Cost considerations for Mastitis

- Intramammary infection due to *S. aureus* accrues significant cost for the dairy herd.
- Cost of any mastitis case may be considered in three areas:
    - Firstly, the cost of any measures employed to prevent *S. aureus* infection.
    - Secondly, the cost of treating cows identified as infected.
    - Thirdly, the losses in potential revenue caused by reduced production.
- In addition, *S. aureus* mastitis has the potential cost of further infection, through its contagious transmission.
- Preventative measures are often not included in mastitis costings, being thought of as an investment in animal health, rather than a cost of disease. However, in the absence of *S. aureus* intramammary infection there would be no need for such an investment, rendering these preventative measures a true cost of the disease.
- Direct costs of clinical mastitis due to *S. aureus* are relatively easy to calculate, being an addition of the cost of therapeutic treatment (both the medicines and the staff time required for administration) and the cost of discarding the milk for the treatment period plus the relevant withdrawal period for medicine residues.
- Lost income due to *S. aureus* clinical cases is harder to quantify. The reduction in yield following clinical mastitis varies depending on the individual cow, the severity of the case and the stage of lactation. However, a significant and prolonged production loss is common to most scenarios.
- Further to losses from clinical cases, sub-clinical infection plays a significant role in the cost of *S. aureus*. Chronically infected animals, with elevated milk somatic cell counts but no visual signs, invariably have lower milk yields than they would have in the same circumstances without *S. aureus* infection. Different methods of calculating the relationship between somatic cell count and milk yield all agree that increased cell counts are associated with significant milk loss. Meta-analysis by Hortet and Seegers concluded an approximate reduction in daily yield by 0.4kg for primiparous and 0.6kg for multiparous animals for every twofold increase above 50,000 somatic cells/ml.
- Elevated somatic cell counts on a herd level may also lead to financial losses due to milk not meeting the criteria for sale set by the purchaser. Some milk contracts have payment penalties or bonuses for being above or below a cell count threshold respectively.
- To control somatic cell count at a herd level many producers will discard milk from sub-clinically infected cows, increasing the losses due to unrealized income.
- Additionally, the culling of chronically infected animals adds replacement costs to the overall financial impact of *S. aureus* intramammary infection. The impact of this will vary with replacement prices, as well as with milk and feed costs for herds that are replacing cows with heifers of a lower production level.
- Many studies have attempted to derive a mean cost for a *S. aureus* intramammary infection, but the inputs to this calculation are not only highly variable between herds, but even within herds at different points in time, giving a huge variation around the mean thus rendering any ‘average cost’ to be of little practical relevance to the individual herd.
- Estimates of cost at herd level must take in to account current milk prices, feed prices, replacement costs, cull cow prices and production parameters for the herd in question within the time period of interest.
- Cost of future cases through the contagious nature of this pathogen can also be ascribed to a case.
    - This factor that has been largely overlooked in the past but is highly significant in contributing to total herd mastitis cost.
    - Transmission rate is a key reason for *S. aureus* being one of the financially more important mastitis pathogens.