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VET CHAT

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NEW TECHNOLOGY AIDS ANTIBIOTIC STEWARDSHIP

THE RISE AND FALL OF ANTIBIOTICS

Perhaps one of the greatest medical breakthroughs of our age was the discovery of penicillin by Alexander Flemming in 1928. New antibiotics were rapidly discovered which revolutionized the means by which infectious diseases were treated. Common human infections became easily curable and outbreaks of infectious disease were readily controlled. However, just a few years after the golden age of antibiotics, warning signs of developing resistance were observed. Just as Flemming had predicted, previously susceptible bacteria were evolving and mutating to develop resistance to antibiotics at an alarming speed. Although the magnitude of this problem is still unclear, it is proposed that abuse and misuse of antibiotics is largely responsible for the development of resistance. In less than 100 years after antibiotic discovery, we now face a grim scenario for the generation to come where most antimicrobials might no longer be effective. Human and veterinary medicine may once again enter an era where common bacterial infections could once again prove lethal.

Antibiotic usage in food animals improves more than just animal well-being but also has economic benefits for food animal producers along with a safer public health sector. Significant quantities of antibiotics are used in animal production industries and consequently the incidence of antibiotic resistance has increased.

THE DAIRY ANTIBIOGRAM

Demonstration of evidence-based usage and commitment to ethical antibiotic stewardship is necessary to maintain safe and effective veterinary use of antibiotics, and to preserve public acceptance of this usage. However, bacterial resistance to antibiotics is not as clear cut as being "Resistant" or "Susceptible". Most mechanisms of bacterial resistance depend on the concentration of the antibiotic present.

A new technology, developed by Bayer, which measures the minimum concentration of an antibiotic to inhibit bacterial growth, allows veterinarians to make informed decisions on the most effective treatments. Using this data, an "antibiogram" is developed for individual bacteria and compared over time to detect new levels of antibiotic resistance. The Dairy Antibigram can be currently used for the common mastitis pathogens, *Staphylococcus aureus* and *Streptococcus uberis*, and a range of antibiotics are assessed. Dairy farmers, in conjunction with their veterinarians, now have a unique opportunity to build reliable susceptibility testing into their mastitis programs, and to use this data to guide responsible antibiotic use. A simple, single bulk milk sample is required to provide farm-level antibiograms which can quantify the current status of antibiotic susceptibility of *S. aureus* and *S.uberis*.

ADDING VALUE TO YOUR HERD AND YOUR INDUSTRY

The Dairy Antibigram:

- Provides educated, evidence-based advice on the choice of mastitis treatment.
- Ensures effective use of antibiotics.
- Monitors antibiotic resistance status at the herd-level.
- Provides good evidence of responsible use of antibiotics.
- Supports the dairy industry by contributing data to the national database and preserving the efficacy of mastitis treatments.
- Ensures continued public approval and access to antibiotics for therapy and animal welfare purposes.
- Develops a picture of the current state of antibiotic resistance, and monitors its change over time and in relation to usage practices.
- Upholds the reputation of the Australian dairy industry.

Call the clinic to discuss how the Dairy Antibigram can help your herd with one of our veterinarians.



Scottsdale
(03) 6352 2996

E: admin@scottsdalevets.com.au | W: www.scottsdalevets.com.au



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TEAT SEALANTS: THE FACTS

The use of internal teat sealants in mature cows and heifers has increased over the past decade. This article discusses the potential benefits of internal teat sealants, and when and how they should be administered.



WHAT IS TEAT SEALANT?

Teat sealants are made from bismuth subnitrate, an inert product which aims to mimic the natural defence mechanism of the keratin plug, by forming a physical barrier in the teat canal at drying-off. Teat sealant is especially beneficial in the early dry period before the natural keratin plugs have formed in the teat canals and around calving when they have been lost from many teats. Thus teat sealants help prevent infection and protect the mammary gland during the critical periparturient period. They do not contain antibiotics and must be administered using strict hygiene measures in good facilities. Teat sealants can be used alone in uninfected cows or in combination with dry cow treatment.

WHEN SHOULD TEAT SEALANT BE ADMINISTERED?

In cows, teat sealants should be administered to all four quarters immediately after the last milking at drying off. Good hygiene during administration is essential to prevent the introduction of bacteria into the gland through the teat canal. Teat sealant should not be used where infusion presents an infection risk. This includes lack of staff training, lack of time or poor facilities.

In heifers, teat sealants can be administered 4-6 weeks prior to expected calving date. Research has shown that where the incidence of clinical mastitis in maiden heifers during the first 2 weeks of calving is >10%, the use of a teat sealant can reduce this by 55-85%.

HOW IS TEAT SEALANT ADMINISTERED?

The technique required is very different to that used with antibiotic Dry Cow Treatment.

Some basic guidelines involve:

1. Always wear disposable gloves when administering intramammary treatments.
2. Completely disinfect the teat ends using cotton wool/wipes soaked in 70% methylated spirit. Disinfect the furthest away teats first, followed by the nearest teats.
3. With one hand, gently squeeze closed the base of the teat closest to the udder. Start with the nearest teats first, followed by the teats furthest away.
4. Remove the tube cap and without touching the tip, gently insert the nozzle into the teat canal. Do not insert the nozzle to its full depth as this can damage the teat end.
5. Infuse the teat sealant, whilst maintaining the pressure at the base of the teat. Unlike antibiotic treatments, the teat sealant must sit in the lower part of the teat. Do NOT massage the udder after infusing teat sealant.
6. Administer teat sealants last, after any dry cow treatment.
7. As with all intramammary treatments, udders should be checked for swollen quarters each day for a week after the infusion.

Teat sealant tubes must be kept sterile and dry. The product can become very thick and difficult to administer in cold weather. Do NOT warm the tubes in warm water as they can become contaminated with bacteria, which increases the risk of mastitis. Instead, place the tubes in a warm room prior to administration or in a dry container within a warm water bath.

Adequate training and patience is essential to help prevent damaged teats, introduction of bacteria and subsequent mastitis. Ask one of our veterinarians about our services relating to teat sealant administration in heifers and cows.

The administration of teat sealant in heifers has been made more efficient using our mobile hydraulic tipper crush. Heifers are safely and adequately restrained, allowing clean and hygienic administration of the product, reducing risk of injury to both heifer and operator. Call the clinic today for more details on the use of our tipper crush for teat sealing heifers.

CLINIC SERVICE

MILK QUALITY DRY-OFF CONSULT

Ask about our pre-dry off milk quality consult that can give you head start for the new lactation.

- Milk quality and mastitis review
- Review of intramammary and systemic treatments
- Herd health and staff training

Ask in clinic for more information



IMMUNITY, VACCINES AND COLOSTRUM

Vaccines can be integral in a disease prevention program. This article discusses how vaccines work, the role they play in colostrum management and some tips on the correct administration of vaccines.



HOW DO VACCINES WORK?

Vaccines work by stimulating the immune system, the natural disease-fighting system of the body. Antibodies (also known as immunoglobulins or IgG) are a critical component of the immune system and are produced by the body in response to specific diseases. For example, bovine rotavirus antibodies are produced in response to bovine rotavirus and will not protect against Salmonella. Vaccines can mimic natural exposure to a disease without the need for the animal to actually suffer the disease in the first place. Once enough antibodies have been produced to a specific disease, either from natural exposure or by vaccination, the animal is said to be 'immune'.

WHAT ARE COLOSTRAL VACCINES?

Calves are born with a limited immune system and cannot produce antibodies in response to direct vaccination. However, the cow's immune system can be strategically manipulated so that the calf can benefit from specific antibodies in colostrum. So-called "colostral vaccines" can be a valuable tool to help prevent calf diarrhoea. The timing of these vaccines is critical to enable a maximum immune response during the period of colostrum production (approximately 5-6 weeks prior to calving). If given too early, the peak antibody response will be declining at the point of calving. If given too late or if cows calve earlier than expected, the peak antibody response will not have occurred in time. Each vaccine is different and it is important to follow the instructions carefully.

TIPS FOR VACCINATING

- Vaccines can be administered under the skin or into the muscle and it is very important that each vaccine is administered as directed.
- Good facilities for handling and restraining animals are essential to ensure, safe and effective vaccination.
- Always check the label for storage instructions as some vaccines need to be used within a specified time period after opening.
- Avoid vaccinating and handling young stock on hot or wet days. It is recommended to carry out these procedures early in the early morning to avoid heat-stress.
- Ensure gloves are worn when vaccinating animals and seek medical attention immediately in the event of a needle-stick injury.
- Vaccination needles should be changed frequently and injection sites should be clean and free of manure and mud.
- Ensure an appropriate clean vaccination gun is used to allow accurate dosing. Monitor for leaks and weathered seals.
- Vaccines should be stored in the refrigerator when not being used. A cold Esky is helpful for storing unused vaccines on the day of vaccination.
- Record all vaccinated animals with their unique farm ID, date and type of vaccination and staff members involved in the procedure. It is often helpful to record where the vaccine was administered so that injection site reactions can be monitored.

Some vaccines will need a 'primary course' which typically involves at least two vaccinations at a specified time period apart. Always follow these instructions carefully. It is recommended to only give up to two vaccines on any one day and to administer them at different sites. Speak with one of our veterinarians to help plan an appropriate vaccination program.

SERVICE PROGRAM

COLOSTRUM FIRST

Managing colostrum successfully is fundamental to improving both the health of young calves and the long term productivity of the dairy herd. Our Colostrum First program includes:

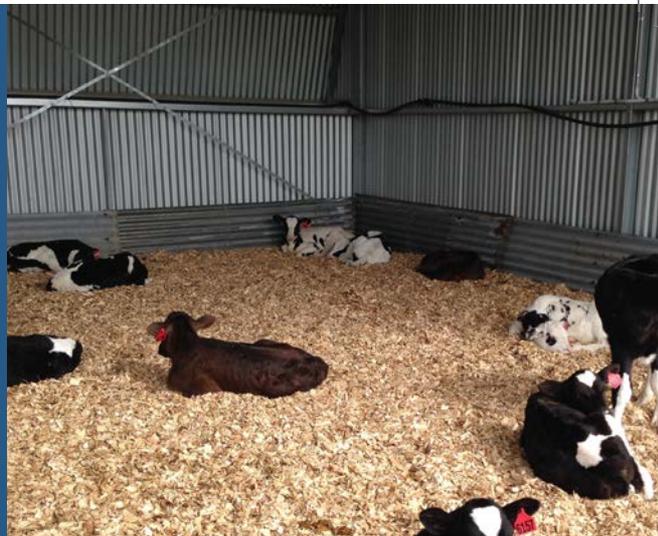
- Review of current colostrum management
- Assessment of passive transfer and colostrum cleanliness
- Establishment of benchmarks
- Monitoring progress



CALL THE CLINIC
TO BOOK YOUR
COLOSTRUM
FIRST CONSULT

PLANNING A NEW CALF SHED?

The easiest time to make changes to your calf housing is when there are no calves in the shed. This article introduces the concepts of rearing calves in groups and how these impact shed design.



ADVANCED PLANNING

The current and future calf requirements will need to be determined in order to plan your shed. The number of calves reared/season and the duration of housing will determine the total area of the shed. The industry recommendation is 2m² per calf but this should be considered an absolute minimum. Consider the thickness of partitions and any alleyways when planning the pen layout.

"BATCH REARING"

Calves should be 'batch reared' and not mix between pens. This "all-in all-out" system means that calves fill a pen until it is full and they stay here until they are all moved out of the shed. When new calves arrive, the next pen starts to be filled until it is full and so on. A calf should only leave her pen if she becomes sick or if she is a slow drinker. Pen size is determined by calving pattern, to allow complete filling of a pen with calves of similar ages and immunity. There should be no more than 7 days age difference between the oldest and youngest calf in the pen.

CALF CONTACT

Contact between calves in different pens should be avoided and common partitions should be solid and made of a non-porous material (eg. corrugated iron or tin). This prevents nose-to-nose contact and passage of manure between pens. Wood is not a suitable material as it is difficult to clean and allows survival of disease-causing pathogens. Mesh partitions (eg. gates) will suffice when there is an alleyway between pens. The front of the pen should be easily opened or have a smaller gate within it to allow easy access. Climbing and lifting of calves over partitions is not recommended and will result in injury to staff and calves.

FEEDING FACILITIES

Feeding facilities are integral to shed design. Delivery method of milk, water, grain and fibre will depend on pen size, the duration that calves are housed, the number of staff available to feed and cost.

Milk feeding should be efficient to reduce stress and allow:

- Inspection of all calves for signs of early disease
- Volume and speed of feeding for each calf to be observed
- Slow drinkers to finish without bullying from other calves.

Ad lib water should be located at the front of each pen. Automated drinkers allow a constant supply of fresh clean water whilst large barrels are unsuitable, being easily contaminated and difficult to clean.

Ad lib calf grain should be located such that many calves can have access at the same time. Long raised troughs are ideal to help prevent contamination with manure. They should be regularly cleaned and at a suitable height for the size of calves in the pen. Place these troughs in the centre of the pen to allow 360° access to grain and to prevent rodents gaining access by running along pen walls.

ACCESS FOR CLEANING

Bedding is often required to create a warm and comfortable environment. Regardless of the bedding type, the method of cleaning must be considered. Manual removal of soiled bedding is time consuming and physically demanding. Machinery access to all pens in the shed will allow safe and efficient cleaning. This may involve demountable pens with drop pins or clips, or slide doors to gain access to larger pens.

Call the clinic today to discuss your calf shed requirements with one of our veterinarians.

APIAM DAIRY SERVICES CLINIC NETWORK

Border Veterinary Clinic: Cohuna, Leitchville, Barham, Kerang
Deniliquin Veterinary Clinic
Echuca Veterinary Clinic
Finley Veterinary Clinic
Gippsland Veterinary Hospital: Maffra, Sale
Gympie Veterinary Services: Gympie, Tin Can Bay

Kyabram Veterinary Clinic: Kyabram, Nathalia

Scottsdale Veterinary Services

Smithton Veterinary Service

Terang & Mortlake Veterinary Clinic: Terang, Mortlake

Warrnambool Veterinary: Warrnambool, Nullawarre, Koroit, Port Fairy



Scottsdale
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