Section seminar: Animal Welfare and Disease control, University of Copenhagen

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30 participants

Treatment of clinical mastitis in Danish dairy cattle

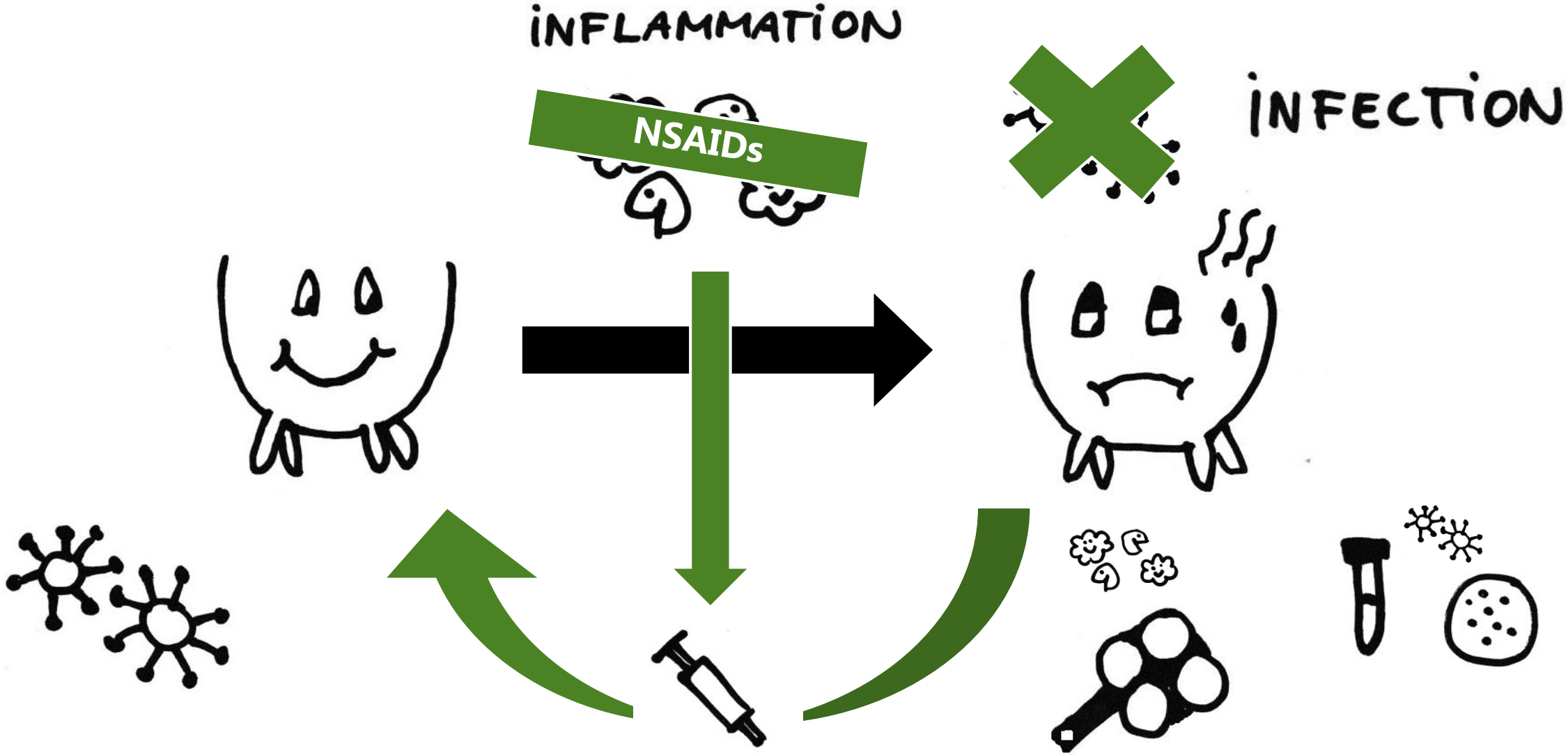
Line Svennesen, DVM, Ph.D.
University of Copenhagen

UNIVERSITY OF COPENHAGEN

line.svennesen@sund.ku.dk

STØTTET AF
Mælkeafgiftsfonden

Mastitis is often caused by bacterial infection



Why?

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

mastitis

antibiotic usage

Treat only a case if it needs treatment

Less AB/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

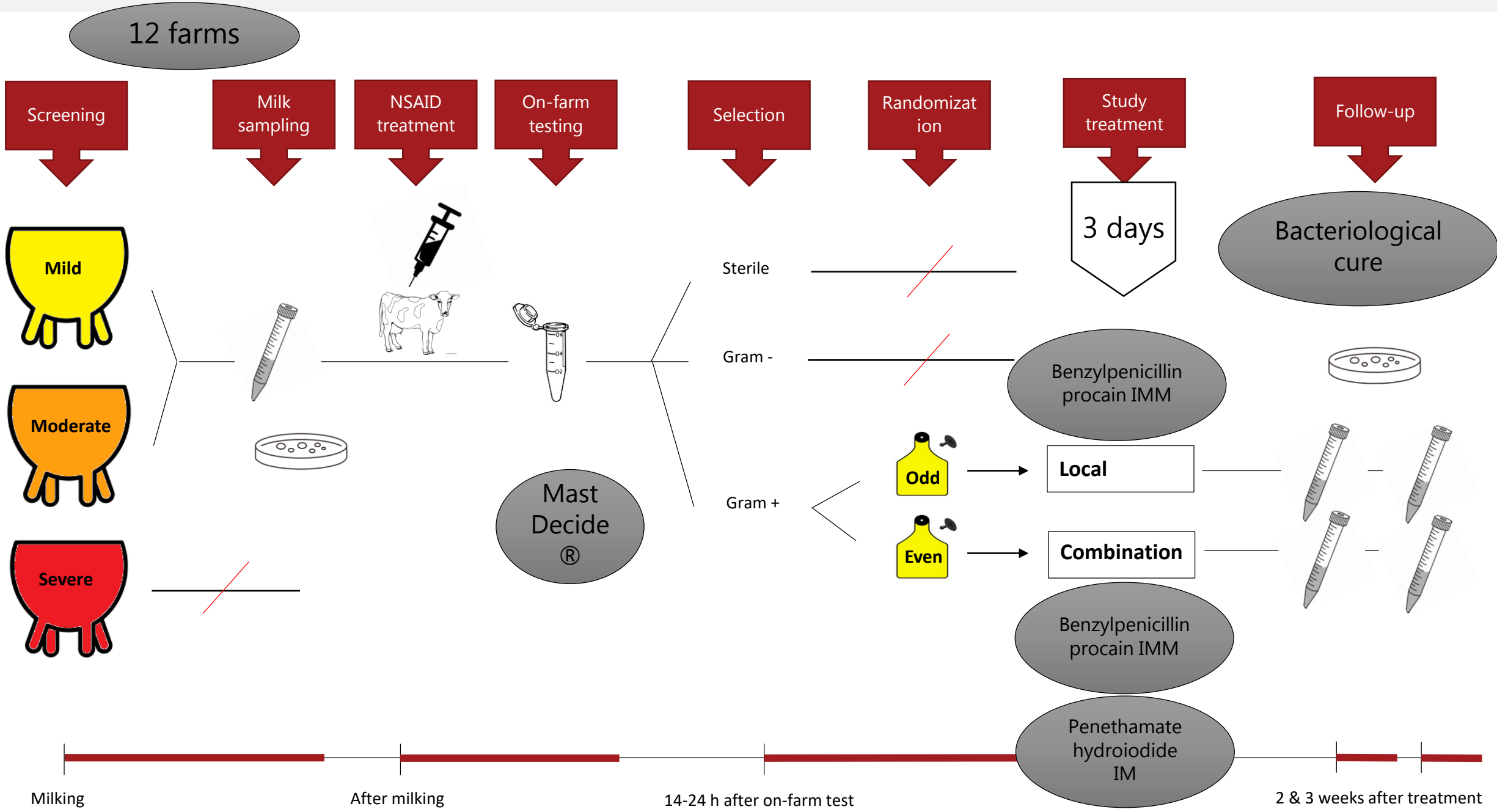
Objective

- 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
3 days
Bacteriological cure
Mild
Moderate
Severe
Sterile
Gram -
Gram +
Mast Decide ®
Benzylpenicillin procain IMM
Odd
Even
Local
Combination
Benzylpenicillin procain IMM
Penethamate hydroiodide IM
Milking
After milking
14-24 h after on-farm test
2 & 3 weeks after treatment

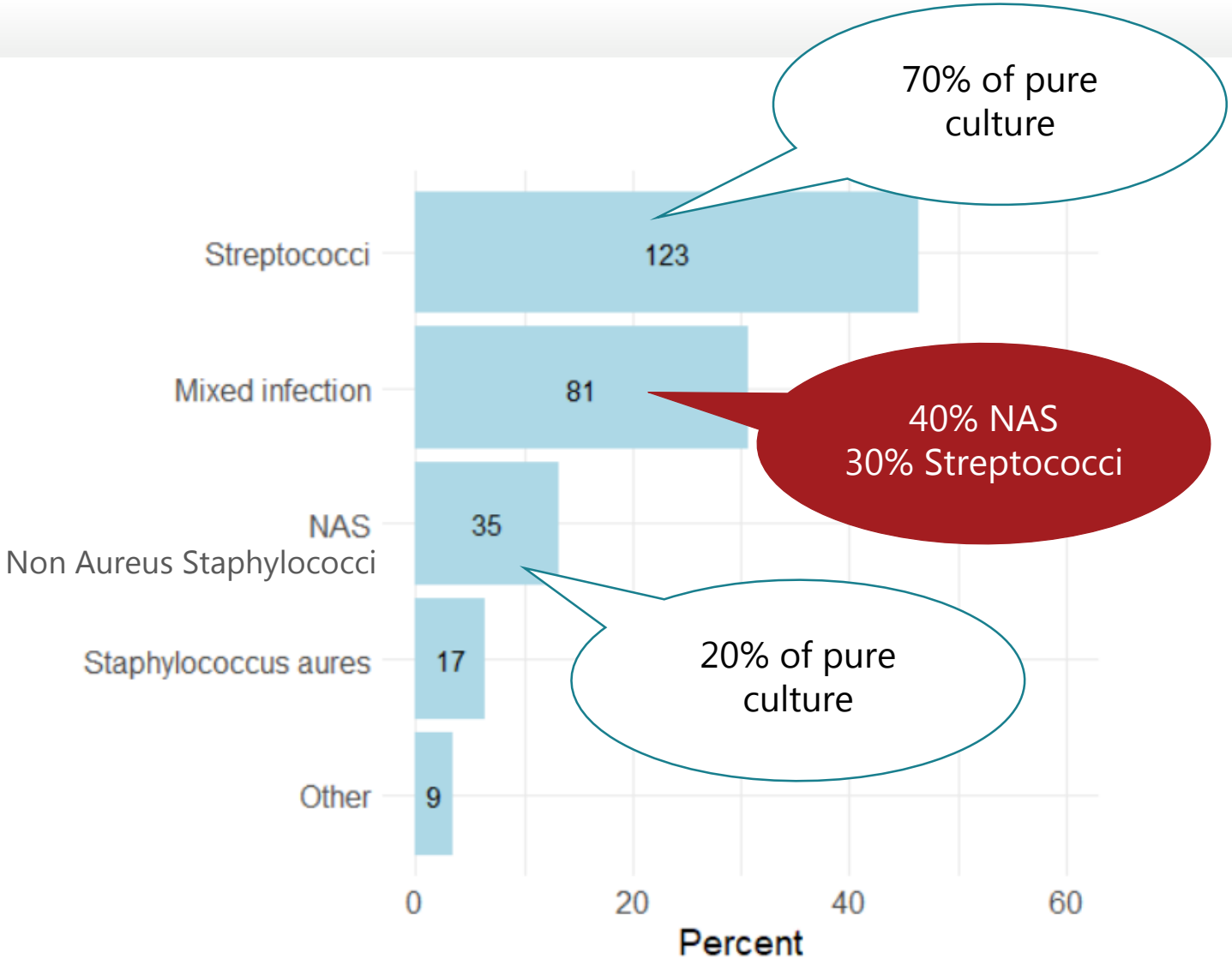
Materials and Methods

- Bacteriology 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

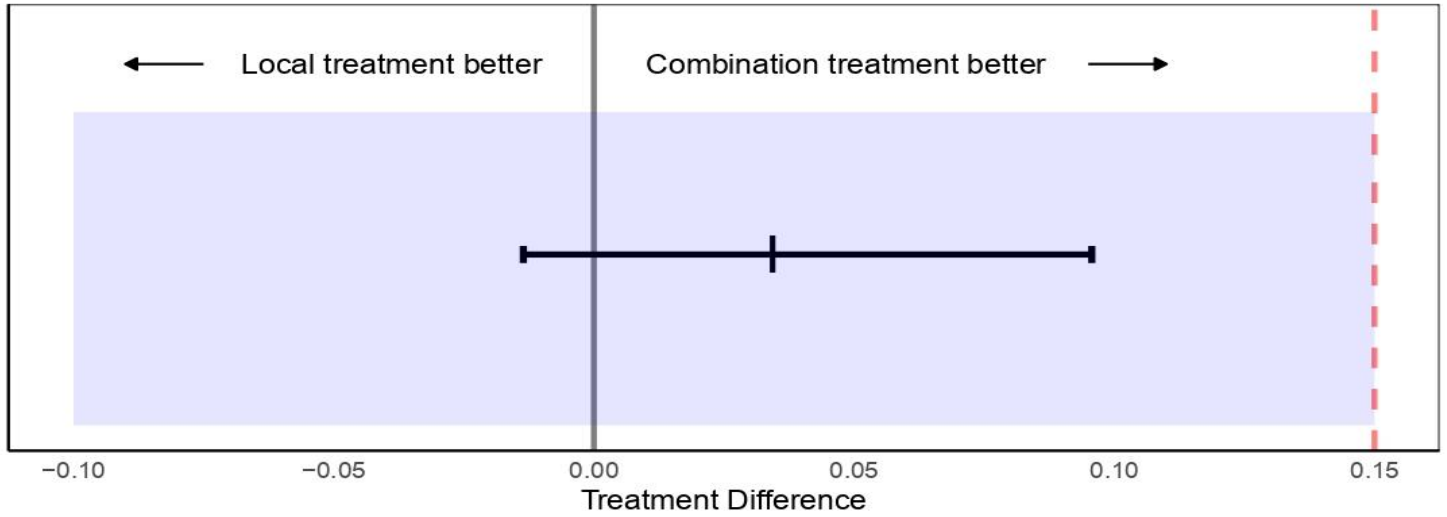
Results

- 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



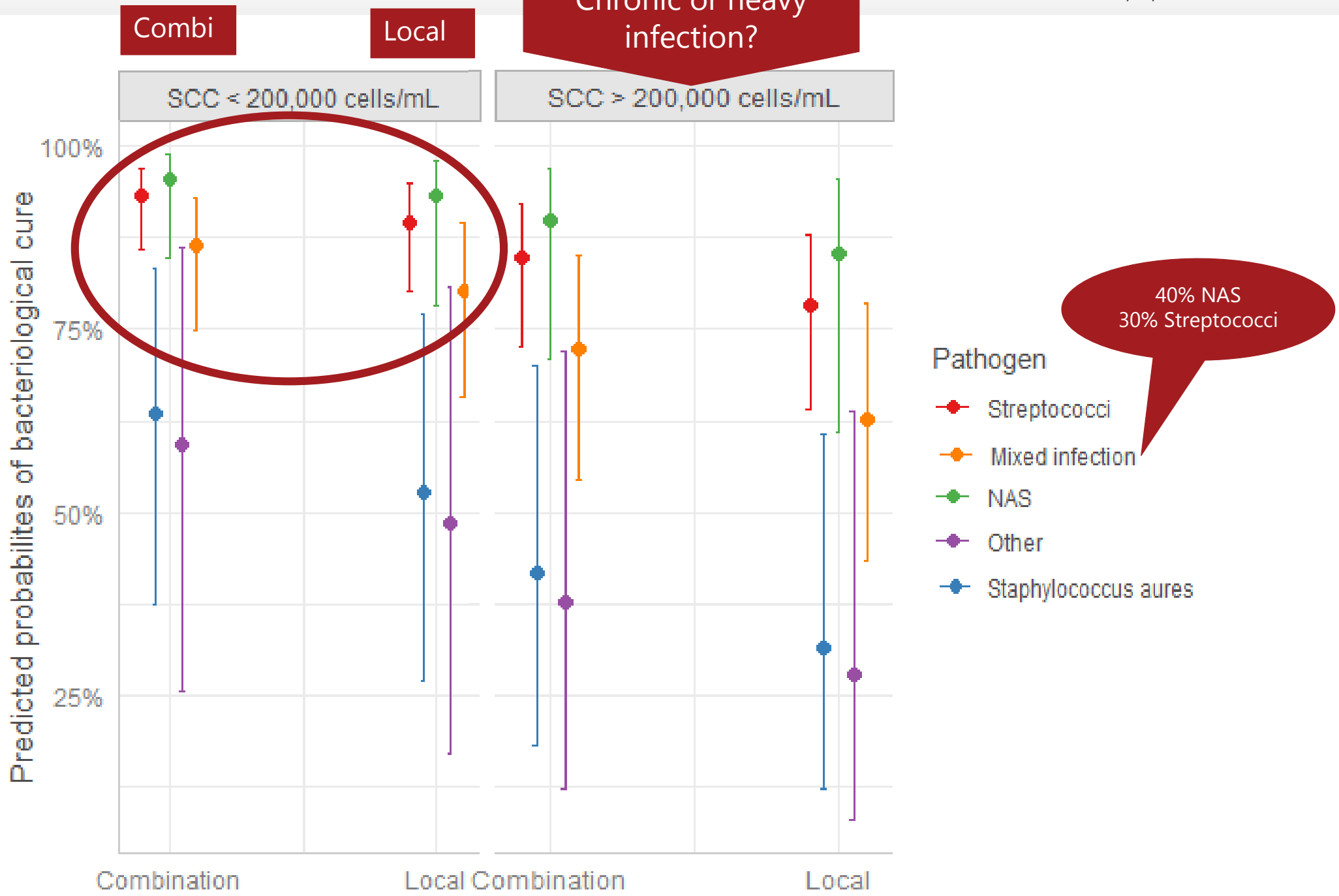
Results – non-inferiority

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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