

VetStat Cattle

Epidemiology and quantification
of antimicrobial use in Danish
cattle herds

Jeanette Kristensen, PhD Student
cand.med.vet

Department of Veterinary and Animal Sciences
Section, Animal Welfare and Disease Control



UNIVERSITY OF COPENHAGEN



Agenda

- Contingency work
- Data work
- My challenges with planning a farm-study

Main activities:

- I. Evaluating used measure of AMU and effect of AMU reduction initiatives
- II. Connection between actual use of medicine and use reported in VetStat
- III. Mapping and effect of different treatment strategies in the Danish cattle industry



Benchmarking Danish Vets

(contingency work)



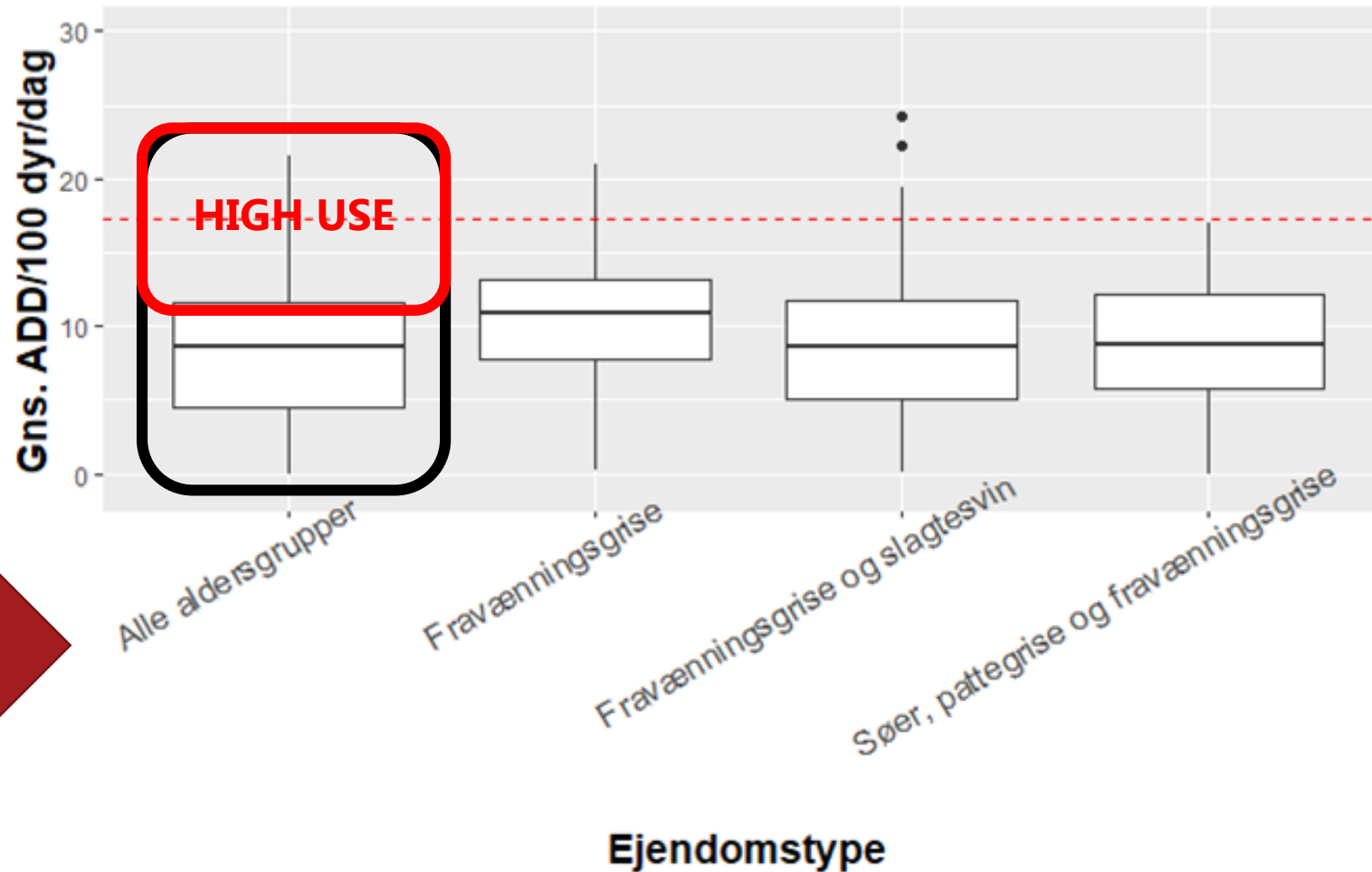
Ensuring “fair” comparison

- Species?
- Herd types?
- Number of animals?
- Veterinary Advisory Service Contracts (VASC)?
- ?

RESULT: A model where vets are compared by percentage of high using farms in their VASC profile for each age group

Example: Weaners % treated animals per day in Danish farms with all age groups present

Figure 22 from the report "[Deskriptiv analyse af dyrlægers ordinationer af antibiotika i svine- og kvægbesætninger](#)"



Corrected for number of animals

Corrected for species and type of herd

3 Vets advising farms with AMU for weaners and all age groups present on the farm

4/16 = 0,25

7/26 = 0,27

5/22 = 0,23

Repeated for each vet for all farm types with weaners

$$\% \text{ High AMU weaner farms} = \frac{\text{Total number of "High AMU farms" with weaners}}{\text{Total number of farms with weaners}}$$

VASC pro

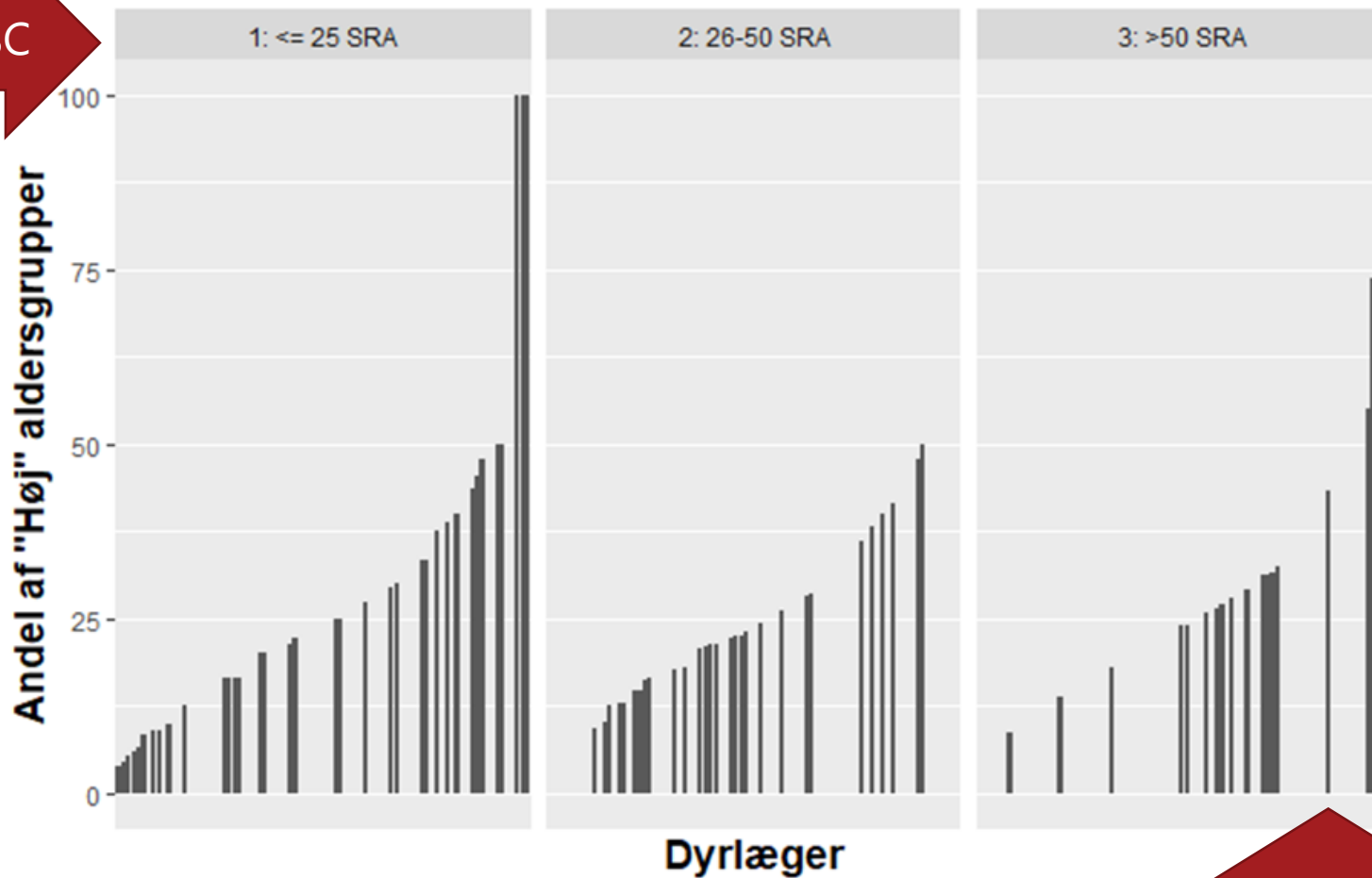
Vet 1

t 3

% High AMU weaner farms

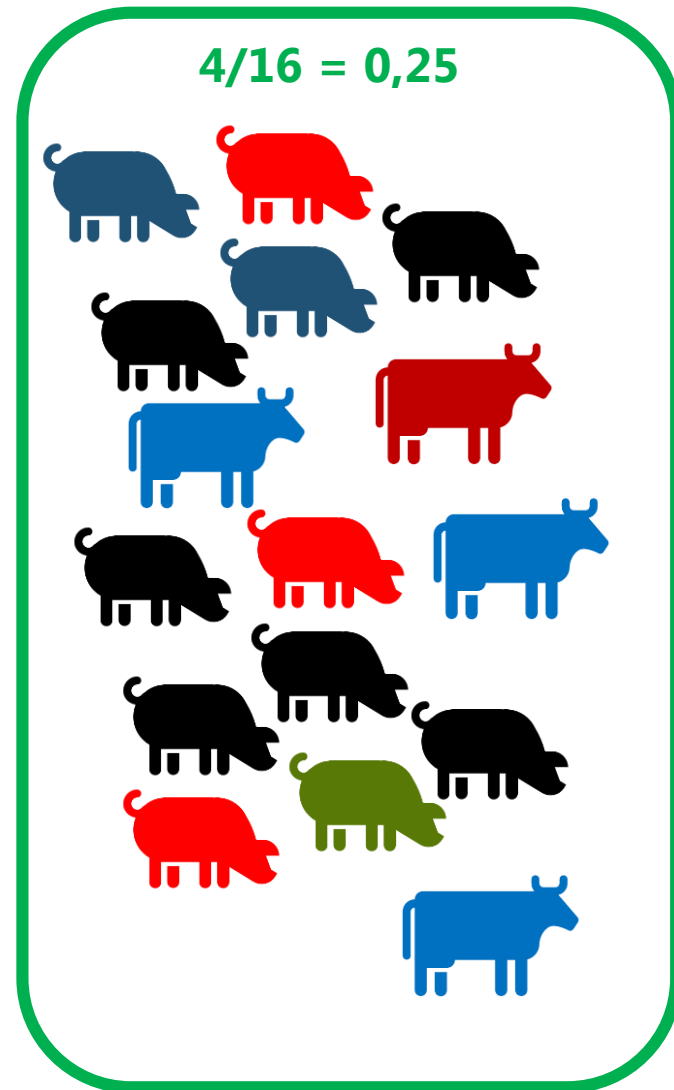
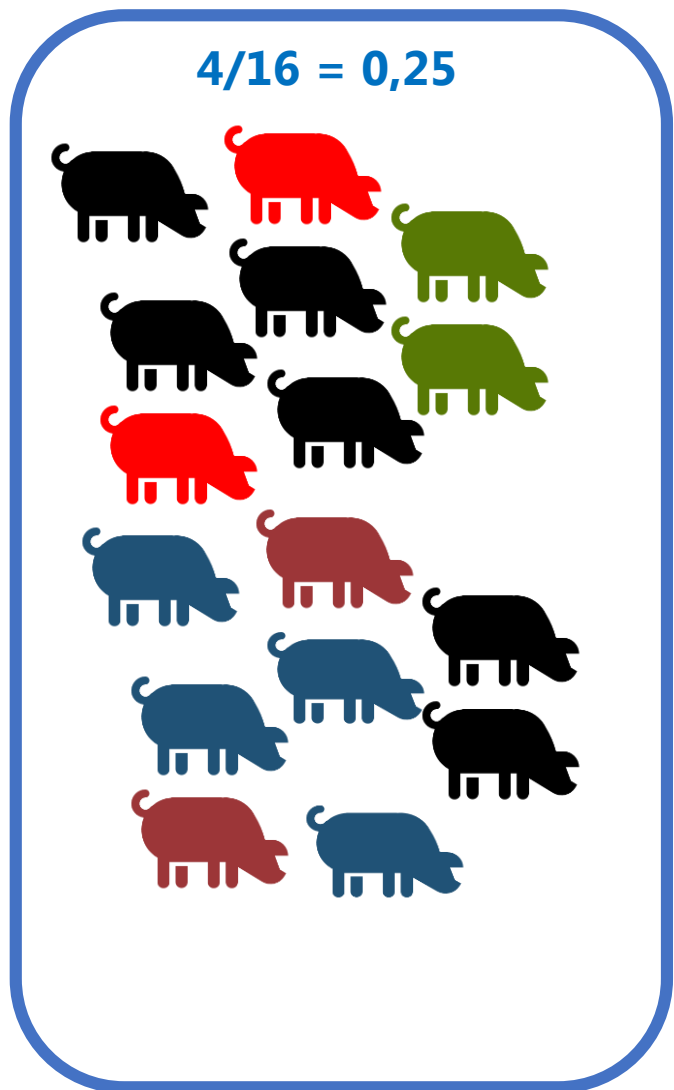
Figure 11 from the report "Deskriptiv analyse af dyrlægers ordinationer af antibiotika i svine- og kvægbesætninger"

Number of VASC



One Vet

Unnecessarily complicated?



To be continued...



VetStat → VetStat 2.0

Some of the changes:

- CHR-level → Herd-level
- Products manually entered → Products extracted from NSP
- Reports on area of disorder and use of group treatments (Per oral)

NEW DATA TABLES!

My actual project...

Main activities:

- I. Evaluating used measure of AMU and effect of AMU reduction initiatives
- II. Connection between actual use of medicine and use reported in VetStat
- III. Mapping and effect of different treatment strategies in the Danish cattle industry

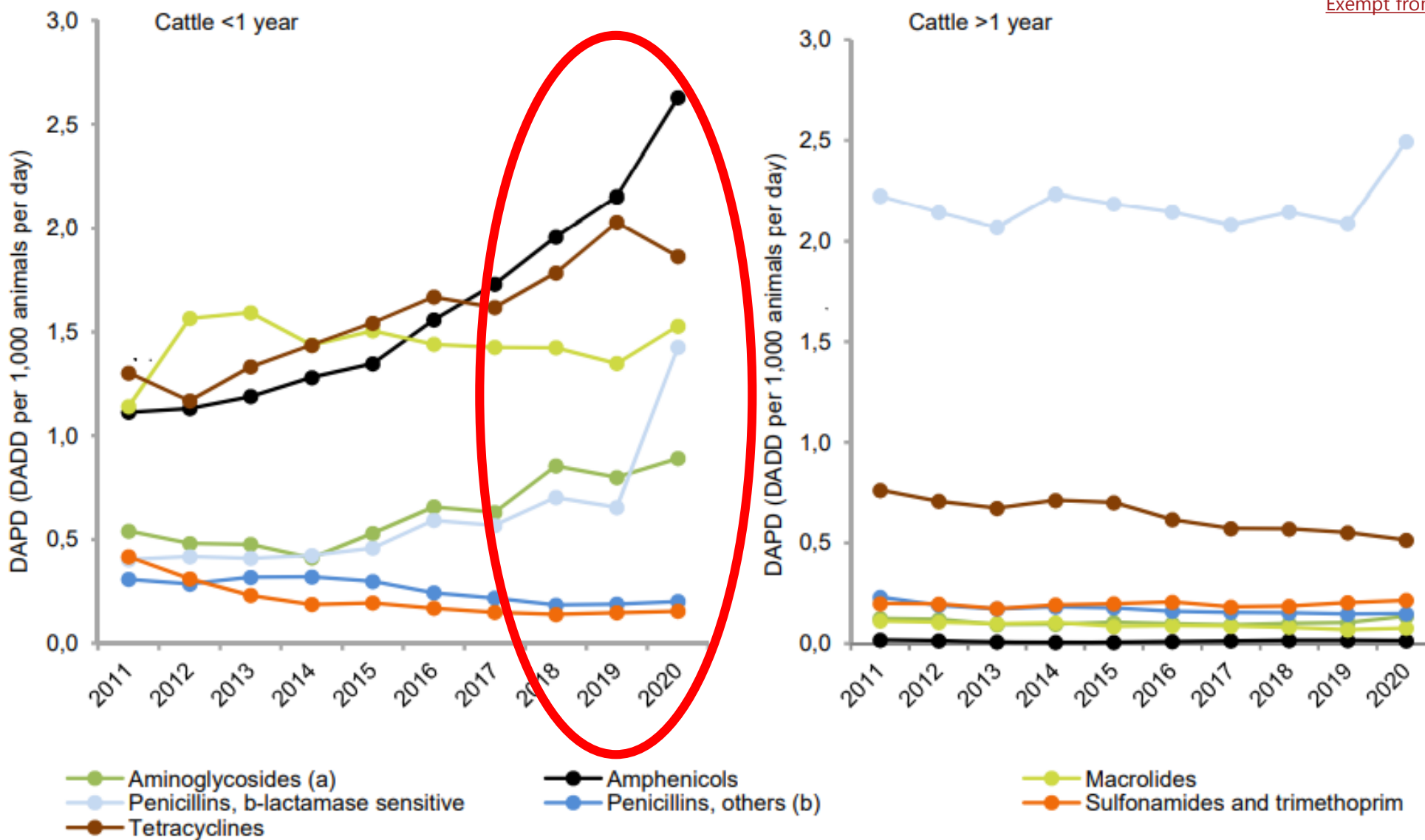


Why is the AMU in calves increasing?

Figure 4.7 Use of antimicrobial agents in cattle, DAPD, Denmark

DANMAP 2020

[Exempt from DANMAP 2020 report](#)

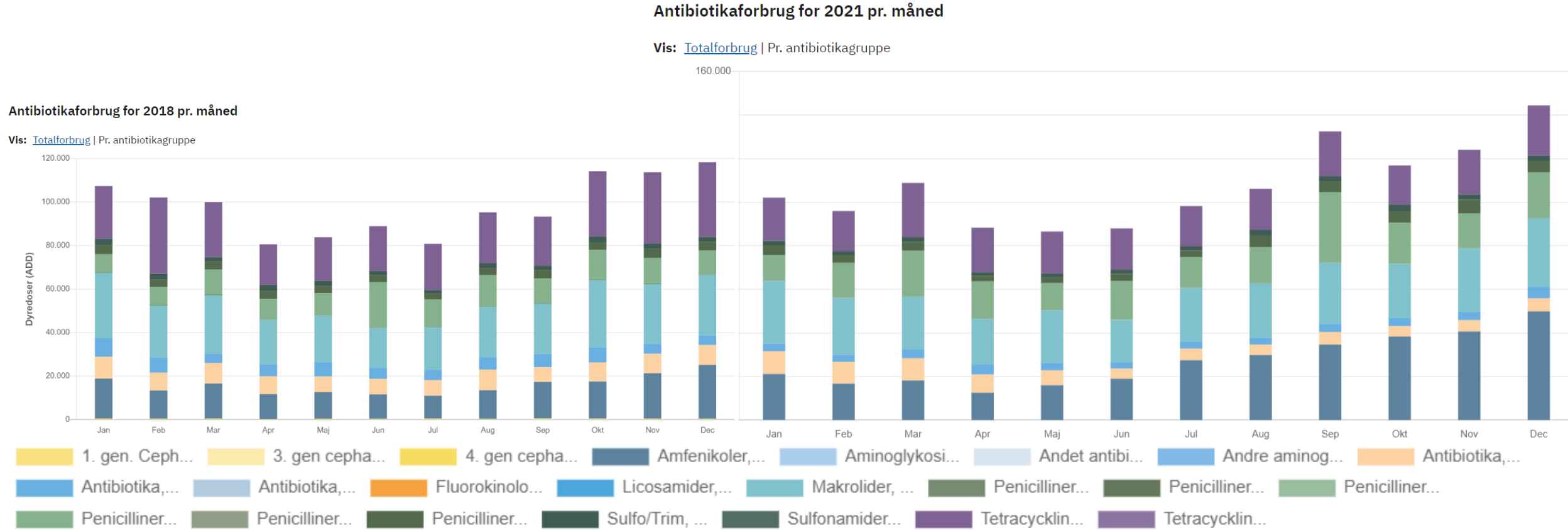


Intramammaries, gynecologicals and topical drugs not included. DAPDs are calculated as the number of standard doses for one kg animal divided by the estimated live biomass in the age group (in tonnes)

a) Aminoglycosides/benzylpenicillinprocain combinations comprise 30% of this group in 2020

b) Penicillins with extended spectrum and combination penicillins, incl. b-lactamase inhibitors, mainly amoxicillin and ampicillin. Amoxicillin/

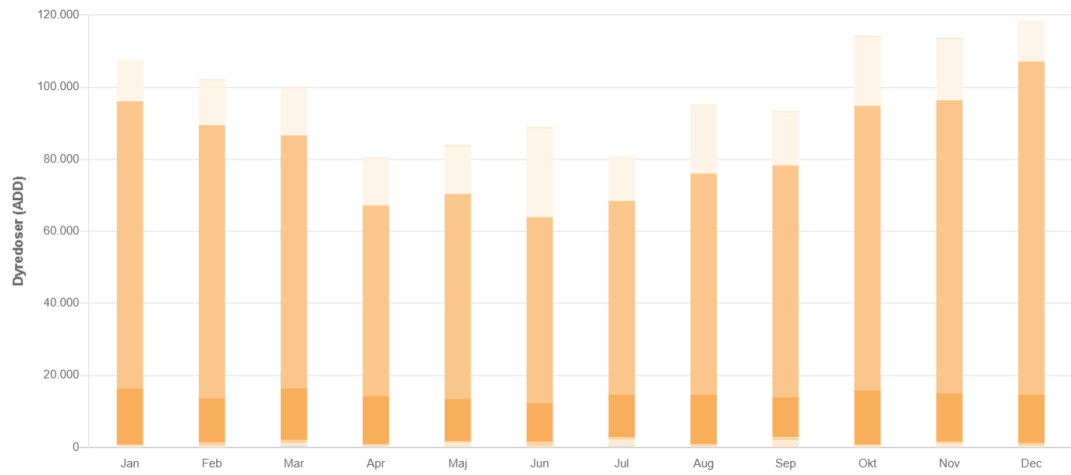
Figures extracted from online [VetStat](#) platform: Antibiotic usage for calves in the years 2018 and 2021 listed as animal daily doses and by antibiotic classes



Figures extracted from online [VetStat](#) platform: Antibiotic usage for calves in the years 2018 and 2021 listed as animal daily doses and by prescriptions groups

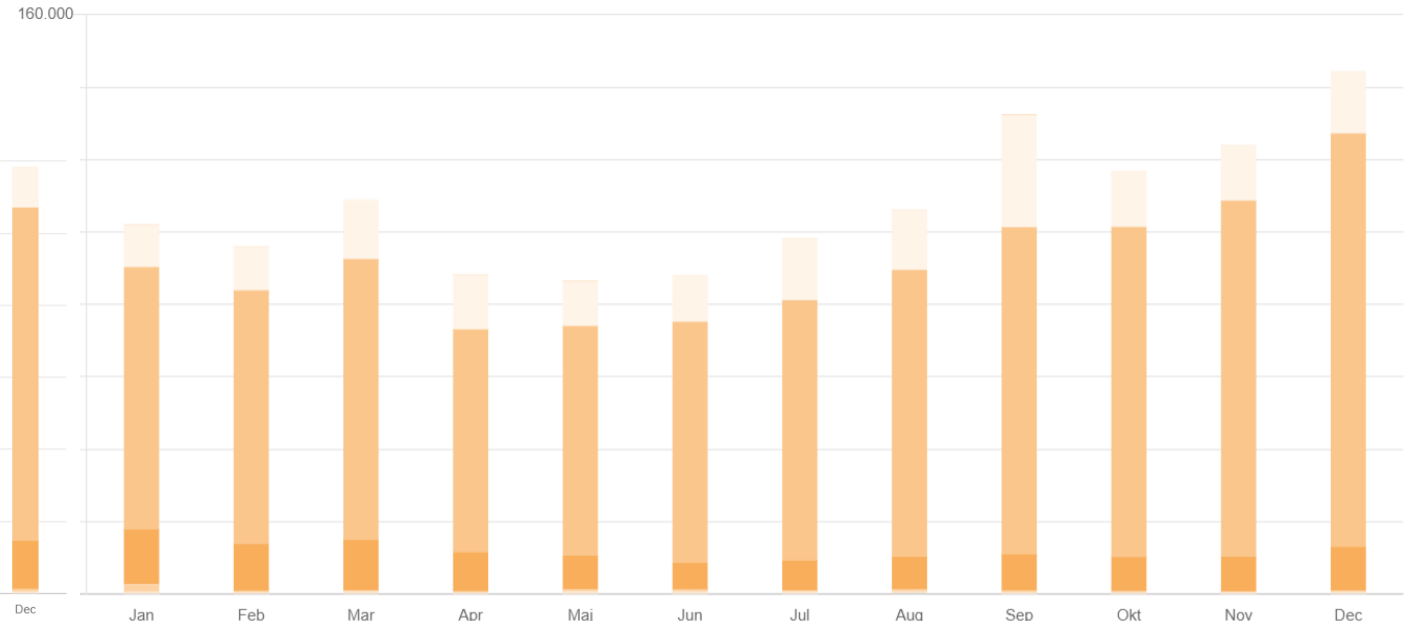
Antibiotikaforbrug for 2018 pr. måned

Vis: [Totalforbrug](#) | Pr. ordinationsgruppe



Antibiotikaforbrug for 2021 pr. måned

Vis: [Totalforbrug](#) | Pr. ordinationsgruppe



- 0 - Erstatni...
- 10 - Reprodu...
- 11 - Yver
- 12 - Gastroi...
- 13 - Respira...
- 14 - Led, le...
- 15 - Stofski...
- 22 - Yngeldø...
- 35 - Respira...
- 98 - Andet
- 99 - Vaccine...

Main activities:

- I. Evaluating used measure of AMU and **effect of AMU reduction initiatives**
- II. Connection between actual use of medicine and use reported in VetStat**
- III. Mapping and **effect of different treatment strategies** in the Danish cattle industry

What to do?

- Characterise herd with high versus medium and low AMU?
- Characterise herd with increasing versus stable and decreasing AMU?
- Focus on farmer attitude or management practices or treatment strategies or or?
- Qualitative or quantitative approach
- Focus on many versus "few" factors?
 - Broad data sets and e.g. Multiple Correspondence Analysis?
 - Few factors and e.g. Multivariable linear regression?