

CPH Cattle seminar
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Tilhørere: 45 fysisk + 35 online

Treatment of clinical mastitis: local or combined administration of penicillin?

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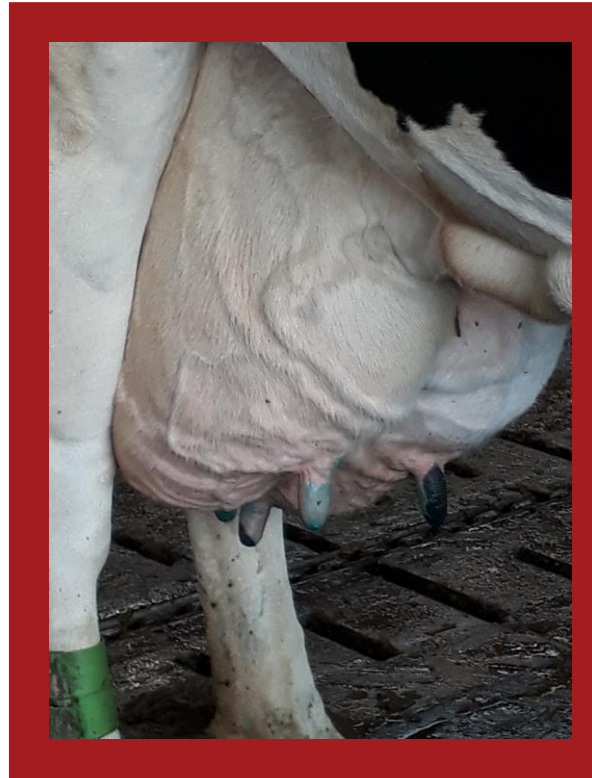
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STØTTET AF

Mælkeafgiftsfonden

Why?

- We aim for responsible use of antibiotics!
- Mastitis still takes the largest amount of antibiotics for dairy cattle
(DANMAP, 2021)



↓ mastitis



↓ antibiotic usage

Reduced no. of treatments
No negative effect on
production, health or welfare



Treat only a case if it
needs treatment

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

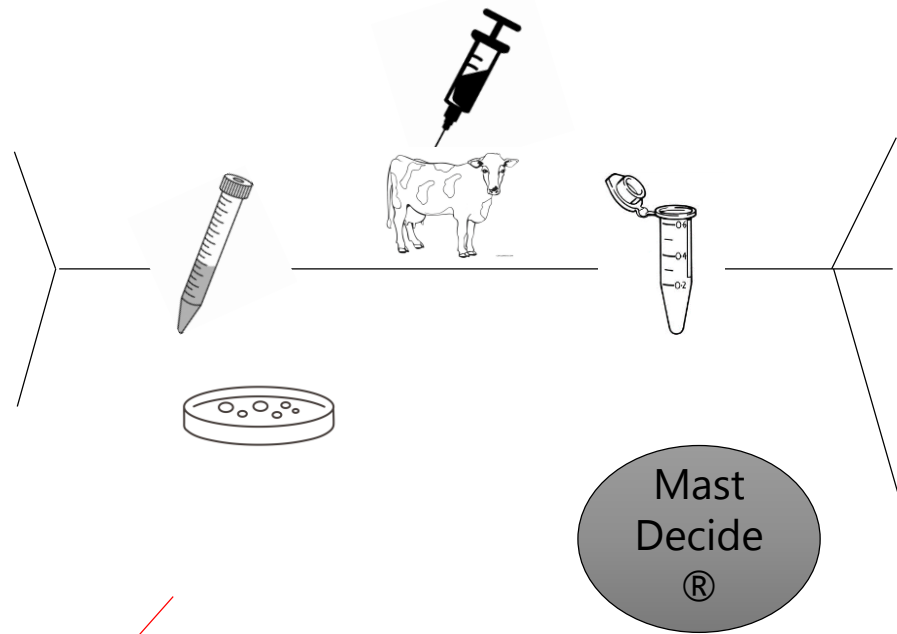
On-farm testing

Selection

Randomization

Study treatment

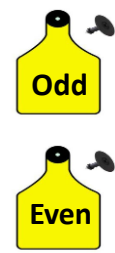
Follow-up



Sterile

Gram -

Gram +



3 days

Bacteriological cure

Benzylpenicillin procain IMM

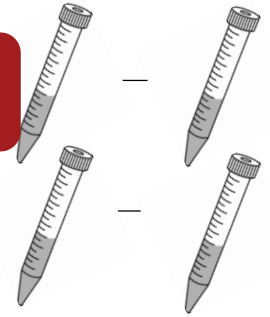
Local

Clinical cure

Combination

Benzylpenicillin procain IMM

Penethamate hydroiodide IM



Milking

After milking

14-24 h after on-farm test

2 & 3 weeks after treatment



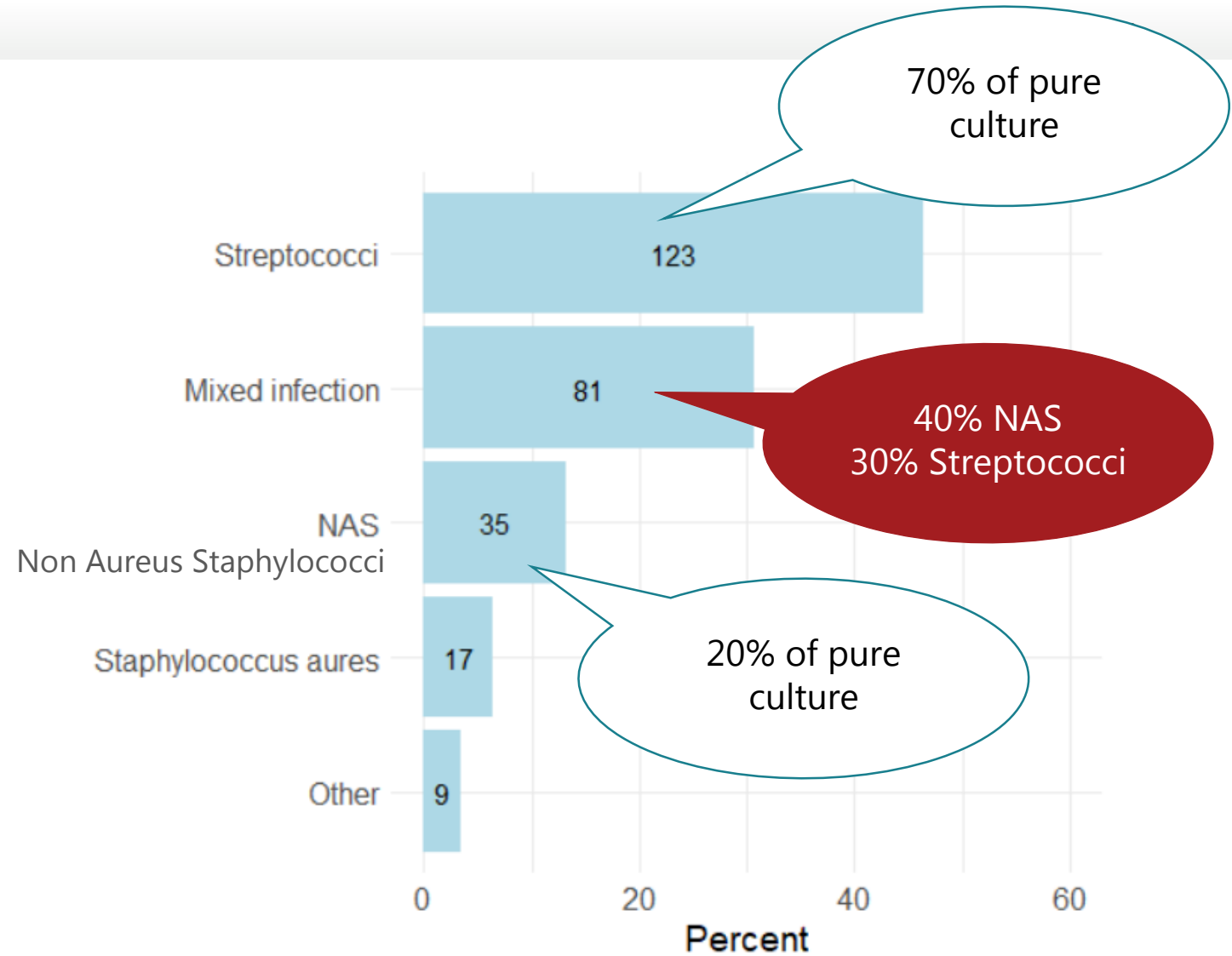
Materials and Methods

- Bacteriology + 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

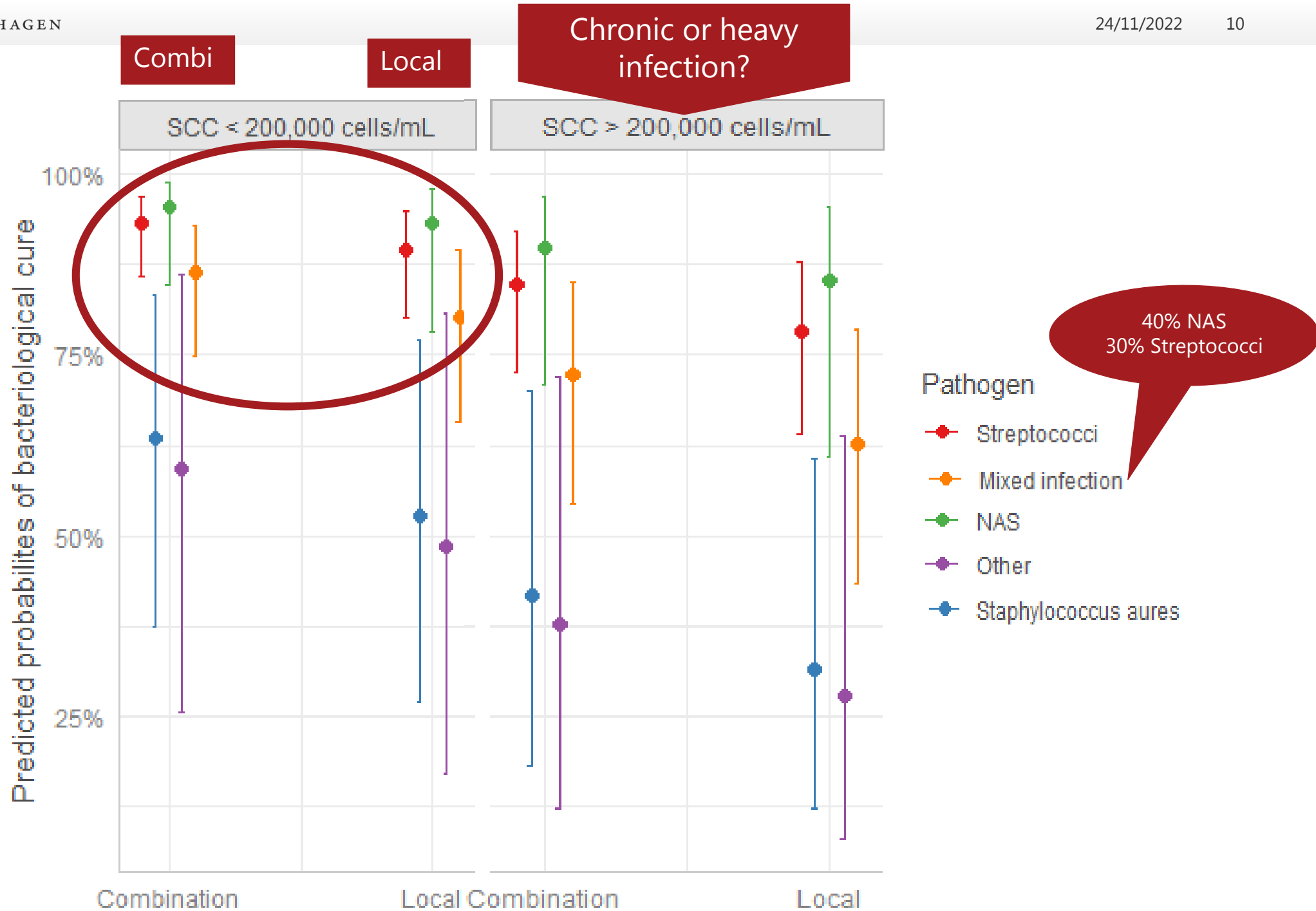
Non-inferiority analysis

Results

- 265 cases for final analysis
 - 1800 cases registered
 - Mainly excluded by on-farm test
- Pathogen and SCC at DHI before clinical case were relevant in the model

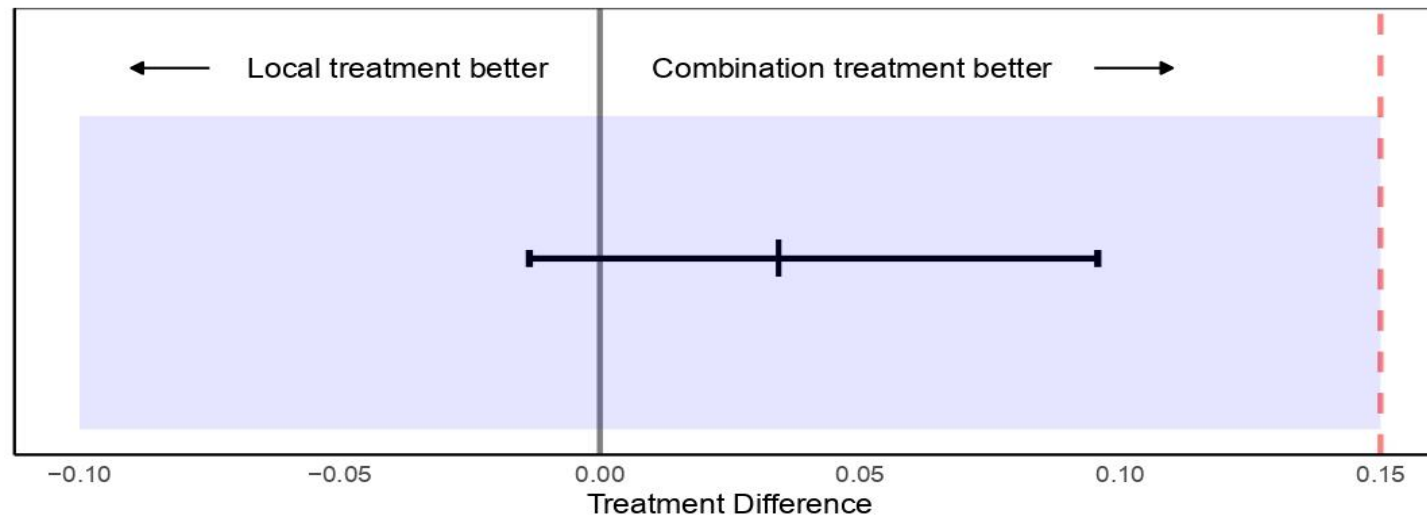


Results



Results – non-inferiority

Overall the local treatment was non-inferior to combined treatment



CONCLUSION:

Treat local only and save antibiotics without reducing treatment effect substantially!

Take-home considerations

- Effect of treatment is depending on pathogen and SCC
- Herd specific!
 - Different species and strains

Use diagnostics !

- Accept 15% difference
- Assess clinical and cytological cure



Thank you!

Acknowledgements

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