Selective Dry Cow Therapy

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What is ‘selective’ dry cow therapy?
Selective Dry Cow Therapy

• Selecting *different* dry cow therapy products for *different* cows at drying-off....
• ...dependant on likely *infection status*
• ...and *aim* of therapy
• Could mean a *different* dry cow antibiotic in infected cows...?
• Should mean using an internal teat sealant *without* dry cow antibiotic in uninfected cows...
Why take a ‘selective’ approach to dry cow therapy?
Reasons to Use a ‘Selective’ Approach

• A *rational* decision! Why administer antibiotic dry cow therapy in an uninfected cow?
  – Government targets of 50mg/kg for antibiotic use in livestock... (O’Neill report 2016)

• Internal teat sealants are significantly *better* at reducing new infections during the dry period

• Welfare of the cow!
  – Using dry cow antibiotic in low SCC cows *increases* the risk of coliform mastitis in the next lactation

• Reduce the risk of bulk tank residue failures
Evidence: Internal Teat Sealants

Abstract

The objective of this study was to assess the efficacy of internal teat sealant products containing bismuth subnitrate (Teatseal and Orbisalseal; Pfizer Animal Health, West Ryde, Australia) when used alone, or in the presence of antibiotic dry cow therapy (ADCT), before or at drying off on the incidence of new intramammary infections (IMI), clinical mastitis, and milk somatic cell count (SCC) during lactation. The literature search identified 18 English-language publications on the use of Teatseal in dairy cattle. A total of 12 studies with 17 subtrials or comparisons including 13 positive control subtrials (internal teat sealant and ADCT vs. ADCT) and 4 negative control subtrials (internal teat sealant vs. untreated) examining IMI were included in the analysis. Internal teat sealants, alone or in the presence of ADCT, reduced the risk of acquiring new IMI by 25% [risk ratio (RR) = 0.75; 95% confidence interval (CI) 0.67 to 0.83] [internal teat sealants reduced the risk of IMI by 73% compared with untreated cows (RR = 0.27, 95% CI 0.13 to 0.55)]. The results of both meta-analyses of IMI with positive and negative controls, were homogeneous [I² (a statistic that describes the proportion of total variation in study effect estimates that is due to heterogeneity) = 65.4 and 92.1%]. No farm or cow factors studied significantly contributed to the heterogeneity of the results. A total of 16 studies (21 subtrials), including 14 positive control subtrials and 7 negative control subtrials, examining clinical mastitis were included in the analysis. Internal teat sealants alone and in the presence of ADCT reduced the risk of clinical mastitis after calving in lactating cows by 29% (RR = 0.71; 95% CI 0.62 to 0.82), and 48% (RR = 0.52; 95% CI 0.37 to 0.75), respectively. The results of the meta-analysis on clinical mastitis with positive controls were homogeneous (I² = 33.6%), whereas the results of studies with negative controls were heterogeneous (I² = 60.4%). No farm or cow factors studied that had sufficient data to evaluate significantly contributed to the heterogeneity of the results. The estimated linear score (LS) of milk SCC after calving in published studies (n = 3) and for studies that provided raw data (n = 2), was significantly lower for cattle treated with internal teat sealants and ADCT in 3 studies than for cattle treated with internal teat sealants only. The estimated LS of pooled raw data of 3 studies from 32 herds showed that the LS of cows treated with internal teat sealant and ADCT was not significantly different than those treated with ADCT only. This study found that the application of internal teat sealants in the presence of ADCT or the use of internal teat sealants at dry off signiﬁcantly reduced the incidence of IMI and clinical mastitis in lactating dairy cows compared with respective control groups. Further studies are needed to investigate the effect of internal teat sealants on postpartum milk SCC in lactating dairy cows.

Keywords: Teatseal, antibiotic dry cow therapy, mastitis, meta-analysis

NADIS Animal Health Skills
Evidence: Internal Teat Sealants

• Studies around the world highlight effectiveness of internal teat sealants
  – Reduce risk of a new infection by about 25%
• A study of 52 herds in the UK showed those herds that took a ‘selective’ approach were significantly less likely to calve down a cow that developed clinical mastitis in the 1st 30 days of the next lactation

Green and others (2007) Cow, farm, and management factors during the dry period that determine the rate of clinical mastitis after calving. Journal of Dairy Science 90(8): 3764-76
Evidence: Welfare of the Cow

- What happens if we use antibiotic dry cow therapy and internal teat sealant...
  - In infected cows at drying-off?
    - Significantly increases the odds of quarters being free of a major pathogen at calving
  - In uninfected cows at drying-off?
    - Significantly increases the odds of quarters acquiring a case of *coliform mastitis* in the next lactation...

How do I know if a cow is likely to be UNinfected?
“How do I know if cows are ‘uninfected’ at drying off?”

- Which test(s) do I use?
- California Mastitis Test?
- Bacteriology at drying-off?
- Somatic cell count (SCC)...

- THERE IS NO PERFECT METHOD.... but product selection can only practically be made on the basis of individual cow SCC’s
Underlying Principles

• In the **high SCC herd** (>200,000 cells/ml)
  – Want higher *sensitivity*
  – Optimise *treatment* as the priority is cure
  – Consider 100,000-150,000 cells/ml

• In the **low SCC herd** (<150,000 cells/ml)
  – Want higher *specificity*
  – Optimise prophylaxis as the priority is *prevention*
  – Consider 200,000-250,000 cells/ml
### An Example Drying-Of List

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<th>Served</th>
<th>PD</th>
<th>Dry △</th>
<th>Due</th>
<th>CM Date</th>
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<td>18</td>
<td>83 Uninfected</td>
<td>Select for Prevention</td>
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Infusing dry cow therapy in an aseptic manner
The Importance of an Aseptic Infusion Technique for Dry Cow Therapy

- Irrespective of choice of dry cow therapy, we MUST administer products in an aseptic manner to reduce the risk of introducing infection
- Even with antibiotic...
- *Especially* without antibiotic...
MUST...administer dry cow therapy as in the parlour as a separate task
MUST...apply licensed pre-milking teat disinfection with 20-30s contact
MUST...wipe dry with clean towel
MUST...scrub the teat & teat end with cotton wool soaked in surgical spirit.
MUST...infuse dry cow therapy in reverse order of cleaning teats

- Clean teats furthest away from you...and then closest to you

- Administer tubes to teats closest to you...and then furthest away from you
MUST...apply licensed post-milking teat disinfectant and allow cows to stand for 30 mins on clean loafing area
Monitoring the outcome of (selective) dry cow therapy
Dry Period *Cure* Rates...
The Importance of Dry Period Cure...and Re-Infection Pressure

• Why so much variation in ‘apparent’ cure rates across the dry period?
• These herds are all using antibiotic dry cow therapy...
• Are the dry cow antibiotic tubes ‘working’?
• Or is this caused be re-infection from the dry cow environment?
Dry Period New Infection Rates...

HP22: Dry period new infection rate (rolling annual average)

mean = 15.8
median = 15
Dry Period Cure and New Infection

• In herds with POOR ‘apparent’ cure rate, the new infection rate is likely to be increased

• This is important...

• Reducing new infection pressure from the ENVIRONMENT during the dry period:
  – In uninfected cows we are trying to protect
  – In infected cows we are trying to cure

• Dry cow therapy is only part of the answer!
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- www.qmms.co.uk
- http://nottingham.ac.uk/research/groups/dairy-herd-health-group/mastitis.aspx