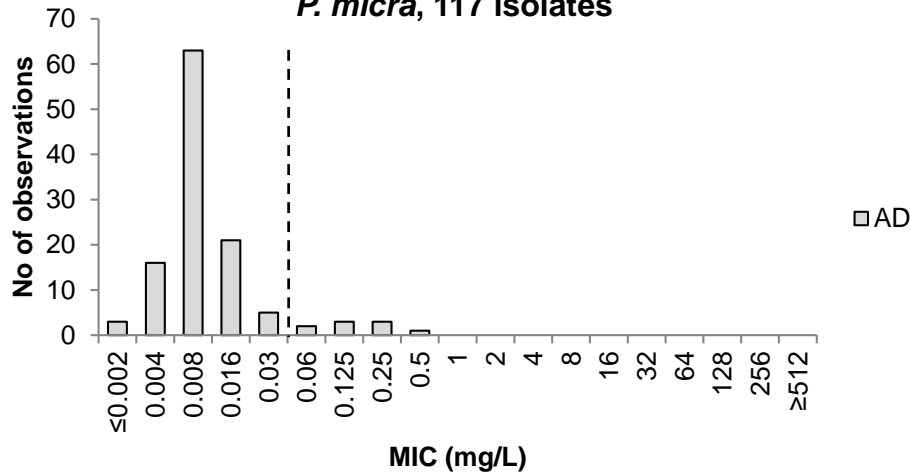
**Metronidazole 5 µg vs. MIC  
*F. magna*, 50 isolates (100 correlates)**



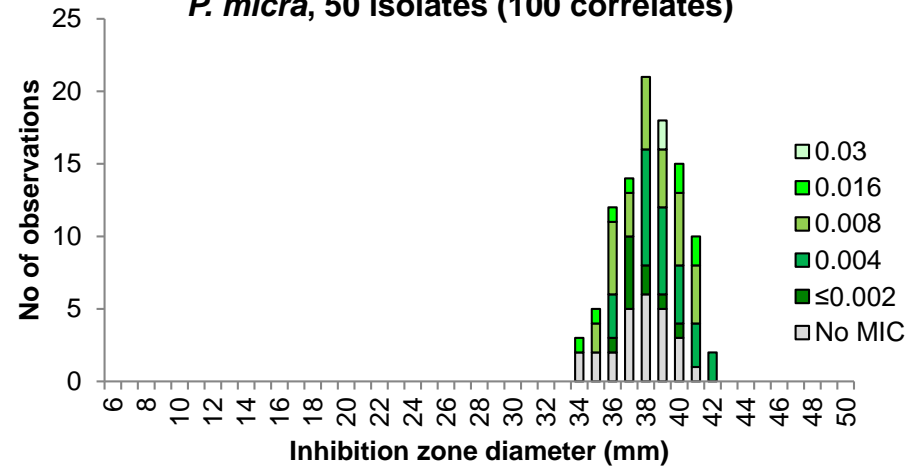
*Parvimonas micra*

# Benzylpenicillin

**Benzylpenicillin**  
*P. micra*, 117 isolates

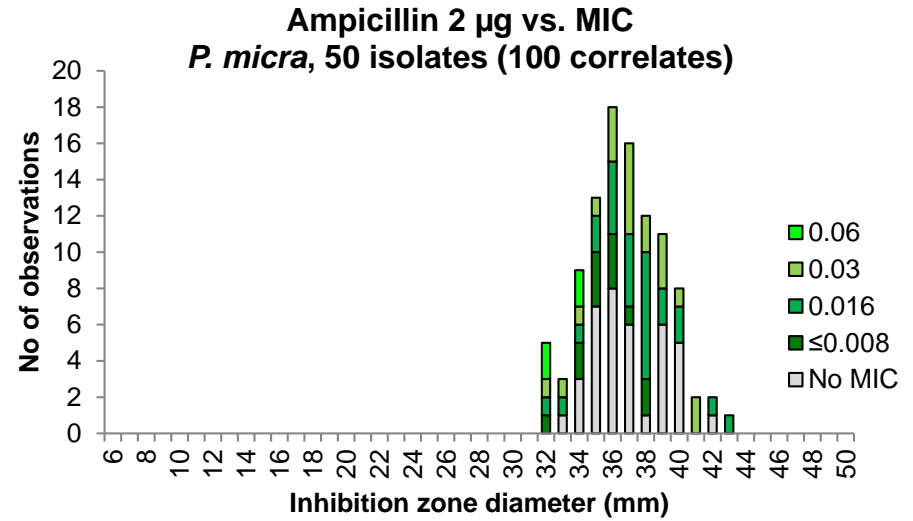
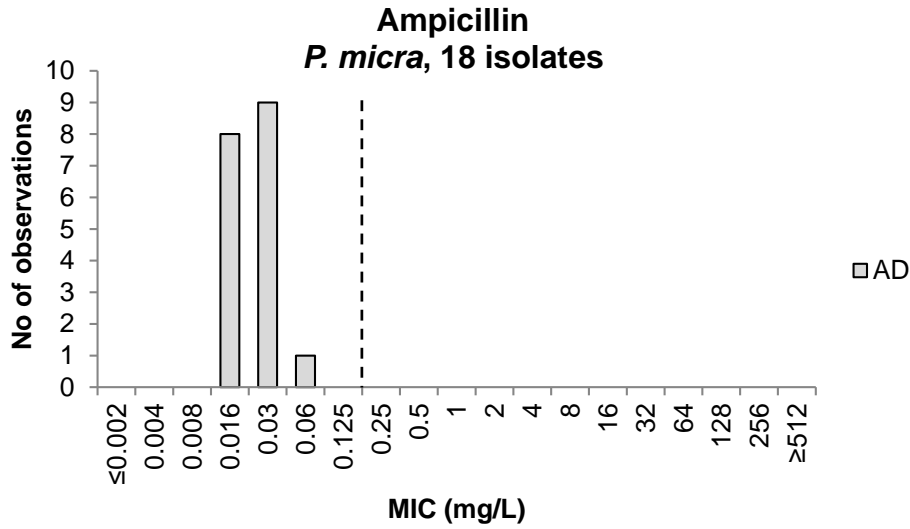


**Benzylpenicillin 1 unit vs. MIC**  
*P. micra*, 50 isolates (100 correlates)



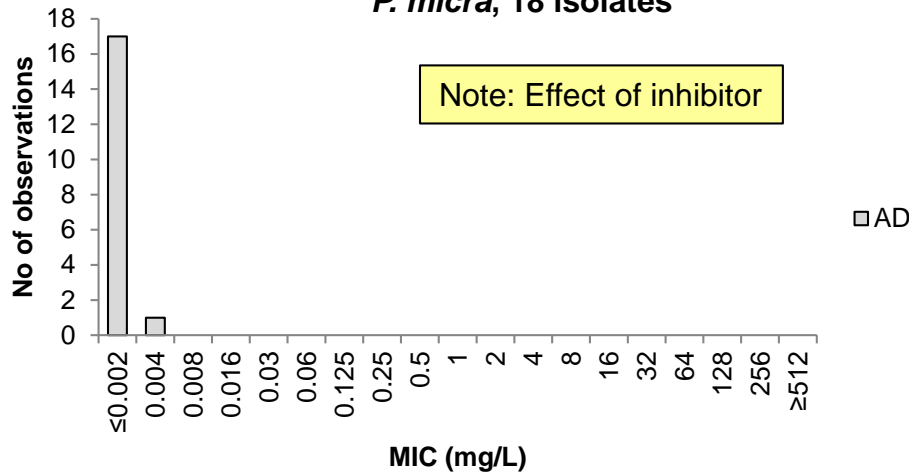
All benzylpenicillin-susceptible isolates are susceptible to all other beta-lactams tested.

# Ampicillin

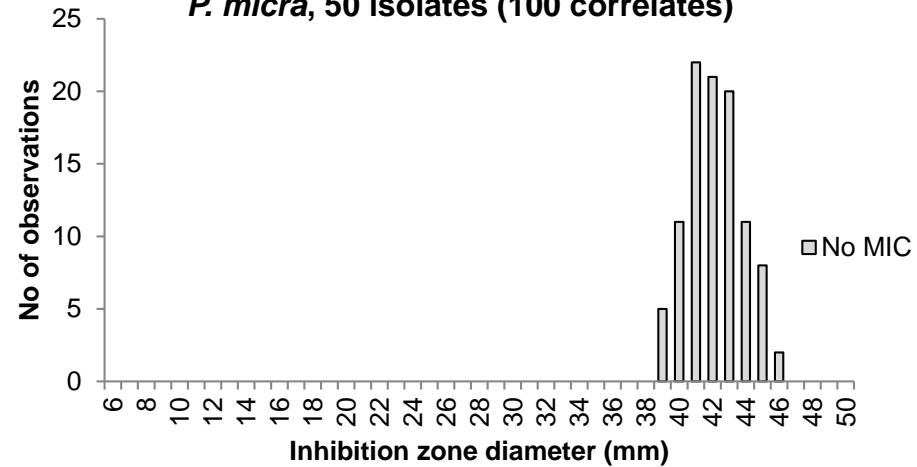


# Ampicillin-sulbactam

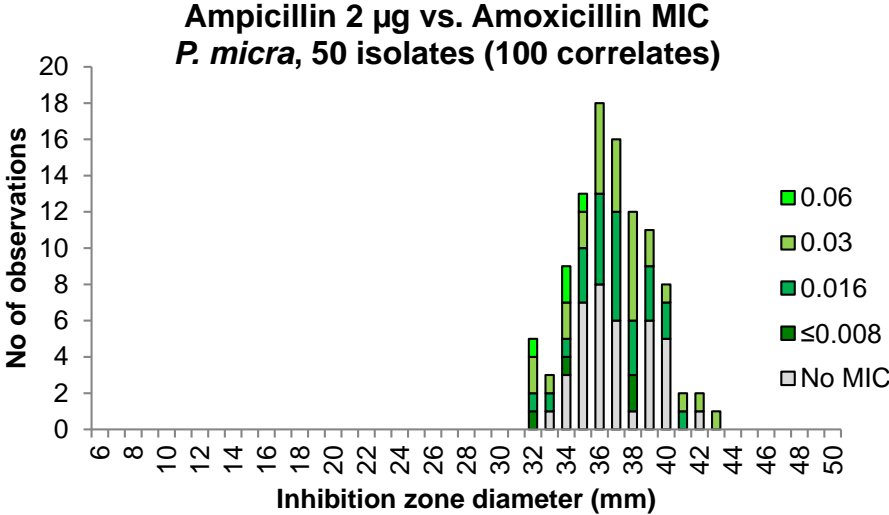
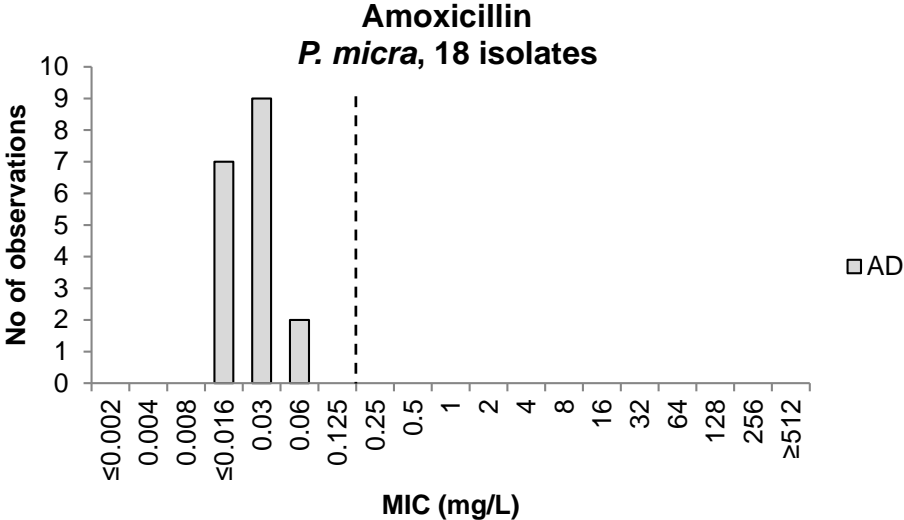
Ampicillin-sulbactam (fixed)  
*P. micra*, 18 isolates



Ampicillin-sulbactam 10-10 µg vs. MIC (fixed)  
*P. micra*, 50 isolates (100 correlates)



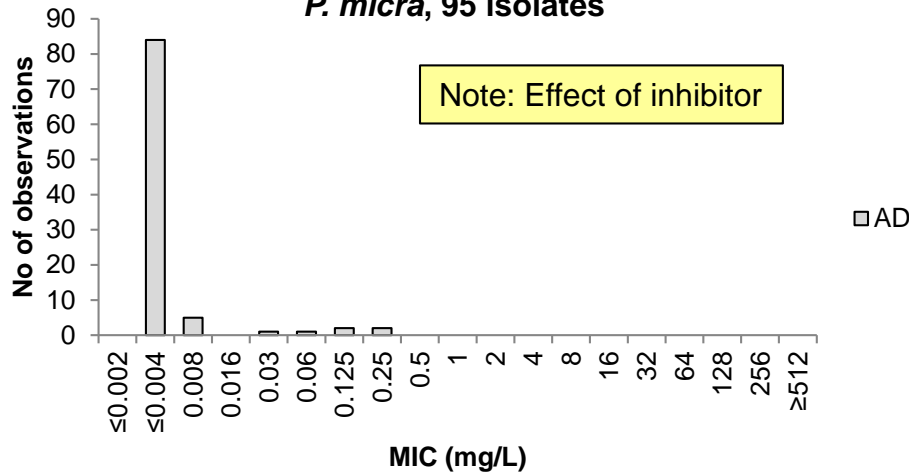
# Amoxicillin



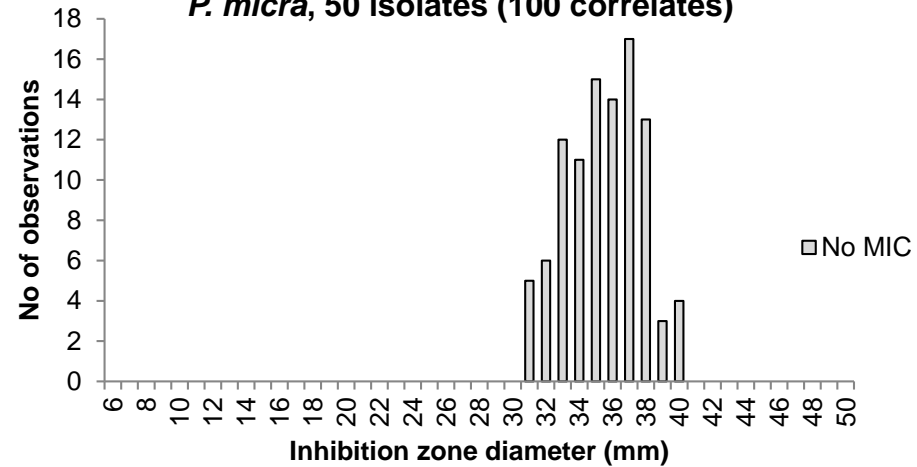
For disk diffusion, amoxicillin susceptibility is inferred from ampicillin.

# Amoxicillin-clavulanic acid

Amoxicillin-clavulanic acid (fixed)  
*P. micra*, 95 isolates

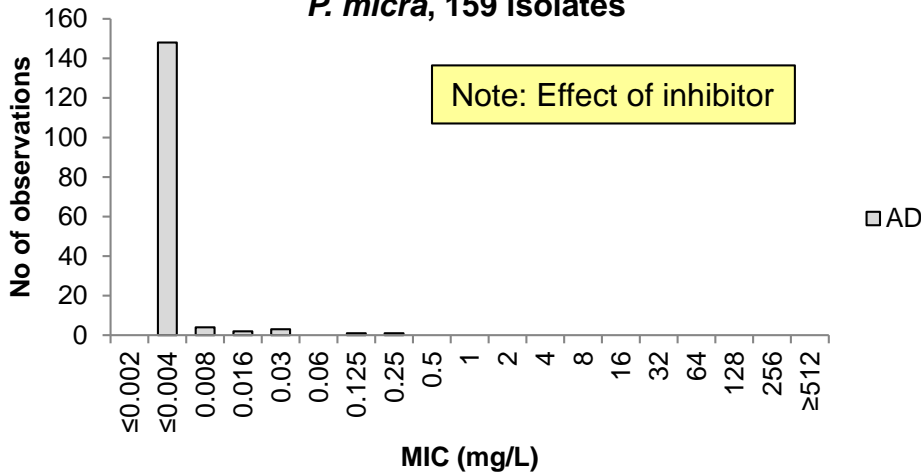


Amoxicillin-clavulanic acid 2-1 µg vs. MIC (fixed)  
*P. micra*, 50 isolates (100 correlates)

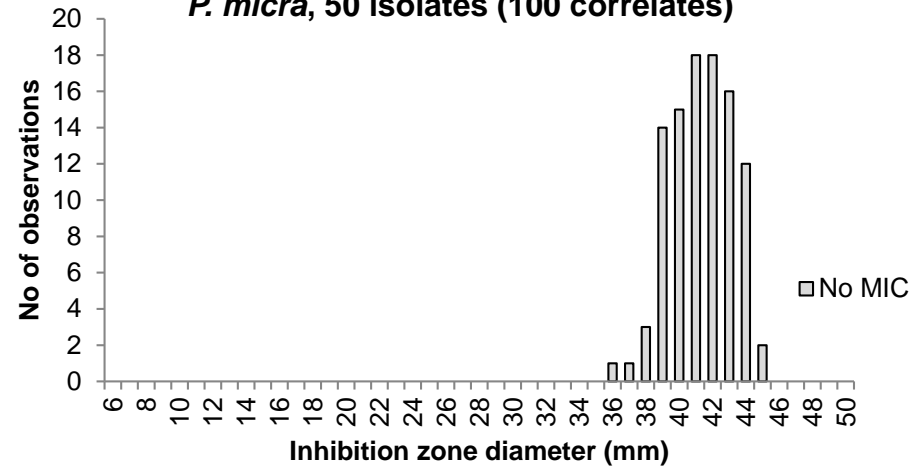


# Piperacillin-tazobactam

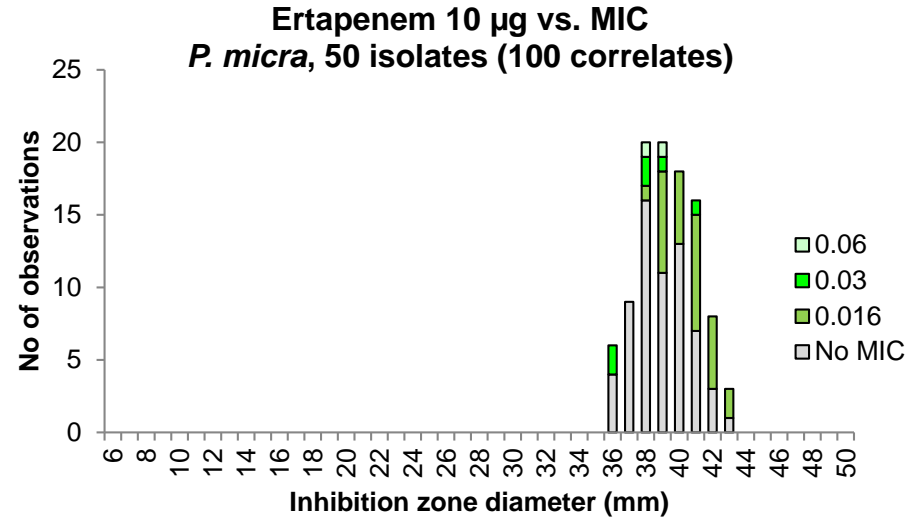
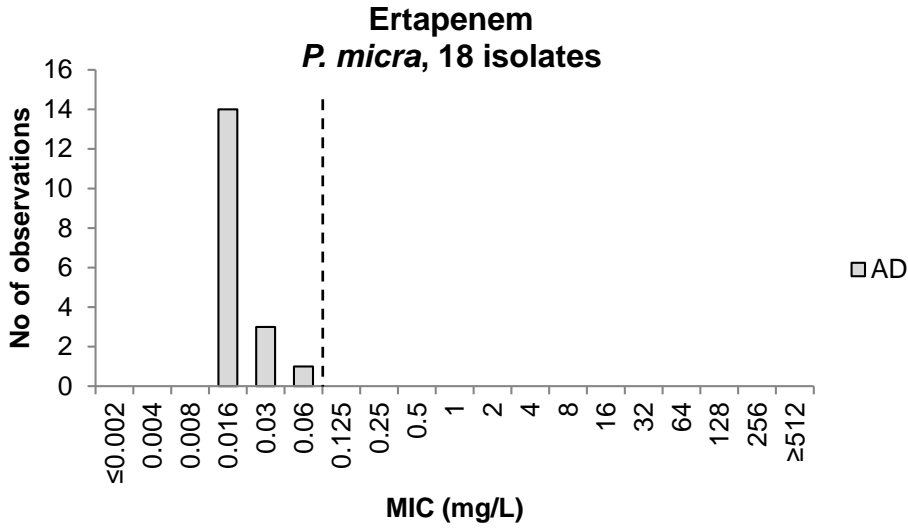
Piperacillin-tazobactam  
*P. micra*, 159 isolates



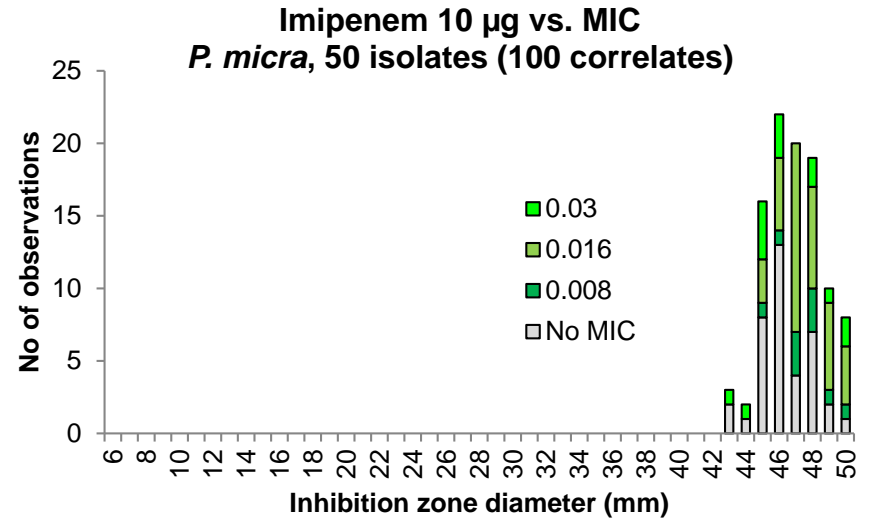
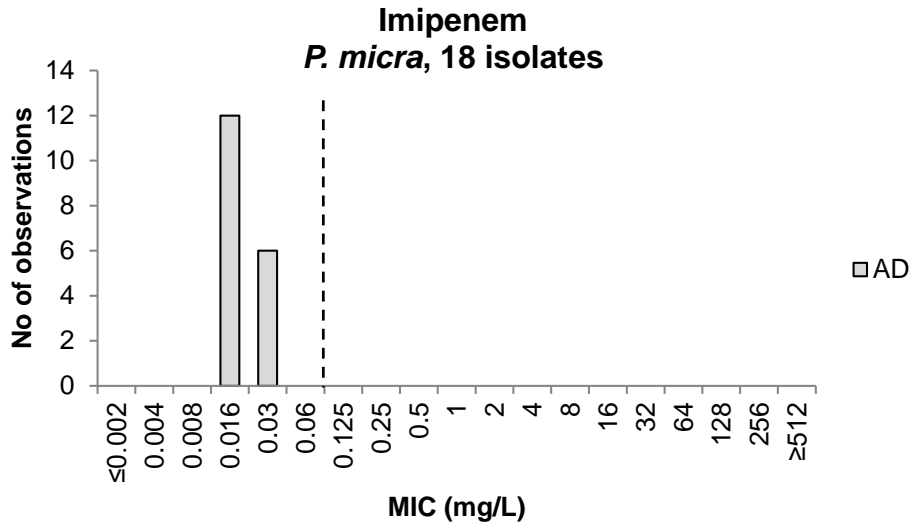
Piperacillin-tazobactam 30-6 µg vs. MIC  
*P. micra*, 50 isolates (100 correlates)



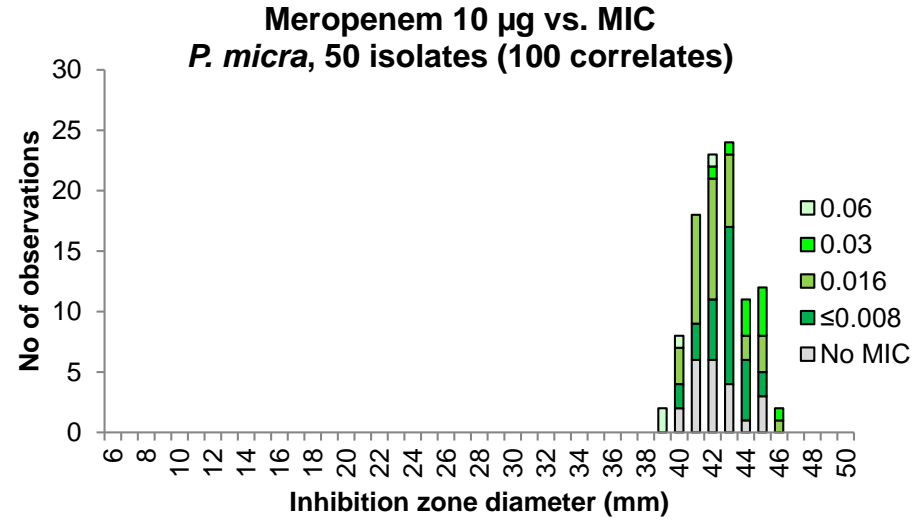
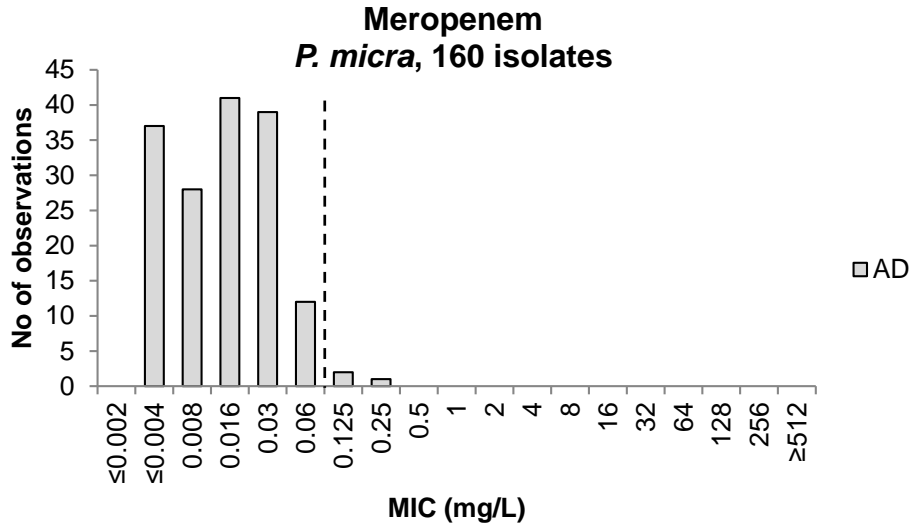
# Ertapenem



# Imipenem

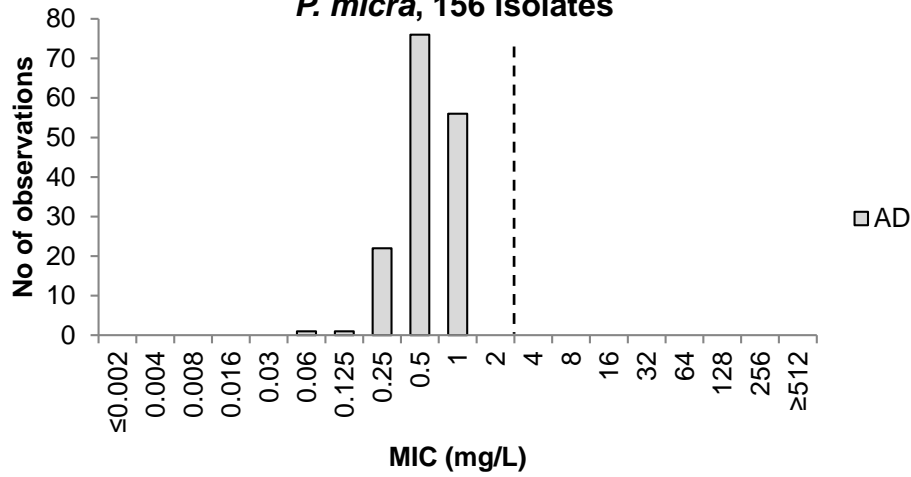


# Meropenem

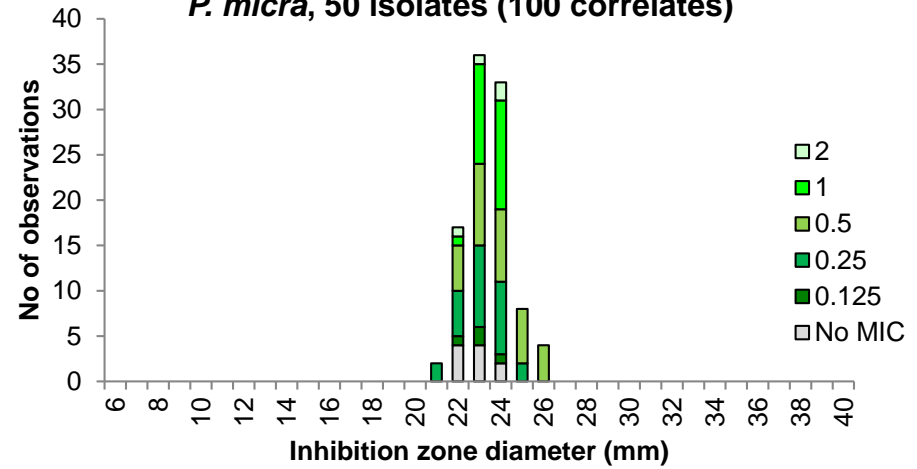


# Vancomycin

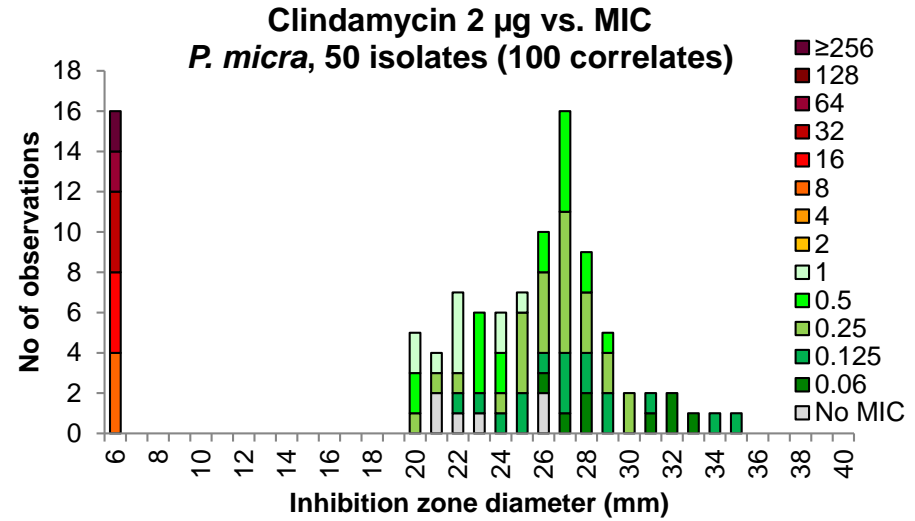
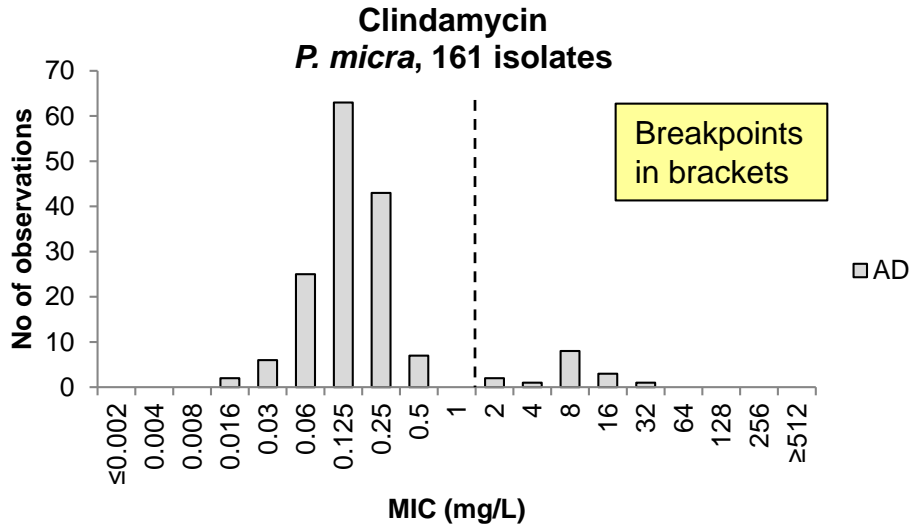
Vancomycin  
*P. micra*, 156 isolates



Vancomycin 5 µg vs. MIC  
*P. micra*, 50 isolates (100 correlates)

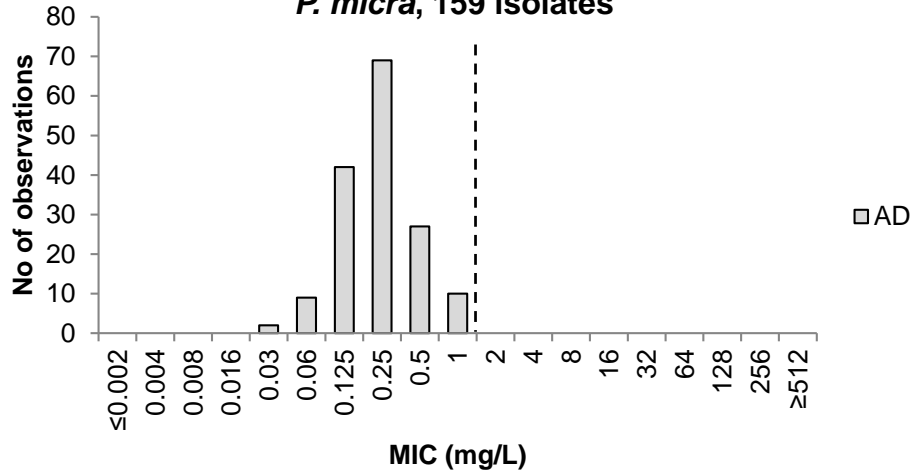


# Clindamycin

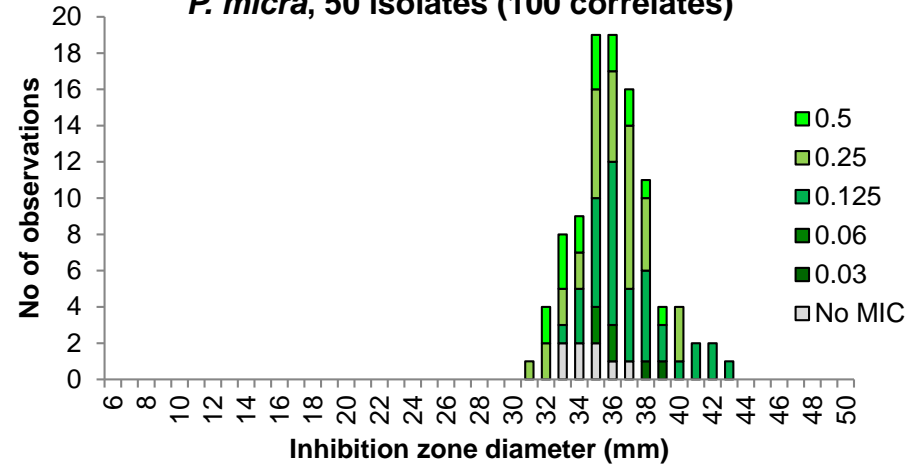


# Metronidazole

**Metronidazole  
*P. micra*, 159 isolates**

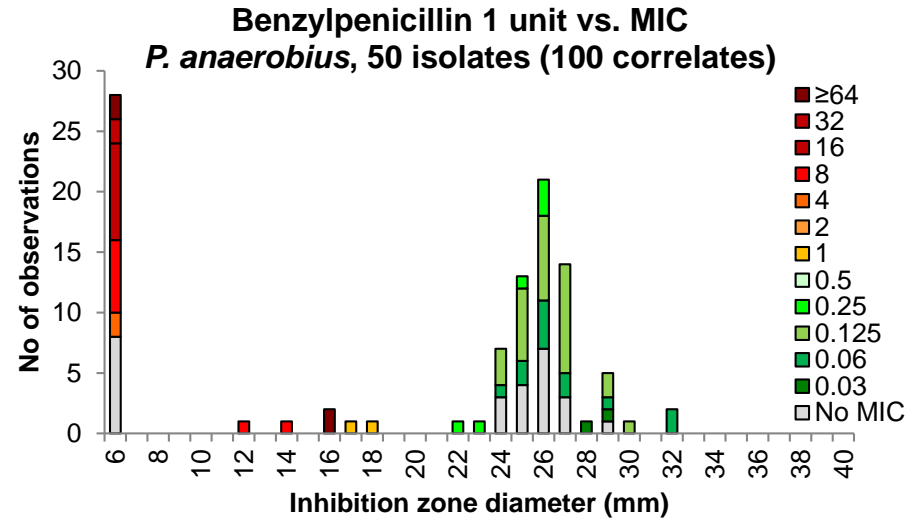
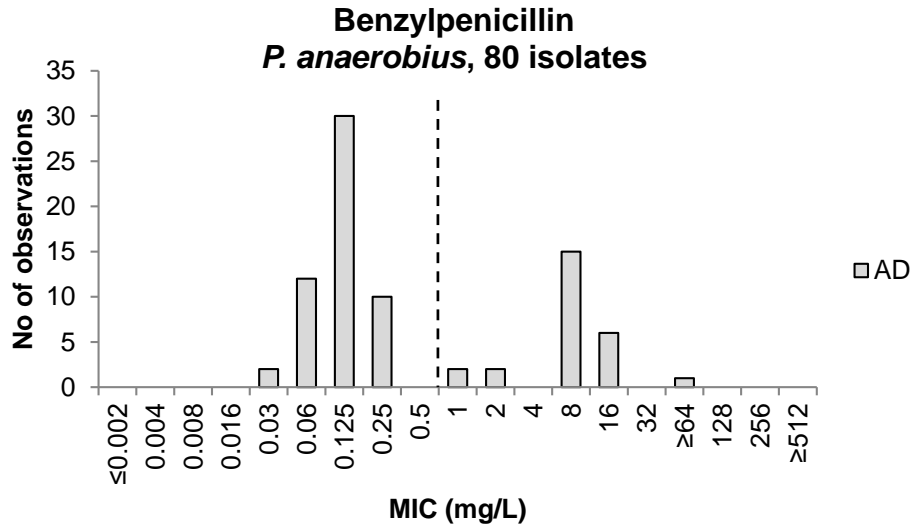


**Metronidazole 5 µg vs. MIC  
*P. micra*, 50 isolates (100 correlates)**



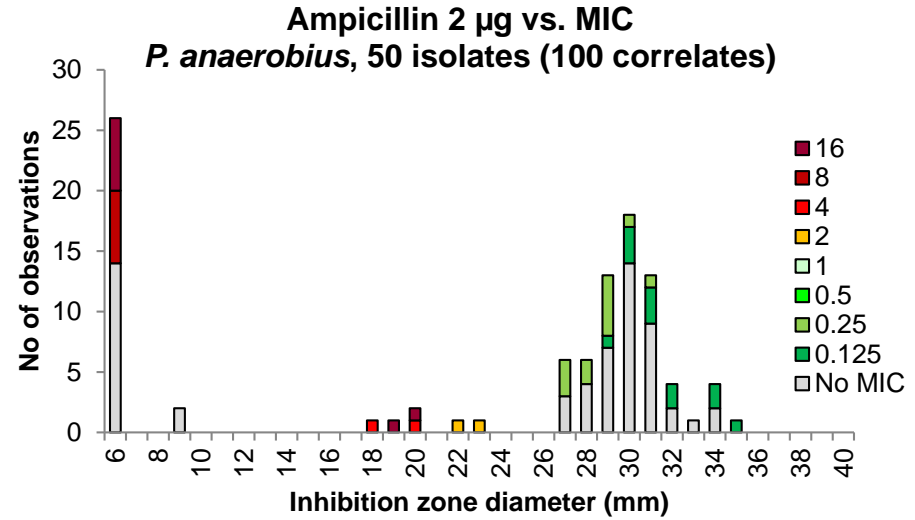
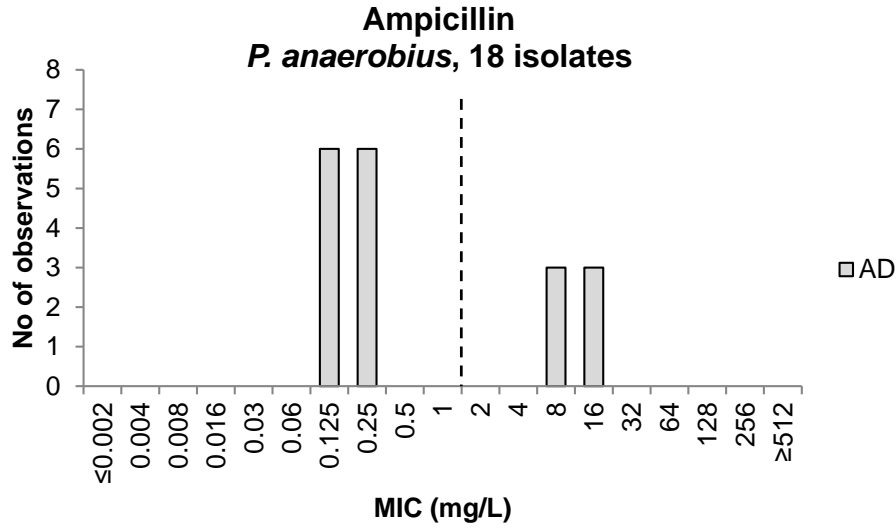
*Peptostreptococcus  
anaerobius*

# Benzylpenicillin



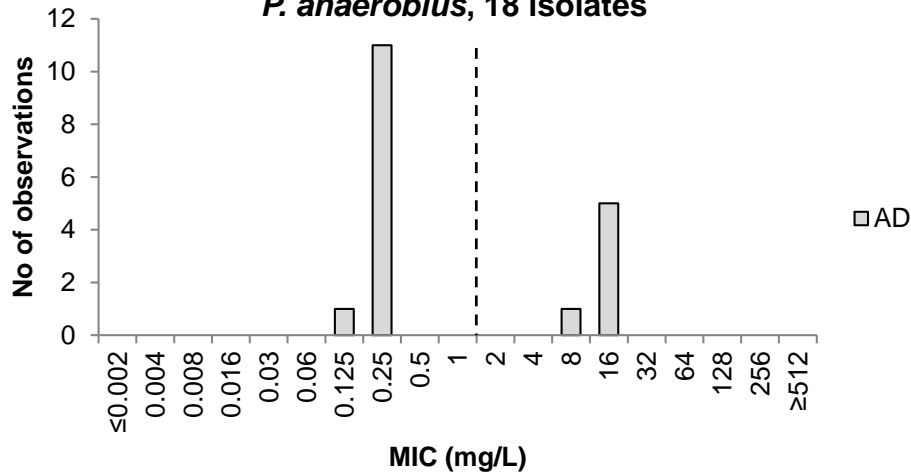
All benzylpenicillin-susceptible isolates are susceptible to all other beta-lactams tested.

# Ampicillin

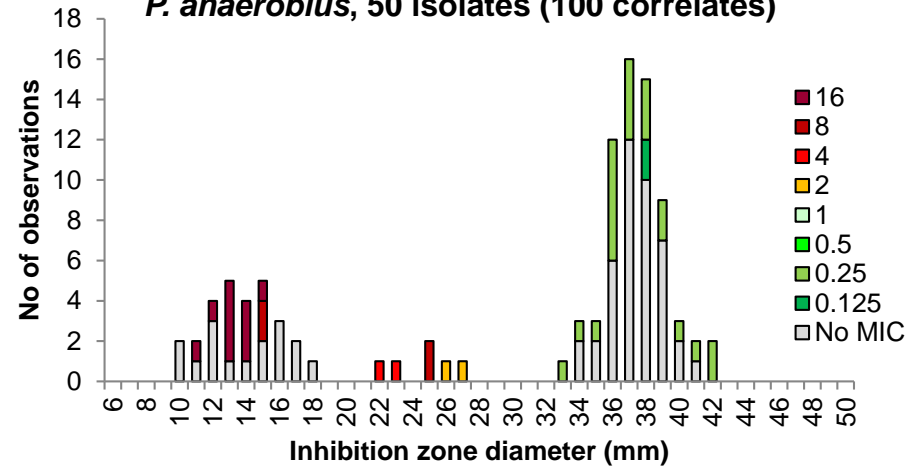


# Ampicillin-sulbactam

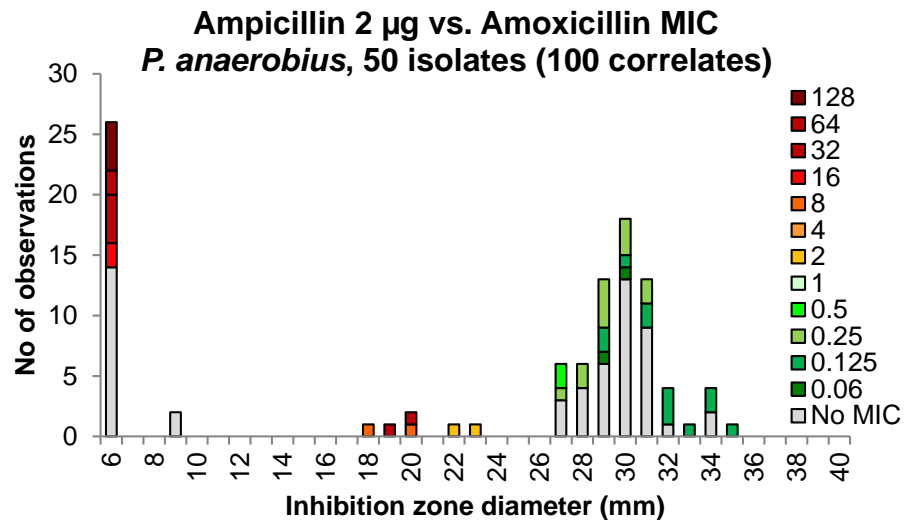
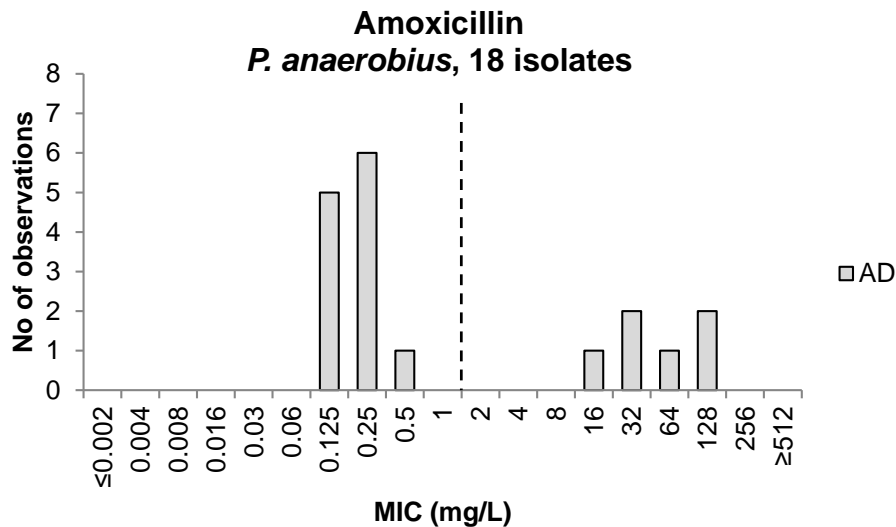
Ampicillin-sulbactam (fixed)  
*P. anaerobius*, 18 isolates



Ampicillin-sulbactam 10-10 µg vs. MIC (fixed)  
*P. anaerobius*, 50 isolates (100 correlates)



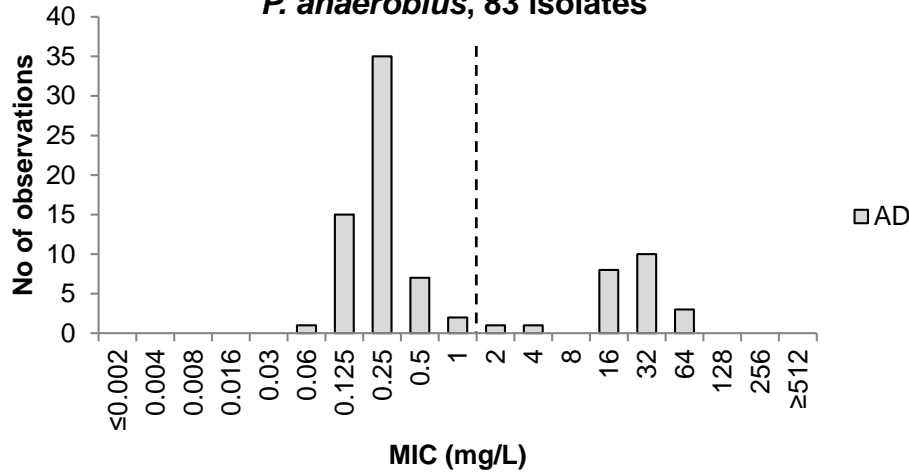
# Amoxicillin



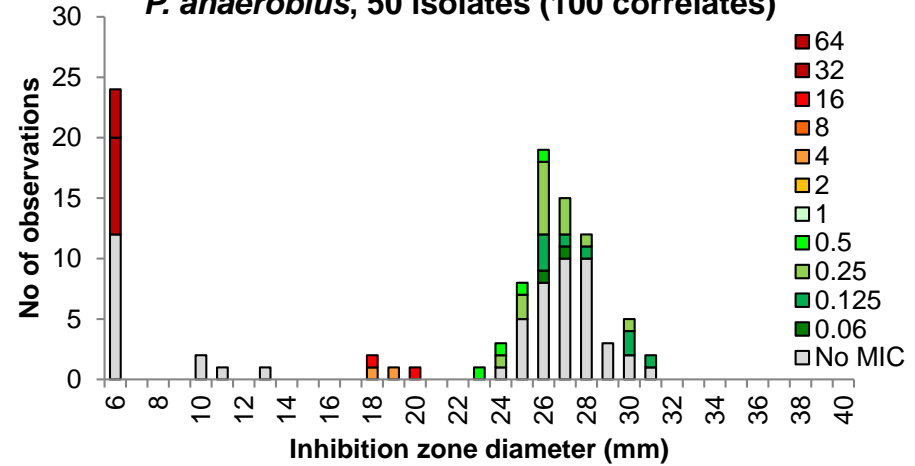
For disk diffusion, amoxicillin susceptibility is inferred from ampicillin.

# Amoxicillin-clavulanic acid

Amoxicillin-clavulanic acid (fixed)  
*P. anaerobius*, 83 isolates



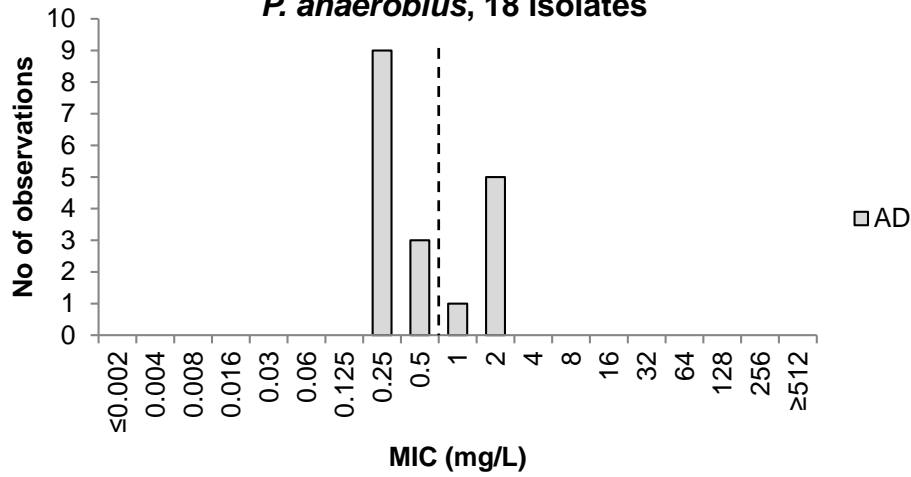
Amoxicillin-clavulanic acid 2-1 µg vs. MIC (fixed)  
*P. anaerobius*, 50 isolates (100 correlates)



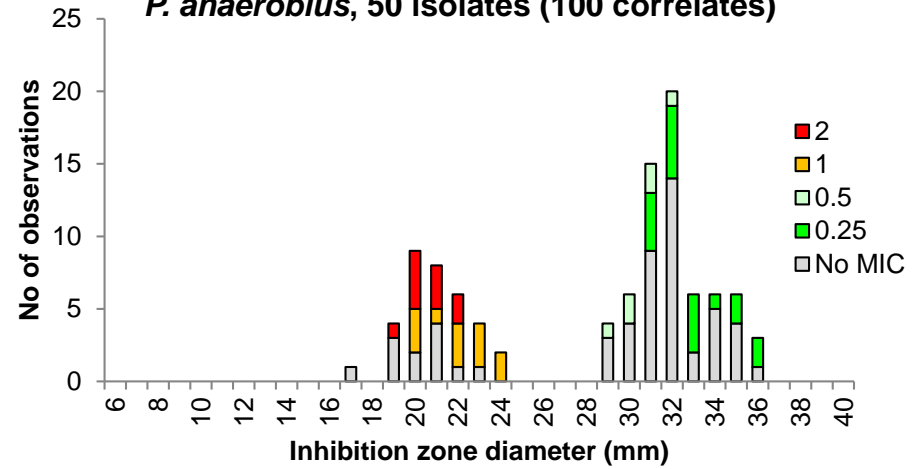


# Ertapenem

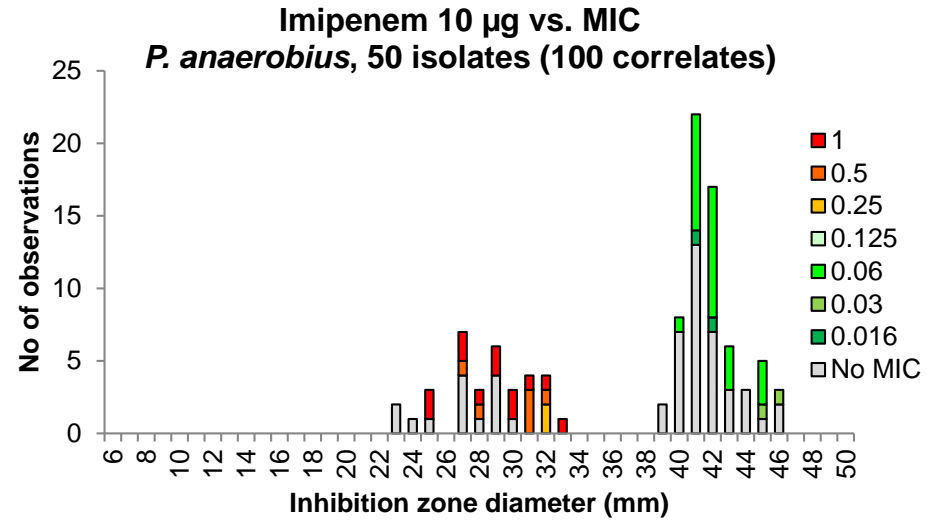
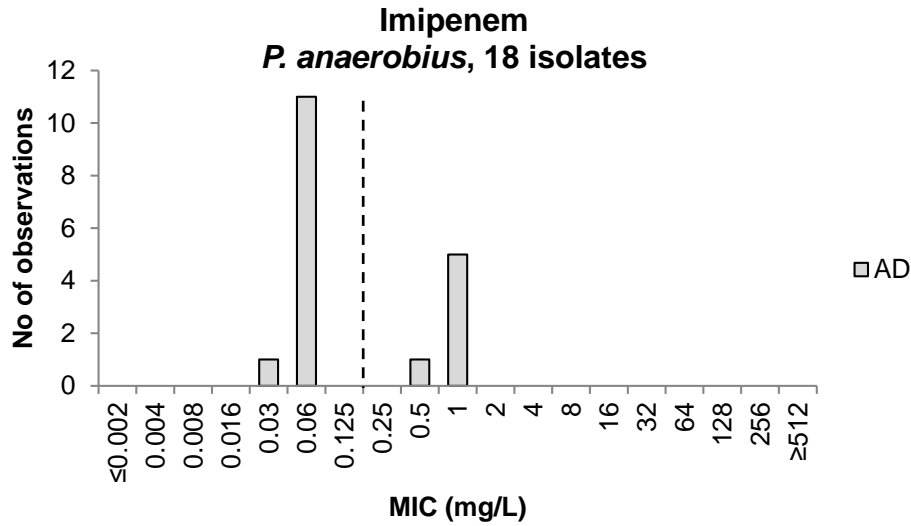
Ertapenem  
*P. anaerobius*, 18 isolates



Ertapenem 10 µg vs. MIC  
*P. anaerobius*, 50 isolates (100 correlates)

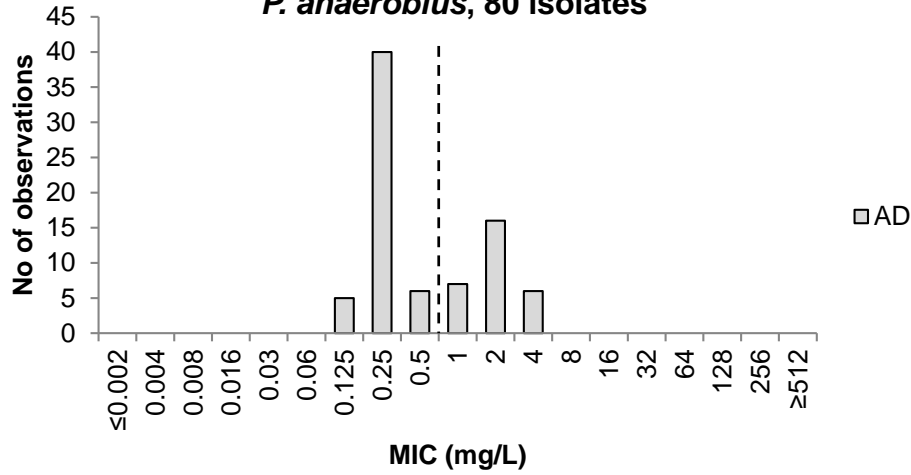


# Imipenem

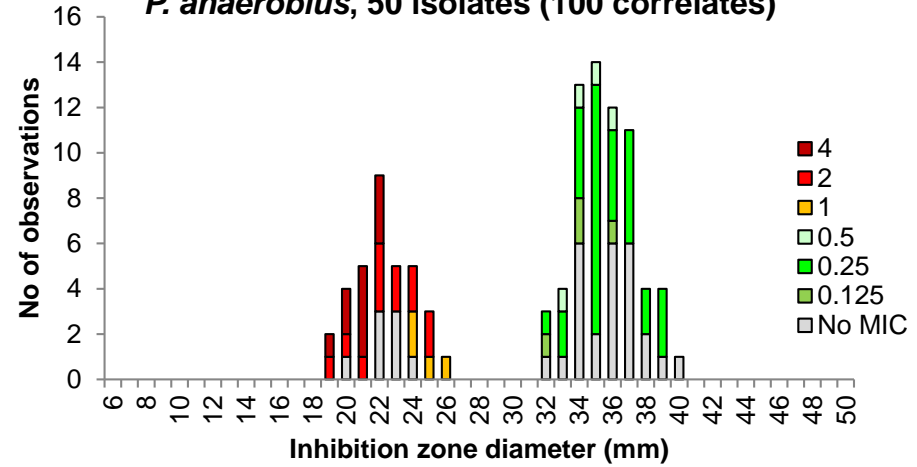


# Meropenem

**Meropenem**  
*P. anaerobius*, 80 isolates

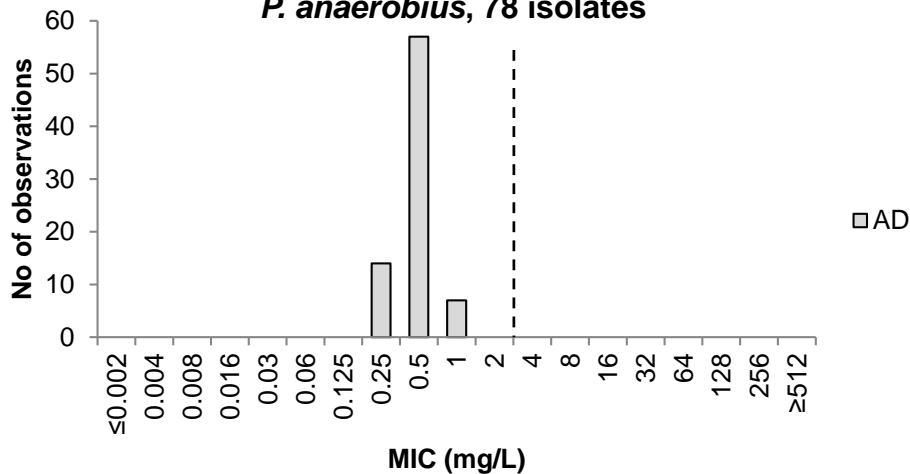


**Meropenem 10 µg vs. MIC**  
*P. anaerobius*, 50 isolates (100 correlates)

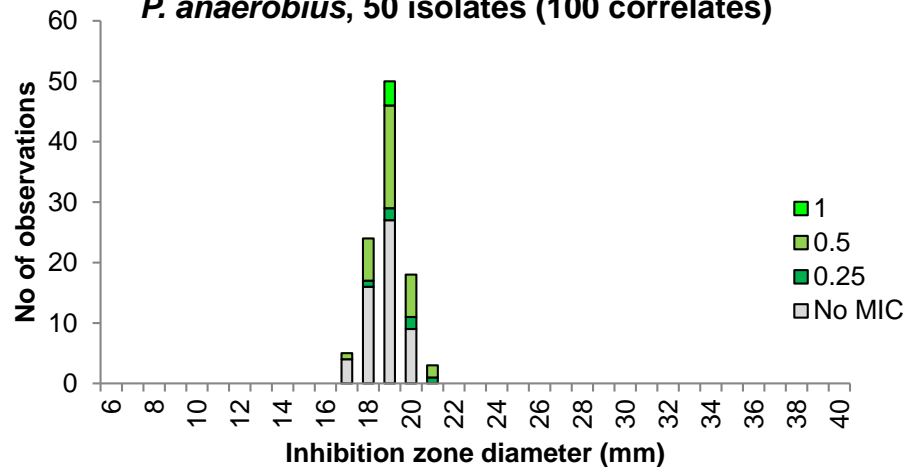


# Vancomycin

Vancomycin  
*P. anaerobius*, 78 isolates



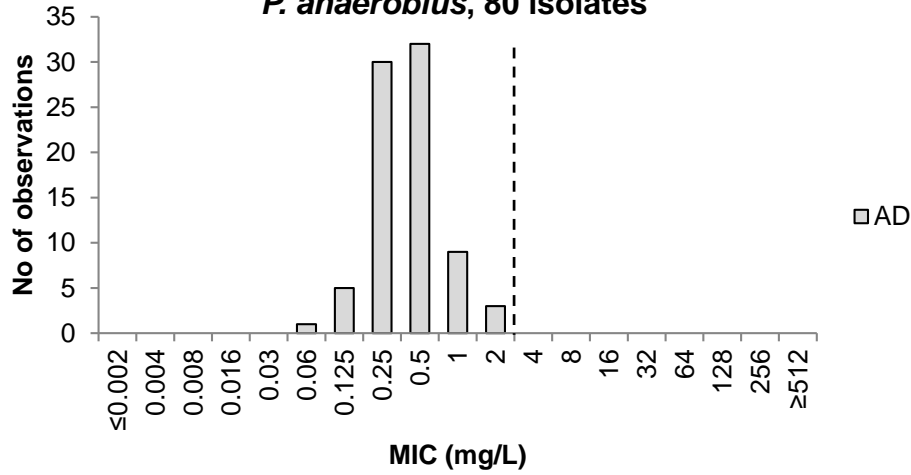
Vancomycin 5 µg vs. MIC  
*P. anaerobius*, 50 isolates (100 correlates)



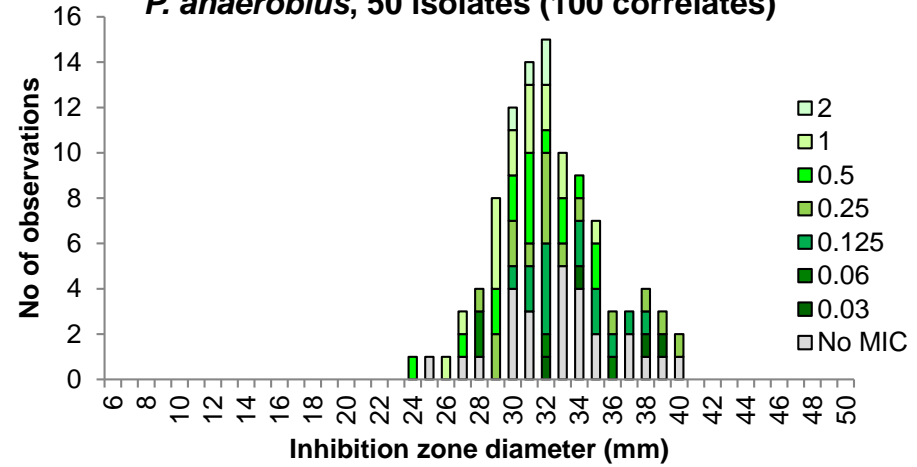


# Metronidazole

Metronidazole  
*P. anaerobius*, 80 isolates



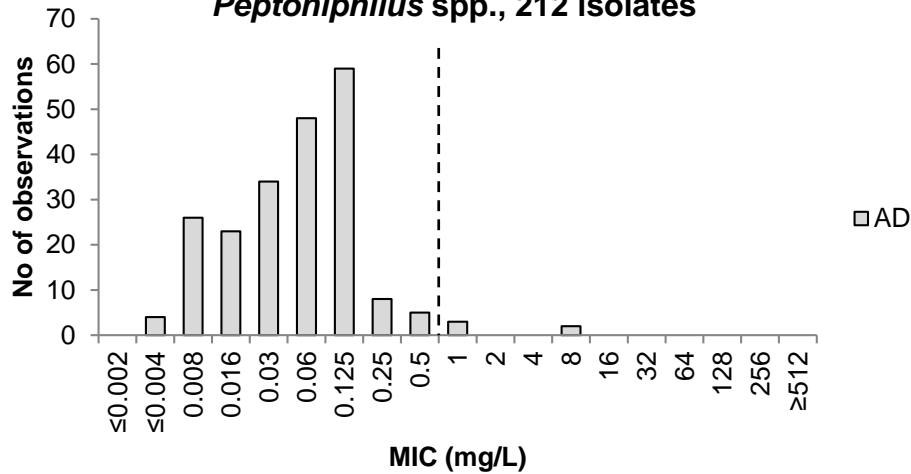
Metronidazole 5 µg vs. MIC  
*P. anaerobius*, 50 isolates (100 correlates)



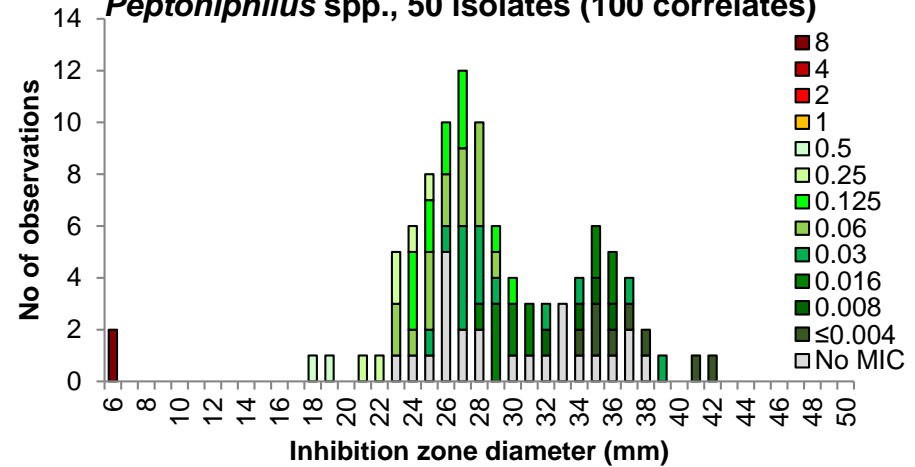
*Peptoniphilus* spp.

# Benzylpenicillin

**Benzylpenicillin**  
*Peptoniphilus* spp., 212 isolates

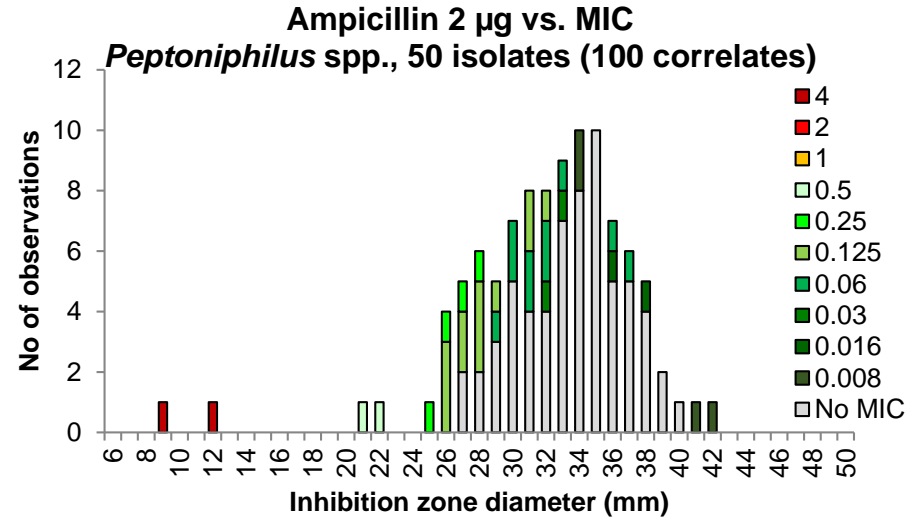
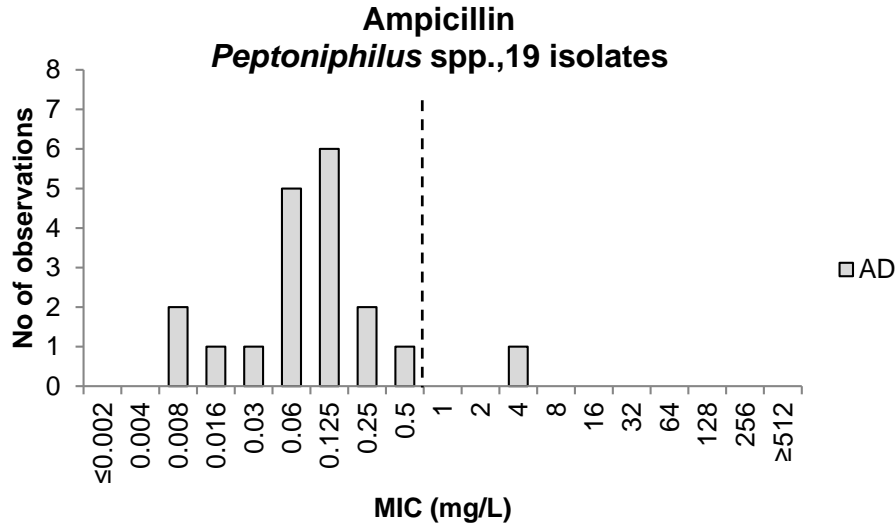


**Benzylpenicillin 1 unit vs. MIC**  
*Peptoniphilus* spp., 50 isolates (100 correlates)



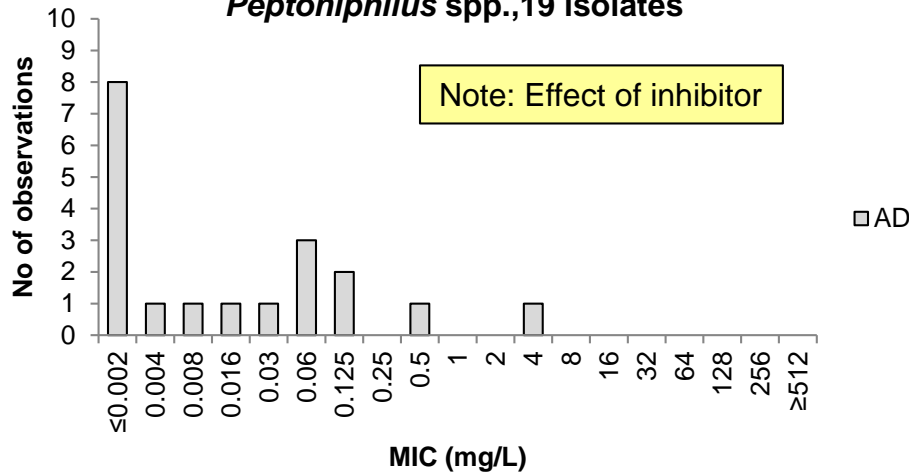
All benzylpenicillin-susceptible isolates are susceptible to all other beta-lactams tested.

# Ampicillin

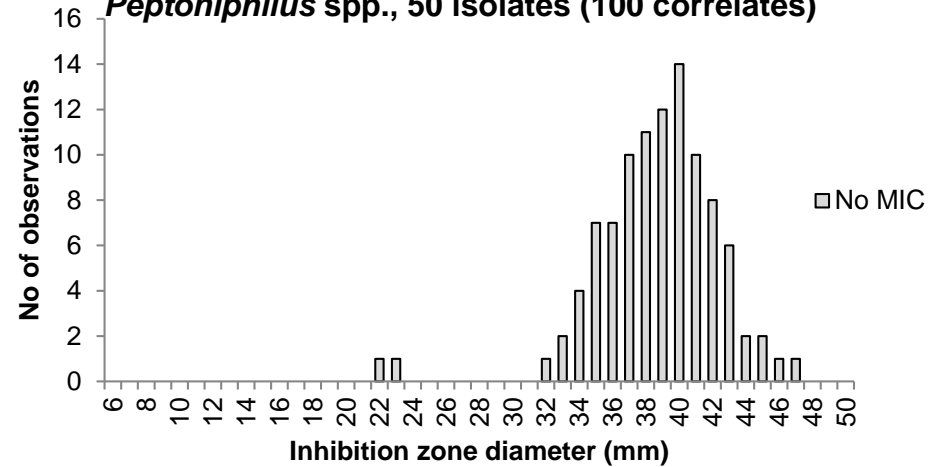


# Ampicillin-sulbactam

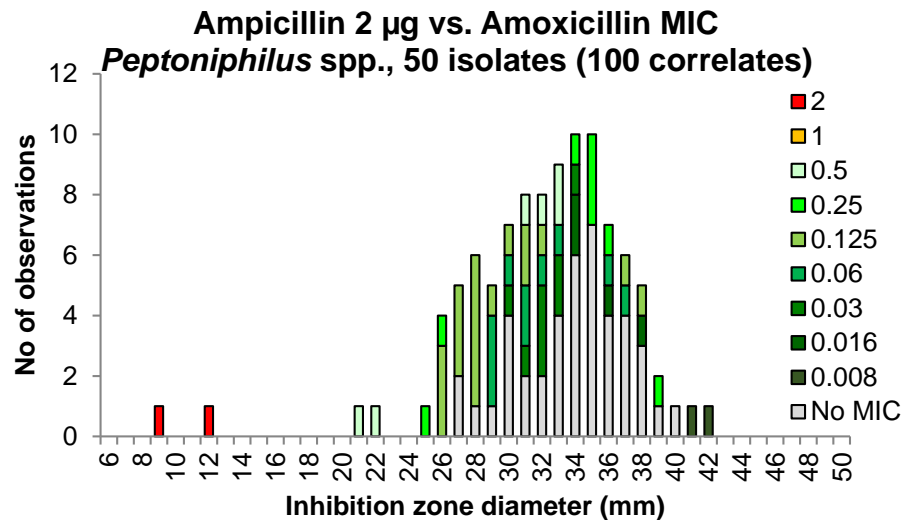
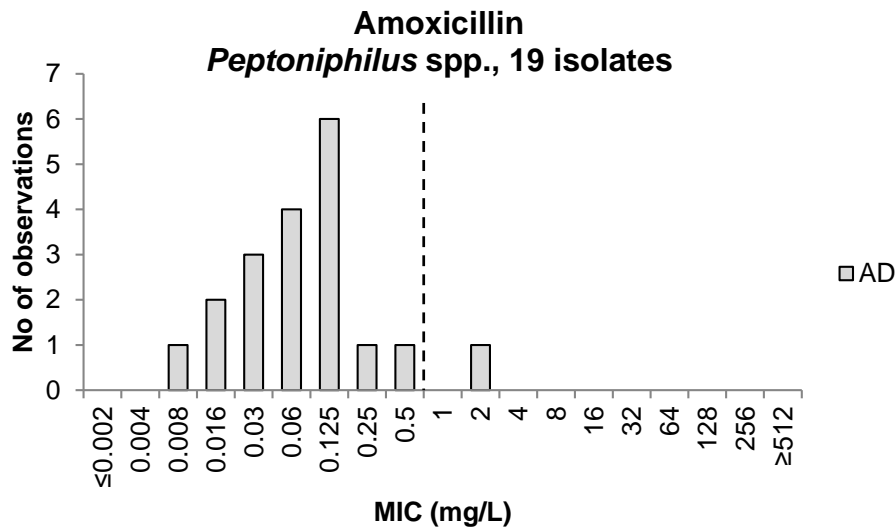
Ampicillin-sulbactam (fixed)  
*Peptoniphilus* spp., 19 isolates



Ampicillin-sulbactam 10-10 µg vs. MIC (fixed)  
*Peptoniphilus* spp., 50 isolates (100 correlates)



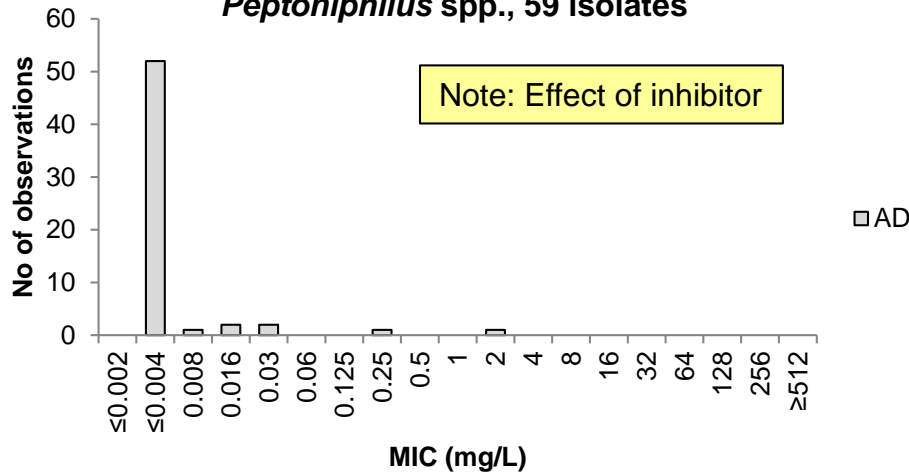
# Amoxicillin



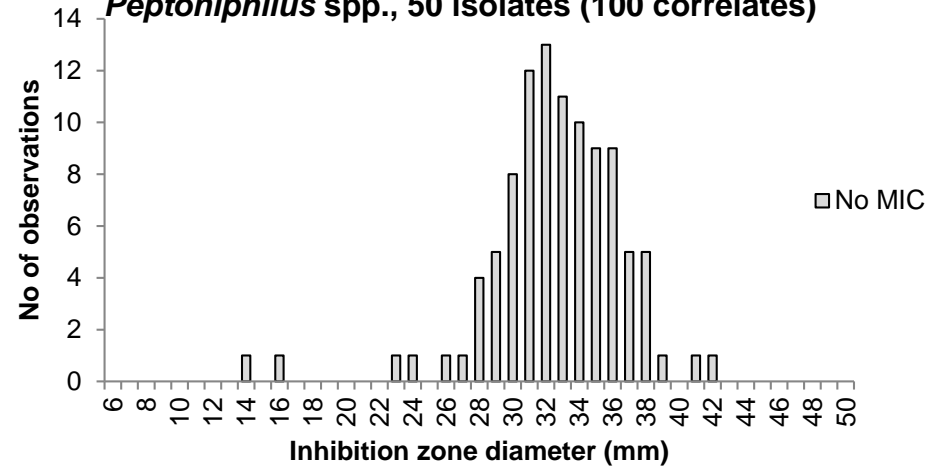
For disk diffusion, amoxicillin susceptibility is inferred from ampicillin.

# Amoxicillin-clavulanic acid

Amoxicillin-clavulanic acid (fixed)  
*Peptoniphilus* spp., 59 isolates

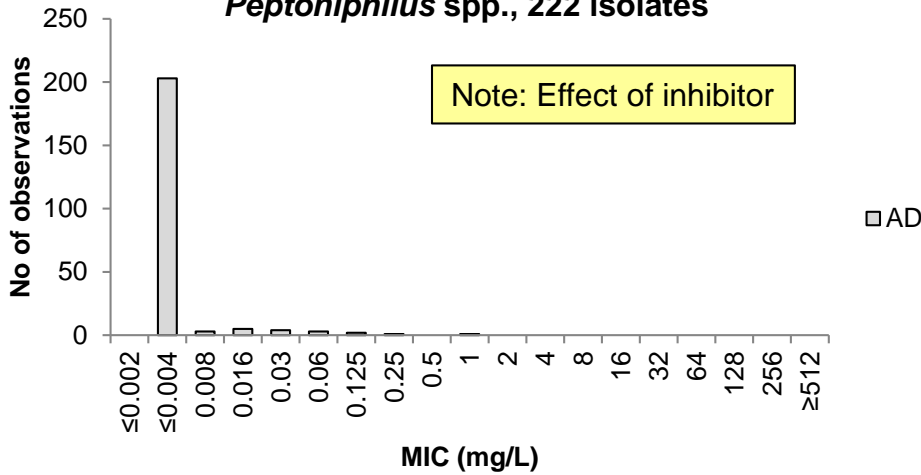


Amoxicillin-clavulanic acid 2-1 µg vs. MIC (fixed)  
*Peptoniphilus* spp., 50 isolates (100 correlates)

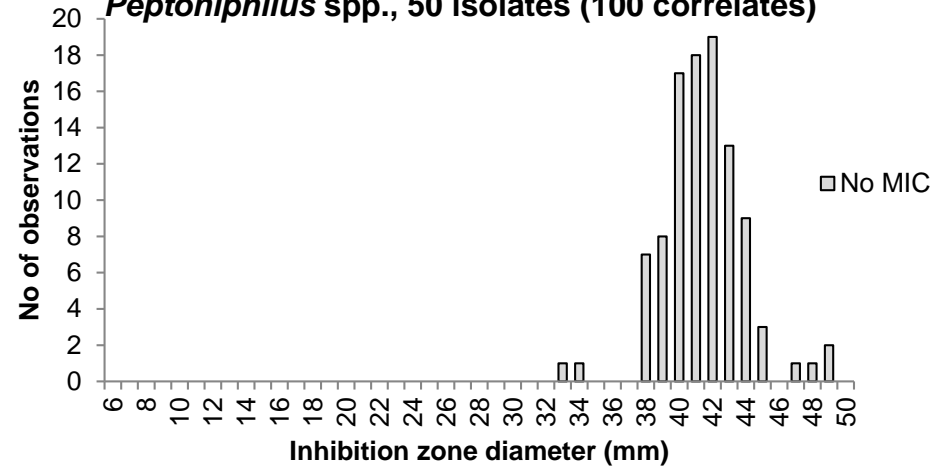


# Piperacillin-tazobactam

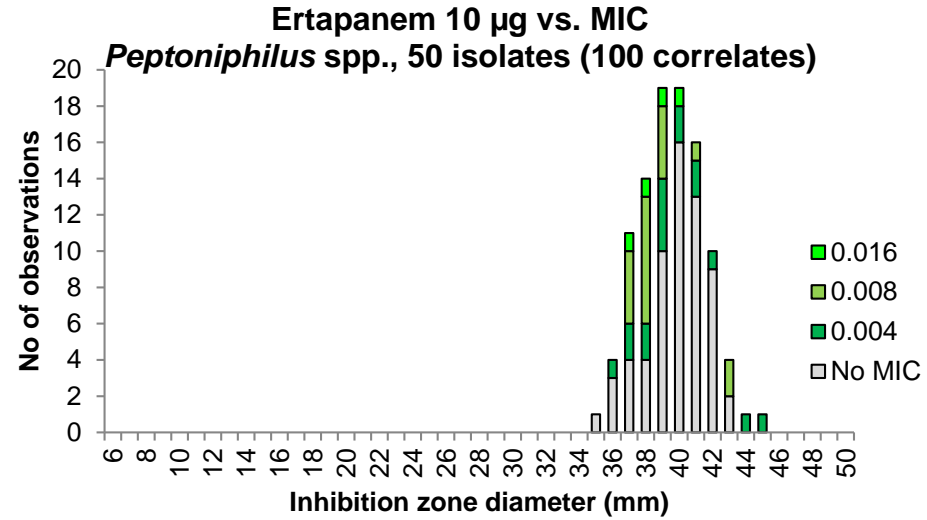
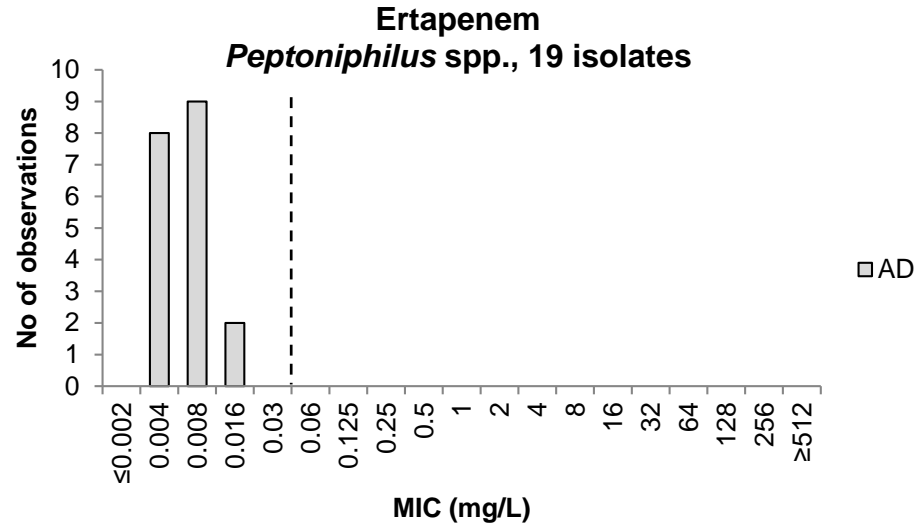
Piperacillin-tazobactam  
*Peptoniphilus* spp., 222 isolates



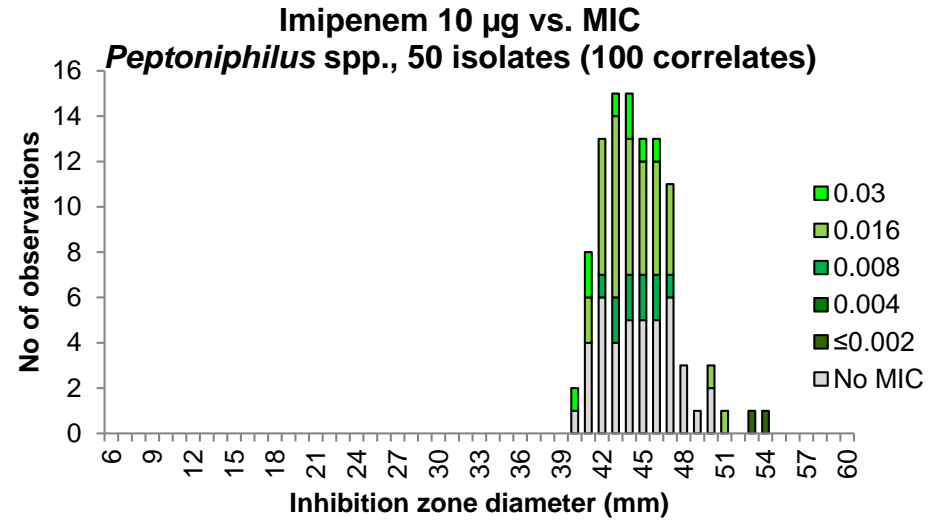
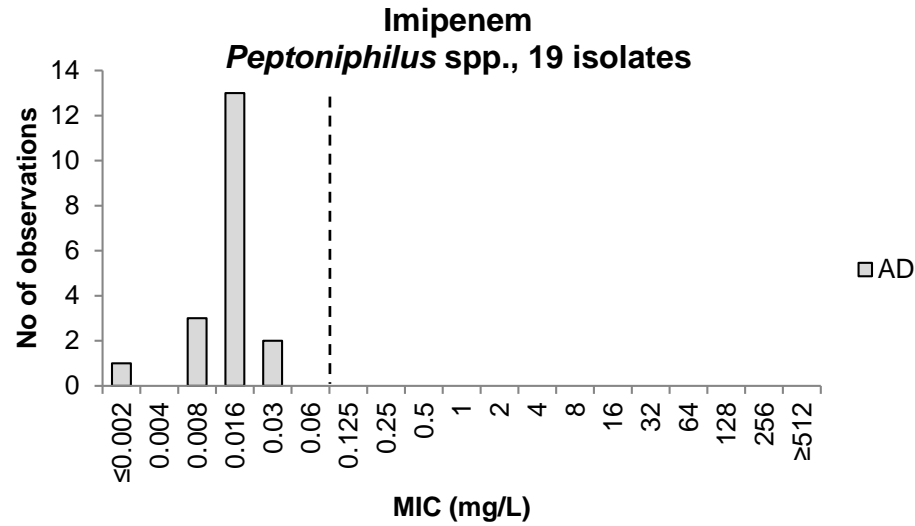
Piperacillin-tazobactam 30-6 µg vs. MIC  
*Peptoniphilus* spp., 50 isolates (100 correlates)



# Ertapenem

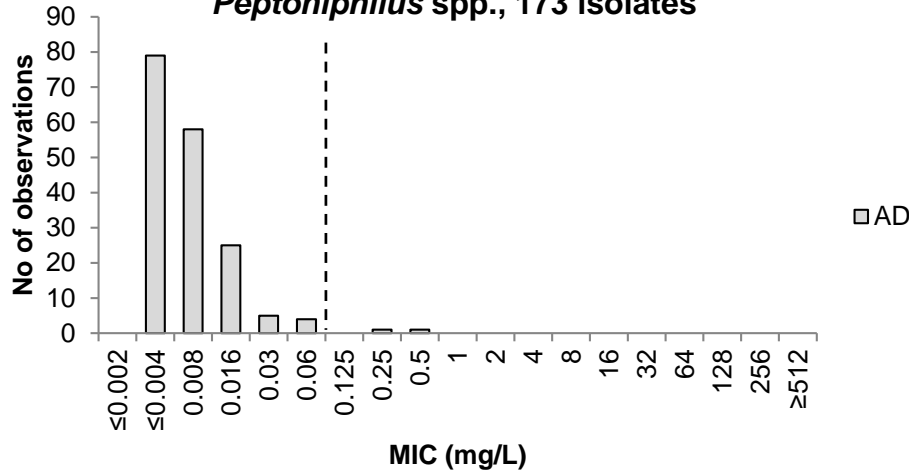


# Imipenem

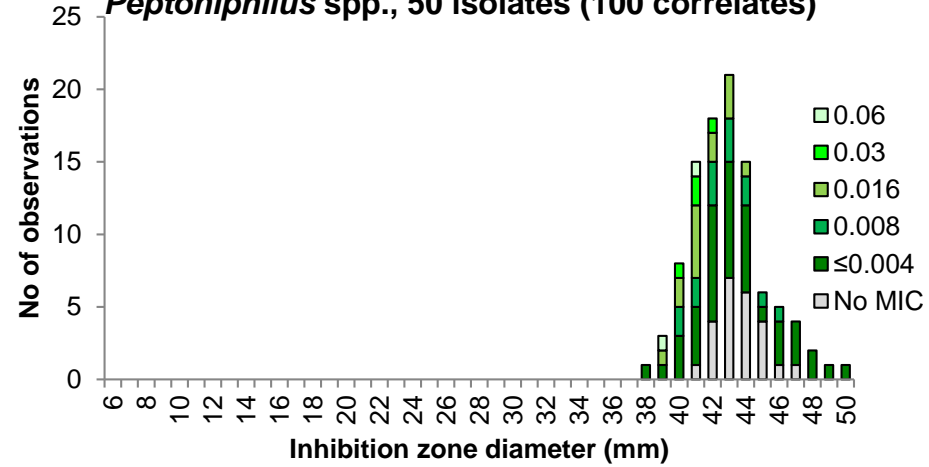


# Meropenem

Meropenem  
*Peptoniphilus* spp., 173 isolates

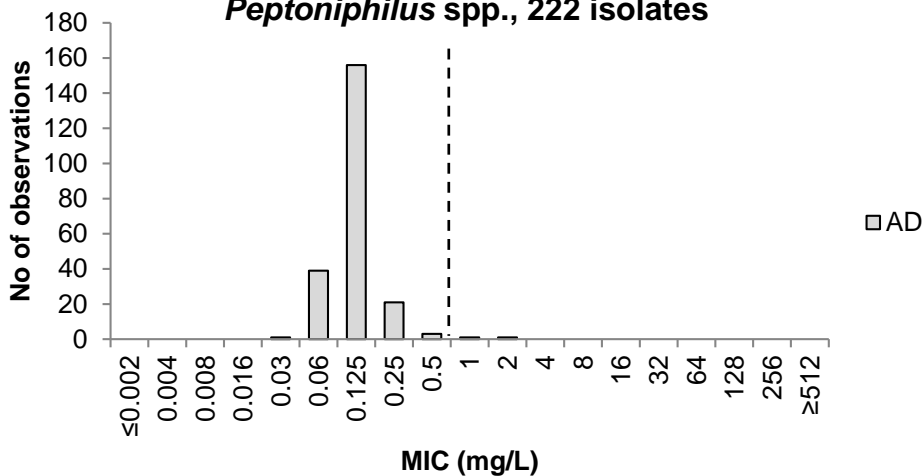


Meropenem 10 µg vs. MIC  
*Peptoniphilus* spp., 50 isolates (100 correlates)

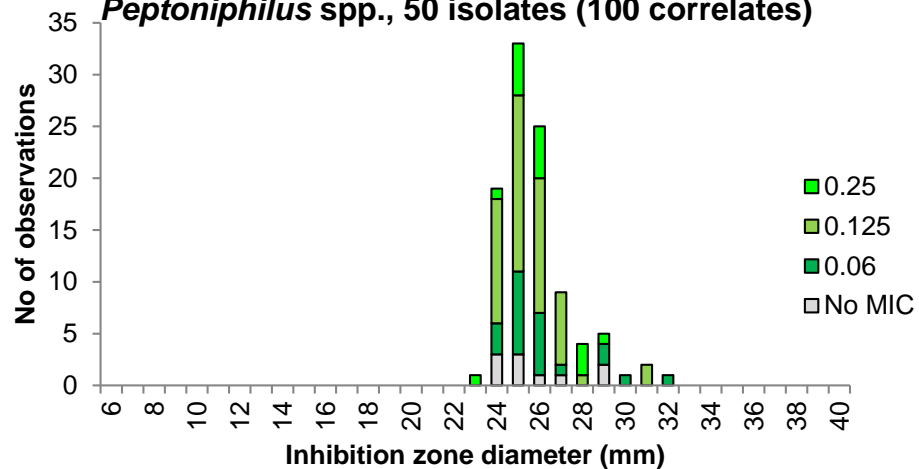


# Vancomycin

Vancomycin  
*Peptoniphilus* spp., 222 isolates

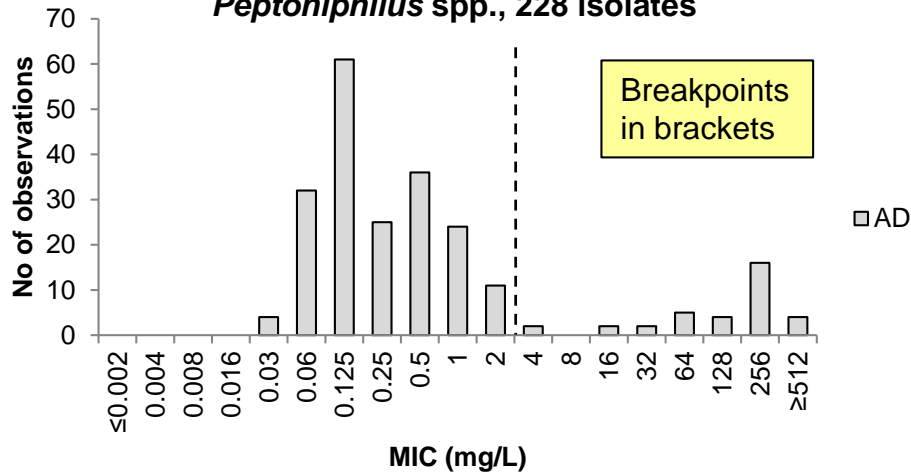


Vancomycin 5 µg vs. MIC  
*Peptoniphilus* spp., 50 isolates (100 correlates)

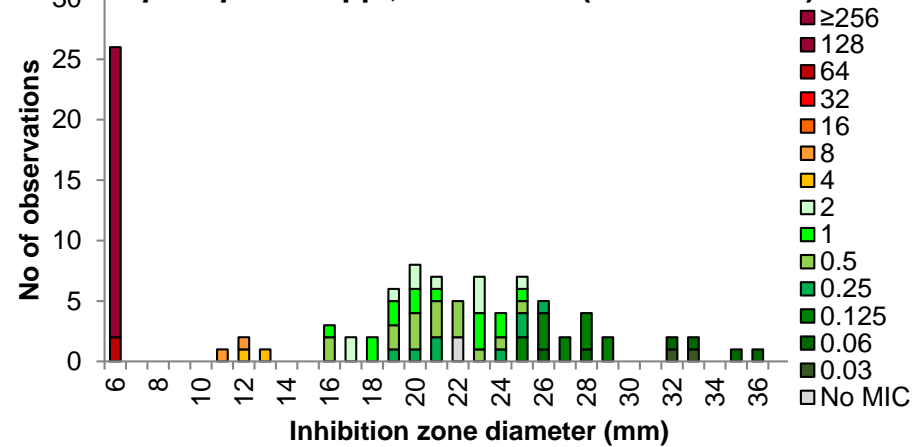


# Clindamycin

**Clindamycin**  
*Peptoniphilus* spp., 228 isolates



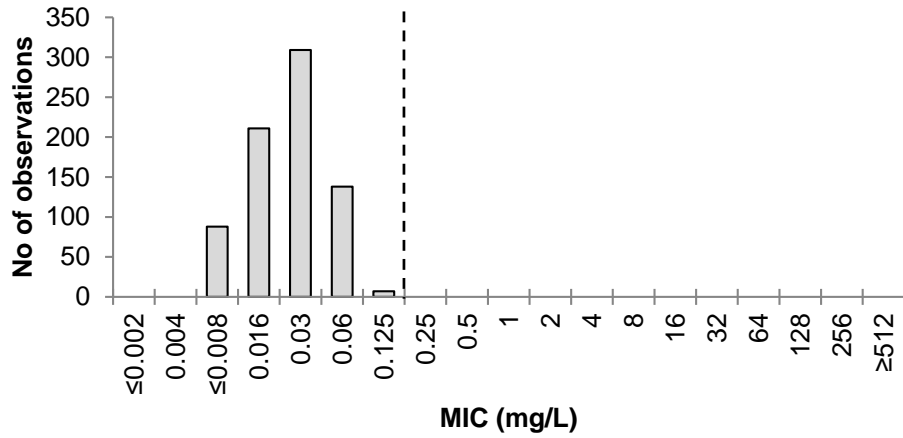
**Clindamycin 2  $\mu$ g vs. MIC**  
*Peptoniphilus* spp., 50 isolates (100 correlates)



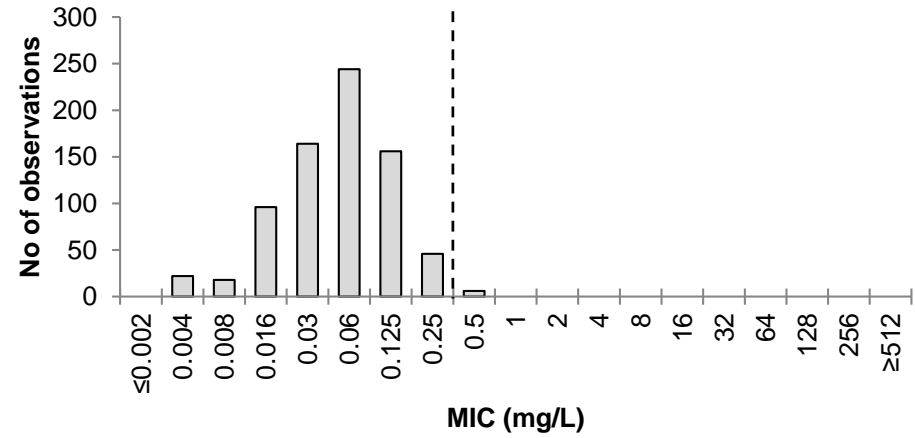


Proposed changes  
in existing breakpoints for  
*Cutibacterium acnes*

**Benzylpenicillin**  
*C. acnes*, 753 isolates



**Ceftriaxone**  
*C. acnes*, 752 isolates



**Meropenem**  
*C. acnes*, 891 isolates

