

CPH Cattle seminar
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Treatment of clinical mastitis: local or combined administration of penicillin?

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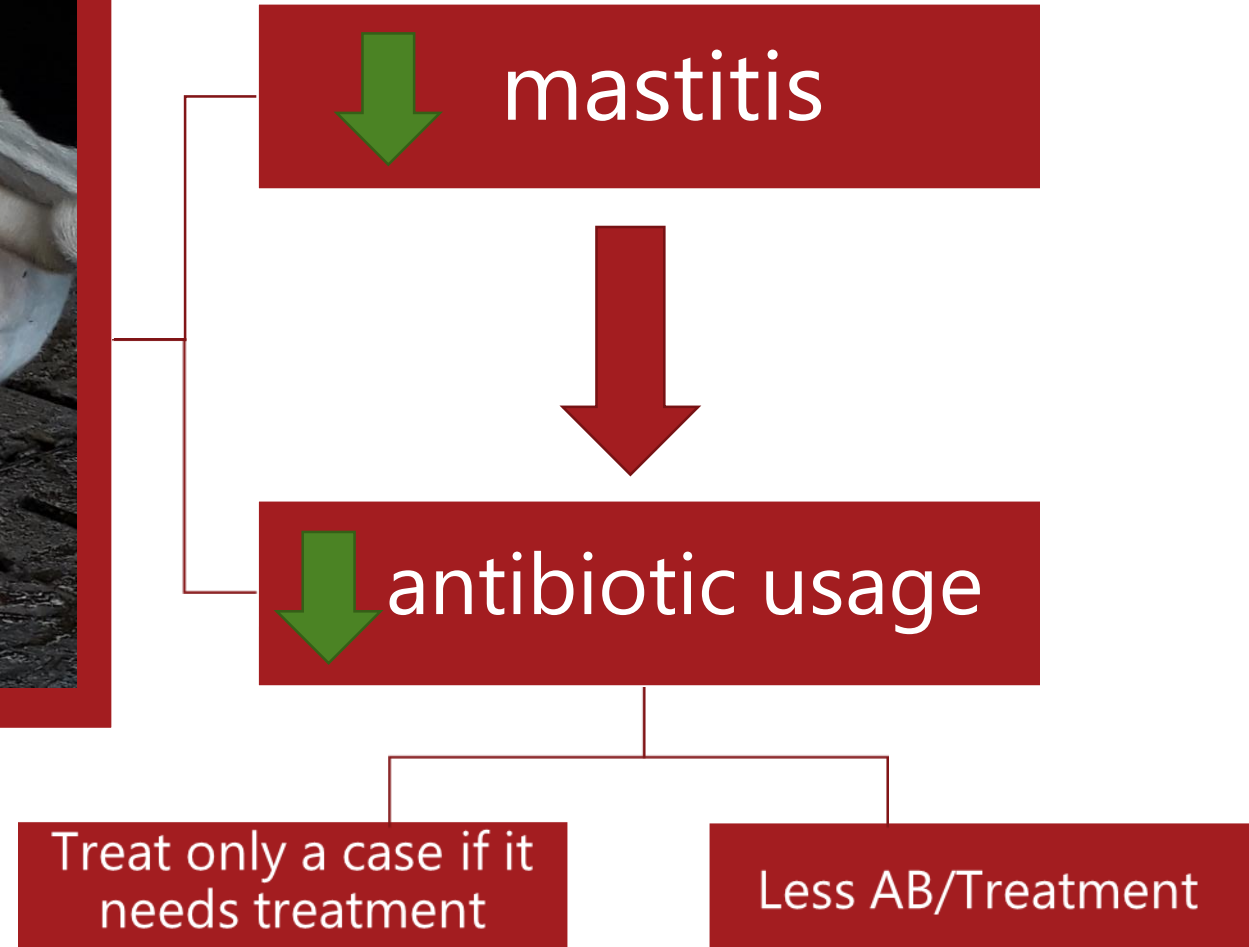
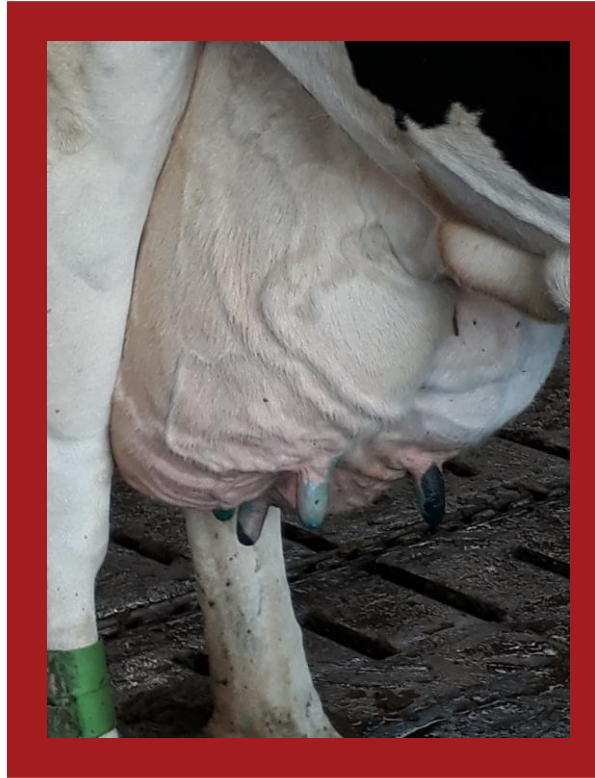
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STØTTET AF

Mælkeafgiftsfonden

Why?

- We aim for responsible use of antibiotics!
- Mastitis takes the largest amount of antibiotics for dairy cattle (DANMAP, 2020)



Less amount of antibiotic per treatment

- Treatment of mastitis in Denmark (Nordic countries) is more or less restricted to the use of Penicillins.
- Mainly combined treatment: Penicillins are administered local (IMM) and systemic (IM) (Wilm et al., 2021)
- A combined treatment has 16 times the amount of antibiotic active compound compared to local treatment only

Objective

- Outcome: Bacteriological cure rate
- Non-inferiority trial: 15% margin

We would like to demonstrate...

Local treatment alone does not reduce bacteriological cure rate with more than 15% compared to combined treatment

Materials and Methods

12 farms

Screening

Milk sampling

NSAID treatment

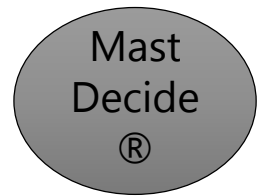
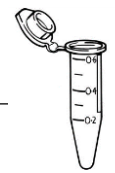
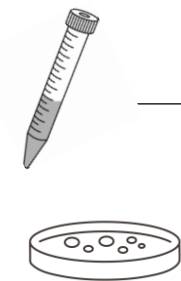
On-farm testing

Selection

Randomization

Study treatment

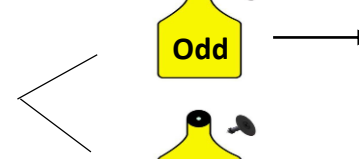
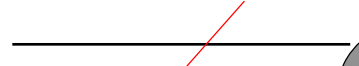
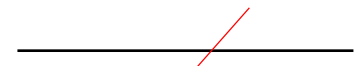
Follow-up



Sterile

Gram -

Gram +



3 days

Benzylpenicillin procain IMM

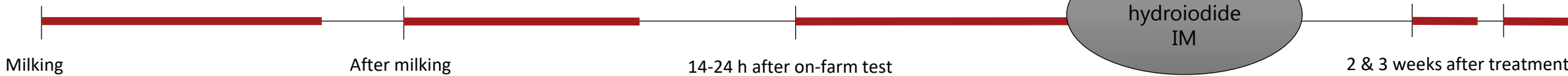
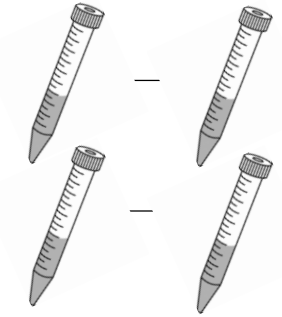
Local

Combination

Benzylpenicillin procain IMM

Penethamate hydroiodide IM

Bacteriological cure



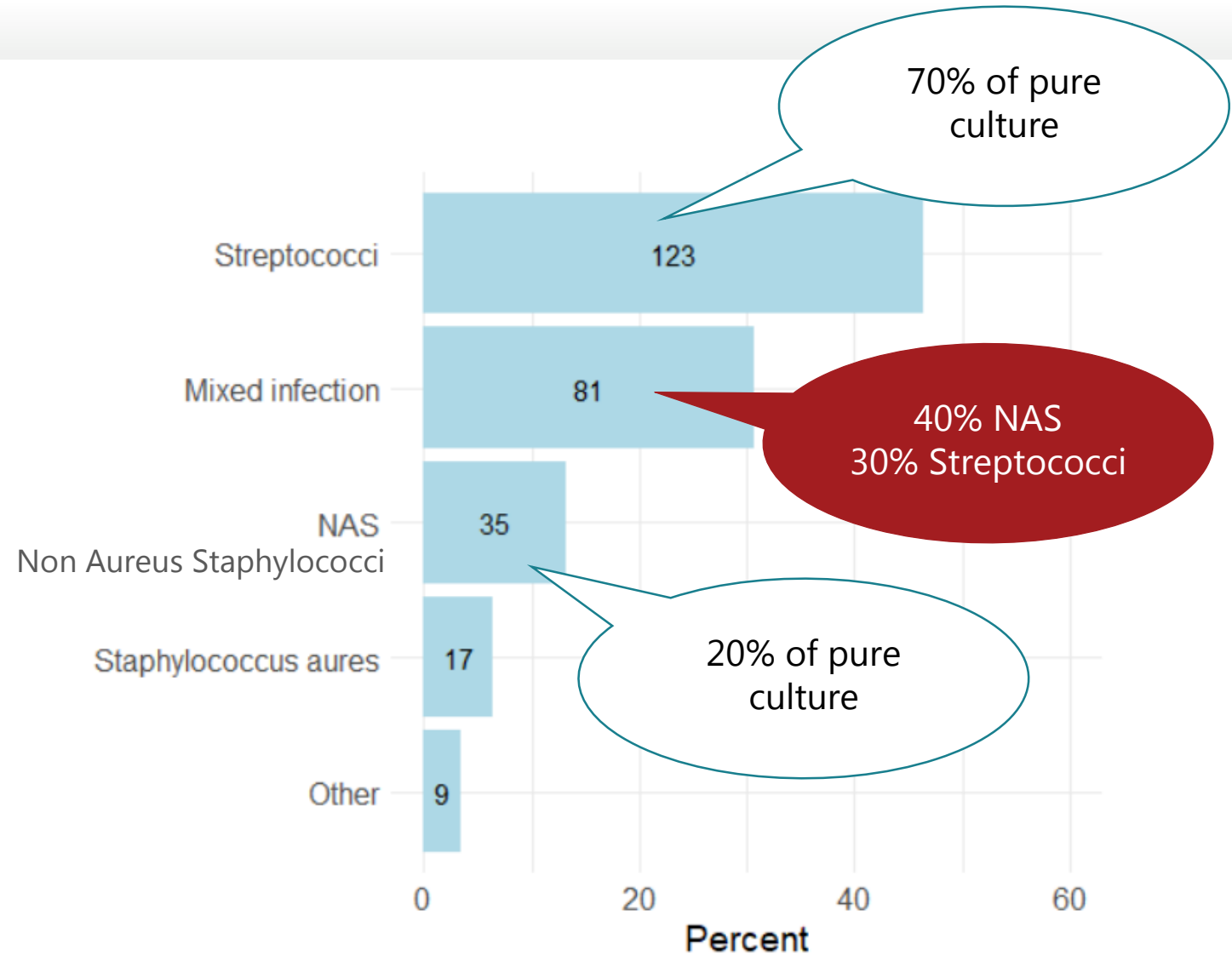
Materials and Methods

- Bacteriology following NMC standards + MALDI-TOF for species identification
 - 2 pathogens = mixed infection
 - >2 pathogens =contamination
- Cure defined as: pathogen(s) in the clinical milk sample not detected in follow-up samples - at species level
- Cow- and case characteristics (DIM, SCC, clinical grade...) included in logistic regression mixed model of treatment effect on bacteriological cure

Non-inferiority analysis

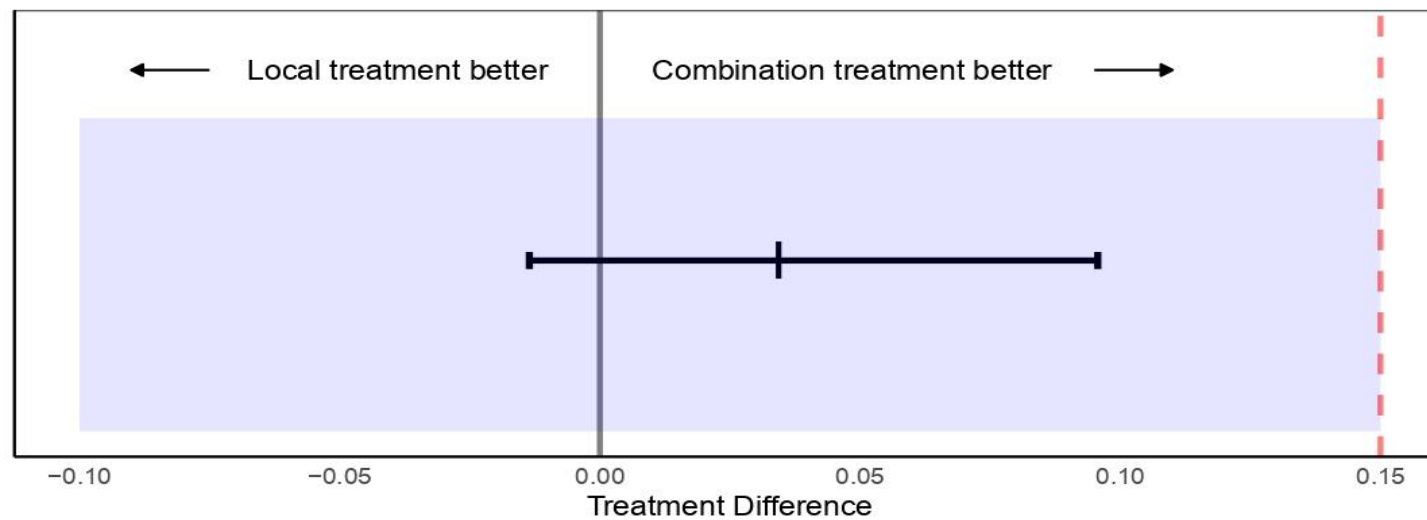
Results

- 265 cases for final analysis
 - Almost 2000 cases registered
 - Mainly excluded by on-farm test
- Pathogen and SCC at DHI before clinical case were relevant in the model



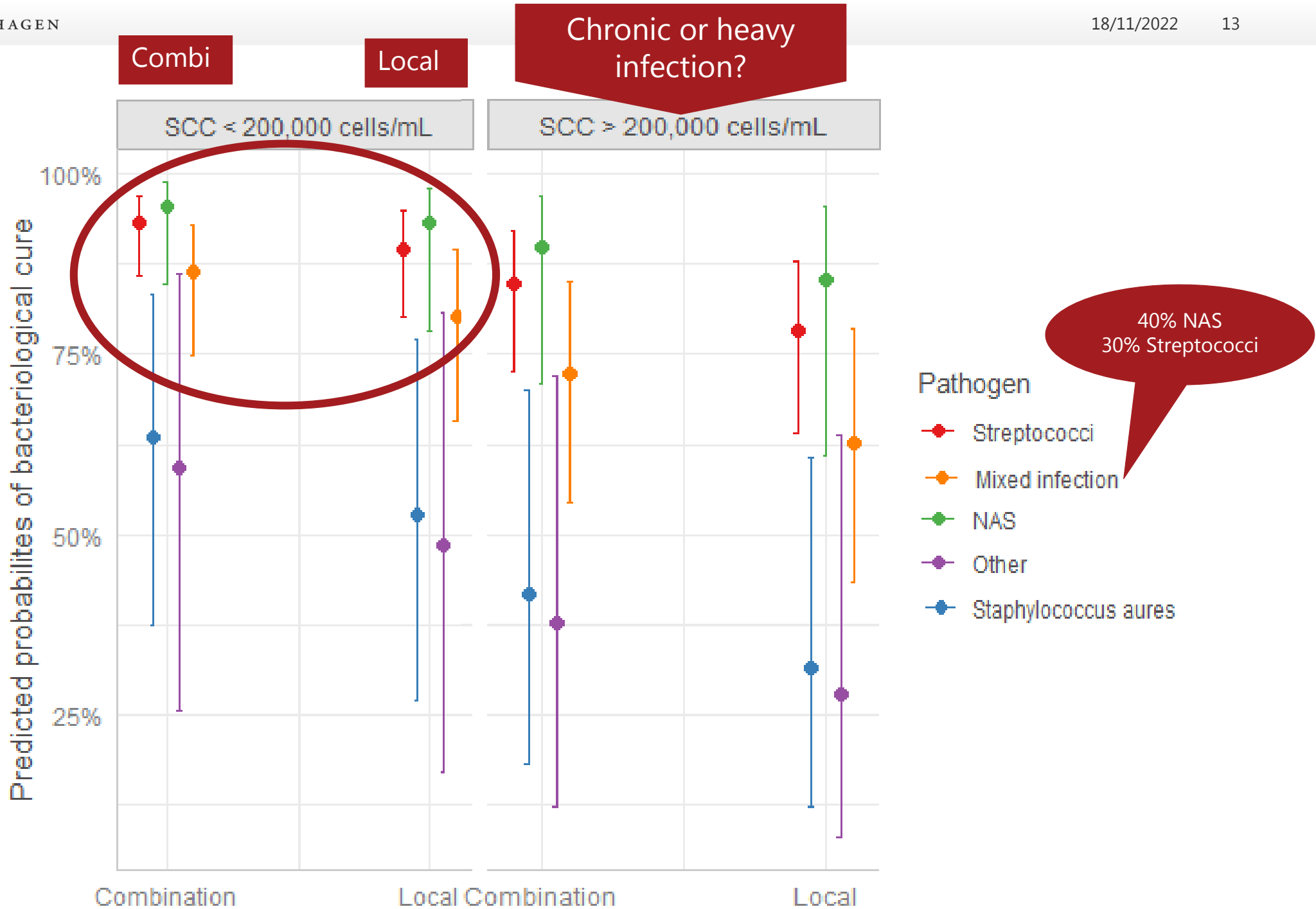
Results – non-inferiority

Overall the local treatment was non-inferior to combined treatment



Results

Cure rates above expected spontaneous cure



Take-home message

- Local penicillin treatment compared to combined treatment can reduce antimicrobial usage without reducing bacteriological cure rates by more than 15%
- Effect of treatment is depending on pathogen and SCC at last DHI before clinical mastitis case

Use your diagnostics !



Thank you!

Acknowledgements

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