Technote 15

Culling persistently infected cows

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1 Culling as a mastitis control strategy

Culling infected cows is an important mastitis control strategy as it is the only guaranteed way to eliminate some intramammary infections. Antibiotic Dry Cow Therapy (DCT) does not cure all infections, and the likelihood of cure declines with:

- increasing chronicity and severity of infection
- increasing cow age
- presence of *Staph. aureus* (Buddle *et al* 1987, Sol *et al* 1994).

In a New Zealand comparison of two dry cow antibiotic (DCT) formulations (McDougall, 2010), bacteriological cure rates for cows with *Staph. aureus* infections were only 62% or 75%, whereas cure rates for minor pathogens or *Strep. uberis* infections exceeded 89%. Cure rates were also lower for older cows (≥8 years; 89%) than for younger cows (≤4 years; 94%).

Culling due to udder health issues is common. A NZ study of herds with high-quality records (Xu & Burton 2003), found 10.4% of culls were due to mastitis or udder-related problems, the third most common reason after infertility and low production. Later work (Kerslake *et al* 2018) similarly identified udder health, mastitis and SCC problems as the 3rd most costly culling category. Internationally, 5-8% of cows are culled annually for mastitis or SCC-related reasons, with little change in incidence rate between the 1980s and 2000s (Compton *et al* 2017).

Although culling is effective, it is expensive, and bulk milk SCC problems will only be resolved if new infections are prevented concurrently. Halassa *et al* (2009) reported that culling was the largest contributor to total costs of mastitis, particularly for *Staph. aureus* mastitis.

➜ The **Mastitis Performance Calculator** allows a herd's culling performance for mastitis to be compared with industry targets.

② Culling cows with recurrent clinical mastitis

Treatment success can decline sharply in cows with recurrent clinical mastitis. NZ data from the 1990s reports cure rates of 75% for first cases, 45% for second cases and only 12% for cows being treated for the third time (NMAC 2000).

Bactereiological cure rates can vary by pathogen and cow factors. NZ studies (McDougall *et al* 2007a; 2007b) report:

- 70 to 90% cure rates for *Strep. uberis* cases
- 30% to 40% cure rates for *Staph. aureus* cases
- 88% cure for 2 year old cows versus 71% for cows ≥7 years
- 84% cure for cases treated on day of calving versus 68% cure for cases occurring >7 days postpartum.

Overseas findings are similar: cure rates for *Staph. aureus* cases decrease with increasing cow age, rising SCC, chronic infection duration, higher bacterial load in the milk, multiple quarters affected, rear quarter infections and presence of beta-lactamase producing genes (Barkema *et al* 2006; Sol *et al* 1994).

There is broad industry agreement that retaining cows with recurrent clinical mastitis is uneconomic. When three clinical episodes occur in a single quarter, a practical interim solution is to dry off the affected quarter for the rest of the lactation and plan to cull the cow.

Consider culling any cow when you find her third clinical case in a lactation.

➜ **Technote 4.6** summarises treatment approaches and expected cure rates by pathogen and **Technote 4.11** discusses the options for drying off chronically infected quarters.

③ Culling cows with persistently high cell counts

High cell counts in two consecutive lactations, despite antibiotic DCT in the intervening dry period, indicate likely refractory infections. **These cows have a low probability of cure and should be considered for culling when economically justifiable.** Bacterial tests can help validate the decision.

Whether culling is economic depends on:

- the cow's contribution to the bulk milk SCC and impact on payment;
- the risk of mastitis spread to other cows
- the cost of suitable replacements.

Before culling, review each cow's history. Cows with a single high SCC in lactation may still respond to antibiotic DCT and should not be automatically culled. Likewise, cows with a single culture result for *Staph. aureus* should be given the benefit of antibiotic DCT, and are NOT candidates for immediate culling.

The DairyNZ **Mastitis Focus Report** identifies cows with a SCC >150,000 cells/mL for three consecutive lactations, despite antibiotic DCT. These cows have had multiple opportunities to cure and are therefore high priority culls.

➜ See the **'Managing Staph. aureus Mastitis' factsheet** for more on managing these cases, and **Technote 8.3** for guidance on segregation of infected cows.

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Key papers

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