ANTIMICROBIAL SENSITIVITY OF UK ISOLATES OF KEY MASTITIS PATHOGENS

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- Prudent use of antimicrobials dictates that sensitivity testing of target organisms should be undertaken to facilitate the selection of appropriate drugs for treatment.
- Broth microdilution method is accepted as the gold standard for determining antimicrobial susceptibility, however, the disc diffusion method is widely used in practice, albeit that interpretation needs to be in the light of the limitation of this technique.
- Interpretation of disc diffusion results is hampered by the lack of robust breakpoints (as determined by zone sizes) for determining which isolates are likely to be susceptible and resistant *in vivo*.
- Despite its limitations, useful information about likely susceptibility can be gleaned by looking at distributions of zones sizes (and therefore indirectly Minimum Inhibitory Concentrations (MICs)).

- Isolates were collated from laboratory submissions in 2020.
- Species were confirmed by MALDI-ToF.
- Susceptibility was determined using the disc diffusion method.
- Breakpoints were collated from a variety of sources including those published by CLSI, EUCAST and BSAC as well as those in the literature.

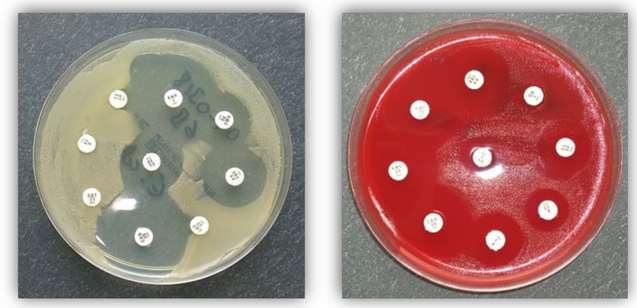
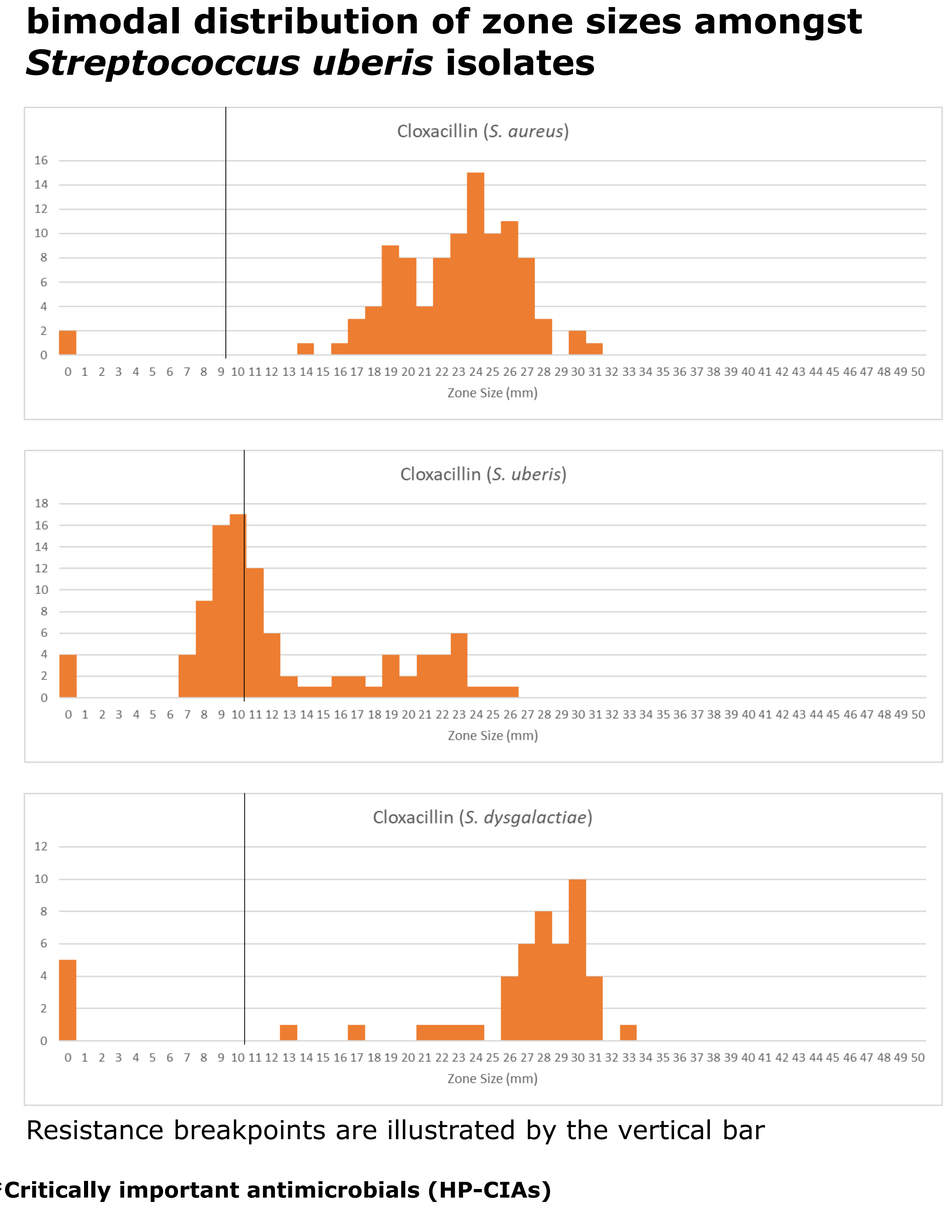


Figure 1: An illustration of the Kirby-Bauer Disc Diffusion Method

Table 1: Key farm indices and udder health indicators 2019

Pathogen	*E. coli*	*S. aureus*	*S. uberis*	*S. dysgalactiae*
n	100	100	100	50
Antimicrobial				
Amoxicillin/Clavulanic Acid	11	1	0	0
Ampicillin	13	2	1	2
Cefquinome*	2	0	0	0
Cefalonium	0	0	0	0
Cefalexin	10	0	1	0
Cefapirin	32	0	0	0
Cefoperazone*	3	0	1	0
Cloxacillin	-	2	50	10
Neomycin	5	3	-	-
Penicillin	-	14	0	0
Streptomycin	10	3	-	-
Sulpha/Trim	7	2	98	8
Tetracycline	12	2	16	88
Tylosin	-	3	14	6
Novobiocin	-	2	-	-
Enrofloxacin*	3	0	0	0
Ubrostar (Penicillin/Framycetin)	7	3	4	0
Ubrolexin (Cefalexin/Kanamycin)	8	0	1	2
Albiotic (Lincomycin/Neomycin)	5	0	28	6

Figure 2: Zone size distribution for cloxacillin for Gram-positive isolates, illustrating the bimodal distribution of zone sizes amongst *Streptococcus uberis* isolates



Resistance breakpoints are illustrated by the vertical bar

***Critically important antimicrobials (HP-CIAs)**

Key Messages

- Clinical decisions related to apparent resistance need to be taken with care given the uncertainty about breakpoints for mastitis pathogens. Further work using broth microdilution is warranted
- There was relatively little resistance amongst mastitis isolates.
- **ALL** Gram-positive isolates were susceptible to at least one first line antimicrobial.
- Resistance involving >1 antimicrobial class was rare and <5% were resistant to >5 antimicrobials.
- The bimodal distribution of MICs seen in the *S. uberis* population suggests that it may be worth understanding the population on individual farms when making decisions about the use of cloxacillin containing tubes.

Acknowledgements

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