



courses contributes to the development of a professional support network that helps to decrease burnout and compassion fatigue. However, most CE programs are not targeted specifically to graduates in their first years of practice despite new graduates choosing and needing different CE courses compared to senior veterinarians. Hence, it is essential to provide CE targeted to the areas that recent graduates in rural practice identify as their greatest needs. This presentation will showcase the development and authors' experience leading an online course on bovine medicine targeted at recent veterinary graduates in rural practice, emphasizing the differences in perceived relevance of CE topics between senior and early-career bovine veterinarians.

Nutrition & Metabolism Diseases

K51

Energy balance and body condition, key drivers for a healthy herd

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Dairy cattle body condition and body condition scoring has long been a source of both study and debate among dairy professionals and lay people. While the scale for body condition differs depending on the country and even region, it is generally accepted that low values are equivalent to emaciation and high values are reflective of obesity. Despite a tremendous amount of literature demonstrating the effects of both overall body condition and body condition score change, widespread adoption of body condition as a documented tool for making management decisions by farmers remains relatively low.

Reproduction, production, animal health, and more recently, welfare have all been related to body condition or body condition score change. Several different reasons have been proposed for why the adoption of management strategies centered on body condition have been extremely limited. These include inconsistent training of staff on how to obtain BCS data, uncertainty on how to utilize the information when it is obtained, and a perceived lack of time by both professionals and dairymen. More recently, advancements in sensor and camera technology have helped to move subjective data measure into the objective category. Our aim with this presentation is to highlight how making body condition a key driver of decisions on the farm can improve herd health and subsequently profitability. This presentation will provide practical solutions for overcoming the challenges associated with body condition scoring in both a subjective and objective manner. It will also give examples demonstrating the benefits of tracking body condition on herd health outcomes over time regardless of the methodology used.

K53

Managing the transition period through protocols- A systems based approach

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Producing a safe, wholesome, nutritious product at an economically viable price is the primary goal of dairy producers. Over the past century there have been significant technological and scientific advancements that have resulted in increased efficiency; increases production; decreases in environmental costs per unit of food; and decreases in the cost of production, in an unprecedented manner. While dramatic increases in productivity per cow as well as improved labor and feed efficiency ratios are the primary drivers of the reduced cost of produc-



tion, the individual cow is still the heart of the dairy economic model. No matter the size, farm level profitability is the direct result of the cow being influenced by four primary factors: 1) Genetics 2) Nutrition 3) People 4) Environment. When all four of these factors are aligned, a healthy cow results in a healthy herd, resulting in profitable farms.

To date, the dairy industry has largely relied on lagging metrics as indicators of performance. Percentage of heifers returned to the lactating herd, 21-day pregnancy risk, and 30- and 60-day cull rates, are only three of many of examples of common lagging metrics used to evaluate performance. Arguably, no singular portion of a cow's lifecycle has been as extensively documented as the transition period. The goal of this presentation is to describe the clinical aspects of managing herd health throughout the transition period. We will do this by focusing on well-defined and common disease conditions, managing those conditions extraordinarily well, and consistently utilizing the information to look ahead and see where the dairy is headed. We propose that by maintaining the cow as the center of system and implementing leading metrics (focused on the four primary factors above during the transition period) cow productivity and farm profitability can be reliably predicted.

Infectious Diseases

K55

Tools for the diagnosis and control of bovine paratuberculosis

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Paratuberculosis (PTB) is an infectious enteropathy with worldwide distribution that mainly affects domestic and wild ruminants and is caused by *Mycobacterium avium* subsp. *paratuberculosis* (Map) and triggers a regional chronic enteritis. Map infection significantly reduces the cost-effectiveness of cattle farms due to reduced milk production and early replacement of infected animals. Furthermore, Map has been associated with Crohn's disease, so it is considered by some authors as a zoonotic pathogen. The herd-level prevalence of MAP infection is over 50% in most countries with a developed substantial dairy industry. However, it should be considered that this percentage is limited by the small number of large epidemiological studies carried out in the different countries and by the difficulty in the laboratory detection of animals in subclinical stages.

Combining pathological lesions with clinical signs, two forms of infection, latent and patent, can be distinguished. Latent forms are those present in infected animals with focal lesions, very low bacterial load, low antibody titres and absence of clinical signs. On the other hand, patent forms are those presented by animals with multifocal and diffuse lesions, associated with a higher bacterial load and the presence of more or less evident clinical signs. Detection of infected animals before they present clinical signs of the disease is one of the challenges in laboratory diagnosis. So far, the combination of microbiological (culture and rt-PCR) and serological (ELISA) techniques with complementary sensitivity is the most effective alternative. However recent studies indicate that other techniques such as digital PCR could cover the shortcomings of current protocols.

Currently, the main disease-control strategy within dairy herds involves the combination of appropriate hygienic-sanitary measures and test and cull programs. Since test and cull programs are time-consuming, expensive, and eventually not as efficient as expected in part due to the lack of sensitivity of diagnostic tests, new approaches are needed. In this context, vaccination should be an alternative. It has been demonstrated its effect in the reduction of Map isolation in feces and tissues of infected animals and in the increasing of milk production and cow productive lifespan in infected farms. However, the possible interference of the vaccine with the tests used in the eradication control programs restrict its use. Another approach that is gaining relevance is the identification of genetic markers of resistance or susceptibility to the disease that can be considered in breeding programs.

In this talk all these aspects will be reviewed.
