Epidemiology of mastitis in 30 Walloon dairy farms using a compilation of clinical and subclinical data in a new tool for Udder health assessment.

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Quotas

Liters of quota in Belgium

Issu de : Confédération Belge du lait - Rapport d'activité 2009
Service de Thériogénologie
Département clinique des animaux de production - FMV- ULg

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UDDER HEALTH, WELL KNOWN...

WELL IGNORED
Under health, Well known... Well ignored

- 25% of producers have DHI data

- SCC Tank
  - 275,000

- SCC Herd
  - 288,000

- IMM Tubes (LC)
  - Wallonia 2007
    - 400,000
    - Flanders 2007
      - (400,000)

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HOW TO HELP?

Walloon estimated loss linked to udder health

44,000,000 €€€

Equivalent to a FMD episode every 10 years...
Tools for udder health?

• Research?
  – Production: progression
  – Cell counts: diminution
  – Mastitis: ???

• Communication=Federate
  – OSaM (Observatoire de la santé mammaire, BE)
  – M-Team (Ugent, BE)
  – UGCN (NL)
  – Canadian Research Network (CA)
Objectives

• Collaboration between University of Liege and the Walloon herd association

• « LAECEA » = Milk in walloon dialect

• **Federate** all type of epidemiological information on udder health that could improve it’s prevention and management for both farmers and their vets

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Objectifs

MASTITIS ?

Synergy
Encode CM
Valorisations (+QFL, DAF...)

DHI

CLINICAL DATA

GLOBAL COLLECTION

BULK MILK ANALYSIS

Administrative data...

Record treatment

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Material

• 30 voluntary dairy farms (2200 cows)
• Building a new web-based interface in MyAWEnet
• Calculating economic losses
• Development of an **Udder health File** (UHF)
Methods

• Definitions
  – Subclinical mastitis (SCM)= Primiparous >150,000 cells/ml
  – Multiparous> 250,000 cells/ml
  – Clinical mastitis (CM): 3 grades (MILK / QUARTER / GENERAL SIGNS)
  – Period : From last DHI till next

• Generating indexes
  – Herd prevalence rate (HPR) : Clinical + Subclinical mastitis / Cows at risk
  – Incidence rate : New cases (CM+SCM)/ Healthy Cows at risk
  – Dry-off cure rate (DOCR) : Infected cows healthy at first control
  – New infection rate at first control (NICF) : Healthy cows at dry-off infected at first control

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Methods

• Economic losses assessment (Admitted)
  – Clinical cases according to SEVERITY (2,5%/month)
  – Subclinical cases according to SCC (0,4L/cow/day)
  – Death according to AMORTIZATION (None)
  – Culling according to AMORTIZATION + CULL-COW PRICES (None)
  – Quarter loss according to COMPENSATION (None)
  – Quality through BULK MILK PENALTY (None)
Results

Dossier de Santé Mammaire : page récapitulative

Exploitation :
Période d'analyse : du 21/01/2011 au 17/02/2011

1. Pertes économiques relatives aux mammites pour le troupeau = 144 vaches au C.L.
   Pertes totales = 1301 €/période
   Pertes évitables = 488 €
   Pertes tolérables = 813 €/période

2. Vue synthétique

Vaches en lactation
- Vaches saines : 75%
- Vaches en lactation : 134
  - Contamination : 12%
  - Guérison : 41%
  - Non guérison
    - Vaches taries
    - Guérison au tarissement : 70%
    - Contamination au tarissement : 32%

Vaches mammiteuses
- Vaches à cellules : 25%
  - Cas cliniques : 1%

NB : période d'analyse = 28 jours
3. Répartitions par numéro de lactation

<table>
<thead>
<tr>
<th>Lactation</th>
<th>Effectifs</th>
<th>Mammiteuses</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>47</td>
<td>7</td>
<td>15%</td>
</tr>
<tr>
<td>2</td>
<td>22</td>
<td>1</td>
<td>5%</td>
</tr>
<tr>
<td>3</td>
<td>24</td>
<td>5</td>
<td>21%</td>
</tr>
<tr>
<td>4</td>
<td>12</td>
<td>3</td>
<td>25%</td>
</tr>
<tr>
<td>&gt;4</td>
<td>19</td>
<td>8</td>
<td>42%</td>
</tr>
</tbody>
</table>

4. Évolution récente des animaux

<table>
<thead>
<tr>
<th></th>
<th>SAINES</th>
<th>MAMMITEUSES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guérisons</td>
<td>4</td>
<td>18</td>
</tr>
<tr>
<td>Non contaminations</td>
<td>91</td>
<td>3</td>
</tr>
<tr>
<td>Nouvelles infections</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

5. Description des cas cliniques

6. Santé mammaire et qualité de la détection des mammites
8. Moment d'apparition des mammites cliniques au cours de la lactation

Nombre de vaches présentant des cas cliniques au cours de la lactation

9. Répartition des mammites cliniques au cours de l'année (effet saison)

Nombre mensuel de mammites cliniques sur les 24 derniers mois
Results

• Since April 2011
  – 722 mastitis (2305 recovered from software history)
  – 79% by the web-interface
Results 22/08/2011

• Y = Mean avoidable loss

• Tolerable loss : 71€/cow/year

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std Error</th>
<th>P25</th>
<th>P75</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cow-Day-at-risk</td>
<td>77.6</td>
<td>36</td>
<td>53</td>
<td>83</td>
</tr>
<tr>
<td>Herd prevalence rate</td>
<td>33%</td>
<td>11%</td>
<td>25%</td>
<td>42%</td>
</tr>
<tr>
<td>New infection rate</td>
<td>17%</td>
<td>10%</td>
<td>9%</td>
<td>22%</td>
</tr>
<tr>
<td>Cure rate</td>
<td>32%</td>
<td>15%</td>
<td>39%</td>
<td>22%</td>
</tr>
<tr>
<td>Dry off cure rate</td>
<td>65%</td>
<td>14%</td>
<td>75%</td>
<td>57%</td>
</tr>
<tr>
<td>New infection at first control</td>
<td>23%</td>
<td>11%</td>
<td>15%</td>
<td>29%</td>
</tr>
<tr>
<td>Avoidable loss/cow/Year</td>
<td>+44.7€</td>
<td>86€</td>
<td>-0.8€</td>
<td>64€</td>
</tr>
<tr>
<td>Composite Herd SCC (cell/ml)</td>
<td>331</td>
<td>146</td>
<td>233</td>
<td>420</td>
</tr>
</tbody>
</table>
Analysis

Distribution of the avoidable loss/cow/year

Normal zone?

Number of Udder health file

-50 ou vide
-50--25
-25-0
0-25
25-50
50-75
75-100
100-125
125-150
>150

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Linear regression

• Y= Avoidable loss
  – DOCR : $R^2=0.20; \beta=-131; p<0.0001$

• Y= New infection rate
  – Primiparous prevalence $R^2=0.36; \beta=0.33; p<0.0001$
Composite Cure rate

\[(\text{IGT-IC-ICT}) \times \text{IG}\]

Avoidable loss per cow per year

\[R^2 = 0.2505\]
I do yoga meditation
And Thai boxing

What do you do for prevention?

Hell, so many figures, what if...

« PRAESTAT CAUTELA QUAM MEDELA »
Take home message

1. Clinical and subclinical data could be seen as **2 components** of a same pathology
2. Partial budget approach gives **realistic figures**
3. Best explanation of ECONOMIC LOSS variance is **Dry off cure rate**
4. Means that most COSTS **could be anticipated**
5. Incidence is mainly linked with **Primiparous infection rate**
“If you think adventure is dangerous, try routine. It is lethal.”
Paulo Coelho