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Wednesday 4th September Session 93 Room: Podolica – Limonaia
Preventive approaches to livestock diseases to reduce drug resistance

Dry-off practices on dairy farms as a tool for the reduction of antimicrobial use and improvement of cow health and welfare

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Antimicrobial resistance (AMR) is a major global public health concern!

To prevent AMR a collective effort is required :

- the responsible use of antimicrobials
- possibly a reduction in their use.

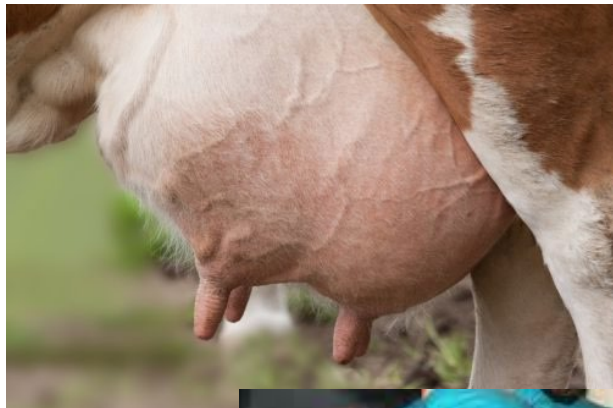


Regulation (UE) 2019/6 on Veterinary Medicinal Products



The use of an antibiotic for prophylactic purposes
when there is no clinical evidence that it is needed.

The udder health



In dairy farms, the first cause of antibiotic use is related to udder health and it is used:



to treat clinical mastitis during lactation



For prophylactic purpose at the drying- off phase to prevent mastitis in the following lactation

Blanket Dry Cow Therapy:
all cows are treated

To comply with the Regulation (UE) 2019/6 on Veterinary Medicinal Products

The promising strategy to reduce significantly the antibiotic use
in dairy farms is to act at the drying-off phase

Selective Dry Cow Therapy

The fact that it is still difficult to quantify the specific benefits and risks
of introducing ST is part of the reason for farmers' skepticism.
Proper selection of candidate cows is therefore crucial to reduce the
mastitis risk of subsequent lactation.



The main recommendations for the correct drying-off

Milk yield below 15 kg/day:

- Changing feeding plan, reducing drastically the energy availability and increasing roughage
- Reducing in the last week of lactation the number of daily milking

Control of udder health:

- Level of somatic cells during lactation (at the least in the last 3 test day) controls <200.000)
- Condition of teat ends (teat score)



Normal
no ring



Severe abnormality
Thick, wrinkled ring

Aim

This study was carried out in **the context of the transition to Selective Dry Cow Therapy**, forced by a change in the legislation on the use of veterinary medicines.

- The study aims to provide an overview of the management practices adopted by Italian dairy farmers during dry-off.
- The results of this large-scale survey are address to identify:
 - a. The level of application of virtuous management practices that should support the path towards a selective approach at the drying off in dairy farms.
 - b. Strategies (research, training, technical assistance) to support the farmers in this change

Methods

The survey was carried out in the Veneto region
of Italy (Eastern part of the Po Valley)

- A direct interviews was prepared in collaboration with the Regional Breeders' Association (ARAV)
- Data were collected the ARAV's technicians at the end of the monthly visits for the recording of individual cows' milk yield and quality (test day)



Methods

- A pivotal question was used to categorize the farms based on the percentages of cows treated with antimicrobials at drying-off time:
 - ✓ **None dry cow therapy with antibiotic (NT)**
 - ✓ **Only a certain percentage of cows treated with antibiotic - Selective Treatment (ST)**
 - ✓ **100% cows treated with antibiotic - Blanket Treatment (BT)**



The other questions focused on the management procedures carried out at drying-off:

- changes in feedeng and milking management;
- use of sealant;
- criteria followed in the identification cows to treat with antibiotics;
- Opinion of the farmers on the ST (difficulties to adopt it, results of the approach in their farm)

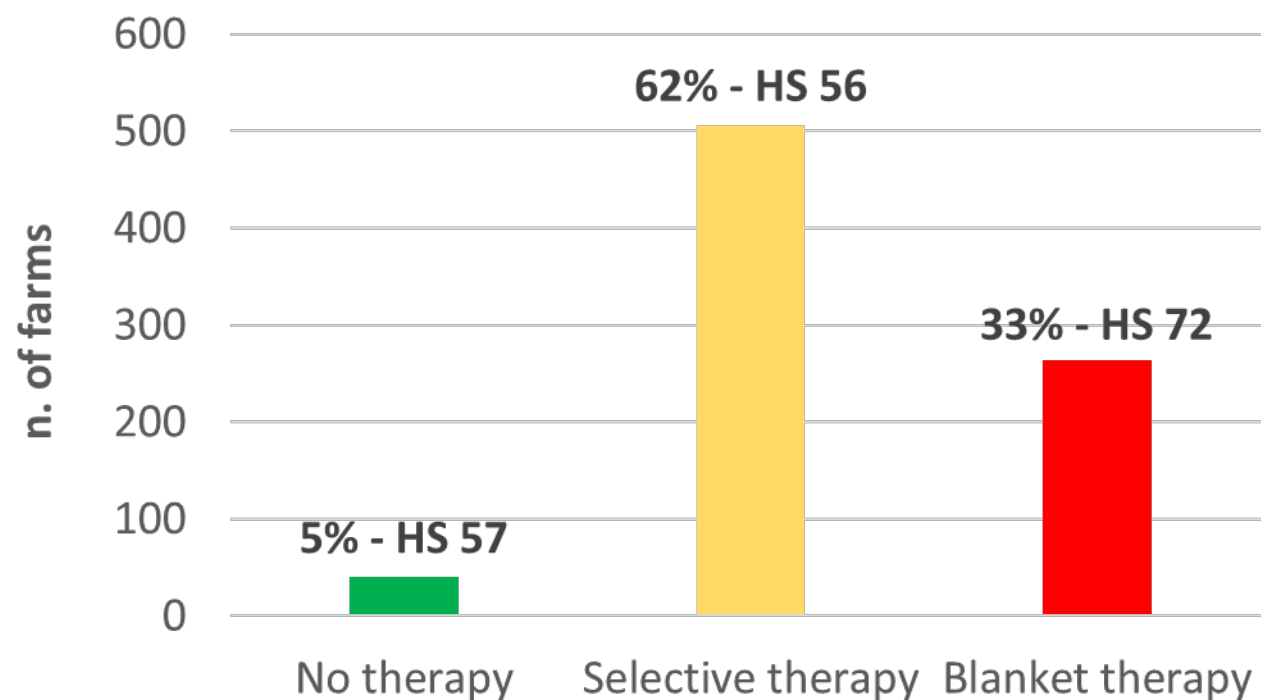
Statistical Analysis

- ✓ Counting data (% of farms in different group) were processed using k-proportions test and post-hoc pairwise comparisons among groups were performed using Marascuilo procedure.
- ✓ Continuous outcome variables, expressed as median and interquartile range, were compared using non-parametric Kruskal-Wallis test.
- ✓ Univariable logistic regression models were used to analyse the relation between dry cow therapy (selective vs none and selective vs blanket) and farms' characteristics (housing and herd size) and management predictors (use of teat sealant, average milk yield per herd at the drying-off, management strategies during the transition from lactation to dry-off).



Results

Number of farms, herd size and drying-off therapy



Farm enrolled:

76% of the officially controlled dairy farms; 810 herds (61,471 cows)

Housing:

89.6% of the sample were housed in free stalls

Milking system:

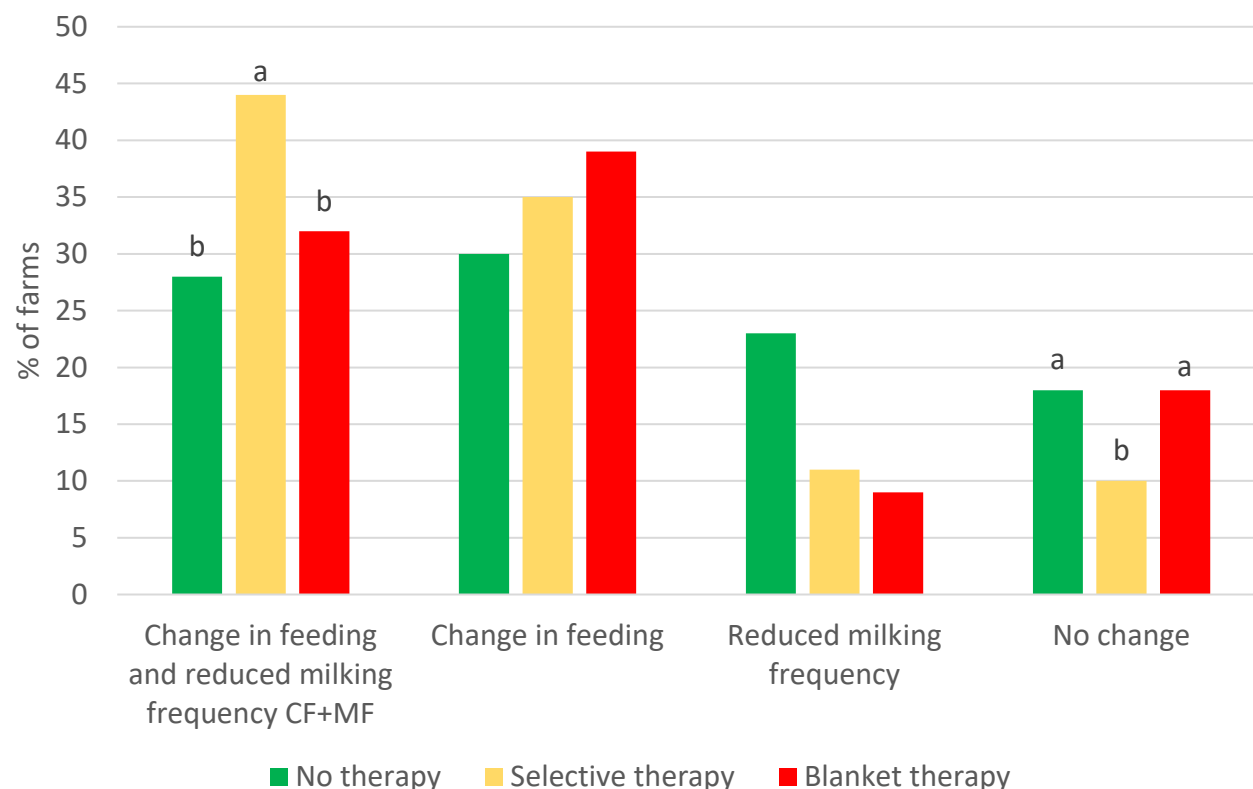
Milking parlour was the most common
62% of the total

Results according to drying-off therapy :

- The average herd size (HS) of BT farms was significantly higher than those of NT and ST ones (72 vs 56 $P < 0.05$)
- No significant difference in the proportion of farms with tied stalls
- Only 5% of the farms don't use antibiotic at the drying-off while 33% still adopting BT approach

Results

Strategies adopted to decrease milk yield at the drying off in different farm categories

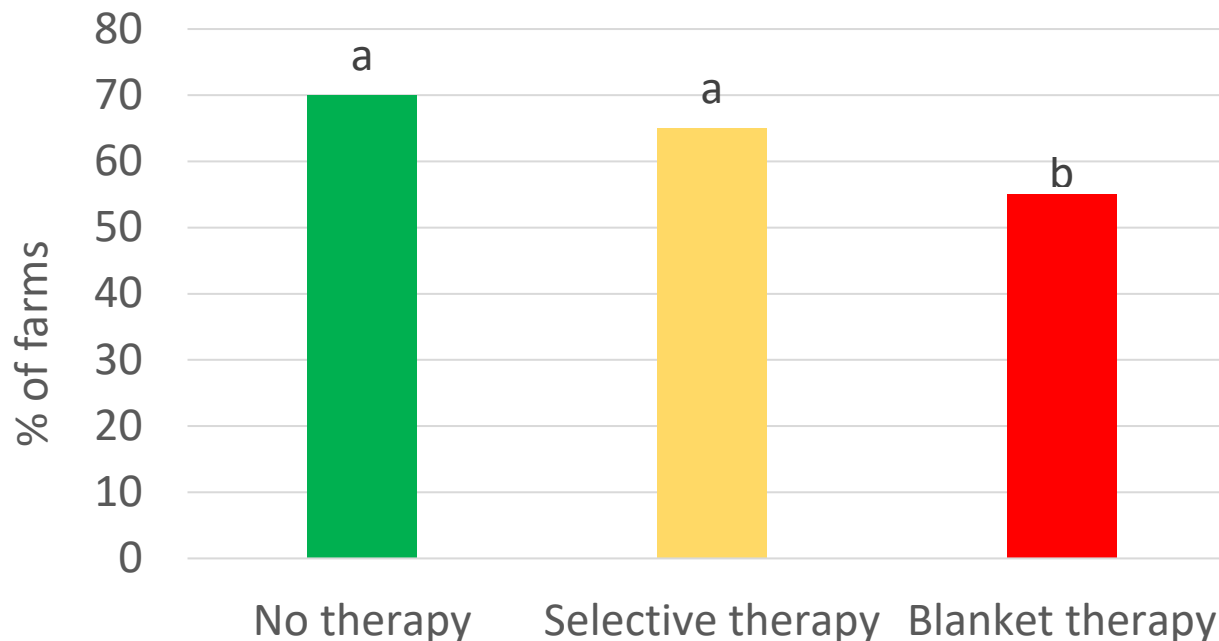


Results according to drying-off therapy :

- 39% of the total sample implemented a combined protocol.
- 44% of the ST used the combine protocols a higher value compared to NT and BT ($P < 0.05$)
- 85% of the total farm sample reported change in feeding consisted of a switch from total mixed ration to the ad libitum of source of roughage (straw or long meadow hay)
- 13% of the total sample at drying -off cows maintaining the same feeding and milking management used in late lactation and this practice was more frequent within BT and NT groups compared with ST ($P < 0.05$).

Results

Milk yield lower than 15 kg/d at drying-off
in different farm categories

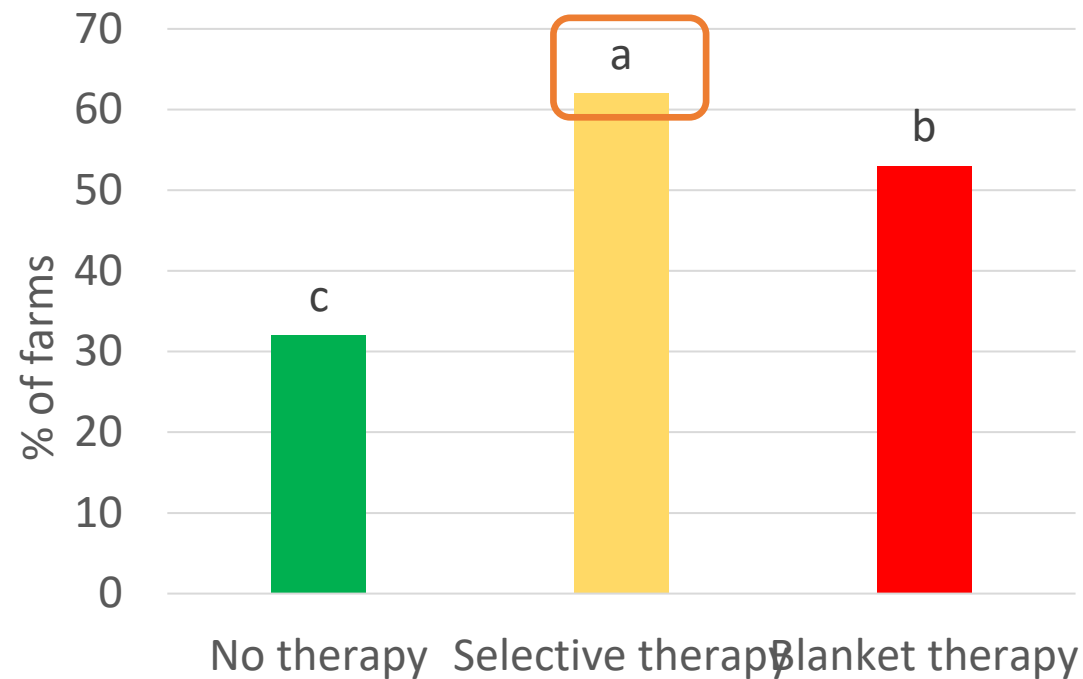


Results according to drying-off therapy :

- For 62% of the farms the average milk yield at the drying-off was: <15 kg/d
- The class <15 kg/d was significantly higher for NT and ST farms, accounting for more than 65% of the farms within both classes

Results

Farms (%) that use sealant at drying-off
in different farm categories



Results according to drying-off therapy :

- 58% of the total farms sample injected teat sealant, as prevention tool into the cows' nipples at the end of the last milking,
- This practice had the highest percentages (62%) in ST farms ($P < 0.05$)

Results univariable logistic analyses

Aim of the analysis

to compare farms using different dry-cow therapy for decision-making strategies at drying-off

ST vs NT

ST farms are more predisposed to use the teat sealant after the last milking and to use the dry-off management protocol that combined changing the feeding regime and reducing the number of daily milking.

NT farms are more likely to adopt the only reduction of milking frequency during the transition from the lactation to the dry period.



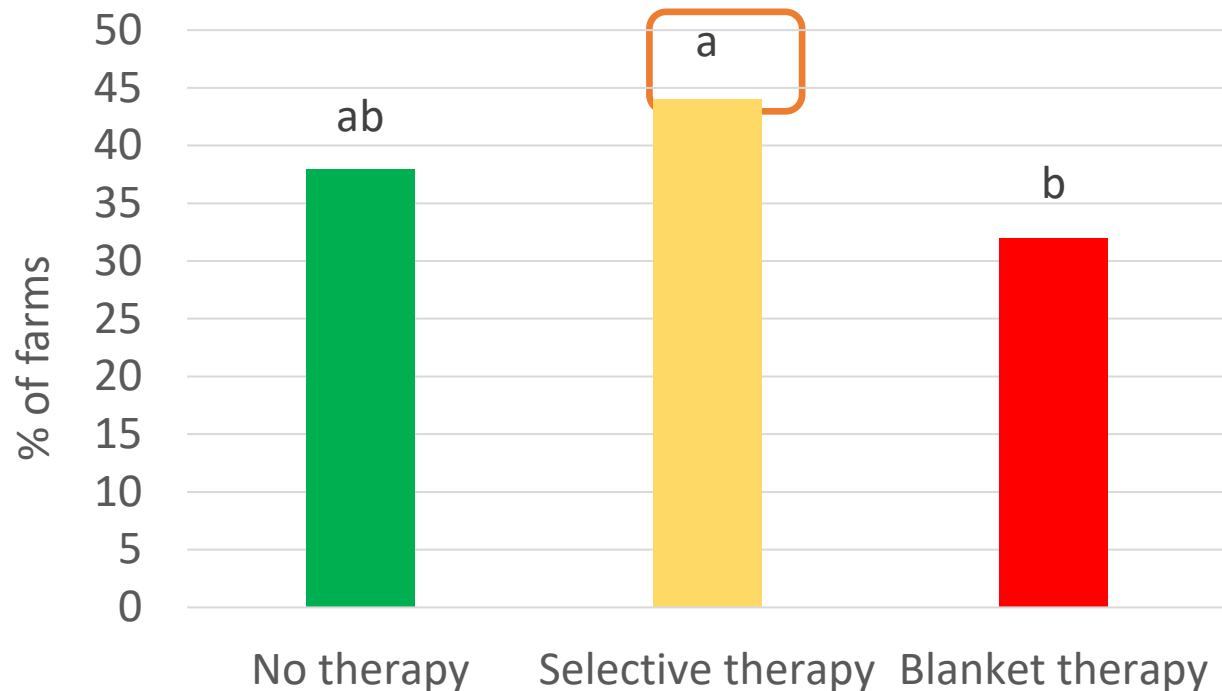
ST vs BT

BT farms were larger in size, more likely to dry-off cows either at higher milk yield (even more than 20 kg/d) or without changing diet and milking routine.

ST farms had lower production levels at drying-off (<15 kg/d) and were more likely to use the teat sealant. Selective dry cow therapy was more frequently associated to the use of a management protocol that combined the reduction in milking frequency with a changed the feeding regime.

Results

Is mastitis a severe problem in your herd?
Farms (%) in different farm categories



Results according to drying-off therapy

- More than 50% of the farmers responding that it is not a problem or it is always under control.
- A significant difference between ST and BT farms was observed for the prevalence of respondents who considered the mastitis problem out of control at certain times ($P < 0.05$).

Conclusions

The results of the survey carried out right after the ban of BT in the EU countries revealed that **the majority of the Italian farms already introduced alternative dry cow therapy protocols such as NT and ST**, which eliminated or significantly reduced antibiotics at dry-off.

Besides farms still adopting BT, room for further improvement of the Italian **action plan against AMU for mastitis control** should be based on the **refinement of the management protocols for cows at the end of lactation**.

