Background
• BoHV-1 introduction into naïve dairy herds typically leads to a range of clinical syndromes described as Infectious Bovine Rhinotracheitis (IBR)\(^1\)
• BoHV-1 infection may lead to sub-clinical disease with insidious production losses\(^2\)
• BoHV-1 infection has potentially serious economic consequences as well as adverse impacts on animal welfare
• Milk production losses from sub-clinical BoHV-1 infection have not been previously demonstrated over a prolonged period

Study aims
This retrospective study aimed to investigate the effect of sub-clinical BoHV-1 infection on milk production over a 2 year period on a commercial UK dairy herd.

Data analysis
• Data collected; monthly cow level test day milk records (Jan 2009 to Dec 2010), BoHV-1 antibody status for each cow
• Multilevel linear model used to evaluate impact of infection status on milk production

Results
• 72% of cows were seropositive to BoHV-1 in May 2010 (bulk milk negative BoHV-1 February 2010)
• Risk of seroconversion varied with parity; higher proportion of parity 1 and > 4 positive
• Seropositive cows produced 2.6 kg per day less milk (p=0.05) throughout lactation compared to seronegative cows (figure 1)\(^3\)
• A large decrease in potential daily milk yield was demonstrated for cows with associated sub-clinical BoHV-1 infection
• Cows with antibodies to BoHV-1 on average failed to produce almost 1,000 kg of milk per year compared with seronegative cows

Table 1: Counts and proportions of cows identified with bovine herpesvirus 1 (BoHV-1) infection* by parity in May 2010

<table>
<thead>
<tr>
<th>BoHV-1 status</th>
<th>Parity</th>
<th>Positive</th>
<th>Negative</th>
<th>Proportion positive</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>24</td>
<td>1</td>
<td>0.83</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>20</td>
<td>16</td>
<td>0.56</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>14</td>
<td>11</td>
<td>0.56</td>
</tr>
<tr>
<td></td>
<td>≥4</td>
<td>34</td>
<td>5</td>
<td>0.87</td>
</tr>
</tbody>
</table>

*Based on identification of antibodies in serum (optical density >0.25)

Conclusions
• Subclinical BoHV-1 infection associated with significant reduction in potential milk yield
• Potential fall in production is larger and predicted to last longer than previous estimates
• Variation could relate to disease dynamics, cow differences between herds, study design, BoHV-1 strain or analytical methods
• Large potential losses in milk production highlights the importance of herd health management to prioritise interventions such as; biosecurity and vaccination
• Effective monitoring is important to mitigate the effects of sub-clinical disease through holistic herd health management

References
\(^1\) Nettleton, P. F., (2007) IBR – One herpesvirus, a variety of clinical syndromes. Cattle Practice 15, 208-211.
\(^3\) Reduction in daily milk yield associated with sub-clinical bovine herpesvirus 1 infection. Veterinary Record 2015 177:339

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