Mastitis risk indicators assessed through a germ specific epidemiological model in southern Belgium

Théron L.[1], Sustronck B.[2], Bertozzi C.[3], Detilleux J.[1], Hanzen Ch.[1].

[1] Service of production animals Theriogenology Faculty of Veterinary medicine of Liege

[2]Intervet-Schering-Plough Belgium NV - Bruxelles

[3]Walloon farming association- Ciney, Belgium

Introduction

Udder health is usually considered as a the main economic problem for dairy farmers. We now consider that mastitis is the result of many factors related to the environment, the pathogen and the host. Nowadays, the **main interface with mastitis is the farmer**, and their knowledge about mastitis is very heterogeneous. We tried to show a group of dairy farmers that mastitis could take several different forms from one farm to another, in term of **incidence, pathogens and clinical forms**. One common observation is that most common preventive practices are not implemented in all farms. This study tries to understand the **specific impact of mastitis epidemiology** on **identified risk factors** in previous studies in Wallonia.

Material and Methods

•Epidemiological survey

25 farmers / 12 veterinarians during 3 months

Questionnaires about their main practices (25 points) mastitis knowledge (15points), personality and satisfaction

•Bacteriological survey

Clinical questionnaire and bacteriology at day 0 and day 21

1630 cows at risk during 3 month (Mean 67; SD 18)

• Germ-specific epidemiology

Assessment in 3 categories of the bacteria isolated : **Mammary, Environmental, Mix** related to respectively presence of Staphylococcus aureus, with or without CNS; Environmental pathogens such as Streptococcus uberis or Escherichia coli, with or without CNS; and CNS only or both Streptococcus and Staphylococcus.

We used univariate and multivariate analysis to identify a risk ratio for each variable. Then we used Germ-model as a stratification to analyse each factor with Winepiscope®.

Mammipack®, our sampling agreement with the participants.

It contains:

- **A pedagogical file** upon main aspects of udder health
- **Small laminated sheets**

for quick access on Milk sampling and teat lesions

- **Sterile sampling tubes**
- **A mastitis clinical record pad**
- **Book Udder Health®**

Classic cohort analysis

Factor	Freq. (%)	RR of IMI	CI95%
Type of housing (Cubicles vs Other)	45,3%	**0,39**	**0,24-0,67**
Calving pen (yes vs no)	68,4%	1,08	0,95-1,22
Cleaning teats before (yes vs no)	68,4%	NS	NS
Post-dipping (yes vs no)	73,6%	2,13	2,13-3,39
Shearing (yes vs no)	63,6%	0,87	0,77-0,99
Claw stripping (no vs yes)	47,3%	4,00	2,29-7,03
Pulsator Type (Individual vs multiple)	50%	0,86	0,73-1,00
Number of claw per milker (>10 vs <10	5,3%	0,29	0,11-0,72
Identification of problem cow (yes vs no)	89,5%	0,98	0,92-1,04
Length of transition period (at calving vs >8 days)	89,5%	1,02	0,96-1,08
Predipping (no vs yes)	89,5%	3,79	1,30-11,02
Foremilk check (yes vs none)	94,8%	0,64	0,22-1,87

Discussion

As Schukken et al. (1991) and Barnouin et al. (2005) underlined **contradiction between risk factor study regarding somatic cell count and clinical mastitis data**, we found out significant bias under key management practices. That should help understanding why some measures just won't help in some farms, **due to the type of infection in the herd**. Nevertheless we can ask ourselves why post-dipping seems associated with elevated IMI rate. Could it be because of a teat apex modification of the flora?

Results

We collected 124 intramammary infection (IMI) events, 244 bacteriology. Only 1265 cows and 118 mastitis were abled to be included regarding data collection and bacteriology. Incidence of clinical mastitis over the 1265 cow at risk was **9,41%.** Out of the 25 management points, only 12 were able to be compared statistically (Tab. 1).

The germ-specific model was evaluated by farm, the most prevalent being **environmental 53%**, then **mammary 26%,** then **mix 21%.**

According to literature, known preventive measures appear associated with increased IMI, such as post-dipping.

Stratified cohort analysis

If there was no interaction between stratum variable was not considered.

Post-dipping : **RR Mammary : 0,3 CI95% (0,13-0,70)**

RR Environmental : 3,95 CI95% (1,62-9,63)

RR Mix : NS

Q(Breslow-Day) 21,4 (p<0,0001)

Means that Post-dipping is biased by the nature of infections occurring at the farm. It is associated with low IMI incidence regarding Mammary models and high IMI in environmental models

Cubicles : RR Mammary : NS

RR Environmental : 0,27 CI95% (0,14-0,52)

RR Mix : NS

Q(Breslow-Day) 9,5 (p<0,01)

Means Cubicles has truly association with low IMI only regarding environmental pathogens.