

# Quarter-based vs cow-based selective dry cow therapy

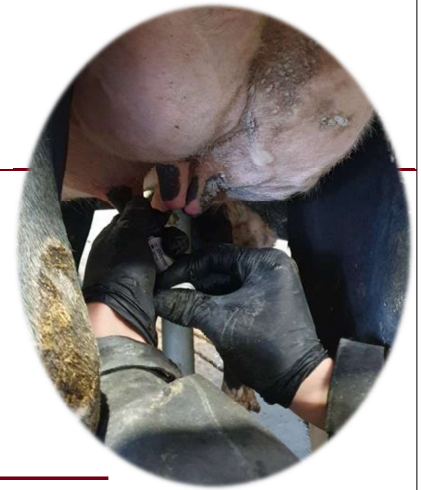
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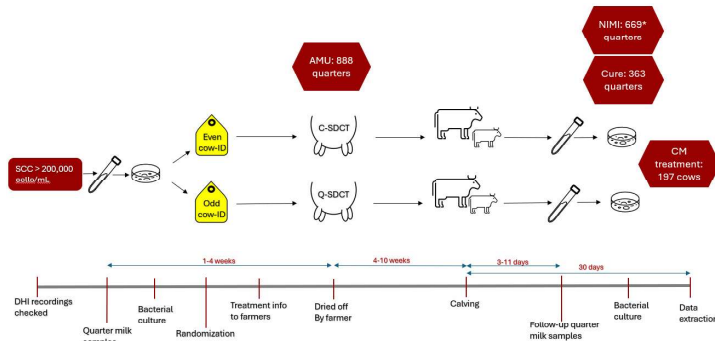
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## Objectives and design

### Background

- Overuse of antimicrobials and antimicrobial dry cow therapy has been linked to antimicrobial resistance
- We hypothesize that antimicrobial usage (AMU) can be reduced by using quarter-based dry cow therapy (Q-SDCT) compared to cow-based dry cow therapy (C-SDCT) without decreasing udder health substantially



### Data

- Randomized controlled parallel-group trial
- 8 herds from Denmark and Northern Germany
- Enrollment November 2022 - November 2023

### Outcomes

- New intramammary infection (NIMI) risk within dry period
  - A pathogen detected in follow-up milk sample but not in dry-off milk sample
- Bacteriological cure risk within dry period
  - A pathogen detected in dry-off milk sample but not in follow-up milk-sample
- Incidence risk of clinical mastitis (CM) treatment within dry period and first 30 days in lactation
  - Registration of CM treatment by farmer of maximum 1 per cow
- AMU tested as proportion of treated quarters in both groups

### Analyses of udder health outcomes

- Multivariable logistic regression with treatment group as primary interest
- Equivalence of Q-SDCT and C-SDCT within a margin of 10% absolute difference

## Results

Crude risk of udder health outcomes and proportion of treated quarters

Outcomes	Q-SDCT in %	C-SDCT in %
NIMI	18.0 <sup>a</sup>	8.8 <sup>b</sup>
Bacteriological cure	97.1	94.7
CM treatment	10.4	8.3
AMU at dry-off	57.3 <sup>a</sup>	100 <sup>b</sup>

<sup>a,b</sup>Within a row, means with different superscripts differ significantly ( $P < 0.05$ )

OR of udder health outcomes and explanatory variables in final multivariable analyses for Q-SDCT with C-SDCT as reference

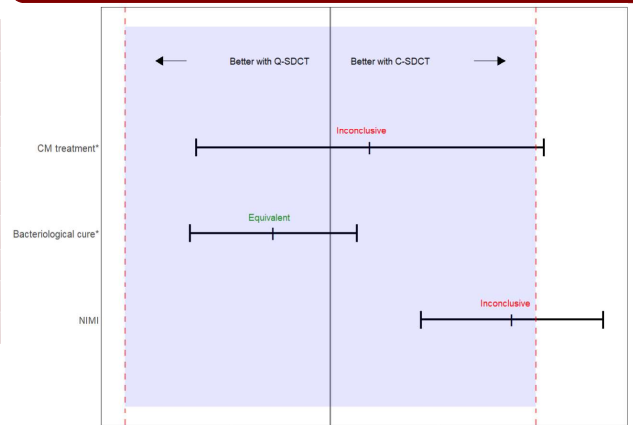
Outcomes and variables	OR	P-value
NIMI	2.3	0.001
CM in previous lactation	1.6	0.091
CMT $\geq 2$ at dry-off <sup>1</sup>	0.5	0.036
Daily milk-yield (kg ECM) <sup>2</sup>	1.04	0.018
Ln(SCC * 1000 cells/mL) <sup>2</sup>	0.6	0.019
Bacteriological cure	1.8	0.307
Parity (primiparous)	NA <sup>3</sup>	0.990
CM treatment	1.3	0.610
Parity (primiparous)	0.2	0.168

<sup>1</sup>California mastitis test on a scale from 0-3

<sup>2</sup>From last DHI recording before dry-off

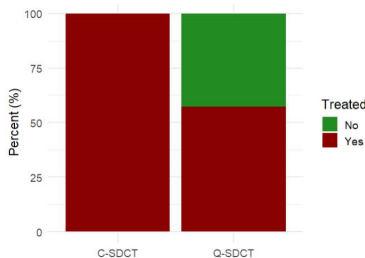
<sup>3</sup>Not able to calculate due to 0 quarters from primiparous cows without cure

Equivalence plot between Q-SDCT and C-SDCT for udder health outcomes. Dashed lines show the equivalence margin of an absolute difference of 10%



\*Only multiparous cows, due to 0 cases of non-cure and 1 case of CM in primiparous cows.

Percentage of treated quarters at dry-off for the two treatment-groups



## Conclusions

- Q-SDCT is capable of significantly reducing antimicrobial usage at dry-off
- Equivalence between treatment-groups were seen for bacteriological cure risk within a margin of 10% absolute difference
- However, a significant increase in NIMI risk was seen for Q-SDCT

### Limitations

- Limited sample sizes for outcomes might affect the chance of showing significant differences and equivalence



Nadja Alsted, DVM, PhD student at the University of Copenhagen, IDF conference in Stockholm, March 2026



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