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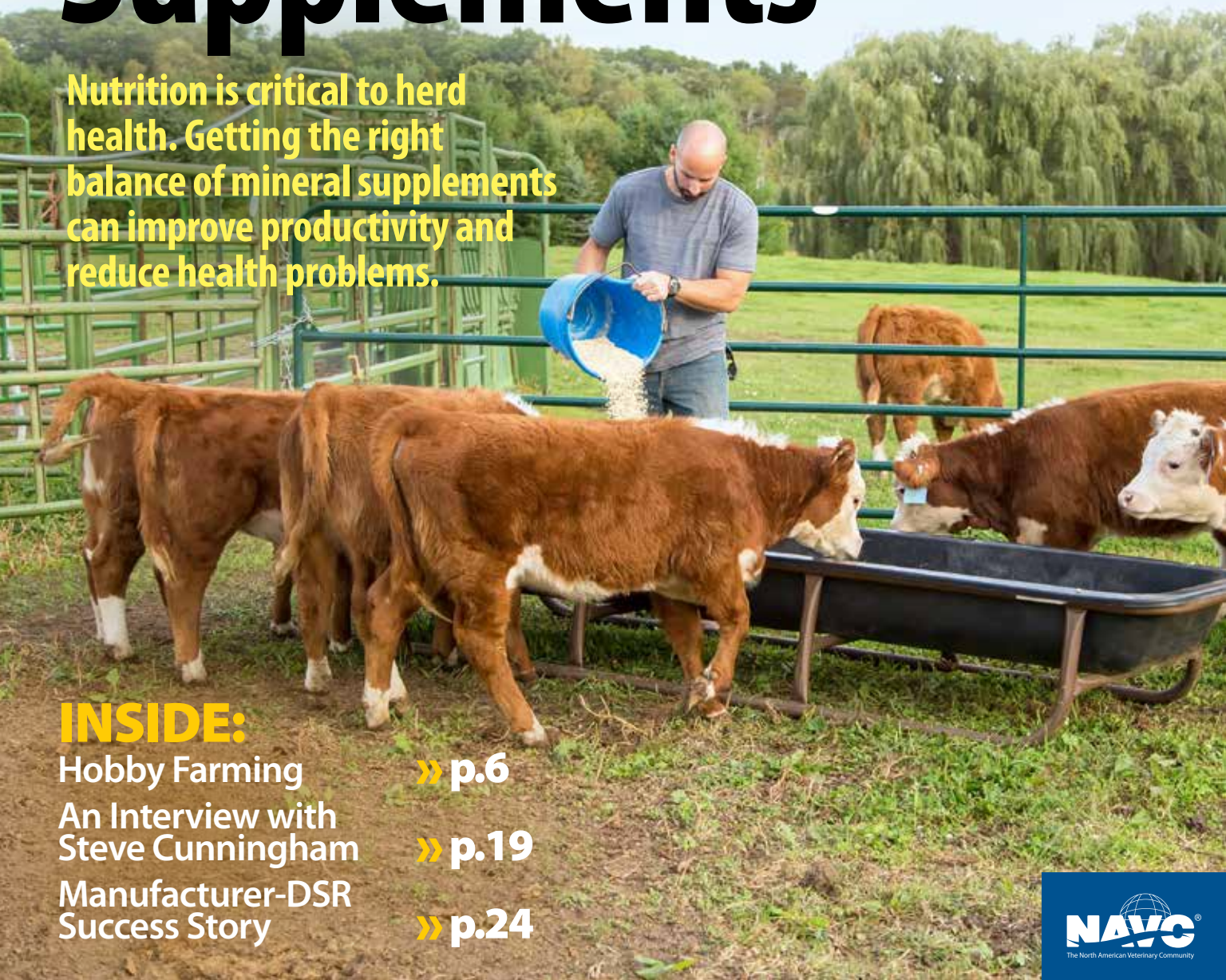
Promoting Excellence in Animal Health Sales

Veterinary advantage

An Official Publication of the NAVC

Sorting Out Supplements

Nutrition is critical to herd health. Getting the right balance of mineral supplements can improve productivity and reduce health problems.



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Hobby Farming » p.6
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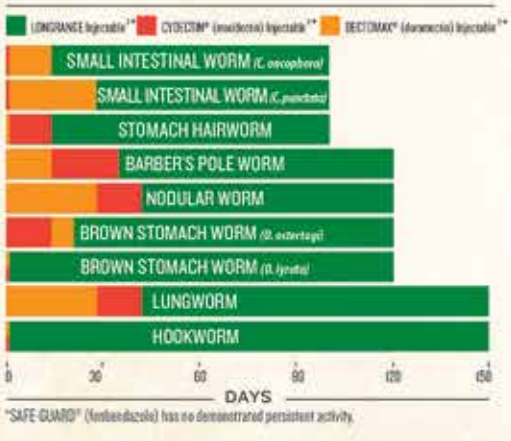
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[2] Based on product labels.

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Growing with Business

Industry consolidation offers opportunities



BY JENNIFER RYAN

Share your successes. Drop me a line at jryan@NAVC.com.

At the end of nearly every interview with a distributor sales representative, I ask "what is the greatest change you've seen during your career?" The answer is always about the industry's consolidation.

On the producer side, fewer numbers of operations has been met with fewer numbers of companies that serve them. Producers want choice, but they also want the best deal possible. For both parties, getting bigger seems to be the answer.

The hope for each one of these mergers is that we are not only getting bigger, we're also getting better – at serving customers, at anticipating their needs, at managing the inventory, at developing new technologies that will serve future generations.

Answering the call

Steve Cunningham at Animal Health International, Inc., gives us great perspective on how livestock producers are changing – and how the industry is adjusting to meet the challenge (read more on page 19). As he points out, the company's knowledgeable employees are the best way to ensure each customer gets a customized solution.

Flexible paths

Successful DSRs are often featured in this publication, and a common theme in their stories is changing career paths. It often takes a move to help individuals grow their skills and resources.

For example, Stacey Roth with Bayer Animal Health has moved across the Midwest and helped different customers. Along the way, she's teamed up twice with Scott Hertzke, territory manager with MWI Animal Health, once helping with companion animal products and once on the livestock side (read more on page 24).

DSRs that can adapt to the ever-changing business environment also have the opportunity to grow and learn. That's a good lesson for anyone, no matter what the industry.

Us too

Vet-Advantage is undergoing a change of our own. This year, we've joined the North American Veterinary Community (NAVC) Publishing division, helping make it the largest publisher in the veterinary industry.

Just like many of our readers have experienced, becoming part of a larger organization has its benefits. We're now working alongside professionals who produce the annual NAVC Conference (to be called VMX in 2018), which hosts more than 17,000 attendees each year. We're also part of group that includes VetFolio, an online CE platform in conjunction with AAHA; the NAVC Institute; the Veterinary Innovation Council; and journals like *Today's Veterinary Practice*, *Today's Veterinary Technician* and NAVC Live and NAVC Discovery.

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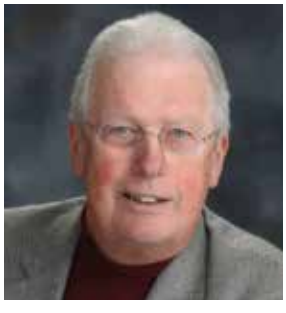
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*Arruda AG, Godden S, Rapnicki P, Gorden P, Timms L, Aly SS, Lehenbauer TW, Champagne J. 2013. Randomized noninferiority clinical trial evaluating 3 commercial dry cow mastitis preparations: I. Quarter-level outcomes. *J Dairy Sci.* 96:4419-4435.
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Productive Producer Meetings



Why adjusting the opening of your producer meetings can greatly enhance your success



BY PATRICK T. MALONE

Patrick T. Malone is a Business Advisor and Leadership Mentor based in Blairsville, GA. He is the co-author of the best-selling business book *Cracking the Code to Leadership* and may be reached at ptm4936@gmail.com or 706-835-1308.

Over the last two decades, the number of producer meetings I have attended are too numerous to count. Unfortunately, most have been a waste of time and a waste of a company's money unless the sole objective was to create goodwill.

If you have watched the mergers and acquisitions in our industry, you know that goodwill is the value of a business not related to assets or liabilities. It is an intangible. You also may be aware that the goodwill claimed at the inception of an M & A is mostly written off at some point during the consolidation process. I have often considered goodwill to be the amount that the buyer overpaid the seller for the asset. So the value of goodwill becomes elusive at best, and brings us back to:

Most producer meetings are a waste of your time and your company's money.

I say this because most producer meetings fail to answer the audience's primary question – "Why should I care?"

The majority of meetings begin with the representative thanking the audience for the opportunity, followed by "I want to talk with you about (fill in the product/service/issue/problem/etc.)". What follows is a data dump that builds goodwill with some, but for the most part goes in one ear and out the other. Ultimately, this yields little return on the investment of your time and your company's money. Perhaps you have gained some goodwill.

The starting line

Unfortunately, goodwill will not pay your bills. So how much different could your next producer meeting be if you began by thanking them for the opportunity and then said,

"Mastitis remains the most costly disease in the dairy industry. I would like to show you how to reduce these costs significantly and improve the economic outcomes within your herds so you can determine if this is the right solution for treating mastitis in your herd."

Or

"Using the appropriate parasite control products will reduce your production losses and assist you to more effectively forecast production outcomes. Let me show you how, and then you can decide if these parasite control products are appropriate for your situation."

Or

"I'm convinced the right vaccine program will provide your herd with enhanced reproductive protection, and that translates to more bottom line dollars for you. Let me demonstrate how you can make this work so that you can make a well-informed decision about vaccines."

A better position

What follows is the same data you provide in your current meetings, only now that data is positioned to reduce costs, improve production and/or increase profit for the producers in attendance. You are positioning your audience to be more successful, which is the answer to – "Why should I care?"

When you answer that question up front, you will find that your audience will listen differently. The questions that they ask will be more specific to their own situation and demonstrate real interest as opposed to the polite questions you are getting now. You will also notice more in-depth discussions after the meeting and a genuine appreciation for your assistance in making them more successful. Shortly, you will transition from just another sales rep or marketing rep to a valued business advisor.

Valued business advisors seem to gain a greater share of the producers business, so while you were focused on making them more successful, they were helping you become more successful – and that is a true win-win proposition.

I'm convinced that adjusting the opening of your producer meetings will greatly enhance your return on your investment. And all that is required is remembering the call letters of success radio – WSIC "Why Should I Care?" But don't take my word for it. Try it. Find out for yourself. It works! ■



BY DAWN SINGLETON-OLSON

Hobby Farming

The growth of hobby farming presents a unique opportunity for your veterinary customers



Until my neighbor hollered across the street to ask if I'd like some fresh eggs, I had no idea that he and his wife had a flock of chickens in their back yard in our midtown Omaha neighborhood. He's not a person I'd expect to see with a chicken perched on his shoulder. My regular route takes me past a house on one of the metro's busiest streets with a few hens inside a portable fence in the front yard. Whether it's to eat healthier, more sustainably or locally, to know where your food is coming from, or as a hobby, 4-H or fair project, urban or backyard farming is growing in popularity and presenting growth opportunities for veterinarians in all types of markets.

This summer's AVMA Convention offers 23 Continuing Education courses in the Urban Farming category alone, plus another six courses devoted to Honey Bee Health and Husbandry. As their website states, these are clearly "hot topics in veterinary medicine" so they are well worth your time to learn about and discuss with your customers.

Urban chicken movement takes off

The "urban chicken" movement has exploded in recent years, and many municipalities across the country have changed their zoning laws to allow for limited numbers of hens inside city limits. The online forum BackyardChickens is just one example of the popularity of poultry with tens of thousands of posts and views, dozens of articles in their Learning Center, and nearly half a million Facebook members. Most veterinarians have had little exposure to poultry medicine, and those who have typically work with huge commercial growers, rather than hobby flocks. My neighbor has struggled to find a clinic who will see his chickens and told me "the biggest help we've had is from Tractor Supply … they're very knowledgeable and always have time to help you out." There are obviously gaps in the hobby poultry market for veterinarians willing to fill them.

Taking the time to learn about the basics of poultry care and the most common health issues and treatments will give you a great starting point for discussions with your customers about this growing market. Some excellent resources include backyardchickens.com mentioned above (click on Learning Center); the Merck Manual (just search "backyard poultry" at merckvetmanual.com to bring up a variety of topics); and caringpets.org (click "chicken hen" in the dropdown under Animal Care Guides).

Chicken health issues include:

- **Viral diseases,** including Marek's Disease, Infectious Bronchitis, Avian Encephalomyelitis and Fowl Pox – a viral disease contracted through skin abrasions
- **Bacterial infections,** such as *Mycoplasmosis* (Chronic Respiratory Disease), *Salmonellosis*, *Colibacillosis* (caused by *E. coli*) and Newcastle Disease
- **Respiratory diseases including Coccidiosis,** Cryptosporidiosis and Toxoplasmosis
- **Egg Binding,** a chicken unable to pass her eggs which can lead to oviduct prolapse
- **Internal and external parasites,** including lice, mites, ticks, tapeworms and roundworms

Other livestock

While chickens have become a sort of symbol for the local food movement, some backyard farmers joke that they are "gateway livestock" to adding more species, as space – and zoning laws – allow. Other fowl including turkeys, ducks, geese and even quail and guineas are becoming more popular. Your customers may find they have clients adding sheep, goats – even llamas or alpacas to their acreages or backyard menageries. Knowing some of the essentials for the care and treatment of these small ruminants and camelids will help in recommending products to your practitioners.

All sheep and goats should be vaccinated for *Clostridium perfringens* Type C and D and tetanus, since clostridial diseases are caused by bacteria that commonly live in the gut and manure of both species. This in an off-label vaccine for llamas and alpacas. Soremouth is a viral skin disease of sheep and goats that can be prevented with Ovine Ecthyma vaccine.

Hoof rot is a bacterial infection of the hoof, more prevalent during wet weather or when animals spend long periods on wet ground. Treatment includes trimming away as much of the affected hoof as possible, cleaning the hoof with a product labeled for foot rot, and often antibiotics. To keep their hooves healthy, most backyard ruminants require a hoof trim every 4-6 weeks.

Like all species, sheep, goats and camelids are affected by internal and external parasites, such as lice, mites and intestinal parasites, and it's common for goats to harbor several species of coccidia. For optimal health, salt and minerals should be provided year-round and formulated for the specific species.

The National Honey Board estimates that there are about 125,000 beekeepers across the country, most of them hobbyists with fewer than 25 hives. Your veterinary customers probably never thought they'd be treating honey bees in their practice, but since honey and related products enter the human food chain, bees are considered a food animal species under the new FDA regulations related to medically-important antibiotics. With the Veterinary Food Directive regulatory changes that took effect at the start of this year, both hobby and commercial beekeepers are now required to consult a veterinarian before treating a diseased colony with antibiotics. This requires veterinarians to be knowledgeable about honey bees and establish a valid veterinarian-client-patient relationship before prescribing antibiotics for a bee colony.

> Most veterinarians have had little exposure to poultry medicine, and those who have typically work with huge commercial growers, rather than hobby flocks.

You can help take the sting out of these requirements for your customers by directing them to the AVMA.org website, where they can enter "honey bee" in the search. Clicking on "Honey Bees 101 for Veterinarians" will pull up a page where AVMA members can link to both a PDF guide with basic information on honey bees, along with three webinars that "introduce veterinarians to various aspects of beekeeping and honey bee medicine" according to the site.

As the popularity and momentum of hobby farming continues to grow, veterinarians and clinic staff who welcome the challenge of working with species new or unfamiliar to their practice have an excellent opportunity to expand their knowledge and their practice revenue. Your efforts to learn more about the variety of animals, what keeps them healthy and the products you carry to promote optimum wellness will be a valuable benefit to your clinics exploring this unique market. ■

Dawn Singleton-Olson has more than 25 years of experience in the animal health industry, including distributor sales, manufacturing, practice management and as a zoo supervisor. She is a volunteer, fundraiser and board trustee for several humane organizations and the Omaha (Neb.) Police Mounted Patrol.

COURTESY OF THE NATIONAL CATTLEMEN'S BEEF ASSOCIATION

Cattle Industry Convention Sets Record Attendance in Nashville



The keynote address at the convention's opening general session was delivered by Dr. Beck Weathers. Dr. Weathers in 1996 survived one of the most violent blizzards to strike Mt. Everest, and he served as the inspiration for the major motion picture *Everest*.

The 2017 Cattle Industry Convention and National Cattlemen's Beef Association (NCBA) Trade Show was held in February. More than 9,300 people attended this year's convention – shattering the previous record of 8,200 – to engage in grassroots policy process, hear from industry experts and attend the expansive tradeshow. In addition, more than 350 exhibitors featured their wares and services on more than seven acres at the NCBA Trade Show.

New board members

Members elected Nebraska cattleman Craig Uden as the organization's new president. Uden, a fourth-generation cattleman from Elwood, Neb., said he is proud to lead the organization.

"It is an honor to be selected to lead the industry that my family has worked in for four generations," Uden said. "We have a great opportunity in the coming year and sharing our story on Capitol Hill and around the country is going to be top priority."

Uden is a partner in Darr Feedlot Inc., a commercial cattle feeding operation in central Nebraska. Craig and his wife, Terri, also own and manage a commercial cow-calf operation.

Policy priorities

In addition to electing the new officer team, NCBA members voted on new and expiring policy issues, and set policy priorities for the organization that will direct the efforts of NCBA in Washington D.C., and elsewhere.

"The coming year is going to be a huge one for the cattle and beef industry from a policy standpoint," Uden said. "We are facing unprecedented change in Washington D.C., and we're going to work tirelessly to make sure our producers' voices are heard in Washington on important issues like tax reform, regulatory relief and international trade."

As president of NCBA, Uden will lead the organization's policy work and oversee efforts as a contractor to the Beef Checkoff Program.

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NCBA Board Members Elected:

- Kevin Kester of Parkfield, Calif., president-elect
- Jennifer Houston of Sweetwater, Tenn., vice president
- Jerry Effertz of Velva, N.D., Federation chairman
- Dawn Caldwell of Edgar, Neb., Federation vice chair
- Joe Guild, Reno, Nev., policy division chairman
- Jerry Bohn of Pratt, Kan., policy vice chairman

$1,500 CME Scholarship Winners:

- Thor Burnside, Fort Hays State University, Talala, Okla.
- Cole Grisham, West Texas A&M University, Van Vleck, Texas
- Emily Ivey, Land Lake College, Loudon, Tenn.
- Abby Marion, University of Florida, Deltona, Fla.
- Garrett Nichols, Iowa State University, Marshalltown, Iowa
- Dan Johnson, Kansas State University, Dillion, Mont.
- Shelby Schiefelbein, Texas A&M University, Kimball, Minn.
- Madison Slaven, Virginia Tech, Blacksburg, Va.
- Rachel Waggie, Kansas State University, Manhattan, Kan.





Industry scholarships

Ten college students were awarded the 2017-2018 $1,500 CME Beef Industry Scholarships. The scholarship was sponsored by the CME Group and administered by the National Cattlemen's Foundation (NCF). Taylre Sitz of Bozeman, Montana, was the overall essay winner.

"We're pleased to continue our support of the CME Beef Industry Scholarships, which provide education to future beef industry leaders," said Tim Andriesen, CME Group managing director of agricultural products. "Our partnership with NCF enables us to continue investing in accomplished university students who represent the next generation of food producers here in the U.S."

The CME Beef Industry Scholarship was introduced in 1989 in partnership with the Chicago Mercantile Exchange. Today this scholarship tradition remains strong by recognizing and encouraging talented college students who will one day be industry leaders.

In addition to the $1,500 scholarship, Taylre Sitz received a trip to Nashville, Tenn., for the 2017 Cattle Industry Convention and NCBA Trade Show. Sitz currently attends Montana State University, where she is pursuing a bachelor's degree in animal science, as well as a minor in business administration. She is currently enrolled in the pre-veterinary program with plans to become a large animal veterinarian.

"Growing up on a ranch, I developed a commitment to the beef industry at an early age," Sitz said. "I am interested in becoming a large animal veterinarian, and through ranch life I have been able to see and visit as they doctored cut horses or lame cattle. These experiences only furthered my desire to pursue the large animal veterinary career." ■

Mark your calendars: The next NCBA Cattle Industry Convention & NCBA Trade Show is Jan. 31-Feb. 2, 2018 in Phoenix, Ariz.

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BRD Has Many Causes, But Producers Can Do More Than They May Realize to Manage It

A multi-pronged approach to the pathogen, the animal and husbandry can help result in healthier, more productive animals

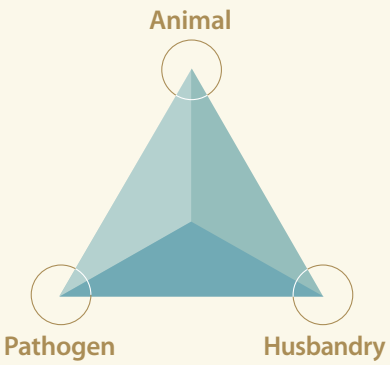
The constant yet unpredictable threat of bovine respiratory disease (BRD) can be maddening and devastating for ranchers and feeders alike.

BRD is the most deadly and costly disease for producers, accounting for 37 percent[1] of the mortality in calves over 3 weeks of age on cow/calf operations and 57 percent[2] in feedlots – despite years of advances in managerial practices, vaccines and clinical therapies. In addition, a growing desire and industry pressure to reduce overall antibiotic use has only added to the challenge.

The fact is, BRD is in many ways a result of the way the U.S. cattle industry is set up. From birth to auction market and stocker to feedyard, animals travel from location to location, commingling with other animals in new environments. These changes and related stressors can have a big impact on animals' ability to fight off diseases such as BRD.

The battle against BRD isn't just about preventive and treatment options, but also utilizing the latest information and best practices to protect livestock and livelihoods.

The BRD Triad



There is no single cause for the BRD complex and, likewise, no single cure.

The many factors that can bring about the disease require a multifaceted approach to prevention and treatment.

It can be helpful to think of BRD management as a triad with three points of influence — the pathogen, the animal and husbandry practices.

The Pathogen

The first point of influence in the BRD triad is the pathogen, which involves addressing the disease directly. What makes BRD so complex is the fact that it is associated with several viral and bacterial pathogens.

A variety of viruses (IBR, BVD, BRSV and PI_3) can invade and damage the calf's respiratory tract, which compromises its natural defense mechanisms, including the ability to expel bacteria and dust from the lungs. This damage, along with a suppressed immune system, permits the invasion of BRD-causing bacteria such as *Mannheimia haemolytica*, *Pasteurella multocida*, *Histophilus somni* and *Mycoplasma bovis*.

There are several options currently available for producers to help prevent and/or treat BRD, including vaccines and antibiotics.

Vaccines work by triggering a specific immune response to the pathogen or pathogens included in the vaccine for the purpose of preventing disease. Vaccines primarily utilize the animal's adaptive immune system. Designed as a preventive measure, most vaccines should only be administered to healthy, not stressed animals.

Antibiotics, on the other hand, can be used at various stages in the disease by selectively targeting specific bacterial pathogens. Antibiotics can be a powerful tool in the fight against BRD, but work best when the disease is diagnosed early and as part of an aggressive treatment program.

The earlier a producer can detect BRD, the more likely an effective intervention can occur. Vigilant surveillance is necessary to detect and diagnose sick animals. But producers and veterinarians are at a disadvantage because cattle may sometimes appear asymptomatic, even though their illness is progressing.

The Animal

The second point of the triad is the animal, which focuses on supporting the animal's immune system.

As pathogens adapt and find new ways to penetrate the immune system, using treatments that boost the immune response can help reduce the risk of disease.

Enter immunostimulants, which can non-specifically and rapidly strengthen the innate immune system, an animal's first internal line of defense. Innate immunity kicks in immediately upon infection, targeting pathogens that the immune system deems as foreign. In other words, immunostimulants can respond to a wide range of pathogens, which differs from the adaptive, pathogen-specific therapy offered by a vaccine or antibiotic. This can be especially useful in diseases such as BRD, which are associated with multiple pathogens.

By using immunostimulants at or near the time of disease challenge, producers can help the animal's own immune system better fight the disease and reduce mortality.

Husbandry Practices

The third point of the BRD triad is husbandry, which includes limiting animal stress. There is no substitute for solid animal husbandry practices.

That's because BRD can be triggered by a variety of predisposing factors or stressors, such as:

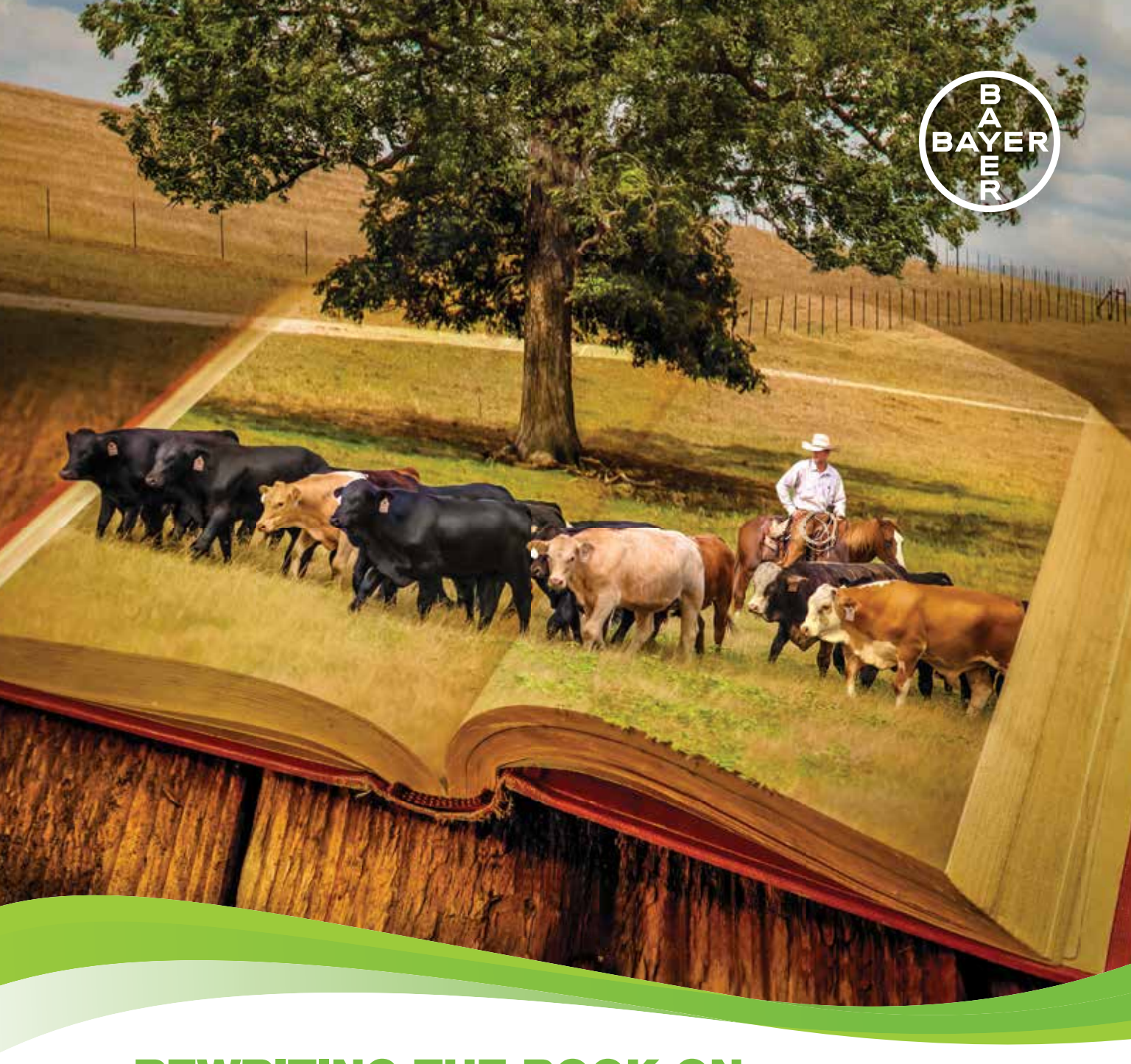
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- **Castration**
- **Dehydration**
- **Weather**
- **Genetics**
- **Production**

Stressors trigger the release of cortisol throughout the body of the calf, cow, heifer or steer, which can compromise the immune response, weakening the animal's defenses against infection.

While it may be impossible to eliminate stress, there are steps producers can take to help reduce its effects. These include avoiding processing, weaning or shipping cattle in severe weather; making sure the animal has sufficient water and feed access; acclimating calves to water troughs and feed bunks; and other good management practices.

Overall, BRD is a complex disease that requires a multi-faceted approach to preventing and fighting it. By focusing on the essential elements or trigger points that may contribute to BRD, producers have a better chance of combatting this deadly disease.

[1]NAHMS, 2007 (Cow-calf, Part V)
[2]Longeragan GH, et al. (2001). Trends in mortality ratios among cattle in US feedlots. *JAVMA*. 219(8):1122-1127.



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Sorting Out Supplements

Nutrition is critical to herd health. Getting the right balance of mineral supplements can improve productivity and reduce health problems.

BY JENNIFER RYAN



The right mineral program can help cattle producers improve overall health and even cut costs. Yet, getting it right is a balance. Too little supplementation risks growth and puts cattle at risk for disease. Too much supplement may waste money – or worse, even lead to toxicity.

What's needed

There are two major categories of mineral supplementation: macronutrients and trace minerals. Macronutrients are required by the animal in high quantities. Trace minerals are required in small quantities but are still critical.

The macronutrients producers most often need to supplement are calcium, phosphorus, potassium, sodium, chloride and magnesium. In addition, there are about eight trace minerals critical to cattle: copper, selenium, zinc, manganese, iodine, iron, chromium and cobalt.

Critical points

For breeding livestock, there are two critical points when cattle need optimal mineral levels. The first is the month before breeding. It takes about four weeks, or longer, to build adequate stores of minerals. After breeding, the stores help protect the embryo and keep it alive.

"The months prior to breeding are really when we need to pay attention and get the correct levels in there," says Lourens Havenga, DVM, CEO at Multimin USA, Inc. "With proper mineral levels, we'll see more cows get pregnant and get them pregnant earlier in the breeding season."

About 90 days before calving is another critical point. At this time, the animal is transferring her own mineral into the calf. The cow's milk provides very little trace mineral. Therefore, it's important to provide adequate levels of copper, zinc and selenium before birth.

"The cow will stack the calf to her own detriment," Havenga says. "She will deplete her own store. If they've depleted themselves, you'll see retained placentas and uterine infections – both in dairy and beef cattle."

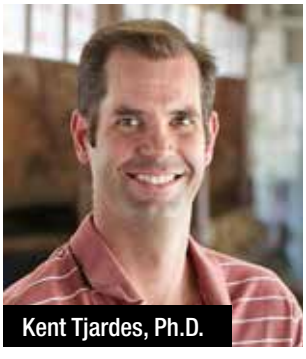
If the calf is low in minerals, producers will see increased rates of scours and respiratory disease. In addition, the calf may not respond as well to vaccines if the deficiencies aren't overcome by weaning time.

"A majority of calves weaned are low in copper, zinc and selenium," he says.

Calcium is the most important macronutrient for cows and calves to receive, says Kent Tjardes, Ph.D., cattle consultant with Purina Animal Nutrition. Calcium plays a critical role in milk production and bone development. It is the most abundant mineral in the body, but cattle generally get plenty of calcium through feed.

"Most grasses provide adequate amounts of calcium, so unless they are grazing on dormant grass and forages, like corn stalks, or using feeding a lot of distiller's or grains, you will not see a deficiency," he says.

Phosphorus is another macronutrient that helps with bone development and formation. It's present in every cell of the body, is part of the genetic material, and is important for the formation of ADP, which is the fuel cell of all animals, Tjardes says.


Kent Tjardes, Ph.D.

"With cattle, we rely a lot on bacteria to help break down forages," he says. "The bacteria in cattle require phosphorus as part of their cell wall, genetic material and their ADP formation as well."

Reasons for deficiencies

Even producers feeding high-quality feedstuffs will need to supplement some vitamins and minerals. Deficiencies can occur even if cattle are fed the right amount of macronutrients and trace minerals.

"The reason we have imbalances on the trace mineral side is usually due to two different reasons. The first problem is because our forages are deficient," Havenga says. "The next problem is antagonism – something else in the diet ties up this mineral and prevents absorption. We may supply the mineral through the mouth, but something else in the diet will tie it up and take it out the backside."

For example, while iron is a critical mineral for cattle, it is rarely a candidate for supplementation. Iron is present in soils and plants worldwide, but can bind up other minerals if there is too much in the animal's diet.

Molybdenum is another antagonist that will bind to copper and prevent absorption by the animal. It is often found in forages. Sulfur also is an antagonist to copper, zinc, selenium and manganese. Some regions – like Sulfur Springs, Texas – are known for their high-sulfate water, which is a typical culprit.

"Molasses is one of the byproducts that is used in rations to help make them more palatable and is a good binding agent. Unfortunately, molasses also has a high sulfur content," Havenga says.

Distiller's byproducts can offer cattle producers an affordable ration ingredient that is high in protein and phosphorus, but it can also come with a high sulfur content, which can bind up the supplemented copper, zinc and manganese.

"It's one of the reasons we keep seeing imbalances," he says. "It's not that people are doing a bad job at supplementing. It's purely because of the variability in forages and that they invariably bring something else in there. It's the biggest reason we don't see consistent results."

Magnesium is a macronutrient that is critical to milk production, bone formation and neuromuscular transmissions, but nitrogen and potassium can be antagonistic to magnesium, causing deficiencies and even disease.

"A lot of times, we have spring calving cows that are turned out on lush grass, and that's where we get grass tetany, from those high levels of soluble nitrogen in the grass that causes them not to absorb magnesium," Tjardes says.

It may not be necessary to develop a completely customized mineral program. Tjardes suggests looking at formulations suited to the region to help target some of these concerns.

Key points

- Key macronutrients: calcium, phosphorus and magnesium
- Key trace minerals: copper, selenium, zinc, manganese, iodine, iron, chromium and cobalt
- Reasons for deficiencies: forages low in essential nutrients or high in antagonistic nutrients that bind nutrients and don't allow absorption.

Accounting for variability

Even if a ration is balanced perfectly, variability in cattle's feed intake is another reason why supplementing can be tricky, Havenga notes.

"There is, on average, a 30 percent variation between individuals in a group," he says. "If you offer free choice feed in a bunk and leave cattle to eat as they want, the difference between the lowest and highest intake will be a 30 percent differential. Some animals will eat too little, some will eat too much. That costs us money."

For grazing cattle, only offering supplements through the ration can cause even more variability. Producers will often see feed refusals increase as quality of grass increases.

Even in these circumstances, producers should not remove access to oral trace minerals.

"There are big seasonal changes," Havenga notes. "As soon as it rains, and they have good quality green grass, they are like kids – they want to go after the candy. People should not remove access to oral trace minerals. Animals need it on a daily basis, but they don't need it at the same level every day."

Technology can help producers balance the cattle's requirements. Chelated or hydroxy minerals are able to bypass some binding effects, which makes the nutrients more available to the animal.

For selenium, producers can also use organic forms to make it more available. Selenium is an important antioxidant that can work in concert with Vitamin E to prevent metabolic stress, which can cause tissues to break down.

Specific regions, such as the Great Lakes and coastal areas are known to have selenium deficiencies and supplementing with an organic form can be worthwhile, Tjardes suggests. However, in areas of the Dakotas and Wyoming, the levels in selenium in forages can be potentially toxic and you do not want to supplement.

"You don't want to test forages for selenium all the time because that one mineral is very costly to test for," he says. "But if you have problems due to either deficiencies or toxicities, it's a worthwhile investment."

Injecting precision

"To bypass antagonists completely, we can change the route we provide trace minerals," Havenga says. "Everything that goes through the mouth is going to be exposed to antagonists."

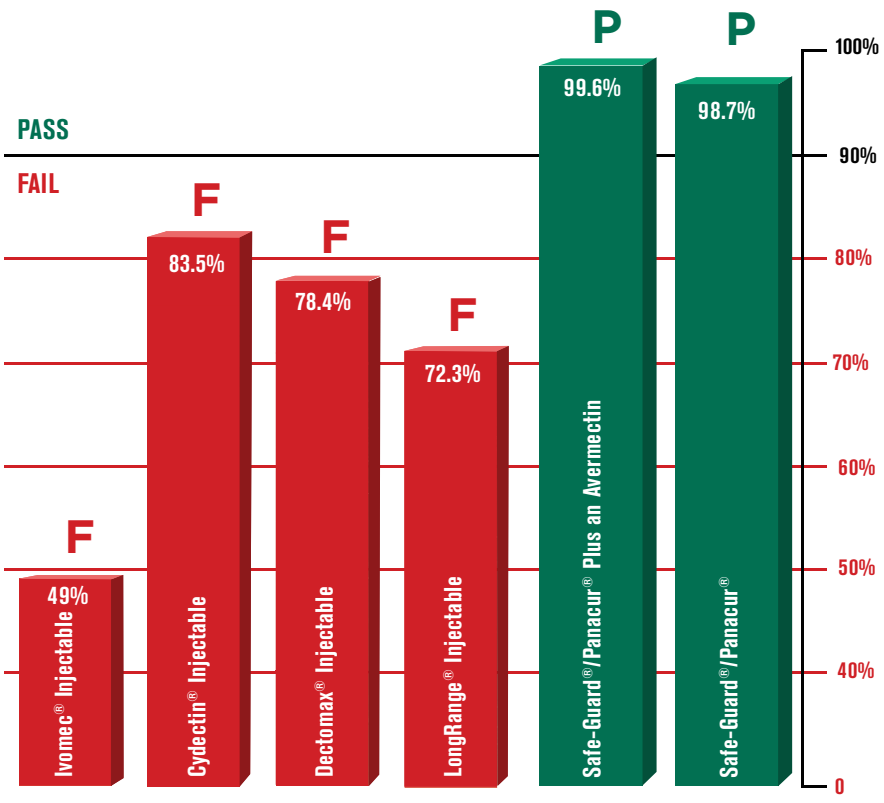
Recently, injectable trace minerals offer producers another way to supplement cattle without the risk of antagonists.

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The majority opinion among parasitologists attending the FDA public forum on managing resistant parasites was that concurrent treatment of two different classes of anthelmintics is the best way to manage these resistant parasites.

Merck's database supports 2008 USDA National Animal Health Monitoring Study (NAHMS) showing confirmed or suspected resistance in several U.S. states to Macrocyclic lactone (Avermectin) class of dewormers.[3]

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Safe-Guard Protein Block

RESIDUE WARNING: Cattle must not be slaughtered within 16 days following last treatment. A withdrawal period has not been established for this product in preruminating calves. Do not use in calves to be processed for veal.

Safe-Guard Mineral, feed through products and liquid feed

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Safe-Guard Drench and Paste

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1 FDA Public Resistance Forum-March 2012
2 Tests from 1/1/2008 - 4/12/2016
3 NAHMS 2008
4 Dobson R., Jackson F., Levecke B., Besier B., et al. Guidelines for fecal egg count reduction tests (FECRT). World Association for the Advancement of Veterinary Parasitology (WAAVP) (2011) Proceedings: 23rd International Conference of the World Association for the Advancement of Veterinary Parasitology

2 Giralda Farms – Madison, NJ 07940 – merck-animal-health-usa.com – 800.521.5767 Copyright © 2016 Intervet, Inc. d/b/a Merck Animal health, a subsidiary of Merck & Co., Inc.
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MERCK Animal Health

While injectable minerals have long been used to prevent or treat specific cases of disease, such as iron anemia, injectables have evolved to include a range of supplements.

"On coastal belts where we see a lot of White Muscle Disease, those areas are horrendously low in selenium," Havenga says. "In the last eight to 10 years, a lot of research has gone into doing multiple minerals in the same bottle. Then, injecting and timing it perfectly for when the animal needs more. Animals need them to reproduce optimally and maintain health at optimal levels."

Tjardes recommends producers consider how they feed free-choice mineral supplements. Some weatherization helps protect against wind and rain, both of which contribute to wasted input costs. Feeding cubes or protein tubs to provide your sole source of supplemental mineral is often not as consistent, which is another key delivery concern.



"The result of a good supplementation program is in weaned pounds."

– Lourens Havenga, DVM

"The key with mineral supplementation is that they need it all the time," he says.

Analyzing inputs

To find deficiencies, producers can spend a lot of money analyzing waters, grasses, soils and even requesting liver biopsies on cattle. However, the availability of nutrients and concentrations in plants change over time.

"Forages from a specific location in a pasture or range change," Tjardes notes. "You can try to customize mineral based on forage analysis, but what you have today is not what you may have a week later. It changes from pasture to pasture and year to year based on moisture and what plants are growing at the time the sample was taken."

An analysis can give producers an overall look at what kind of antagonists are present and gives a baseline, but specific levels can vary so much that it is very difficult to be confident you have the correct custom formulation to meet or exceed the requirements, Tjardes says.

Producers should check with the updated Nutrient Requirements for Beef Cattle (NRC) recommendations, Havenga says.

However, he cautions against under-supplementing or over-supplementing.

"People are not sticking to scientific data and either overdoing it or underdoing it," he says. "Make sure you're following NRC recommendations in your supplement and use only a single balanced oral supplement, critical not to exceed levels for copper and selenium. When using injectable vitamins and minerals, which have an established dose, people often say, 'well, I looked at the calves, and they looked thin and scrawny. This bottle says 5 cc, but I'm going to give them 15.' This can result in gross overdose and deaths. Because a little bit is good, that never implies that a lot is better."

In addition to health risks, overdoing supplementation is expensive, he notes.

Profit potential

Getting supplements right can pay off for producers, Havenga says. Proper supplementation of breeding livestock can result in more effective AI programs and reduced numbers of problems like retained placentas and mastitis.

Getting cattle bred more quickly can help ensure more calves born earlier in the calving season, which can equal a 50- to 80-pound advantage on the calf at sale day, Havenga says.

"The result of a good supplementation program is in weaned pounds," he notes.

For feedyards, supplementation can pay off in higher-quality carcasses. Deficiencies can also result in depressed appetites, poor growth and reduced feed conversion ratios.

"Veterinarians have become more and more involved with this," he says. "All injectable minerals are prescribed products so it's definitely something we need to talk to vets about." ■



Keeping Up With the Customer

Animal Health International's Steve Cunningham discusses trends and opportunities in the livestock industry

As the livestock industry changes, producer customers are growing larger and across multiple sites. Technology is helping them keep pace – but that doesn't change the need for tried-and-true relationship building with their partners. To get some perspective, *Vet-Advantage* talked to Steve Cunningham, Animal Health International, Inc., President – Production Animal Division.



Steve Cunningham

***Vet-Advantage*: What are the major trends you see in the livestock industry on the producer side?**

Steve Cunningham: Consolidation – large customers becoming larger. As that trend continues, we're of course seeing more central ownership of multi-site operations. Another active trend is the continuing increased focus and attention on precision feeding and precision animal management, as opposed to group or whole herd management.

***Vet-Advantage*: How has the industry adopted new technologies?**

Cunningham: As production operations have become larger, the owners and managers have certainly become more technology savvy, for a number of reasons. Owners have always actively looked for ways to reduce input costs, maximize operation efficiency and maximize profits – and most are quite good at it. Today's technology helps them do that even better, whether it be animal management systems, feed management systems, making genetics-based breeding and culling decisions.

At first, it appeared the livestock industry was a bit behind other industries in moving to adopt new technologies and improvements in existing technologies and tools. That's not true of today's producers – they realize very quickly the benefit of integrating tools into their operations which better identify and report inputs and outcomes on an animal, pen, or even herd, basis. The old adage remains true – you can't manage what you don't measure.

***Vet-Advantage*: What are the main challenges in serving livestock customers?**

Cunningham: In contrast to many other industries, including even the small animal veterinary markets, livestock production is not homogenous business. Aside from the obvious differences among species, there's significant differences in the way, say, dairies in Tulare or Dinuba operate versus how dairies in Wausau or Eau Claire operate.

The basics are the same – animal health and welfare commitments, disease states encountered, etc., but operation practices differ greatly depending on geographies, weather, resources availability. Best practices are developed over years and generations suited to specific operations. It's a challenge, at times, but it gives a company like Animal Health International the opportunity to introduce customers to precision solutions – solutions that fit the needs of their specific region, specific operation and specific needs.



We're making significant capital investments in our systems and infrastructures to be well-prepared for an exciting future. We're investing time, energy and resources into assuring we have strong partnerships with our suppliers to meet our mutual goals of providing industry leading solutions and services to our customers.

***Vet-Advantage*: What are the issues the marketplace has to address?**

Cunningham: The industry has done a fairly good job of sharing "the story" of agriculture in general and livestock production in particular. There's plenty of misinformation and misperceptions out there, and for a long time it seemed those were the only voices being heard.

Today, we're doing a much better job of sharing "our" story – the U.S. agriculture industry feeds the world and is continually adjusting and improving practices that benefit and support not only local communities, but improve the health and nutrition of consumers worldwide.

***Vet-Advantage*: Where do you see the areas of growth in the livestock industry?**

Cunningham: In a few areas. Certainly, on the whole, export markets have been driving overall industry growth, and I expect that to continue.

The world looks to the United States ag industry for nutritious, high-quality protein and dairy products. There's always cyclical pressures on particular segments and geographies, but the industry has gotten better at planning for those cycles, and, overall, we're well positioned to meet global needs. Continuing to be the worldwide leader in producing high-quality, affordable and sustainable protein drives our industry's growth.

Meeting growing biosecurity needs, which includes facility and operation sanitation and pest management, is an area of growth and continued focus for Animal Health. Technology, again, is a growth area as producers look for more ways to be effective and efficient at managing their operations.

***Vet-Advantage*: Are there any new product segments that are making a difference in overall sales and margins?**

Cunningham: Certainly pre and probiotics are an area of growth now, across all species, and not only because of the new VFD requirements. The science and technology advances every day, as does our customers' understanding and acceptance of these products.

Vaccines continue to be an area of growth, as producers and veterinarians rely more heavily on disease-prevention as opposed to disease treatment. Immuno-enhancing agents is an emerging category and solution, and we expect great developments in this and other bio-pharmaceutical agents to drive growth over the next few years.

***Vet-Advantage*: What types of products or services are you adding to help address the changing livestock industry?**

Cunningham: Animal Health International has always looked for products, practices and tools which provide solutions to our

customers. We work with over 1,500 manufacturers – a lot to manage, yes, but our close relationships give us an opportunity to be on the forefront of new products and new technologies that provide those needed solutions. We also listen – closely – to our customers. That's really what keeps us on the forefront of providing innovative and effective solutions.

***Vet-Advantage*: How is your company integrating technology in your day-to-day business?**

Cunningham: As it applies to how we run our business, we're driving forward with a number of initiatives that will improve our efficiencies and allow us to better serve our customers.

As you know, Animal Health International was acquired by Patterson Companies in 2015. To best integrate the businesses, we're improving and modernizing our enterprise management software and practices companies-wide. At a distribution-center level, we're modernizing there too, adopting various RFID and bar-code technologies that will allow us to serve our customers better, and make it easier for our sales representative, and the whole organization to focus on what we do best – identifying customer needs and providing solutions.



At first, it appeared the livestock industry was a bit behind other industries in moving to adopt new technologies and improvements in existing technologies and tools. That's not true of today's producers – they realize very quickly the benefit of integrating tools into their operations which better identify and report inputs and outcomes on an animal, pen, or even herd, basis. The old adage remains true – you can't manage what you don't measure.

***Vet-Advantage*: What are your company's plans for the future?**

Cunningham: We continue to strive to be the 'partner of choice' for our manufacturing-partners. Treating them fairly, and with integrity, deep engagements and openness allows us to work closely on our number one shared goal: serving our mutual customer. While not new for Animal Health International, that will continue to be a very important focus for us into the future.

***Vet-Advantage*: As you look ahead, what are the trends in veterinary products distribution that will most affect your company?**

Cunningham: Our customers demand not just "the right product, delivered from A to B, at a fair price," but more – they want a partner who will listen, provide educated and informed consultations and advise, and ultimately provide solutions to the challenges they face. That's true across every segment, every species, and every channel. The successful distributor is the one that meets these needs.

***Vet-Advantage*: How do you hope to strengthen your company in the years ahead?**

Cunningham: We're making significant capital investments in our systems and infrastructures to be well-prepared for an exciting future. We're investing time, energy and resources into assuring we have strong partnerships with our suppliers to meet our mutual goals of providing industry leading solutions and services to our customers. And, importantly, we invest in our greatest assets – our employees. ■

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consume a tremendous volume of disinfectant as part of routine operations. Often, distribution will drive right past these facilities, missing the opportunity to sell them these vital supplies; forcing them to source materials on their own. In doing so, OSRs can be driving past tens of thousands of dollars of annual revenue each time. And rest assured, when a truck wash is forced to buy products from the local retail store, they maybe purchasing the wrong products and receive no service.

Of course, like every other business, truck washes come in all shapes and sizes. Smaller low volume truck washes will consume 20 gallons or more disinfectant per month, and large facilities will use up to 100 gallons per month – that's nearly two 55-gallon drums every month! Think about it…a large truck wash could be going through nearly fifty 55-gallon drums each year. Think about how much disinfectant they're using each time. Wouldn't you like to be the one selling truck washes their products?

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BY JENNIFER RYAN



Expanding Sales Reach

Trust, cooperation between manufacturer reps and DSRs can help expand sales reach across large territories

Extending sales reach to smaller customers is one of the reasons Stacey Roth with Bayer Animal Health relies on a strong partnership with her counterpart at MWI. Roth, a food-animal sales representative, spent the last two years covering Nebraska and South Dakota. While the territory was large, the operations were too. Today, Roth covers Missouri, and the makeup of veterinary clients and livestock producers can include small cow/calf operations and dairies.

"In Nebraska, I lived in feedyard world," she notes. "There were over half a million head just in my county. Moving to Missouri, it's all cow/calf here. There are more producers in Missouri, but they are harder to find. One vet told me last week: 'Everyone has cattle, but no one has very many.'"

We meet again

No matter what the customer's size, developing strong relationships is a similar process. It starts with a good product portfolio, followed by salesperson knowledge and consistent follow-through. To expand her reach, Roth relies on Scott Hertzke, territory manager with MWI Animal Health.

Hertzke and Roth previously worked together from 2002 to 2006 when Roth was a companion animal sales representative. The background helped their professional relationship quickly restart.

Hertzke has been covering the Missouri area since 2002 when he was with Professional Veterinary Products (PVP). He has 27 years of sales experience combined from his previous positions to today.

Roth's entry into large-animal health care was through horses. Growing up in the Kansas City area, by 13, she was volunteering to clean out stables where she watched the veterinarians and farriers.

Moving to Nebraska allowed her husband to work with the family's farm and feedyard, giving her insight into her local customers. Calling on producers in Missouri has shown her how the same product lineup can be used differently.

"On the large-animal side, we're dealing with producers also – not just vets. They use our products in a different way," she says. "To have a distributor partner helps you reach even the smaller customers in those areas you may not get to often."

Sharing information

Hertzke covers about two-thirds of Missouri and strictly calls on veterinary customers.

"The market fragmentation here is good for me because I don't have to worry about direct sellers as much since they are mostly smaller producers," Hertzke says. "I rely on Stacey and the veterinarian and that all comes together well."

The territory only has a handful of exclusively large-animal practices. Most are mixed practices that handle mostly livestock patients with some companion. Hertzke balances his time between large-animal and companion animal discussions depending on the client's needs.

It's a balance he's comfortable with after covering the territory for more than 15 years. To help devote time where it's needed most, manufacturer representatives are key.

"The good manufacturer reps know that if they make a call and hear something I should know, or would like to know, to give me a call," Hertzke says. "I'd do the same for them if, for example, I talked about a Bayer product, and the veterinarian was really excited about it or wanted a follow-up with a technical service team member. Then, I'd call them and let that follow-up happen."

"The good manufacturer reps know that if they make a call and hear something I should know, or would like to know, to give me a call. I'd do the same for them if, for example, I talked about a Bayer product, and the veterinarian was really excited about it or wanted a follow-up with a technical service team member. Then, I'd call them and let that follow-up happen."

– Scott Hertzke, territory manager with MWI Animal Health

Roth and Hertzke recently worked together at the Missouri Veterinary Medical Association meeting. Bayer typically has a veterinary rebate program for insecticide fly tags in advance of the season. Coordinating account contact helps benchmark goals and make the best use of their time.

It's a customer hand-off that can only be done where there is mutual trust. It's a critical point in the sales relationship, Hertzke says.

"It's important to know whose court the ball is in," he says. ■

Dechra Enters the Production Animal Health Market

In the following interview, Mike Eldred, President North American Operations, Dechra, discusses the company's entrance into the production animal health market, and plans for the future.

***Vet-Advantage*: Many people in the U.S. animal health industry are unfamiliar with the company Animal Ethics and their product Tri-Solfen®. Please tell us a little bit about the product as well as the company.**

Eldred: Animal Ethics is an Australian-based company focused on bringing solutions to the animal health and human market for pain relief and wound management, whom we have partnered with in the North American market. The product, Tri-Solfen® is a topical spray and was developed by Animal Ethics in Australia. It's a combination pain relief and wound care agent approved in Australia for use on lambs and calves undergoing surgical husbandry procedures.


Mike Eldred

It contains two topical, local anesthetic agents to numb the wound, a vasoconstrictor to minimize bleeding, and an antiseptic agent to prevent infection of the wound. These actives are contained in a thick gel base that is designed in a spray & stay agent that adheres onto the surface of the wound. The reduced risk of infection, improved wound healing, lower level of animal stress and low cost per dose, results in a strong economic case for market adoption of Tri-Solfen®. The product currently has 35 issued patents.

***Vet-Advantage*: How does Dechra North America plan to capitalize on this new partnership between Dechra and Animal Ethics?**

Eldred: Our initial focus will be on achieving FDA approval for the use of Tri-Solfen on swine and cattle to address commonly performed husbandry procedures that can be painful and may expose the animal to infection. With the increasing focus on minimizing pain and stress for production animals, the potential for this product is extremely high.

We expect to have the development and approval process for the production animal indications completed sometime after 2020. Companion animal applications will be reviewed and developed at a later stage.

Our initial focus will be on achieving FDA approval for the use of Tri-Solfen on swine and cattle to address commonly performed husbandry procedures that can be painful and may expose the animal to infection.

***Vet-Advantage*: What is your future plan for Dechra North America?**

Eldred: Dechra is committed to continue its investment in products focused on improving animal health and providing high quality pharmaceuticals solutions for veterinarians. This partnership with Animal Ethics provides us with access to new innovative products and is going to be transformational for Dechra North America as it provides us with unique products to access the food animal pharmaceutical market. As we approach FDA approval, we will establish and train a food animal sales organization and look to extend our product portfolio to create a unique position for Dechra in this sector. ■

OSPHOS®
(clodronate injection)

controls the clinical signs associated with

NAVICULAR SYNDROME

Easily Administered
via intramuscular injection

Well Tolerated*
in clinical trials

Proven Efficacy*
at 6 months post treatment

No Reconstitution Required



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As with all drugs, side effects may occur. In field studies, the most common side effects reported were signs of discomfort or nervousness, colic, and/or pawing. OSPHOS should not be used in pregnant or lactating mares, or mares intended for breeding. Use of OSPHOS in patients with conditions affecting renal function or mineral or electrolyte homeostasis is not recommended. Refer to the prescribing information for complete details or visit www.dechra-us.com or call 866.933.2472.

CAUTION: Federal law restricts this drug to use by or on the order of licensed veterinarian.

* Freedom of Information Summary. Original New Animal Drug Application, NADA 141-427, for OSPHOS. April 28, 2014.

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OSPHOS® (clodronate injection)

Bisphosphonate
For use in horses only

Brief Summary (For Full Prescribing Information, see package insert)

CAUTION: Federal (USA) law restricts this drug to use by or on the order of a licensed veterinarian.

DESCRIPTION: Clodronate disodium is a non-amino, chloro-containing bisphosphonate. Chemically, clodronate disodium is (dichloromethylene) diphosphonic acid disodium salt and is manufactured from the tetrahydrate form.

INDICATION: For the control of clinical signs associated with navicular syndrome in horses.

CONTRAINDICATIONS: Horses with hypersensitivity to clodronate disodium should not receive OSPHOS.

WARNINGS: Do not use in horses intended for human consumption.

HUMAN WARNINGS: Not for human use. Keep this and all drugs out of the reach of children. Consult a physician in case of accidental human exposure.

PRECAUTIONS: As a class, bisphosphonates may be associated with gastrointestinal and renal toxicity. Sensitivity to drug associated adverse reactions varies with the individual patient. Renal and gastrointestinal adverse reactions may be associated with plasma concentrations of the drug. Bisphosphonates are excreted by the kidney; therefore, conditions causing renal impairment may increase plasma bisphosphonate concentrations resulting in an increased risk for adverse reactions. Concurrent administration of other potentially nephrotoxic drugs should be approached with caution and renal function should be monitored. Use of bisphosphonates in patients with conditions or diseases affecting renal function is not recommended. Administration of bisphosphonates has been associated with abdominal pain (colic), discomfort, and agitation in horses. Clinical signs usually occur shortly after drug administration and may be associated with alterations in intestinal motility. In horses treated with OSPHOS these clinical signs usually began within 2 hours of treatment. Horses should be monitored for at least 2 hours following administration of OSPHOS.

Bisphosphonates affect plasma concentrations of some minerals and electrolytes such as calcium, magnesium and potassium, immediately post-treatment, with effects lasting up to several hours. Caution should be used when administering bisphosphonates to horses with conditions affecting mineral or electrolyte homeostasis (e.g. hyperkalemic periodic paralysis, hypocalcemia, etc.).

The safe use of OSPHOS has not been evaluated in horses less than 4 years of age. The effect of bisphosphonates on the skeleton of growing horses has not been studied; however, bisphosphonates inhibit osteoclast activity which impacts bone turnover and may affect bone growth.

Bisphosphonates should not be used in pregnant or lactating mares, or mares intended for breeding. The safe use of OSPHOS has not been evaluated in breeding horses or pregnant or lactating mares. Bisphosphonates are incorporated into the bone matrix, from where they are gradually released over periods of months to years. The extent of bisphosphonate incorporation into adult bone, and hence, the amount available for release back into the systemic circulation, is directly related to the total dose and duration of bisphosphonate use. Bisphosphonates have been shown to cause fetal developmental abnormalities in laboratory animals. The uptake of bisphosphonates into fetal bone may be greater than into maternal bone creating a possible risk for skeletal or other abnormalities in the fetus. Many drugs, including bisphosphonates, may be excreted in milk and may be absorbed by nursing animals.

Increased bone fragility has been observed in animals treated with bisphosphonates at high doses or for long periods of time. Bisphosphonates inhibit bone resorption and decrease bone turnover which may lead to an inability to repair micro damage within the bone. In humans, atypical femur fractures have been reported in patients on long term bisphosphonate therapy; however, a causal relationship has not been established.

ADVERSE REACTIONS: The most common adverse reactions reported in the field study were clinical signs of discomfort or nervousness, colic and/or pawing. Other signs reported were lip licking, yawning, head shaking, injection site swelling, and hives/pruritus.

OSPHOS®
(clodronate injection)

Dechra
Veterinary Products

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STORY AND PHOTOGRAPHY BY MARK MOORE

Take Off!

These high-flying Indiana high schools bring cutting-edge precision technologies to the classroom



Farming isn't what it used to be, and neither is agricultural education. Pop your head into an Integrated Technology in Agriculture Systems course, for example, and you'll hear teachers and students engaged in conversations about field and fertility maps, photosynthesis rates from their drone scouting or ways to program a precision planter for optimal planting rates. Students get hands-on experience with the latest in precision farming technologies – lessons that help guide their future and allow them to contribute on their farms.

Innovative agricultural curriculum like this is a reality for North Newton and South Newton high schools in Indiana. Fueled by a public-private grant of more than $454,000, eager agriculture students have cutting-edge precision agriculture technology at their fingertips.

This is exciting stuff! Especially for students who prefer to get their noses out of a textbook and get their hands on their coursework. And it's all smiles when the day's lesson involves going outside to pilot a drone. Can you imagine? *A class that lets you go outside and fly a drone!*

More than just drones

Of course, drones garner a lot of attention wherever they go. So any class that offers the opportunity to fly drones is certain to turn a lot of heads. The students enjoy learning with them, too. But Justin DeYoung and Jacob Kessler, seniors at North Newton High School and members of the North Newton FFA, say the program is much more. "I get a lot of questions about flying the drone," DeYoung says. "You quickly learn that it's only a tool that's part of a bigger precision agriculture program."

In addition to several drones added to the program, the schools have purchased two utility vehicles, as well as many components for site-specific farming. "We are using the bigger drone to map out fertility rates in the field," Kessler says. "We can fly the other drone over the field throughout the growing season to monitor growth and to look for wet spots in the field, or even to look at photosynthesis rates."

Yet, that's only a small part of the program. There's also the data generated throughout the growing season. Not unlike what some of their parents or grandparents are doing on their own fields, students are making decisions to help them farm better.

"I get a lot of questions from my grandpa about what we're learning in class," DeYoung says. "I can contribute right away because of what I'm learning."

The program is also steering students into future careers in precision agriculture. Students from South Newton are involved in internships with a dealership and cooperative, and they're putting what they learn to work.

"I go from the classroom to my internship at Peterson Ag Service where I'm using the exact same skills," says Madelyn Cobb, a senior and South Newton FFA member.

John McGraw, also a senior and South Newton FFA member, says the hands-on learning experience is invaluable. "We're not just reading about these new technologies. We get to use them every day, and that is giving me experience I can't really get anywhere else," he says.



"We're not just reading about these new technologies. We get to use them every day, and that is giving me experience I can't really get anywhere else."

– John McGraw, senior and South Newton FFA Member

Participating students also use the program as a springboard for their future education. "Precision agriculture is definitely a part of my future educational plans," says senior Evan Stiltz from South Newton.

For FFA Alumni member Noah Poynter, drone technology is a fact of everyday farm life. A freshman at Purdue University, Poynter uses drone technology on the family farm in Putnam County, Ind. "Information we collect from drones is very valuable to a farming operation," he says.

The rapidly expanding technology, Poynter says, will only continue to grow as a necessary tool. "Multiple types of maps can be made from one drone flight, two of the most popular being NDVI (normalized difference vegetation index) and topography maps," he says. "Drones are showing

their value in nearly every aspect of today's agriculture. This unique experience provided to these students will be very beneficial as the technology becomes even more powerful."

Funding the future

The grant that Newton schools received is part of a program implemented by the Indiana Works Councils, which allocated $4.3 million to schools throughout the state for its innovative career and technical education (CTE) curriculums. Grants are designed to encourage innovative and collaborative career and technical training opportunities to the state's high school students.

"We expected a few thousand dollars to help us move forward with the grant process. But when the county administrators heard our proposal, they provided us with $115,000 to move ahead. We were floored."

– Darrell Allen, ag instructor at South Newton High School in Kentland

Once Newton school administrators learned about the program, the brainstorming began. "We started to think about how we could leverage our agricultural education program and design something that would allow us to benefit from the grant," says Darrell Allen, ag instructor at South Newton High School in Kentland. "The idea of making drones a part of our program came up, and we went to work." Together, the two schools developed a comprehensive program that incorporated the latest in precision agriculture technology.

Once they developed the program's framework, the real work began: securing the grant. The grant



matched local funds up to three to one, but first the schools needed to secure initial local investments. So they approached their county administrators. "That's not an easy task, given the tight budgets," Allen says. "We expected a few thousand dollars to help us move forward with the grant process. But when the county administrators heard our proposal, they provided us with $115,000 to move ahead. We were floored."

Their dedication paid off. The schools were awarded the full grant match in 2015, turning that initial seed money into a full $445,000 that is being shared equally between the two schools. In addition to the precision agricultural program, future curricula will include agritourism and aquaponics.

"The grant has allowed our program to grow in an entirely new direction," explains Ron DeYoung, ag instructor at North Newton High School in Morocco. "It's exciting to be able to offer our students the latest in agricultural technology that will provide them educational experiences and will benefit them far into the future."

The first year of the program got off to a fast start when three students from South Newton participated in the agBOT Challenge, a yearly competition aimed at students to help develop the software and machinery that is in agriculture's future. The students used information gathered from the new curriculum to fabricate an unmanned crop seeder. That same seeder now sits at South Newton and is instrumental as students further incorporate its functions into their studies.

Expanding the program

When the staff and administrators first met to develop the program, they focused on how it could be devised so other schools could replicate it, even with a smaller budget. "Our original idea had us purchasing a larger tractor to use in the program," Allen says. "But then we thought that, to reach a broader audience, we needed to ensure the program could be repeated." So, the schools purchased smaller equipment that would likely fit into more budgets.

"We've received calls from around the country asking about the program," Allen says. "We hope the success we've seen will continue in other schools." ■

The students used information gathered from the new curriculum to fabricate an unmanned crop seeder. That same seeder now sits at South Newton and is instrumental as students further incorporate its functions into their studies.

Follow the FAA Rules

It's important to point out that drones aren't toys that you fly around in your living room. They are complex vehicles that come with their own set of rules and regulations from the Federal Aviation Administration (FAA).

A great resource is knowbeforeyoufly.org, a website that provides detailed information on drone use. Full FAA rules and regulations are available at faa.gov. Here are four items that are particularly important to know.

1. You don't have to be a pilot to fly a drone recreationally, but you do need a remote pilot airman certificate for commercial use. (Part 107 of the FAA Small Unmanned Aircraft Regulations outlines additional rules for commercial drone use.)
2. You may not fly a drone higher than 400 feet, and it must remain below any surrounding obstacles when possible.
3. You must keep the drone away from manned aircraft.
4. You must keep the drone in your line of sight.





Shoulder to Shoulder

In times of crisis, we get a glimpse of the human spirit as it was meant to be

BY JIM WHITT

Jim Whitt is an organizational development and employee engagement consultant with Purpose Unlimited in Tulsa, Okla. He is the author of *Riding for the Brand: The Power of Purposeful Leadership*. Sign up for his newsletter at www.purposeunlimited.com. Reach him at jim@purposeunlimited.com or (918) 494-0009.

We've all seen the devastation of the fires that have swept across the Great Plains recently destroying lives and livelihoods. In its wake, however, we have seen an even more powerful force. People have come to the aid of ranchers and farmers donating money, food, feed for livestock and materials to rebuild fences and structures. Many have taken time from their own work and traveled many miles to assist in the rebuilding.

This passage from *The Transformational Power of Purpose* is a reminder that times of tragedy serve as a catalyst that liberates the human spirit to become what we are designed to be:

On Sept. 11, 2001 our world was rocked with surreal images of the World Trade Towers collapsing in flames. We gathered around television sets and watched in disbelief. That was followed by the attack on the Pentagon, the very heart of our armed forces.

Our world changed that day – it got a lot heavier. I thought about that old Eddie Arnold song: "Make the world go away … and get it off my shoulders…"



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In Greek mythology it was Atlas who was charged with shouldering the weight of the world. Although Atlas was one of the legendary Titans, a race of gods, he decided the burden was too much to bear. Exhibiting not-so-god-like character, he tried to trick Hercules into assuming his task, but failed. Atlas couldn't make the world go away and neither can we.

In the aftermath of the terrorist attacks we called upon God. We prayed to God. We questioned God. How could God allow this to happen? How could these terrorists kill and destroy in the name of God?

We have to remember that human beings are animals. And, as the terrorists responsible for the deaths of thousands of people proved, there are those who choose to be no more than that. But we must also remember our animal bodies serve host to a race of super humans created in the image of God.

If there is anything positive to come from times of great tragedy it is that it provokes us to rise above our animal natures and assume the likeness of our Creator, even if for only a brief moment. In the words of Cicero: "Men resemble God never so much as in doing good to their fellow creatures." It is in these times of tragedy that the part of us that is God reaches out to the other members of our superhuman race.

In the days following the attacks, the images of explosions and implosions gave way to images of firefighters, police and volunteers working side by side, day and night; images of people donating food, clothing, money and their own blood; images of those who gathered all across America and the world to pray. It is in these images that we saw the true image of God.

A crisis provides a temporary "purpose" that touches the human spirit and we become the super humans we were created to be. Unfortunately, when the crisis subsides, we see the mass of humanity revert back to their animal natures and once again fall prey to the manipulation of reward and punishment. These times of crisis give us a glimpse, if but for a brief shining moment, of what happens when the human spirit is liberated to assume superhuman status.



A crisis provides a temporary "purpose" that touches the human spirit and we become the super humans we were created to be. Unfortunately, when the crisis subsides, we see the mass of humanity revert back to their animal natures and once again fall prey to the manipulation of reward and punishment. These times of crisis give us a glimpse, if but for a brief shining moment, of what happens when the human spirit is liberated to assume superhuman status.

This should not be the exception, it should be the rule. It is the way we are created to live. Not just in times of crisis, but daily.

Atlas was at a disadvantage. He alone was charged with carrying the weight of the world. He had no one to share the task. We possess power far superior to the Titans of Greek mythology. We see it happen time after time in the face of disaster. We become one heart and mind as we stand shoulder to shoulder with the brothers and sisters of our superhuman race to "do good to our fellow creatures." And together, upon these many shoulders, we are able to lift the weight of the world. ■

Excerpted from The Transformational Power of Purpose: Finding & Fulfilling Your Purpose in Life by Jim Whitt Copyright ©2002

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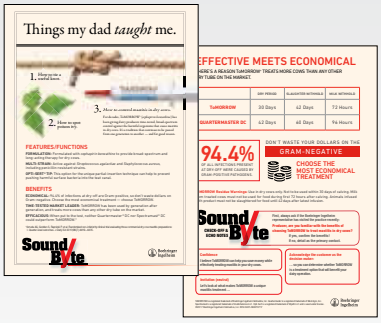
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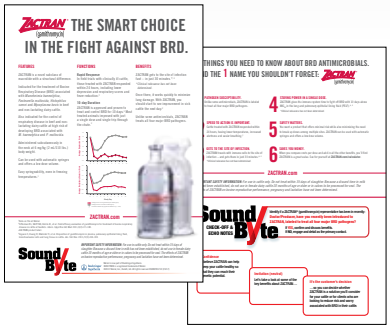
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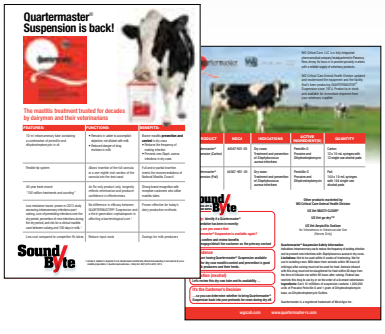
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Dechra® enters licensing agreement with Animal Ethics

Dechra® Pharmaceuticals PLC's Board of Directors announced it has entered a long term Intellectual Property Licensing Agreement with Animal Ethics Pty Ltd, an Australia-based company focused on developing ethical pain relief products in animal health. The agreement gives Dechra the rights to sell and market Animal Ethics' product Tri-Solfen® (Tri-Solfen) for all animal species in all international markets, excluding Australia and New Zealand.

Registration open for AABP Annual Conference

Esteemed experts in bovine medicine and practice will challenge numerous long-held myths and misinformation at the 2017 50th American Association of Bovine Practitioners (AABP) Annual Conference Sept. 14-16 in Omaha, Neb. Registration is now open at www.aabp.org. AABP President-Elect and 2017 Program Chairman, Dr. Mike Apley, says the theme "What We Know that Isn't So" was inspired by a goal of finding where long-held beliefs may be inaccurate and impede service to beef and dairy clients or hamper the veterinarian's ability to have a successful practice. "Our program committee, and through them our speakers, have been challenged to address areas where our thinking needs to be changed." Apley says the general session starts with keynote speakers, Drs. Mark Graber and John Gay, who will look at clinical decision making from the human and veterinary perspective. "This meeting is really about making decisions for our patients and our careers," Apley says. "For example, we continue our general session revisiting three of our old nemeses, Mannheimia, Ostertagia, and Salmonella, as well as catching up on how we need to think about the health of the microbiota as it relates to the health of our patients. Concurrently, the myths of 'new graduates can't own practices' and 'you won't be able to sell a mixed-animal practice' will be addressed in the Veterinary Practice Sustainability sessions." Early registration for the AABP Annual Conference Sept. 14-16 ends Aug. 17. Find out more about the 2017 50th AABP Annual Conference in Omaha, Neb., at www.aabp.org.

Survey: Organic items found in more than 82 percent of American households

According to *MEAT+POULTRY*, a Nielsen survey revealed organic items were found on the shelves of kitchen cupboards and in the refrigerators of 82.3 percent of American households in 2016, the Washington-based Organic Trade Association said March 23. The national average climbed 3.4 percent from 2015 to 2016. North Dakota had the highest jump, increasing 14.2 percent from 2015 to 2016 to reach 85.6 percent of households. Following North Dakota in the ranking of biggest increases were Rhode Island, up 12.3 percent to 88.3 percent; Wyoming, up 10.8 percent to 90 percent; South Dakota, up 10 percent to 68.9 percent; and Wisconsin, up 9.1 percent to 77.6 percent. "These new findings show how important organic has become to millions and millions of American families everywhere – to more than 80 percent of our nation's 117 million households, more than 80 percent of Georgia's 3.5 million households, more than 85 percent of North Dakota's almost 300,000 households," said Laura Batcha, CEO and executive director of the Organic Trade Association.

Subway announces new social responsibility policies

According to a *MEAT+POULTRY* report, fast food chain Subway added new initiatives to the company's social responsibility policies regarding the welfare of poultry used in Subway foods. Specifically, Subway has committed to sourcing 100 percent of its chicken from birds raised according to GAP [Good Agricultural Practice] standards for improved welfare, living conditions, activity levels and stocking density. The company expects to reach its goals in full by 2024.

USDA authorizes emergency grazing in areas impacted by wildfires

The U.S. Department of Agriculture (USDA), acting in response to a directive from President Donald J. Trump, authorized emergency grazing on Conservation Reserve Program (CRP) lands located in Kansas, Oklahoma, and Texas – the three states which were most heavily impacted by ongoing wildfires which began on March 6, 2017, according to

a release. USDA Acting Deputy Secretary Michael L. Young issued a memorandum authorizing the emergency grazing of cattle by ranchers, who are facing the ruination of their herds due to lack of sufficient grazing land. The authorization is pursuant to appropriate restrictions and conservation measures, which can be found in the Acting Deputy Secretary's memorandum.

AVMA "pleased" Sonny Perdue confirmed as Secretary of Agriculture

In a release, the AVMA said it is pleased that a veterinarian, Secretary Sonny Perdue, DVM, was confirmed to the position of United States Secretary of Agriculture. "With the country facing challenges and opportunities on issues requiring veterinary expertise, such as animal health, animal welfare and public health, having strong veterinary leadership at the U.S. Department of Agriculture (USDA) is more important than ever," the association said in the release. "Veterinarians possess unique medical expertise that drives scientifically sound policy decisions. Veterinary leadership at all levels of the USDA is crucial to creating and executing effective policies, and Secretary Perdue's appointment is an encouraging sign that veterinarians will continue to be valued at the agency."

NIFA announces $2.4 million to relieve veterinary shortages

The U.S. Department of Agriculture's (USDA) National Institute of Food and Agriculture (NIFA) announced $2.4 million in available funding to relieve veterinarian shortage situations and support veterinary services. Funding is made through NIFA's Veterinary Services Grant Program (VSGP), authorized by the 2014 Farm Bill. "Veterinarians play significant roles in assuring animal health and wellbeing, food safety and security, public health, and producer profitability, especially in rural areas of the country where most livestock production occurs," said NIFA Director Sonny Ramaswamy. "VSGP supports education and extension activities that will help veterinarians, veterinary students, veterinary technicians, and veterinary technician students gain specialized skills and provide practices with additional resources."

Allflex promotes Chuck Rogers to Northwest Regional Manager

Allflex USA, part of the Allflex Group, announced the promotion of Chuck Rogers to Northwest Regional Manager. In his new role, Rogers will be based in Boise, Idaho, and will oversee Sales and Marketing and technical responsibilities for Washington, Oregon and Idaho. A native of Washington State, Rogers served as a U.S. Navy aircrewman and helicopter crew chief for nine years. After his service, he attended Fullerton College and transferred to DeVry Institute of Technology in Pomona, Calif., to pursue studies in electronics and electronic engineering. He has been a member of the Allflex technical team and manager of that department supporting the electronic identification products.

More than 20,000 attendees for World Pork Expo

More than 20,000 pork producers and ag professionals from throughout the world attended the 29th World Pork Expo, June 7-9, in Des Moines. Presented by the National Pork Producers Council (NPPC), the 2017 Expo hosted more than 1,000 international guests from nearly 40 countries. Highlights included the world's largest pork-specific trade show, a wide variety of educational seminars and Junior National swine show. "World Pork Expo gives producers the opportunity to see and touch the newest products and technologies for their pork businesses," says Ken Maschhoff, NPPC president and Illinois pork producer. "It's a place for producers to interact with each other and share ideas. It also gives employees at all levels a chance to learn, deepen their connection to pork production and have some fun."

Maryland passes law banning routine use of antibiotics in healthy livestock and poultry

According to a *Reuters* report, Maryland has become the second U.S. state to pass a law banning the routine use of antibiotics in healthy livestock and poultry, a move aimed at battling the rise of dangerous antibiotic-resistant bacteria known as "superbugs." Maryland's Keep Antibiotics Effective Act, which aims to end a practice that public health experts say can fuel the spread of superbugs, takes effect on Oct. 1 after Governor Larry Hogan declined to sign or veto it last week. Farmers in Maryland have until Jan. 1, 2018, to comply with the law.

LONGRANGE® (eprinomectin)

Extended-Release Injectable Parasiticide
5% Sterile Solution
NADA 141-327, Approved by FDA for subcutaneous injection
For the Treatment and Control of Internal and External
Parasites of Cattle on Pasture with Persistent Effectiveness

CAUTION: Federal law restricts this drug to use by or on the order of a licensed veterinarian.

INDICATIONS FOR USE

LONGRANGE, when administered at the recommended dose volume of 1 mL per 110 lb (50 kg) body weight, is effective in the treatment and control of 20 species and stages of internal and external parasites of cattle:

Gastrointestinal Roundworms	**Lungworms**
Bunostomum phlebotomum – Adults and L_4	*Dictyocaulus viviparus* – Adults
Cooperia oncophora – Adults and L_4	
Cooperia punctata – Adults and L_4	
Cooperia surnabada – Adults and L_4	
Haemonchus placei – Adults	**Grubs**
Oesophagostomum radiatum – Adults	*Hypoderma bovis*
Ostertagia lyrata – Adults	
Ostertagia ostertagi – Adults, L_4, and inhibited L_4	
Trichostrongylus axei – Adults and L_4	**Mites**
Trichostrongylus colubriformis – Adults	*Sarcoptes scabiei* var. *bovis*

Parasites	**Durations of Persistent Effectiveness**
Gastrointestinal Roundworms	
Bunostomum phlebotomum	150 days
Cooperia oncophora	100 days
Cooperia punctata	100 days
Haemonchus placei	120 days
Oesophagostomum radiatum	120 days
Ostertagia lyrata	120 days
Ostertagia ostertagi	120 days
Trichostrongylus axei	100 days
Lungworms	
Dictyocaulus viviparus	150 days

DOSAGE AND ADMINISTRATION

LONGRANGE® (eprinomectin) should be given only by subcutaneous injection in front of the shoulder at the recommended dosage level of 1 mg eprinomectin per kg body weight (1 mL per 110 lb body weight).

WARNINGS AND PRECAUTIONS

Withdrawal Periods and Residue Warnings

Animals intended for human consumption must not be slaughtered within 48 days of the last treatment.
This drug product is not approved for use in female dairy cattle 20 months of age or older, including dry dairy cows. Use in these cattle may cause drug residues in milk and/or in calves born to these cows.
A withdrawal period has not been established for pre-ruminating calves. Do not use in calves to be processed for veal.

Animal Safety Warnings and Precautions

The product is likely to cause tissue damage at the site of injection, including possible granulomas and necrosis. These reactions have disappeared without treatment. Local tissue reaction may result in trim loss of edible tissue at slaughter.
Observe cattle for injection site reactions. If injection site reactions are suspected, consult your veterinarian. This product is not for intravenous or intramuscular use. Protect product from light. LONGRANGE® (eprinomectin) has been developed specifically for use in cattle only. This product should not be used in other animal species.

When to Treat Cattle with Grubs

LONGRANGE effectively controls all stages of cattle grubs. However, proper timing of treatment is important. For the most effective results, cattle should be treated as soon as possible after the end of the heel fly (warble fly) season.

Environmental Hazards

Not for use in cattle managed in feedlots or under intensive rotational grazing because the environmental impact has not been evaluated for these scenarios.

Other Warnings: Underdosing and/or subtherapeutic concentrations of extended-release anthelmintic products may encourage the development of parasite resistance. It is recommended that parasite resistance be monitored following the use of any anthelmintic with the use of a fecal egg count reduction test program.

TARGET ANIMAL SAFETY

Clinical studies have demonstrated the wide margin of safety of LONGRANGE® (eprinomectin). Overdosing at 3 to 5 times the recommended dose resulted in a statistically significant reduction in average weight gain when compared to the group tested at label dose. Treatment-related lesions observed in most cattle administered the product included swelling, hyperemia, or necrosis in the subcutaneous tissue of the skin. The administration of LONGRANGE at 3 times the recommended therapeutic dose had no adverse reproductive effects on beef cows at all stages of breeding or pregnancy or on their calves.
Not for use in bulls, as reproductive safety testing has not been conducted in males intended for breeding or actively breeding. Not for use in calves less than 3 months of age because safety testing has not been conducted in calves less than 3 months of age.

STORAGE

Store at 77° F (25° C) with excursions between 59° and 86° F (15° and 30° C). Protect from light.
Made in Canada.
Manufactured for Merial, Inc., Duluth, GA, USA.
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1050-2889-06, Rev. 2/2015, 8LON016C

ZACTRAN® (gamithromycin)

150 mg/mL ANTIMICROBIAL
NADA 141-328, Approved by FDA
For subcutaneous injection in beef and non-lactating dairy cattle only. Not for use in female dairy cattle 20 months of age or older or in calves to be processed for veal.

Caution: Federal (USA) law restricts this drug to use by or on the order of a licensed veterinarian.
READ ENTIRE BROCHURE CAREFULLY BEFORE USING THIS PRODUCT.

INDICATIONS

ZACTRAN is indicated for the treatment of bovine respiratory disease (BRD) associated with *Mannheimia haemolytica*, *Pasteurella multocida*, *Histophilus somni* and *Mycoplasma bovis* in beef and non-lactating dairy cattle. ZACTRAN is also indicated for the control of respiratory disease in beef and non-lactating dairy cattle at high risk of developing BRD associated with *Mannheimia haemolytica* and *Pasteurella multocida*.

CONTRAINDICATIONS

As with all drugs, the use of ZACTRAN is contraindicated in animals previously found to be hypersensitive to this drug.

WARNING: FOR USE IN CATTLE ONLY. NOT FOR USE IN HUMANS. KEEP THIS AND ALL DRUGS OUT OF REACH OF CHILDREN. NOT FOR USE IN CHICKENS OR TURKEYS.

The material safety data sheet (MSDS) contains more detailed occupational safety information. To report adverse effects, obtain an MSDS or for assistance, contact Merial at 1-888-637-4251.

RESIDUE WARNINGS: Do not treat cattle within 35 days of slaughter. Because a discard time in milk has not been established, do not use in female dairy cattle 20 months of age or older. A withdrawal period has not been established for this product in pre-ruminating calves. Do not use in calves to be processed for veal.

PRECAUTIONS

The effects of ZACTRAN on bovine reproductive performance, pregnancy, and lactation have not been determined. Subcutaneous injection of ZACTRAN may cause a transient local tissue reaction in some cattle that may result in trim loss of edible tissues at slaughter.

ADVERSE REACTIONS

Transient animal discomfort and mild to moderate injection site swelling may be seen in cattle treated with ZACTRAN.

EFFECTIVENESS

The effectiveness of ZACTRAN for the treatment of BRD associated with *Mannheimia haemolytica*, *Pasteurella multocida* and *Histophilus somni* was demonstrated in a field study conducted at four geographic locations in the United States. A total of 497 cattle exhibiting clinical signs of BRD were enrolled in the study. Cattle were administered ZACTRAN (6 mg/kg BW) or an equivalent volume of sterile saline as a subcutaneous injection once on Day 0. Cattle were observed daily for clinical signs of BRD and were evaluated for clinical success on Day 10. The percentage of successes in cattle treated with ZACTRAN (58%) was statistically significantly higher ($p<0.05$) than the percentage of successes in the cattle treated with saline (19%).
The effectiveness of ZACTRAN for the treatment of BRD associated with *M. bovis* was demonstrated independently at two U.S. study sites. A total of 502 cattle exhibiting clinical signs of BRD were enrolled in the studies. Cattle were administered ZACTRAN (6 mg/kg BW) or an equivalent volume of sterile saline as a subcutaneous injection once on Day 0. At each site, the percentage of successes in cattle treated with ZACTRAN on Day 10 was statistically significantly higher than the percentage of successes in the cattle treated with saline (74.4% vs. 24% [$p<0.001$], and 67.4% vs. 46.2% [$p = 0.002$]). In addition, in the group of calves treated with gamithromycin that were confirmed positive for *M. bovis* (pre-treatment nasopharyngeal swabs), there were more calves at each site (45 of 57 calves, and 5 of 6 calves) classified as successes than as failures.
The effectiveness of ZACTRAN for the control of respiratory disease in cattle at high risk of developing BRD associated with Mannheim*ia haemolytica* and *Pasteurella multocida* was demonstrated in two independent studies conducted in the United States. A total of 467 crossbred beef cattle at high risk of developing BRD were enrolled in the study. ZACTRAN (6 mg/kg BW) or an equivalent volume of sterile saline was administered as a single subcutaneous injection within one day after arrival. Cattle were observed daily for clinical signs of BRD and were evaluated for clinical success on Day 10 post-treatment. In each of the two studies, the percentage of successes in the cattle treated with ZACTRAN (86% and 78%) was statistically significantly higher ($p = 0.0019$ and $p = 0.0016$) than the percentage of successes in the cattle treated with saline (36% and 58%).

Marketed by Merial Limited
3239 Satellite Blvd., Duluth, GA 30096-4640 U.S.A.
Made in Austria

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AMPICILLIN FOR INJECTABLE SUSPENSION, VETERINARY PRESCRIBING INFORMATION

DESCRIPTION
Ampicillin for injectable suspension, veterinary is a broad-spectrum penicillin which has bactericidal activity against a wide range of common gram-positive and gram-negative bacteria. Each 25 g vial contains: 25 g ampicillin activity as ampicillin trihydrate, 90 mg methylparaben (as preservative), 10 mg propylparaben (as preservative), 200 mg lecithin, 500 mg povidone, 200 mg sodium chloride, 600 mg sodium citrate anhydrous.

CLINICAL PHARMACOLOGY
The antimicrobial action of ampicillin is bactericidal, and only a small percentage of the antibiotic is serum-bound. Peak serum levels in dogs and cats are reached approximately one-half hour following subcutaneous or intramuscular injection, and in cattle 1 hour to 2 hours following intramuscular injection. *In vitro* studies have demonstrated sensitivity of the following organisms to ampicillin: gram-positive bacteria - alpha- and beta-hemolytic streptococci, staphylococci (non-penicillinase-producing), *Bacillus anthracis* and most strains of enterococci and clostridia; gram-negative bacteria - *Proteus mirabilis*, *E. coli* and many strains of Salmonella and *Pasteurella multocida*. The drug does not resist destruction by penicillinase and, hence, is not effective against strains of staphylococci resistant to penicillin G. Susceptibility tests should be conducted to estimate the *in vitro* susceptibility of bacterial isolates to ampicillin.

INDICATIONS
Ampicillin for injectable suspension has proved effective in the treatment of many infections previously beyond the spectrum of penicillin therapy. This drug is particularly indicated in the treatment of the following infections caused by susceptible strains of organisms:
Dogs and Cats-Respiratory Tract Infections: Upper respiratory infections, tonsillitis and bronchopneumonia due to hemolytic streptococci, *Staphylococcus aureus, Escherichia coli, Proteus mirabilis* and *Pasteurella* spp.
Urinary Tract Infections due to *Proteus mirabilis, Escherichia coli, Staphylococcus* spp., hemolytic streptococci and *Enterococcus* spp.
Gastrointestinal Infections due to *Enterococcus* spp., *Staphylococcus* spp. and *Escherichia coli*.
Skin, Soft Tissue and Post-Surgical Infections: Abscesses, pustular dermatitis, cellulitis and infections of the anal gland, due to *Escherichia coli, Proteus mirabilis,* hemolytic streptococci*, Staphylococcus* spp. and *Pasteurella* spp.
Cattle and Calves Including Non-Ruminating (Veal Calves) - Respiratory Tract Infections: Bacterial pneumonia (shipping fever, calf pneumonia and bovine pneumonia) caused by *Aerobacter* spp., *Klebsiella* spp., *Staphylococcus* spp., *Streptococcus* spp., *Pasteurella multocida* and *E. coli* susceptible to ampicillin trihydrate.

CONTRAINDICATIONS
A history of allergic reactions to penicillin, cephalosporins or their analogues should be considered a contraindication for the use of this agent.

PRECAUTIONS
Because it is a derivative of 6-aminopenicillanic acid, ampicillin for injectable suspension has the potential for producing allergic reactions. If they should occur, ampicillin for injectable suspension should be discontinued and the subject treated with the usual agents (antihistamines, pressor amines, corticosteroids).

RESIDUE WARNINGS
DO NOT TREAT CATTLE FOR MORE THAN 7 DAYS. MILK FROM TREATED COWS MUST NOT BE USED FOR FOOD DURING TREATMENT, AND FOR 48 HOURS (4 MILKINGS) AFTER THE LAST TREATMENT. CATTLE MUST NOT BE SLAUGHTERED FOR FOOD DURING TREATMENT, AND FOR 144 HOURS (6 DAYS) AFTER THE LAST TREATMENT.

DOSAGE
The dosage of ampicillin for injectable suspension will vary according to the animal being treated, the severity of the infection and the animal's response.
Dogs and Cats - The recommended dose for dogs or cats is 3 mg/lb of body weight administered twice daily by subcutaneous or intramuscular injection.
Cattle and Calves Including Non-Ruminating (Veal Calves) - From 2 mg to 5 mg/lb of body weight once daily by intramuscular injection.
Do not treat for more than 7 days.
In all species, 3 days treatment is usually adequate, but treatment should be continued for 48 to 72 hours after the animal has become afebrile or asymptomatic.

DIRECTIONS FOR USE
The multi-dose dry-filled vials should be reconstituted to the desired concentration by adding the required amount of Sterile Water for Injection, USP, according to label directions. SHAKE WELL. After reconstitution this product is stable for 3 months under refrigeration and will be white to pale yellow in color. At the time of reconstitution the vial should be dated and the concentration noted on the label.

CAUTION
Federal law restricts this drug to use by or on the order of a licensed veterinarian.

STORAGE
Store at controlled room temperature (25ºC), with excursions permitted from 15 - 30ºC (59 - 86ºF). After reconstitution, store under refrigeration.

HOW SUPPLIED
Ampicillin for injectable suspension, veterinary is supplied in vials containing 25 grams ampicillin activity as ampicillin trihydrate.

Manufactured by:
G.C. Hanford Manufacturing Co.
Syracuse, NY 13201

NDC 10515-946-25 25 g per vial

Quartermaster® Suspension

penicillin-dihydrostreptomycin in oil

Bovine Mastitis Prevention and Control in Dry Cows

DESCRIPTION:
Each 10 mL disposable syringe contains 1,000,000 units of Procaine Penicillin G, micronized, and 1 gram of Dihydrostreptomycin base, as Dihydrostreptomycin Sulfate, in an extended action base consisting of 1% w/v Hydrogenated Peanut Oil, 3% w/v Aluminum Monostearate, and Peanut Oil, q.s. Manufactured by a non-sterilizing process.

ACTION:
Infusion of antibiotics at the start of the drying off period has the following advantages: (1) it is active against existing infections; (2) it is prophylactic against new infections, during the time when cattle are likely to become infected [1]; (3) the antibiotic remains in the udder for a sufficiently long period to accomplish the intended objective and is not diluted with milk, as is the case in lactation therapy; (4) the danger of drug residues in the milk is reduced.

Antibiotic control is to be considered an adjunct to good herd hygiene management and milking management. Detailed field studies in England and the United States have demonstrated that a program consisting of treatment, at the time of drying off, with a highly effective antibiotic preparation in a slow-release base, and routine dipping of teats after each milking with an effective disinfectant, markedly reduces the incidence of all udder infections at calving [2,3,4].

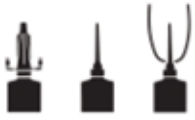
It has recently been recommended that a disinfectant teat dip be used on unmilked cows, or at least be used for 10 days before parturition [5], to reduce the bacterial challenge to the depleted levels of antibiotic in the teat as freshening is approached [6].

When the herd infection level has been reduced, or when herds are not heavily infected initially, it may be desirable to be selective in treating dry quarters [7].

INDICATIONS:
For intramammary use to reduce the frequency of existing infection and to prevent new infections with *Staphylococcus aureus* in dry cows.

DIRECTIONS FOR USING THE FLEXIBLE TIP SYSTEM:
The flexible tip is designed to provide the choice of either insertion of the full cannula, as has traditionally been practiced, or insertion of no more than 1/8 inch of the cannula, as recommended by the National Mastitis Council.
a. Full Insertion: Remove the white end cap by pulling straight up as shown. Gently insert the full cannula into the teat canal; carefully infuse the product.

a.



b. Partial Insertion: Remove *both* the white end cap and the red cannula by pushing sideways as shown. Gently insert the exposed white tip into the teat canal; carefully infuse the product.

b.



DIRECTIONS FOR USE:
At the last milking prior to drying off, completely milk out cow. Warm the syringe containing **Quartermaster** Suspension to body temperature; choose the desired insertion length (full or partial) and insert tip into teat canal; slowly infuse the entire contents. Instill the contents of one syringe into each quarter. Discard the syringe after use. Treated teats should then be dipped into an effective teat dip. The teat or quarter should not be manipulated again until the cow freshens. To achieve and maintain a lower frequency of infection, proper dipping of teats during lactation is recommended.

Shake vigorously for 10 seconds immediately before using.

WARNINGS:
For udder instillation upon drying off only. Not to be used within six (6) weeks of freshening. Not for use in lactating cows. Milk taken from animals within 96 hours (8 milkings) after calving must not be used for food. Animals infused with this product must not be slaughtered for food within 60 days from time of infusion nor within 96 hours after calving.

CAUTION:
Federal law restricts this drug to use by or on the order of a licensed veterinarian.

STORAGE CONDITIONS:
Store at controlled room temperature 20° to 25°C (68° to 77°F). Store under dry conditions.

HOW SUPPLIED:
Quartermaster Suspension is supplied as:
Packers of 12–10 mL (.33 Fl Oz) disposable syringes with 12 convenient single-use isopropyl alcohol pads..... NDC 44567-901-03

Pails of 144–10 mL (.33 Fl Oz) disposable syringes with 144 convenient single-use isopropyl alcohol pads .....NDC 44567-901-05

ATTENTION DOCTOR:
It is your responsibility to inform your client of the warnings stated above so as to avoid adulteration of meat or milk and possible prosecution under Federal law.

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[6] Feagan, J.T.; Hehir, A.F.; & White, B.R., The Effectiveness in Control of Mastitis of Iodine as a Post Milking Teat Dip, *AUSTRALIAN JOURNAL OF DAIRY TECHNOLOGY* 25: 87-90, 1970.

[7] *Supplement to Current Concepts of Bovine Mastitis.* The National Mastitis Council Inc., Washington, D.C. 22003, 1972, page 7.

WG CriticalCare
A PHARMASPHERE COMPANY

WG Critical Care, LLC
Paramus, NJ 07652

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Rev. 6/2016

★ UNITED STATES VETERINARY PRODUCTS ★



Ampicillin

for Injectable Suspension, Veterinary

AMPICILLIN TRIHYDRATE

- 25 grams of ampicillin activity as ampicillin trihydate
- Bactericidal activity against a wide range of common gram-positive and gram-negative bacteria
- Effective in the treatment of many infections previously beyond the spectrum of penicillin therapy

[Refer to complete Prescribing Information on other side for details]



AVAILABLE AT LEADING VETERINARY SUPPLIERS

Product	NDC #	Composition	Quantity
Ampicillin for Injectable Suspension, Veterinary	10515-946-25	Ampicillin trihydrate	12 bottles

UNITED STATES VETERINARY PRODUCTS
U.S.VET

Note: A history of allergic reactions to penicillin, cephalosporins or their analogues should be considered a contraindication for the use of this agent.

Boehringer Ingelheim

2017 BIVI DSR Rewards Points Program

Merial is now part of Boehringer Ingelheim!

Starting July 1, 2017 the Boehringer Ingelheim Vetmedica, Inc. (BIVI) Rewards Points Program includes all Merial cattle and equine products. For a limited time all Merial cattle and equine products will earn double points from 7/01/2017 until 12/31/2017. It's a great time to bring your customers value with BIVI and Merial products and earn lots of BIVI DSR rewards points while you do it!



Redeem your BIVI DSR Rewards Points for reloadable debit cards as well as individual gift cards!

BIVI reward points earned from multiple BIVI programs, promotions, and bonus opportunities will automatically be combined into individual DSR accounts.

Program period: July 1 - December 31, 2017

To track and redeem your BIVI DSR Rewards Points log in to BIVIRewards.BHEngage.com

Program Rules

DSRs must watch assigned training modules and complete assigned quizzes. Frequency of quizzes is expected to be once every trimester but timing and frequency are subject to change without notice.

DSRs must achieve sales of $50,000 in eligible BIVI Cattle or Equine products to qualify for any award payments.

Keep In Mind

- All Cattle and Equine products are eligible toward awards in the program.
- BIVI DSR Reward Points are retroactive to dollar one (less BIVI DSR Reward Points previously paid at lower levels).
- BIVI DSR Reward Points will be deposited in DSR accounts on a monthly basis.
- BIVI DSR Reward Points earnings will be rounded to the next highest whole number.
- BIVI DSR Reward Points are removed if products are returned.

For any questions about the Rewards Points Program, how to access the website or help with a lost or stolen debit card, please contact the BIVI Discounts and Rebates team:

Phone: 1-800-862-0389
Email: AHBIVIprogramhelp.US@boehringer-ingelheim.com

Once the minimum threshold is met, DSRs earn BIVI DSR Rewards points as follows:

Cattle

Sales Level	Sales Rep Earnings
SILVER LEVEL $50,000 – $199,999	**One Point for every $100** in combined BIVI and Merial Cattle product sales
GOLD LEVEL $200,000 - $399,999	**Two Points for every $100** in combined BIVI and Merial Cattle product sales
PLATINUM LEVEL* $400,000 - $699,999	**Four Points for every $100** in combined BIVI and Merial Cattle product sales
DIAMOND LEVEL** $700,000 and above	**Five Points for every $100** in combined BIVI and Merial Cattle product sales

* DSRs with sales exceeding $400,000 in 2016, and are at or above 100% of previous year's sales, will automatically earn awards at the PLATINUM LEVEL on all 2017 sales.

** DSRs with sales exceeding $700,000 in 2016, and are at or above 100% of previous year's sales, will automatically earn awards at the DIAMOND LEVEL on all 2017 sales.

*** Sales to BIVI Reporting Strategic Veterinarian Program (RSVP) and Reporting Strategic Dealer Program (RSDP) accounts are NOT part of the program. Sales to RSVP and RSDP accounts contribute to qualifying volume to achieve level minimums but do not pay BIVI DSR Reward Points.

BIVI DSR Rewards Points have no cash value and cannot be supplemented with cash or credit card toward redemption of any program awards. No award substitutes are allowed. Boehringer Ingelheim Vetmedica, Inc. will make the determination of eligibility, interpretation of the rules, and final award issuance. BIVI DSR Rewards Points are awarded for sales reported for individual sales reps and are based on the account assignment reported by the distributor at the time the sales were made. BIVI is not responsible for changes in account assignments or how they affect sales history totals or level achievements. Boehringer Ingelheim Vetmedica, Inc. reserves the right to change, modify or cancel this program at any time. Participants must be employed with a participating distributor at the time of each award issuance to receive awards. All applicable federal, state, and local taxes are the sole responsibility of program participants. Participants will be asked to fill out a W-9 tax form if their annual earnings are over $600 per year. Special Notice: All Cydectin SKUs will only be counted towards BIVI DSR Rewards Points Program until the product line is officially divested to the prospective buyer. After the Sale of the Brand no more points will be paid on the BIVI DSR Rewards Points Program.

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