Responsible antibiotic use in mastitis control

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Summary

- The use of antibiotics in both animals and humans increases the risk of developing antimicrobial resistance.
- Improving animal health reduces the need for antibiotics.
- Use as little as possible and as much as necessary.

Introduction

The introduction of penicillin in the 1940's, which began the era of antibiotics, has been recognized as one of the greatest advances in therapeutic medicine. Antimicrobials, including antibiotics, have been life-changing and in many cases life-saving for both humans and animals. However, antimicrobial resistance (AMR) is fast becoming part of our everyday vocabulary, and it is now recognised as being a significant threat to human health. AMR is resistance of a microorganism to a drug to which it was previously susceptible, for example when a bacterium develops resistance to a particular antibiotic that used to kill it. It is now well recognised that the use of antibiotics in both animals and humans increases the risk of AMR developing.

National progress in udder health

Improving animal health reduces the need for antibiotics. Positive steps are already being taken, with an overall improvement in the udder health of the national herd in recent years. Since the commencement of the *CellCheck* programme in 2011, the proportion of herds and milk volume nationally with an annual average SCC <200,000 cells/mL has increased from 39% to 68%, and 46% to 71% respectively, between 2013 and 2017. The national average bulk-tank SCC has also reduced during this time, from a high of 272,000 cells/mL in 2009 to 175,000 cells/mL in 2017 (Figure 1).

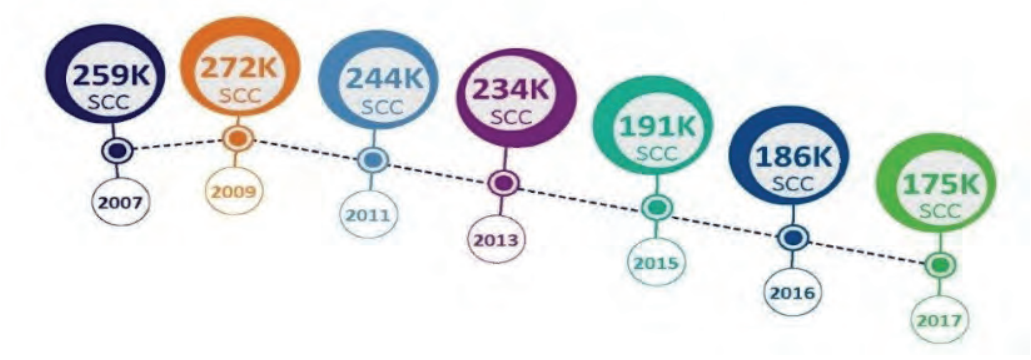

Figure 1. *Annual average bulk-tank SCC (2007–2017)*

Analysis of national intra-mammary product sales data from 2003–2015 also shows a reduction in the number of in-lactation mastitis treatments sold. The 'defined course dose' per 100 animals per year reduced to 46.6 in 2015 from a high of 69.9 in 2008 (Figure 2).

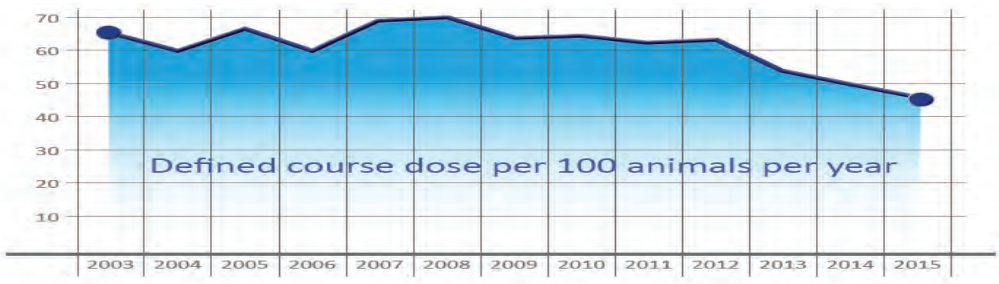

Figure 2. *Usage of in-lactation intramammary antimicrobials on Irish farms ('03-'15)*

Antibiotic dry cow therapy

However, there is still potential to make even more prudent antibiotic choices in the area of mastitis control. 'Blanket' dry cow therapy (DCT), where all quarters of all cows are treated with antibiotic at drying off, was recognised until recently as best practice and has made a very positive contribution to udder health in many countries. Antibiotic DCT undoubtedly has an important role to play in treating infections that persist at the end of lactation and maximising cure rates. However, it has also traditionally been used to prevent new dry period infections. In January 2019, a new Veterinary Medicines Regulation was agreed by Europe, which states that antibiotics should not be used in a preventative fashion. Is it time, therefore, to consider an alternative to blanket DCT, such as 'selective' DCT? This is when only selected cows i.e. those with infected quarters, are treated with antibiotic before drying off. Internal teat sealer is often then used in the remainder of the herd as one of the measures to prevent new infections. While this is considered a more prudent use of antibiotic and would reduce antibiotic use on many farms, we need to ensure that such an approach does not negatively impact udder health.

Critically important antibiotics

In 2005, the World Health Organisation first classified all antibiotics into three different types or categories, based on their importance to human health; important, highly important and critically important. A list of "Highest Priority Critically Important Antibiotics (HPCAIs) for Human Health" was developed. These include some products that are licensed for mastitis treatment, such as third and fourth generation cephalosporins and macrolides. DAFM have subsequently adopted a policy on their use which states that they:

- should not be used in a preventative fashion, or as a first line of treatment.
- should only be used to treat an animal(s) where a milk culture and/or sensitivity result indicates that there is no effective alternative treatment.

Conclusions

While positive change is already underway in relation to antibiotic use for mastitis treatments, there are expectations and opportunities for us, as an industry, to do more. As custodians of animal health, it is important that we do our best to prevent disease in the first instance. When it comes to antibiotics, a good principle is to "use as little as possible, but as much as is necessary".