

Medical treatment of mastitis in Norwegian cows



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Introduction

- Worldwide mastitis is the most common disease in dairy cows
- Causes economic loss due to reduced milk yield and milk discarded during mastitis treatment
- Recurrent mastitis and high cell count is often a reason for culling dairy cows
- Mastitis is the most common indication for use of antibiotics in Norwegian cows
- In 2020, 0.47% of milk samples from cows with clinical mastitis in Norway were positive for penicillin resistant *S. aureus*
- Global increase in penicillin resistant bacteria calls for prudent use of antibiotics
- Mastitis can be painful, avoiding treatment affects animal welfare
- Treatment should be initiated quickly in moderate to severe cases of mastitis
- Since 2012, it has been required by Norwegian law in Norway to register all prescription drugs administered to cattle
- Aim: Determining what are the most common drug combinations used to treat clinical mastitis in Norway
- This work is part of the research project «New Approaches to MASTitis treatment and Effective prevention», NAMASTE



"Veterinarian treating a cow with mastitis painted by Edvard Munch" generated by DALL-E

Materials and methods

- Retrospective observational study
- Data from the Animal Health Recording System (AHRS) in Norway, approximately 96% of medical treatments in cattle is recorded in the AHRS
- 270 841 cases of clinical mastitis in the period 2014-2021
- 4 130 journals removed due to double reporting and 1 780 due to registration of medicines not approved for cattle.
- Data analysis in STATA 17 and RStudio

Results and discussion

Most veterinarians treat clinical mastitis with a combination of systemic and intramammary antibiotics. Use of only systemic antibiotics has increased since 2018. We also observed a decrease in antibiotic treatments. One factor that might affect the increase in use of systemic treatment alone (no local antibiotic) is structural changes in Norwegian dairy production with an increasing use of free stalls and automatic milking systems

The low frequency of penicillin resistant *S. aureus* makes initial treatment with procaine benzylpenicillin a medically sound choice. In 2014, the proportion of antibiotic treatments where they only used procaine benzylpenicillin was 0.58 in Norway, increasing to 0.86 in 2021. This increase may be due to Streptocillin Forte intramammaries (dihydrostreptomycin and procaine benzylpenicillin) losing marketing approval in Norway in 2019.

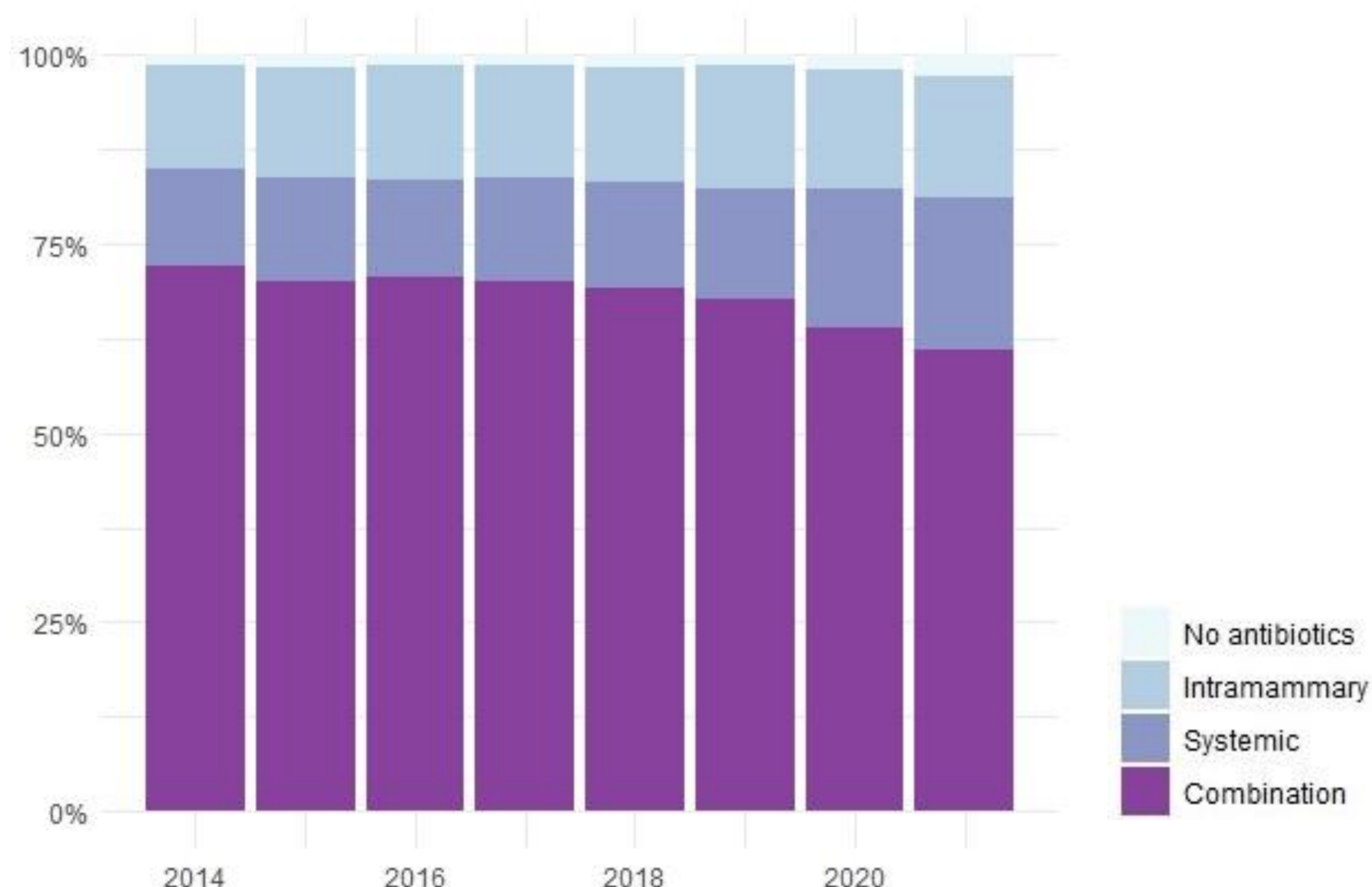


Figure 1: Proportion of administration routes for antibiotics when treating clinical mastitis

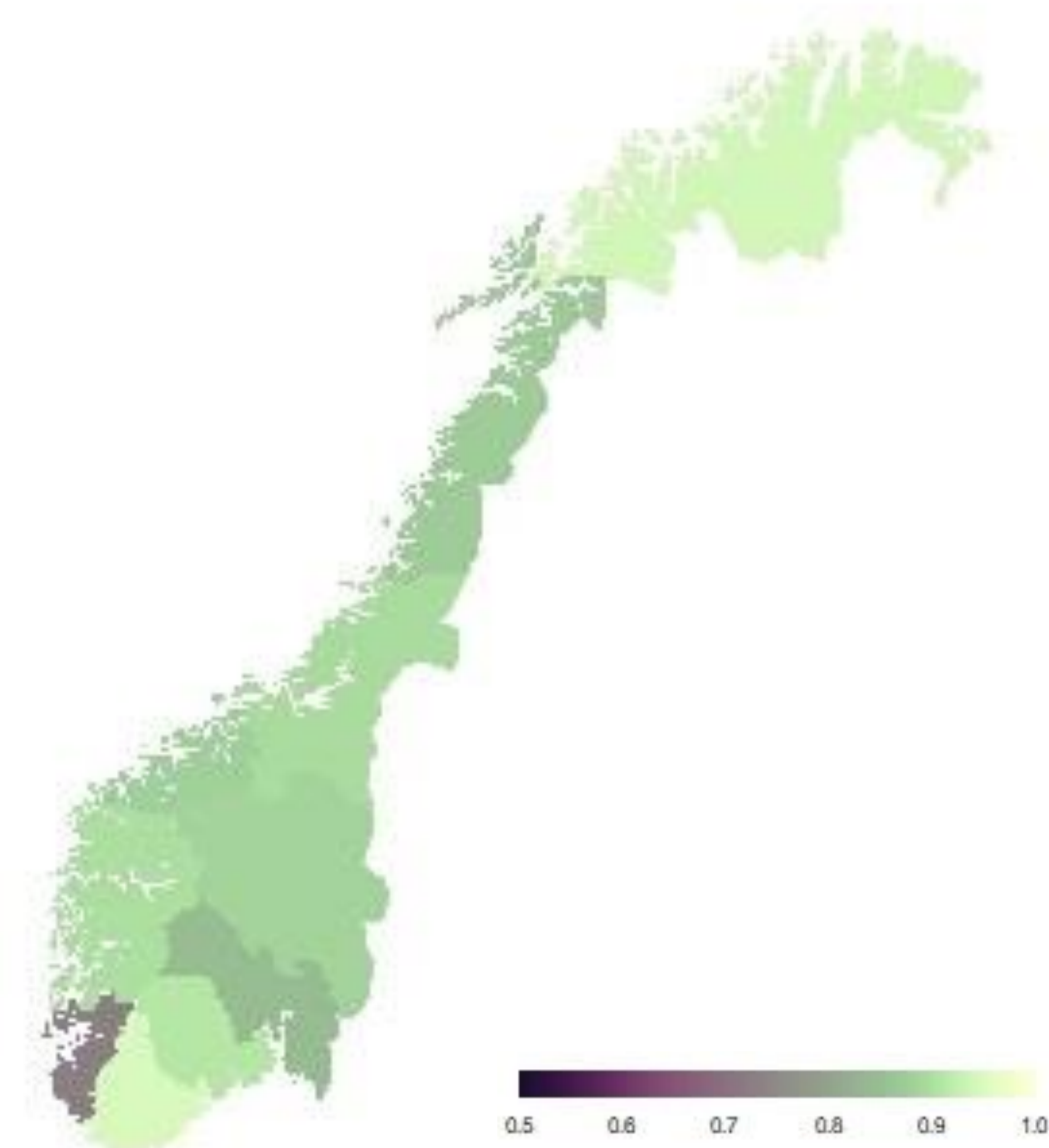


Figure 2. Proportion of antibiotic treatments of clinical mastitis with procaine benzylpenicillin as the only antibiotic.

We observed regional variation in the proportion of antibiotic treatments with procaine benzylpenicillin as the sole antibiotic. In one county the proportion was 0.73 while in the other counties it ranged between 0.84-0.94.

The use of NSAID in the treatment of clinical mastitis increased across the study period, with positive implications for animal welfare. The proportions of NSAID use in southern Norway was lower than in other parts of Norway, but still had an increase from 2014 to 2021. Southern Norway has a lower density of dairy herds and fewer cases of mastitis, thus if one or a few veterinarians do not use NSAID this might have a relatively larger impact on the proportion compared to other regions.

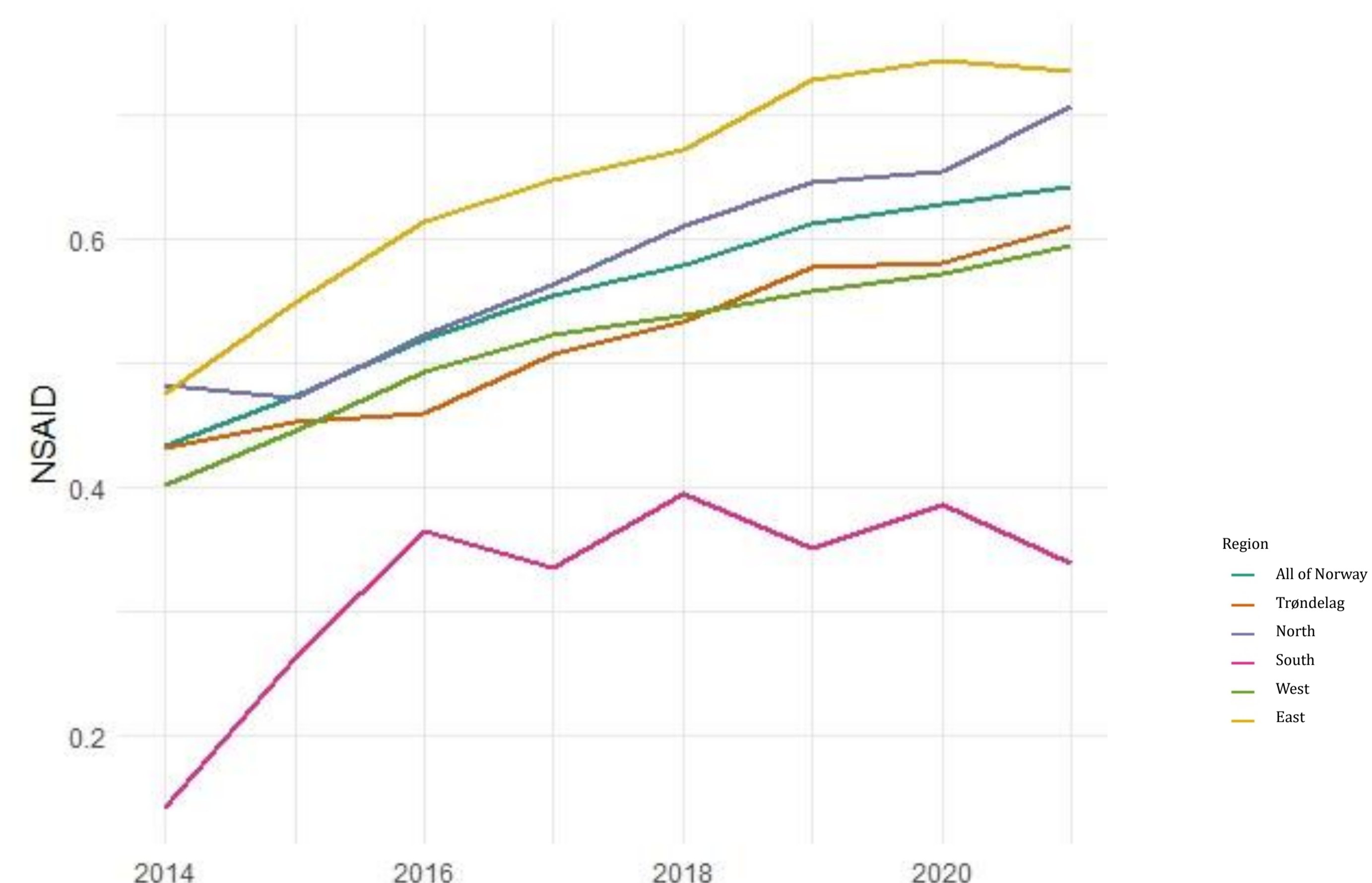


Figure 3. Proportion of mastitis treatments where NSAID is used.

Conclusion

Penicillin is the most common antibiotic used when treating clinical mastitis in Norway. Most veterinarians use a combination of systemic and intramammary antibiotics. Use of NSAID when treating mastitis has increased in the period 2014-2021. The completeness and correctness of the database is unknown, but the study likely has acceptable validity for the Norwegian cattle population. Prescription records does not include information of the drivers behind variation in mastitis treatment choices.

References

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