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DJD Handbook 2022

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1 Data on file.

2 Adequan® i.m. Package Insert, Rev 1/19.

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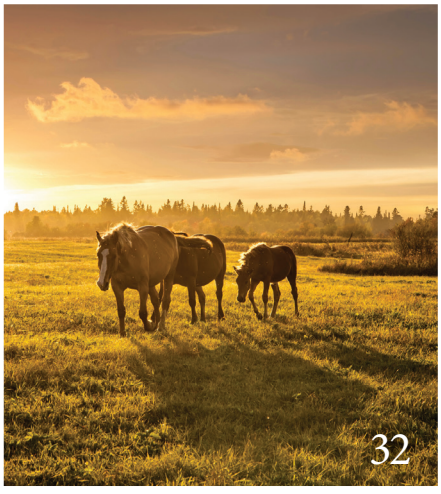

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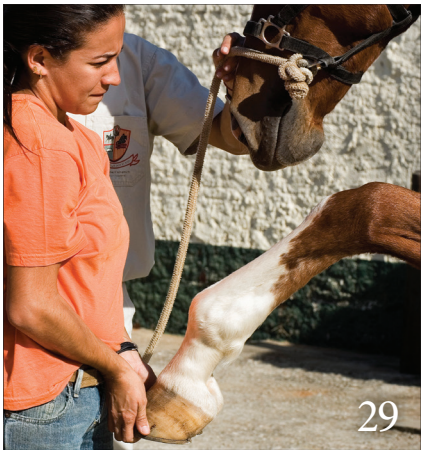
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***Cover photo Arnd Bronkhorst Photography***


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# DJD Handbook

By Kimberly S. Brown

That's really what this Special Issue of *EquiManagement* really is—a handbook on degenerative joint disease (DJD) and osteoarthritis (OA) from a variety of practitioners.

The information contained in this special issue is based on hours of discussions among participants of an American Regent Animal Health roundtable conducted by *EquiManagement*. The participants were **Kent Allen**, DVM; **Robin Dabareiner**, DVM, PhD, DACVS; **Christopher E. Kawcak**, DVM, PhD, DACVS, DACVSMR, ACVS founding fellow/MIS; **Zach Loppnow**, DVM; **Rick Mitchell**, DVM, MRCVS, DACVSMR; **Kyla Ortved**, DVM, PhD, DACVS, DACVSMR; **Kelly Tisher**, DVM; and **Gary White**, DVM.



In the "A Team Approach to Managing DJD" article (page 30), we talked to Ortved as well as her colleagues **Kara Brown**, VMD, DACVSMR, and **Patrick Reilly**, Grad.Dip.ELR, who joined New Bolton Center as Chief of Farrier Services and Director of the Applied Polymer Research Laboratory in 2006.

## Like a Hallway Conversation

The content of this special issue reminds me of the great "hallway" conversations that are held at the annual AAEP Conventions. Talking to veterinarians of different backgrounds and expertise about a specific issue that is important to you and your clients.

With an aging equine population of sport and pleasure horses, and a lack of younger horses to advance up through the ranks in competition, all veterinarians are dealing with DJD/OA in their patients.

With the advances in diagnostics (especially standing CT) and recent research on DJD, more vets are diagnosing DJD earlier in a horse's career. That means they can begin treatment even before radiographs show damage. By treating horses earlier, it allows practitioners to extend those horses' useful careers.

## Diagnose Early, Treat Individually

A famous Allen quote is: "Absent a diagnosis, medicine is poison, surgery is trauma, alternative therapy is witchcraft."

"I think we're surprised how many times a relatively normal-looking joint on radiographs will have fairly substantial changes on MRI or CT," said Kawcak. For veterinarians who don't use a lot of CT and MRI, he thinks "we are likely under-diagnosing DJD."

Mitchell summarized the group's feelings when he said that there was no "one-size-fits-all" solution when it comes to DJD treatment.

When it comes to selecting treatment, the vets agreed that while owners of top-level performers might have more ability to pay for diagnoses and treatments, cost shouldn't affect initial recommendations for mid-level athletes and backyard/senior horses. White said that all of these horses should be offered "the best alternative first, [and] if that's not workable, find out what is."

We hope you enjoy all the information and insights in this special issue on DJD, brought to you by *EquiManagement* and American Regent Animal Health. EM

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ARND BRONKHORST PHOTOGRAPHY

Equine veterinarians understand the process of OA and DJD better today than in any time in the past.

# Do You See It? Do You Feel It?

## The incidence of degenerative joint disease and osteoarthritis is related to improved diagnostics and changes in equine demographics.

By Kimberly S. Brown

There is a trend in the United States toward an aging equine population with fewer foals born, according to the 2015 National Animal Health Monitoring System survey.[1] This means that a larger portion of the horse population that veterinarians are serving is aged, many with second careers. And there is a smaller population of up-and-coming performance horses to replace older campaigners moving out of top-tier competition.

Most participants in a 2020 roundtable discussion of equine degenerative joint disease (DJD) and osteoarthritis (OA) don't think DJD is increasing in the general population. However, they believe veterinarians are diagnosing more DJD because improved diagnostic capabilities available today allow for earlier diagnosis of disease. These diagnostic tools also have helped identify a true increase in incidence of DJD in a subset of competition horses.

The bottom line seems to be that equine veterinarians understand the process of osteoarthritis and degenerative joint disease better today than in any time in the past. In addition, practitioners have research that can help them better identify horses that are at risk for DJD even when they don't show radiographic changes.

Christopher E. Kawcak, DVM, PhD, DACVS, DACVSMR, ACVS founding fellow/MIS and director of Equine Clinical Services at Colorado State University (CSU), noted that people do use the



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**Many sport horses experience wear-and-tear of joints. Dr. Kent Allen found in one study that 44% of horses failed a pre-purchase exam due to lameness or radiographic findings without lameness.**

terms DJD and OA interchangeably in both veterinary and human medicine. "OA is probably more commonly used today as we understand more the bone (osteo…) part of the disease process," he said.

Kent Allen, DVM, owner of Virginia Equine Imaging and a founder of the International Society of Equine Locomotor Pathology (ISELP), said changes veterinarians are seeing in the frequency of DJD among today's horses are "probably due more to us getting better at diagnosis than the animals getting more disease."

## Horse Jobs and DJD Incidence

Allen's practice consists largely of equine performance horses, with the majority of those being event horses, followed by dressage horses. "Event horses are the triathletes of the equine sport horse world," said Allen. "And, certainly, they develop arthritis from just repetitive action as well as the normal amount of degenerative changes and OCD."

Allen said that in looking at the pre-purchase population in his practice, they did a "data dump" of about 700 pre-purchase exams that "we all did the same way." He noted that on the day of the pre-purchase exam, "they're supposed to be—on the day—the soundest they've ever looked in their life. Right? Yet you go through them and, somewhere between 40-50% of those horses, we read radiographic arthritic changes somewhere in their joints."

In that set of pre-purchase horses, Allen said 52% passed and 48% failed. "The failure rate was 32% on lameness and 12% on radiographic findings without lameness."

Robin Dabareiner, DVM, PhD, DACVS, who worked at Texas A&M for 23 years before working at Waller Equine Hospital in Texas, said that probably 50-60% of her caseload consists of "playday" horses from 15-25 years old. "Those are horses that have been—in their prime—professional, top-notch horses," she explained. "Now they're not fast enough, a little too crippled, too much arthritis for the high-tier riders. So, they're going down to these kids that are anywhere from 5 to 16 years old. They do numerous events all day long. They're very tough horses with a lot of problems."

Dabareiner added that the older "playday" horses making up a big portion of her patient base do have an overall increased incidence of DJD. "I think it's more the type of horse—the older horse—that I'm looking at now."

Kawcak said his practice is made up of radiologists, sports medicine clinicians and surgeons. "We argue quite commonly as to what is defined as osteoarthritis (OA)," he said.

He said the radiologists in his practice "pull the trigger on that diagnosis sooner than a lot of us do. Because of that, I would say that if we look at the caseload alone, our incidence is probably going up."

Kawcak said he thinks veterinarians are getting better at X-rays, and that they are "a little bit more critical than we have been before, especially on pre-purchase films. I think it is not so much [that] the incidence [of OA] has gone up, but the definition has probably scaled a little bit over the last few years."

Kawcak said there is one segment of the equine population in his caseload that appears to have increased DJD incidence. "I deal with a fair number of young cutting horses, both here [at CSU] and in Texas, and have had the opportunity to follow a lot of them. I do think in those young, hardworking, active athletes with that big push in their 3-year-old year that the incidence [of DJD] has probably gone up, especially in stifles and hocks. We've done some studies here to show that that incidence of hock lesions does have an impact on performance, at least during their limited age event years."

"Consequently, I think a lot of them end up, like Dr. Dabareiner said … they get kicked down to the kids and amateurs," said Kawcak. "Then that group becomes very difficult to maintain, especially when you're looking at chronic stifles."

Zach Loppnow, DVM, formerly an associate veterinarian at Anoka Equine Veterinary Services in Minnesota, is

now a first-year equine surgery resident at Steinbeck Country Equine Clinics in California. He said that when looking at the lameness profiles of the range of horses seen at Anoka Equine, "greater than half of what we're doing is osteoarthritis of some kind. We see it a lot." He said the demographic there was a majority of Western sporthorses, although they see a range of many types of horses in many disciplines.

Among those disciplines are endurance horses doing 50-, 75- or 100-mile rides. "We've seen a lot of wear and tear on these horses' joints," said Loppnow.

He noted that all performance horses are getting "pushed longer" in terms of their athletic careers. Because of that "desire to stretch that performance life of the horse," he thinks they are seeing the incidence of osteoarthritis going up. "If you use the definition of a senior horse as being 15 years and older, that's a large percentage of our caseload," he added.

Rick Mitchell, DVM, MRCVS, DACVSMR, an owner of Fairfield Equine Associates and a founding member of ISELP, said that his practice's caseload is "getting older." As he explained, "In several reviews that we've done recently and in a paper we had accepted for publication, the mean age of horses in our practice—which is hunters/jumpers and dressage horses and a few eventers—is 11 years.

"Those horses are generally reaching their peak in performance and capability," he said. "But they're also starting to acquire some of the wear and tear inherent to the jobs that they do. They certainly do demonstrate a significant amount of osteoarthritic changes. It is a major portion of what I do every day."

Like other practitioners, he has seen a lot of the older, high-performance horses move down in competition. "They were grand prix jumpers, they were high-level dressage horses, and now they are schoolmasters or they're hunter equitation horses," said Mitchell.



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**Dr. Rick Mitchell said "we are identifying issues in horses perhaps a bit sooner than we used to ... We're trying to figure out why they're lame and what could be done ... to manage that lameness."**

About 14 to 15 years ago there was a "big change" in footing on the East Coast, noted Mitchell. Arenas went from a sand-based footing to the fiber-based footing with wax and other things in it. He said it took the riders, trainers, veterinarians and farriers a while to figure out how to manage the foot of the horse to compensate for that footing. "We saw a large number of horses with distal limb synovitis, osteoarthritis, ligamentous problems and so forth for quite a few years," he noted. "Now we're not seeing quite as many."

He said it could be that "we are identifying issues in horses perhaps a bit sooner than we used to. We're not just giving them a dose of bute or Banamine and telling them to go on. We're trying to figure out why they're lame and what could be done more directly to manage that lameness."

Kyla Ortved, DVM, PhD, DACVS, DACVSMR, the Jacques Jenny Endowed Term Chair of Orthopedic Surgery at the University of Pennsylvania's New Bolton Center, has a caseload of about 40% Thoroughbred racehorses, 40% sport horses (mostly English performance animals) and 20% other types, including backyard and lower-level performance horses. She said that she sees a lot of pre-purchase films from clients looking to buy young horses in Europe. "I'm finding that a lot of those pretty young horses have radiographic changes. And maybe, like Chris [Kawcak] said, we're a little bit over-sensitized to the radiographic changes and describing joints that maybe historically we wouldn't have diagnosed as OA."

Ortved also works with a lot of off-the-track Thoroughbreds for rehoming

and rescue organizations. "We screen a lot of their horses that come off the track before [they attempt to offer them for adoption]," she said. "A lot of those horses are quite young … 3-, 4-, 5-year-olds coming off the track. We see a subset of them that have end-stage OA that end up being put down for humane reasons as they have such severe lameness. Then we see some that are not as badly affected but will require a lot of treatment to keep sound, or they're just put into more of a low-level type of work."

At New Bolton Center, Ortved said they recently acquired a PET (positron emission tomography) scan to go along with their MRI and CT scanners. "We've been doing more imaging and more diagnostics on horses that otherwise probably we wouldn't have in the past," she said. "I think we are seeing things at an earlier time point and are a little bit more able to pinpoint and diagnose joint injuries that we wouldn't have been able to diagnose in the past."

Ortved also said a lot of clients are very sensitive to changes in the horse's gait or perceived discomfort. "Sometimes I think that's an excellent thing; sometimes it's a little bit frustrating," said Ortved. "Probably 10-20 years ago, people rode lame horses more often than they ride lame horses now."

Kelly Tisher, DVM, managing partner at Littleton Equine Medical Center in Colorado, noted that they have about 60% English performance horses and 40% Western performance horses. While he doesn't think the actual incidence of DJD is changing, he noted that there are more older horses on which owners will ask veterinarians to "do more management than maybe we have before."

He, too, agreed that veterinarians will be seeing more and more older horses. But he also mentioned the "diagnosis dilemma" with young horses. "Where does degenerative joint disease become the diagnosis, when you maybe don't have imaging changes but you do have the strong sense of synovitis, capsulitis and [the] need to manage that horse at a young age?" Tisher asked. In addition, he mentioned the "strong desire from trainers" who notice performance issues and want veterinarians to address them.

He said the futurity barrel horse is a subset of his practice's patients in which owners are investing a tremendous amount of money. "That young group potentially has some of the signs of degenerative joint disease, but maybe doesn't have the imaging signs of OA. I think that's a subset that is a challenge," said Tisher.



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**Veterinarians are becoming more adept at diagnosing DJD earlier in the disease process.**

Gary White, DVM, owner of Sallisaw Equine Clinic in Oklahoma, has a practice that consists of about 70% Western performance horses, ranging from barrel racers and team ropers to rodeo event horses. He noted that the Western rodeo performance horse over the last 25-30 years has had a small professional presence, with most people participating as a hobby. "But now there are a lot of people who have invested a lot of money in these horses," he said. "There's a lot of money to be earned with these horses.

"When I started out in this business over 40 years ago, you seldom saw a high-level Western performance horse over 13, 14 or 15 years old," he explained. But he added that today, "we see high-level horses in these disciplines up to 20 years old. Then a lot of them switch to the 'playdays' and school horses and perform into their late 20s. So yes, we're seeing more of an incidence of arthritis."

## Take-Home Message

There are several facts that equine veterinarians must face today and in the coming years.

- Veterinarians are become more adept at diagnosing DJD earlier in the disease process.
- There is an aging U.S. equine population.
- There are fewer young horses available to move up in the ranks of competition.

These factors mean that veterinarians will be caring for more horses whose careers are extended beyond what was demanded of them only a decade before. And with wear-and-tear of joints a common occurrence of nearly any active horse, that means earlier intervention to protect joints is necessary in today's equine industry.

The good news is that with improved diagnostics, early intervention and proper treatment, equine veterinarians can extend the competitive and useful lives of many horses. EM

***Reference***

1. USDA. Equine 2015: "Changes in the U.S. Equine Industry, 1998-2015" USDA-APHIS-VS-CEAH-NAHMS. Fort Collins, CO #723.0517

*Veterinarians quoted are paid consultants of American Regent, Inc. PP-AI-US-0840*



"As a profession, we don't necessarily do a great job communicating to clients ..." said Dr. Kyla Ortved.

ISTOCK

# Enhancing Horse Care Through Communication

## Opportunities for veterinarians to better position themselves as a client's first resource in horse care can start with improved communication.

By Kimberly S. Brown

Veterinarians must be proactive in not only talking to clients but educating them on the many benefits gained from engaging with an equine veterinarian early and often in a horse's life and career. This is true whether the horse is a trail horse, weekend competitor or high-level performance horse.

Kyla Ortved, DVM, PhD, DACVS, DACVSMR, the Jacques Jenny Endowed Term Chair of Orthopedic Surgery at the University of Pennsylvania's New Bolton Center, joined several other veterinarians in a roundtable discussion about degenerative joint disease (DJD) hosted by EquiManagement and sponsored by American Regent Animal Health. Part of the discussion centered around the need for today's veterinarian to become better at communicating with clients in order to become the go-to person for health issues in that client's and horse's "team" of providers.

She said, "I think as a profession, we don't necessarily do a great job communicating to clients what we can provide or what tools our training has provided us with."

Ortved emphasized the need to improve the client messaging behind a good workup, a good lameness exam and




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**In one study of barrel racing horses, the researchers found the most common musculoskeletal problem was forelimb foot pain only.**

repeat lameness evaluations. "I think owners and trainers and clients for the most part want to do right by their horses," said Ortved. "I think sometimes they get 'lost,' and you have a horse that comes in that's been lame for six months and the chiropractor has been working on it."

In addition, veterinarians should remember that while some horse owners are astutely aware of the subtle signs of lameness or discomfort in their horses, other owners are not as astute.

Gary White, DVM, owner of Sallisaw Equine Clinic in Oklahoma, said about that second group of horse owners: "If you make them think about what the horse is doing, they will pay more attention to what their horses are telling them."

White also said that veterinarians—especially new practitioners—need to focus on clinical correlation. "That means to use your hands, your eyes, your fingers and your ears all as part of the exam," he said. "Then have a quick response to high-level imaging as the next step."

Christopher E. Kawcak, DVM, PhD, DACVS, DACVSMR, ACVS founding fellow/MIS and director of Equine Clinical Services at Colorado State University (CSU), said as things get more "complex" on the diagnostic side, "it's going to take even more education to both laymen and veterinarians on how best to use that information."

Ortved noted that practitioners need to take the time to understand what they're seeing with the more advanced diagnostics. "Let's make sure that we're using new technology appropriately," she said.

## Consider the Discipline

Veterinarians should be knowledgeable about the discipline of the horses they are examining and ask the proper questions. For example, White said you might ask barrel horse owners these questions: "Which direction does the horse turn better? How do they make the turn? Are they running less on the straightaway?" He said there are a "lot of things that can clue you in" to what is going on with that horse.

Robin Dabareiner, DVM, PhD, DACVS, agreed that strong client bonds built on good communication is crucial to diagnosing lameness issues. "You can't diagnose anything early if you don't see the horse," she said. In fact, Dabareiner, who worked at Texas A&M for 23 years before working at Waller Equine Hospital in Texas, was involved in three studies of Western performance horses while at Texas A&M that support this statement.

The first study involved 118 barrel racing horses. From that study, she and her colleagues reported that most horses were examined because of lameness (61%) rather than poor performance (39%). Owner complaint was not significantly associated with age or body weight of the horse. The most common performance change was refusal or failure to turn properly around the first barrel (41%).

Some horses had more than one limb diagnosed as lame in this study. The right forelimb affected in 48% of horses examined and the left forelimb was affected in 43% of horses. The left hind limb was diagnosed as lame in 26% of horses, and the right hind limb was diagnosed as lame in 21% of horses.

The most common musculoskeletal problems were forelimb foot pain only (33%), osteoarthritis of the distal tarsal joints (14%), suspensory ligament desmitis (13%), forelimb foot pain with distal tarsal joint osteoarthritis (9%) and bruised feet (8.5%).

In 81 horses (69%), the affected joint was treated with intra-articular medications.

The study's authors concluded: "Results suggest that in horses used for barrel racing that are examined because of lameness or poor performance, the forelimbs are more likely to be affected than the hind limbs, with forelimb foot pain and osteoarthritis of the distal

tarsal joints being the most common underlying abnormalities (*J Am Vet Med Assoc* 2005; 227:1646–1650).

In a study of team roping horses, Dabareiner and her colleagues found that among horses evaluated by lameness clinicians, the proportion with lameness or poor performance was significantly greater in horses used for heading (74/118 or 63%) and lower in horses used for heeling (44/118 or 37%) than would be expected under the null hypothesis.

"Most horses examined for poor performance were lame," noted the authors. They reported that a significantly greater proportion of horses used for heading had right forelimb lameness (35%), compared with horses used for heeling (16%). Horses used for heading had more bilateral forelimb lameness (24%) compared with horses used for heeling (9%). Horses used for heeling had more bilateral hind limb lameness (7%) compared with horses used for heading (0%).

"The most common musculoskeletal problems in horses used for heading were signs of pain limited to the distal sesamoid (navicular) area, signs of pain in the navicular area plus osteoarthritis of the distal tarsal joints, and soft tissue injury in the forelimb proximal phalangeal (pastern) region," the study noted. "Heeling horses most commonly had signs of pain in the navicular area, osteoarthritis of the metatarsophalangeal joints, and osteoarthritis of the distal tarsal joints."

The study concluded that horses used for heading were most commonly affected by lameness in the right forelimb. Horses used for heeling had more bilateral hind limb lameness than horses used for heading (*J Am Vet Med Assoc* 2005; 226:1694–1699).

A study of 200 cutting horses in which Dabareiner participated found that more horses were examined because of a recent decrease in performance (58%) than for lameness (42%). "All horses had at least one lame limb, with lameness affecting a total of 281 limbs. Of the 281 lame limbs, 189 (67%) were hind limbs and 92 (33%) were forelimbs."



ISTOCK

**It is important for equine veterinarians to help owners focus on preventing cartilage and joint problems rather than treating them.**

The most common performance change in these horses was that they would not reverse direction to follow prespecified individual cattle, and the most common cause of lameness was pain localized to the stifle joint region (35%).

The study authors concluded: "Cutting horses sustained more hind limb than forelimb musculoskeletal problems, and although these horses were more likely to be examined for decreased performance than lameness, veterinarians should be vigilant for problems affecting the stifle joint region" (*J Am Vet Med Assoc* 2019;254:619–625).

## Best Practices for Treatment

Extending the useful lifespan of all levels of horses starts with veterinary involvement in the horses' lives at an early age and continues through the golden years.

Good communication of recommended therapies and treatments with horse owners and caregivers is essential to successful management of equine joint disease over time. This can be an ongoing battle when owners are bombarded with unproven or inappropriate options that don't have the safety and efficacy assurances provided by FDA-approved drugs.

Even safe and successful use of FDA-approved drugs such as corticosteroids (intraarticular), sodium hyaluronate or polysulfated glycosaminoglycan (Adequan® i.m.) requires ongoing communication between the veterinarian and owner to ensure the product is used as directed and is achieving the intended result.

It is important for equine veterinarians to help owners focus on preventing cartilage and joint problems rather than treating them. Rick Mitchell**,** DVM, MRCVS, DACVSMR, an owner of Fairfield Equine Associates and a founding member of ISELP, said, "I try to incorporate all that in my discussion with them: How am I spending your money? How am I protecting your horse? How am I going to have some effectiveness with what I'm doing to help treat the issues that are going forward? And acknowledging, too, that there's a wide range of other things outside of those three questions that may play a role."



ARND BRONKHORST PHOTOGRAPHY

**Key points in talking to horse owners about non-FDA-approved supplements is to stress the issues of safety, quality and consistency, as well as knowing what is in the products to prevent positive drug tests.**

He noted that he tries to go the "educational route" with clients and explain the differences and the chemical similarities of various products. He said he doesn't recommend many oral joint supplements, but he does "steer people away from the off-brand products that really don't have clear scientific data at all."

Ortved said she discusses the science—or lack thereof—of most of the nutraceuticals, as well as the fact there is no regulation on the manufacturing process or ingredients like there is for FDA-approved products such as Adequan® i.m.

She said there is also the "weird peer pressure to give supplements to your horse. If you don't give a supplement, you're a really terrible owner." She added that the discussion is the same whether it is an oral or an injectable supplement that is not FDA-approved.

Kelly Tisher, DVM, managing partner at Littleton Equine Medical Center in Colorado, agreed. He feels there is over-supplementation with these oral products, "especially in the fear-based, peer-based world that we live in."

A couple of the veterinarians mentioned a study[1] where joint supplements were researched to see what was (or wasn't) in them and in what amounts ("Evaluation of glucosamine levels in commercial equine oral supplements for joints"). Some had no levels of the "active" ingredient and others had 221% of label levels.

Tisher said he talks with owners about the safety, the quality and the consistency of these non-FDA-approved supplements. "Is the bucket you're buying today really the same thing as the bucket you're buying tomorrow?" he said he asks owners.

Tisher also mentioned that in competition horses, with regard to regulatory controls, "We just don't know what's in a lot of oral supplements—the nutraceuticals," he said. "And you can get jammed up a little bit on testing for different things that are in those products that you may or may not know."

He added that non-FDA-approved injectable products—mostly those that are called "medical devices"—are a harder subject to discuss with owners. "People think that if it comes in a vial and is injected, that it must be FDA-approved and it must have a safety margin with it. As a practice, we really steer clear of those products."

White likes to help owners understand what each class of drugs can do for horses. "I'll say, 'This is what the non-steroidals like bute and firocoxib do. This is what corticosteroids do. This is what HAs do, and this is what Adequan [i.m.] does. They all have an important place in what we're doing.' I think if you do that, people understand that there are differences. I think that helps both you and them make the choice."

White added, "I'm going to be a little bit harsher about the oral supplements. I don't think they work. I base that on both research experience and clinical experience. I tell most of the owners,

'Use a good quality one and it won't do any harm, but I'm really not sure that it's worth the money.'

"You can take what it costs you to feed some of these products and you can buy quite a bit of Adequan [i.m.] or Legend, which we know work," he said. "Or, as the injectables go, I'll show them a bottle or a box of Adequan [i.m.] or a box of Legend and I say, 'Look right here. It has an NADA approved by FDA.' If it doesn't say that, I don't sell it and I don't recommend it."

Kawcak has been involved in research on numerous joint products. He summarized by saying that "safety and efficacy studies support use of medications and protect end users. Shortcuts for use put patients at risk."

Kent Allen, DVM, owner of Virginia Equine Imaging and a founder of the International Society of Equine Locomotor Pathology (ISELP), said he has several things he communicates to clients on the topic of supplements. "One of them is simply that upper-level eventing riders ask if they aren't sure of what is in their supplements," he said. The potential penalties involved for a drug positive at the upper levels are so significant that the riders can't be too careful.

He said he was given one of the supplements, and he had to look up something in it. "It turned out that it was GABA (Gamma-Aminobutyric Acid or GABA), which is banned by almost every regulatory body," said Allen. "I didn't even know synthetic GABA existed. We immediately started talking to riders and the manufacturers; then we had a whole slew of positives on it. So, you've got to be really careful about what's in those supplements."

The second illustrative point Allen uses is this story: "I took a very good American event horse to Burghley one time," recalled Allen. "She goes out and ties up on what then we called Phase A. She hadn't even run cross-country. She tied up to the point where I had to give her 20 liters of fluids to get her up off the ground. Then I took her back to the stall, proceeded to give her 125 liters that night.

"At one point I asked the groom, 'Why don't you go and get me the supplements that this mare had?' The groom looked at me and says, 'You want me to go bring them now?' I said, 'Yeah, just go bring them.' She comes back with a wheelbarrow," related Allen. "This horse is on 24 supplements. I'm going, 'Well, that's why the horse was on the ground before it ever got to run cross-country.' These things have effects, and not all of them are good, particularly in combinations."

Dabareiner said she tells owners, "It may cost the same amount to give your horse intramuscular Adequan as it does to supplement with a product that's not metabolically available or not absorbed."

**"I think most people are unaware of what the FDA actually does to protect the consumer, and once they realize that, a lot of times they start to realize that they're approved for a reason."**
—Dr. Chris Kawcak

While at Texas A&M, Dabareiner was involved in the resveratrol study led by Dr. Ashley Watts. "It was a double-blind study[2] in which horses diagnosed with distal hock OA were fed either a placebo or the resveratrol. "There was a slight improvement on recheck in lameness if the horse was on the resveratrol versus placebo," said Dabareiner. "But that's the only study that I'm aware of comparing an oral supplement vs placebo.[2]"

Kawcak said with oral supplements, "a lot of it's based on theoretical approach—kind of building up the basic tissue building blocks of whatever it is. I just try to stress to the owner that they're investing in hopefully strengthening tissues, and maybe that will help prolong athletic use.

"As Gary [White] touched on, and I think it's important ... stressing the importance of FDA approval," continued Kawcak. "Not only for the safety aspect, but for the efficacy aspect and the manufacturing component. I think most people are unaware of what the FDA actually does to protect the consumer, and once they realize that, a lot of times they start to realize that they're approved for a reason."

## Take-Home Message

Equine veterinarians need to take the time to educate horse owners and caretakers to recognize physical issues with their horses. Then they can provide proper diagnoses of those problems and address the problems on an individual basis using proven treatments.

All of this requires good communication skills with owners and caregivers. That means taking time to ensure you understand each client's concerns and that they understand your recommendations. EM

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*Veterinarians quoted are paid consultants of American Regent, Inc. PP-AI-US-0841*

*For full safety information please see page 23.*

# Client conversations: Before, during and after diagnosis

A conversation tool helps get clients talking for more proactive joint health management and earlier degenerative joint disease (DJD) diagnosis.

Equine joint health management starts before the rider notices a twinge, a delayed step, a stiff neck. But you may not see horses until they're already dealing with a lameness issue. To set you up as the first source of information and encourage soundness-related conversations, the veterinarians at American Regent Animal Health created a client communication tool that provides a:

- Definition of DJD, including early signs
- Summary of the types of joint health products
- List of questions to help evaluate lameness
- List of notes to prepare clients for a lameness exam and potential recommended therapies

The tool helps foster conversation before DJD sets in. To help catch DJD early, the veterinarians who participated in the American Regent Animal Health roundtable agreed that proactive client conversations and regular soundness checks on the horse—ideally twice a year—are critical. Soundness checks are a prime opportunity to remind horse owners that they're the first line of defense against DJD.

## Talk about DJD before it happens

"I emphasize that if you have a horse that knows what he's supposed to do and knows how to do it right, you start seeing subtle changes in the way this horse works or uses himself," said Kyla Ortved, DVM, PhD, DACVS, DACVSMR, the Jacques Jenny Endowed Term Chair of Orthopedic Surgery at the University of Pennsylvania's New Bolton Center. "That's the time to seek intervention, before it becomes a real lameness issue."

When the time comes to make a diagnosis, horse owners play an important role. Zach Loppnow, DVM, a first-year equine surgery resident at Steinbeck Country Equine Clinics in California, tells his clients he needs their perspective on how the horse moves. "So take note of when the horse is not doing what you normally expect it to do, take note of how that's changed, what it's doing differently," Dr. Loppnow says, "because the more time-based information you can give me on when it's doing things, what it's doing, the better I can diagnose what may be going on."

## Discuss tailor-made treatments

With a diagnosis, take the time to explain the problem and your recommended treatment plan. If the diagnosis is DJD, ensure clients understand that DJD is a chronic, progressive condition that may affect one or more of the joints.

Rick Mitchell, DVM, MRCVS, DACVSMR, an owner of Fairfield Equine Associates and a founding member of ISELP, suggests telling clients why you recommend specific DJD treatments. "There's no cookbook for DJD across the board," Dr. Mitchell said. "You have to look at the joint. Is it a high-motion joint? Is it a low-motion joint? Then how old is the horse. Is it a young horse? Is it an older horse? Are we looking at a first-time lameness? Or are we looking at a horse that has recurrent lameness without perhaps significant radiographic changes? Or are we looking at an older horse with really significant radiographic changes and a really degenerative joint?"

**INDICATIONS** Adequan® i.m. (polysulfated glycosaminoglycan) is recommended for the intramuscular treatment of non-infectious degenerative and/or traumatic joint dysfunction and associated lameness of the carpal and hock joints in horses. **IMPORTANT SAFETY INFORMATION** There are no known contraindications to the use of intramuscular Polysulfated Glycosaminoglycan. Studies have not been conducted to establish safety in breeding horses. **WARNING:** Do not use in horses intended for human consumption. Not for use in humans. Keep this and all medications out of the reach of children. **CAUTION:** Federal law restricts this drug to use by or on the order of a licensed veterinarian. For full prescribing information, visit adequan.com.

*"There's oftentimes...little things that they'll say that'll give you insight into what's going on with this horse."* — *Dr. Rick Mitchell*

Adequan i.m.®
polysulfated glycosaminoglycan

## Equine Lameness Questionnaire

Your horse's mobility involves many factors, from what your horse eats to how much your horse exercises. By providing the information below, we'll be better able to determine the cause(s) of your horse's lameness.

### Patient information

Patient name: _____ Patient age: _____ Breed: _____

Gender: Mare ___ Stallion ___ Gelding ___

Primary use: _____

Name of farrier and date of last trimming/shoeing: _____

Current diet (include all regular treats): _____

Describe housing and/or access to turnout: _____

Describe frequency and intensity of usual exercise: _____

Previous medical history (include any prior lameness even if resolved): _____

_____

Have there been any recent changes in the horse's feed, housing situation, exercise, etc.?_____

Current medications (include dose and frequency of administration): _____

_____

Current therapies (ex: chiropractic, massage, acupuncture): _____

Current supplements or other products administered or applied (include amount and frequency): _____

_____

### History of current lameness

1. How long has the horse been lame?_____
2. Has the horse been rested or exercised?_____
3. Has the lameness worsened, stayed the same or improved?_____
4. Do you know what caused the lameness? (accident, fall, collision, etc.)_____
5. Once warmed up, does the lameness go away?_____
6. Is the lameness more obvious under saddle?_____
7. Is the lameness more obvious while being lunged?_____
8. Is the horse more lame on hard surfaces or on soft surfaces?_____
9. Has the horse received any treatment for the lameness (include any periods of rest)? If so, was it helpful? _____

_____

10. Is there anything else you would like us to know about?_____

_____

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Download the complete communication tool at
adequan.com/pdf/Equine-Lameness-Questionnaire.pdf

Taking the time to talk clients through DJD at every stage—from proactive joint care to diagnosis and ongoing treatment—connects them to their horse's joint health. And it connects them to you. That will help you keep your clients and their horses moving together—longer.

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ARND BRONKHORST PHOTOGRAPHY

Veterinarians need to "back up and try to practice quality medicine," said Dr. Rick Mitchell.

# Diagnose, Then Move Forward

## In order for horses with arthritis or DJD to be properly treated, they must first be properly diagnosed.

By Kimberly S. Brown

Advances in imaging and diagnostics are leading to earlier and more frequent diagnosis of DJD in horses. This is heightening awareness that degenerative joint disease (DJD) can be a problem for horses of all ages—and that awareness is a win for those horses.

"I think we're surprised how many times a relatively normal-looking joint on radiographs will have fairly substantial changes on MRI or CT," said Christopher E. Kawcak, DVM, PhD, DACVS, DACVSMR, ACVS founding fellow/MIS and director of Equine Clinical Services at Colorado State University (CSU). For veterinarians who don't use a lot of CT and MRI, he thinks "we are likely under-diagnosing DJD (degenerative joint disease)."

There was a consensus among veterinarians participating in a 2020 roundtable on DJD sponsored by American Regent Animal Health that more DJD will be found as equine diagnostics become better, easier and more available—particularly with the advent of the standing CT scanner.

They also agreed that owners and trainers have long recognized that maintaining joint function and reducing joint pain is critical to performance. But, without a thorough evaluation and the availability of more advanced diagnostics, this disease has gone largely "under-diagnosed and over-treated."

Gary White, DVM, owner of Sallisaw Equine Clinic in Oklahoma, explained it like this: "People will go to a veterinarian and get eight or 10 joints injected at one trip. I question whether that horse received a good examination and a good diagnosis."

Kelly Tisher, DVM, managing partner at Littleton Equine Medical Center in Colorado, agreed with White. However, he said that in his practice, he feels that clients and trainers have become better over the last decade or so at valuing the veterinarian's exam to obtain a proper diagnosis before beginning treatment.

Rick Mitchell, DVM, MRCVS, DACVSMR, an owner of Fairfield Equine Associates and a founding member of ISELP, said he doesn't think veterinarians are over-diagnosing, but he does think there's a tendency to over-treat. "I think there is a trend from trainers and owners to [tell us to] 'do whatever you can to fix the horse to make it go. We've got to go to a horse show next week.' We have to back up and try to practice quality medicine."

### Start With a Thorough Exam

Quality veterinary medicine includes a thorough physical exam along with diagnostics.

Zach Loppnow, DVM, formerly an associate veterinarian at Anoka Equine Veterinary Services in Minnesota and currently a first-year equine surgery resident at Steinbeck Country Equine Clinics in California, said, "Personally, I work really hard to not just go off of the radiographs or the imaging, but to correlate that to the horse in front of me. And maybe that's where you fall into the trap of under-diagnosing the subclinical arthritic horses.

"I had a horse that had pastern arthritis, [which] was what we were treating," Loppnow said. "We used regenerative therapies in that joint. The horse is doing great, but we did some survey radiographs of the carpi on that horse because there's a little bit of abnormal swelling, and there was some osteophyte proliferation in those joints—but the horse

blocked out to the pastern joint. So, if clinically I'm treating what's causing the lameness, am I missing some of the subclinical stuff that may be causing a problem down the road and missing that opportunity to catch it early?"

The use of CT and MRI improves the chance of diagnosing DJD. Kawcak said that veterinarians who don't use a lot of CT and MRI are likely under-diagnosing DJD, "especially when you start looking at subchondral lesions, things that can progress post-traumatic OA. And again, similar to the racehorse, I think we're surprised about how many times a relatively normal-looking joint on radiographs will have fairly substantial changes on MRI or CT. But, at the same time, what does it mean to the horse? Sometimes you see fairly dramatic changes, and it doesn't mean much to him."

Kawcak thinks that in the next year or two, with new imaging technologies more readily available, vets will be "a little bit overwhelmed" with the changes that occur in the back and pelvis that "right now are a little bit frustrating to characterize objectively."

Even more frustrating can be encountering a horse that has been treated based on assumption instead of a thorough diagnosis. As a result, Robin Dabareiner, DVM, PhD, DACVS, who worked at Texas A&M for 23 years before joining Waller Equine Hospital in Texas, said she gets a lot of horses for second opinions.

"The typical barrel horse isn't performing; it's not taking the right barrel," she described. "And when I see it, what's been done is hocks and stifles and fetlocks in the rear have all been injected. The horse may have been to one or two veterinarians, and it has not had a thorough exam—meaning a diagnostic nerve block to locate the lameness. I would block the horse out, and it ends up with a high suspensory or a soft tissue injury."

Dabareiner noted that many horses whose owners thought they had poor performance issues actually ended up having lameness issues once diagnostics were undertaken. "I agree with [this group] that I'm seeing way too many horses over-treated versus localizing the problem," she said, citing research she published during her tenure at Texas A&M.

Three of the studies in which Dabareiner was involved focused on Western performance horses (cutting, team roping and barrel racing competitors) and were published in JAVMA:

- Lameness and poor performance in horses used for team roping: 118 cases (2000–2003)[1]
- Musculoskeletal problems associated with lameness and poor performance among horses used for barrel racing: 118 cases (2000–2003)[2]
- Musculoskeletal problems associated with lameness and poor performance in cutting horses: 200 cases (2007–2015)[3]

**"Absent a diagnosis, medicine is poison, surgery is trauma, alternative therapy is witchcraft."**

*—Kent Allen, DVM*

Even with improved diagnostics, a veterinarian's professional insight remains critical. With more widespread availability of standing CT in the next two or three years, Kent Allen, DVM, owner of Virginia Equine Imaging and a founder of the International Society of Equine Locomotor Pathology (ISELP), thinks that veterinarians will see more DJD. However, he continued, some of those findings will be relevant and some will be irrelevant. He said that over the years in his career, as diagnostics have improved, it has taken experience to be able to say, "That is a change, but that's just a modeling change and that's not a big deal." He added that putting those findings in perspective is important.

Kyla Ortved, DVM, PhD, DACVS, DACVSMR, the Jacques Jenny Endowed Term Chair of Orthopedic Surgery at the University of Pennsylvania's New Bolton Center, added, "I think for the most part, we have really good tools in our toolbox to diagnose horses currently, and we likely will be developing more tools. But the horses need to be seen [by veterinarians] in order for us to use the tools on them."

## The Owner's Role in Recognizing DJD

Preventing cartilage and joint problems rather than treating them was a point of discussion among the veterinarians. Mitchell said he asks clients: "What's it going to cost you to replace this horse?" Then he tells them: "Compare that expense to what it would cost to maintain this horse properly."

He added that his "pitch" to horse owners is that "prevention is way easier than treatment" when it comes to DJD.

Tisher said one problem in addressing lameness issues with horse owners is that "oftentimes they reach out to about everyone else before their veterinarian in response to trying to fix some of the issues—whether they're large or small, whether they're performance issues or something that's quite substantial. The list of professionals or 'supposed professionals' that get to weigh in before we get to weigh in is kind of long sometimes.

"I'm not saying that the rest of those professionals don't add to it," he continued. "It's the order sometimes that frustrates me, and the opportunity to intervene before there's been other things that have been done." As a result, owners




COURTESY HALLMARQ

**"I think we're surprised how many times a relatively normal-looking joint on radiographs will have fairly substantial changes on MRI or CT," said Dr. Chris Kawcak (above images of Hallmarq standing CT).**

often have spent a tremendous amount of money before veterinarians get the opportunity to examine the horse.

Dabareiner added, "I'm sure we all have the owner that, first thing they do is go to a chiropractor, or they listen to their friends, or they go to the internet."

Educating clients and involving them in their horses' care can help them place higher value on the veterinary exam so it takes place sooner.

White sees a couple of types of owners: "We have some that, if you listen to them, they can really help you with your diagnosis," he said. "Others don't have a clue, and you pretty much have to discard what they say; but it helps if you understand the discipline and you know what questions to ask."

He hopes that going forward, the second group of horse owners—"if you make them think about what the horse is doing"—will pay more attention to what their horses are telling them.

Allen hopes proactive education will reduce the number of owners who bring in an obviously lame horse and are looking for help. He said that when those owners ask him "What can I do?" to help their horses stay sound, he recommends that the average performance horse have a twice-a-year soundness exam with podiatry films used to advise the horse's farrier.

"We can look at the horse, do a complete physical soundness examination … palpate the back, palpate the SI [sacroiliac joint], block things that they need blocked," said Allen.

He tells owners: "Bringing the horse in twice a year for a lameness exam is what you can do that will undoubtedly prolong this horse's athletic life. We can detect arthritis early and come up with a rational plan."

Kawcak agreed, adding that even with some very successful trainers and riders, "you look at the horse and wonder how it got to this point." And he said there are others who think "a training-related issue has got to be a physical ailment of some sort."

He encourages veterinarians to ask a client the right questions to get an understanding for the significance of the horse's problem. "I think people are starting to maybe understand where they struggle in managing their horses, and I think in those cases [they are] reaching out more," said Kawcak.

The difficulty of positioning yourself as a client's first resource is a frustration Loppnow experienced firsthand. "I've got to say it's making me feel a lot better that it's not just me that the clients are avoiding and going to chiropractors and everybody else first," Loppnow said. "The fact that it sometimes seems like the veterinarian is the last resort rather than the first opinion is something that's really challenging to deal with. And I think I often find myself spending about half my time proving what it isn't before I can actually prove what it is, because they've gotten so many other opinions from other people.

"I think everybody has a role in keeping a horse sound and performing well—chiropractors, acupuncturists, massage therapists, whatever alternative therapy you want to use—but you have to figure out what the problem is first, and then bring those other parts on board," Loppnow added.

The team approach to DJD includes the client. That's why Loppnow has a consistent message for owners: "You know this horse better than anybody else … in terms of how it feels, how it moves, what it's doing—and I need that perspective from you. So, take note of when it's not doing what you normally expect it to do. Take note of how that's changed, what it's doing differently—because the more time-based information you can give me on when it's doing things [and] what it's doing, the better I can diagnose what may be going on."

Mitchell referenced a paper done by Sue Dyson, MA, VetMB, PhD, DEO, FRCVS, in Europe on a group of 57 horses that were presumed to be sound by trainers and owners. Only 14 of the 57 horses were determined to be sound

after veterinary examination.[4]

Mitchell thinks veterinarians fall short in taking time to talk and listen to owners, whereas massage therapists, chiropractors and others *do* take time to have conversations. "I think if we spent a little bit more time, we can gain information that will help us do a better examination," he said.

## Importance of Educating Owners

Owners and trainers are familiar with many different therapeutic options for management of joint problems. However, they are poorly equipped to evaluate the best practices or to appropriately tailor treatments to an individual horse.

Ortved thinks that providing targeted education to help clients understand what veterinarians can do is important, not to mention actually teaching them what DJD is.

"I think that's sometimes where they fall into the trap of this whole idea of maintenance injections, because they have this understanding or they have this perception that if they maintain the joints with staged or serial injections every three, six, nine, whatever months they do, then they're preventing anything from occurring and that's the best way to approach it," said Ortved. "They don't necessarily have a good understanding of what arthritis is and what that means for a specific joint, and that it's not a widespread problem that happens in every single joint of the body that's possibly injectable.

"So, I guess the piece that seems to be missing is that knowledge sharing between our profession and horse owners, trainers and other professions," concluded Ortved.

Loppnow wrapped it up by stating, "I think it's all about controlling the conversation [with owners]; making sure that we're setting ourselves up to be the first resource, not the third or fourth resource, with each horse."




ARND BRONKHORST PHOTOGRAPHY

**Dr. Kyla Ortved thinks that providing targeted education to help clients understand what veterinarians can do is important.**

Ways to do that center around effective communication, whether in person, via phone or text, or with email.

In the veterinary field, many studies have supported the essential nature of communication skills in achieving success in practice. The four key elements of good communication are non-verbal communication (i.e., recognizing your own and the client's body language), open-ended inquiry (asking questions that require more than a yes or no answer, such as "Tell me…" "What…" "How…" or "Describe for me…"), reflective listening ("What I'm hearing you say is that JoJo has been refusing jumps and feels 'off' on his right foreleg") and empathy (seeing the situation through the client's eyes, such as "I know you really wanted to show JoJo this weekend, but with this lameness I think you will want to give him some time off so we can get to the bottom of this problem").

*(Editor's note: You can find more about these elements of communication by searching on EquiManagement.com for "Communicating Effectively in an Emergency.")* EM

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*Veterinarians quoted are paid consultants of American Regent, Inc. PP-AI-US-0844*

*For full safety information please see page 23.*

# Jumper with Neck Mobility Issues

## A physical and mobility exam plus imaging helped diagnose this horse's problem.

By Kimberly S. Brown

Rick Mitchell, DVM, MRCVS, DACVSMR, an owner of Fairfield Equine Associates and a founding member of ISELP, talked about a grand prix jumper with a stiff neck focused in the cervical articular process joints in a presentation based on a 2021 AAEP Sunrise Session on Redefining DJD Diagnosis, Refining Treatment and Mastering Client Communication. *(You can watch a video of that presentation with Drs. Mitchell and Kyla Ortved on EquiManagement.com by searching for "Redefining DJD Diagnosis.")*

Mitchell said a successful grand prix jumper was having some issues jumping and was "losing his shape" in the air over a jump. He also wasn't using his front end as well as he had in the past.

Mitchell shared a few case notes on the horse, along with his approach to arriving at a diagnosis.

- He did a normal physical exam.
- Mitchell noticed that when the horse was lunged, he carried his head out and away from the person lunging him.
- He would not "release and relax" while being circled, noted Mitchell.
- Mitchell said that was also typical of how the horse moved when he was ridden. "Achieving poll flexion with this horse had become quite a challenge," said Mitchell.

Upon evaluating the horse's neck mobility, Mitchell noted:

- In the physical examination, "I prefer to allow the horse to show me how mobile it is rather than force mobility on the horse," Mitchell noted. "I find very often that just getting the horse to reach for a treat can tell me a lot about their range of motion."
- To the right, the horse had a pretty good range of motion when asked to flex his neck significantly and laterally (back and up toward his tuber coxae).
- To the left, the treat-induced motion was repeated.
- Then when Mitchell moved back to the right side of the horse and asked it to do the same motion, the horse told him, "That's hard for me to do, Doc!"

"So, there is some dynamic going on there that when he flexed laterally—right, then left, then back to the right—that induced pain and reduced his range of motion significantly," said Mitchell. "That was a good indication that there was something going on in his neck."

Mitchell radiographed the jumper's neck in the field. "These images were taken with a 15 MA machine at 76 kvp at 0.18 seconds," he said. "I think they are very diagnostic images and can be done with digital systems in the field very effectively."

What Mitchell saw on radiographs was enlightening:

- On oblique views, they showed the horse had significant osteolytic changes and some proliferative changes along the margins of the facets.
- "I think oblique images can oftentimes tell us a lot that simple lateral images may not always show us. I think it is a useful technique," stated Mitchell.

Mitchell treated the horse's articular process joints in the regions of C4-5, 5-6 and 6-7 with corticosteroids.

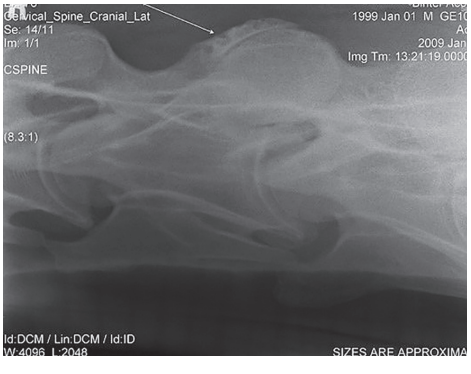
He said the horse responded nicely to intra-articular injection and achieved a degree of comfort that improved his way of jumping. This horse concurrently was also put on an Adequan i.m. (polysulfated glycosaminoglycan) program on the 7-dose regimen, noted Mitchell. EM

*Veterinarian quoted is a paid consultant of American Regent, Inc. PP-AI-US-0845*

*For full safety information please see page 23.*

COURTESY DR. RICK MITCHLL






**Dr. Rick Mitchell did a physical and neck mobility exam on this horse (above left image taken from video). Radiographs of the horse showed that the horse had significant osteolytic changes and some proliferative changes along the margins of the facets.**



ARND BRONKHORST PHOTOGRAPHY

**Diagnosis is only the first step in managing degenerative joint disease (DJD) in horses.**

# Practicing Quality Medicine

## Successful management of degenerative joint disease requires veterinarians develop a plan tailored to the individual horse.

By Kimberly S. Brown

Diagnosis is only the first step in managing degenerative joint disease (DJD) in horses. Selecting therapeutic options must take into consideration the severity of the lameness, joints involved, type and level of use, economics and the ability of caregivers to implement the various strategies.

Therapies can range from periods of rest, changes in training methods, alternative therapies and incorporation of regenerative modalities to the use of pharmaceutical drugs or surgical options.

*Editor's note: Veterinary comments in this article came from participants in a roundtable on DJD sponsored by American Regent Animal Health. All are paid consultants of American Regent, Inc. The opinions expressed by the consultants might not be the opinions of American Regent Animal Health or American Regent, Inc.*

One of the key questions during this DJD roundtable was whether veterinarians were "over-treating" based on demands from trainers and owners.

"I think there is a trend from trainers and owners to 'do whatever you can to fix the horse to make it go,' " said Rick Mitchell, DVM, MRCVS, DACVSMR, an owner of Fairfield Equine Associates and a founding member of ISELP.

The consensus of the roundtable participants was that without pursuing diagnosis and without the input of a veterinarian in the patient-specific selection of therapies, the result has been "over-treatment" by owners/trainers with therapies that might or might not be appropriate or efficacious.



ISTOCK

**Not every treatment is appropriate or recommended for every horse. Equine veterinarians should take a multimodal approach to improve success rates in treating DJD.**

## Tailored Treatment Plans

Mitchell summarized the group's feelings that there was no "one-size-fits-all" solution when it comes to DJD treatment.

Items the group said need to be determined prior to treatment are:

- Joint involved
  - Is it a high-motion joint?
  - Is it a low-motion joint?
- Age of the horse
- Stage of DJD/osteoarthritis (OA)
  - Is it a first-time lameness?
  - Is it a recurrent lameness without significant radiographic changes?
  - Is it an older horse with significant radiographic changes and a degenerative joint?
- Severity of lesion
- Anatomic location of lesion
- Is the horse metabolic?
- Was a treatment tried? What was the outcome?
- What are the current and long-term athletic expectations for the horse?
- Is the horse ridden/competed year-round or seasonally?
- Are there competition medication guidelines?
- What is the timing to the next show?
- Can the horse be rested?

Treatments options could include:

- Phenylbutazone or other non-steroidal anti-inflammatory drugs
- Adequan® i.m. (polysulfated glycosaminoglycan)

# Client Education and Communication Tips

Being able to communicate to clients the importance of early diagnosis and proper treatment of horses with osteoarthritis (OA) or degenerative joint disease (DJD) is critical to a horse's welfare and longevity. The roundtable participants noted that the profession has some room for improvement here. Rick Mitchell, DVM, MRCVS, DACVSMR, said veterinarians often fall short in taking time to talk and listen to clients about their horses' issues.

Kyla Ortved, DVM, PhD, DACVS, DACVSMR, said that many veterinarians could do more to help clients understand what DJD is, because otherwise they misunderstand treatment and prevention options.

Robin Dabareiner, DVM, PhD, DACVS, said that based on research she published while at Texas A&M, many owners thought their horses had poor performance issues, but the horses actually were found to have lameness issues once diagnostics were undertaken. And while not every client or veterinarian has the ability to use diagnostic MRI or CT on horse joints, they *can* benefit from what those scans have shown; radiographs miss many early arthritic changes in equine joints.

*(Editor's note: Veterinarians can check out the Treatment Questionnaire and Checklist provided by American Regent Animal Health on pages 12 and 13, respectively.)*

*—By Kimberly S. Brown*



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1 Data on file.

2 Adequan® i.m. Package Insert, Rev 1/19.

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PP-AI-US-0629 (v2.0) 05/2022

## *FROM THE ROUNDTABLE:*

# *Use of Adequan® i.m.*

*(polysulfated glycosaminoglycan)*

*Editor's Note: For 30 years, veterinarians have prescribed FDA-approved Adequan® i.m. as a treatment for degenerative joint disease (DJD), also known as osteoarthritis (OA). Here's what the roundtable participants had to say about the product.*

"Adequan i.m. is something that we've all used for years, and certainly it has played an important role for the equine athlete," said Kent Allen, DVM. "Adequan i.m. is going to be most effective at managing that horse when it has mild to moderate OA. Identifying that group and identifying them before they get to the severe stage" is important to treatment success, he noted.

Allen said you want to catch these horses relatively early in the DJD process, when treatment is going to be most effective. "You're going to be able to [help] them," stated Allen. "They're going to be successful at their job, and they're going to keep doing the job. And that's where I've focused my efforts on use of Adequan i.m., and I've found it very successful."

Robin Dabareiner, DVM, PhD, DACVS, said she has issues trying to convince owners to use Adequan i.m. as directed every four days for seven treatments in the muscle. "The vast majority of clients that are on intramuscular Adequan do not follow labeled dosing. And sometimes it can be difficult to convince them to change their ways."

Chris Kawcak, DVM, PhD, DACVS, DACVSMR, ACVS, said that Adequan has been around a long time, and it obviously has stood the test of time. "If we want to improve communication around Adequan i.m., I think making sure that the dosing paradigm is communicated clearly [is important] because there are many people who don't use it according to the label," he said.

Rick Mitchell, DVM, MRCVS, DACVSMR, said he tells clients, "If you're going to use the product [Adequan i.m.], use it correctly."

He said that discipline rules that have enabled veterinarians to use Adequan i.m. and similar products "legally and openly" have been important, because they're supportive products that have been "a big help to the welfare and to the soundness of our high-level competitive horses."At one time, the FEI did not allow the use of those products. "We have seen a perceived difference in the health, welfare and soundness of the horses since we've been able to use those products legitimately," said Mitchell.

Zach Loppnow, DVM, said he would argue that Adequan i.m. is one of the treatments that "is in the running for the best thing you could do for the overall health and well-being of that horse. The fact that Adequan really works not only in that joint where you diagnosed DJD but also to promote joint health and mobility, I think, is a huge benefit of it."[1]

Kelly Tisher, DVM, noted that "you asked us in one of the previous questions about the backyard horse, the medium-level horse, and the high-end horse. And my thoughts on Adequan [i.m.] is that it is such a great product to recommend for all three of those groups. For the group of backyard horses, that is a reasonably cost-effective way to do a really good job of helping that horse's joints," he explained. "The medium performance horse for the same reasons, plus or minus some more intensive intra-articular therapies. And the high-level horse to perhaps take that interval of joint injections and extend it."

Tisher thinks that for label-indicated joints, Adequan i.m. can perhaps help with some earlier DJD issues.[1] "So we're not having to perhaps go into as many places later with intra-articular therapies when we've included [Adequan i.m.] as part of the horse's management through its athletic career."

Gary White, DVM, said Adequan i.m. is "certainly a cornerstone of my approach to treating DJD … I agree with Kent [Allen] that it is most effective on a mild to moderate synovial inflammation without a lot of radiographic changes. I strongly encourage people to do the seven-dose series and repeat it as needed. I've found it to be extremely useful. My clients have found it to be extremely useful. And I'm going to continue to keep it as a cornerstone."

In discussing Adequan i.m. use in low-level, medium-level and high-level horses, White said, "It should be a no-brainer in the high-end horses, and it's almost a no-brainer in the lower-end horses because here is an intervention that has a potential to prolong a horse's career. I get the objection once in a while, 'Well, this costs a lot.' And I say, 'Well, what would it cost you to replace this horse?' "

Kyla Ortved, DVM, PhD, DACVS, DACVSMR, said that veterinarians should drive home the narrative "that Adequan [i.m.] truly can be given in a safe manner."

She added that it makes a lot more sense to be using something like Adequan i.m. that has been tested and has demonstrated efficacy and safety than using other products that have no efficacy or actually could be harmful.

Mitchell agreed with other practitioners who talk to the client about preventative medicine versus what it could cost the owner to replace the horse.

"I encourage and try to get my clients that have actively competing or training horses [with] soundness problems to consider Adequan i.m. on a regular basis … The way I pitch it is that … there is clear scientific evidence that this [Adequan i.m.] helps to inhibit the development of cartilage degradation and degenerative joint disease.[1] So why wouldn't you use it?"

Mitchell also said he sees owners more willing to use the Adequan i.m. product because they had previous favorable experiences with other horses and because of the ease of administration.

While the product must be administered by or used on the order of a veterinarian, Mitchell said "It does not have to be given by the veterinarian every time."

He added that "the relatively low reaction rate if given properly is also very comforting [when] handing the product to someone

who may not be the most experienced injection administrator."

Loppnow said his practice is promoting joint health sooner rather than trying to promote it after the horse already has DJD or osteoarthritis that is causing problems. He wants to have that conversation about using Adequan i.m since it is easy for owners to miss subtle signs in their horses.

Allen added to that, saying, "If you've got 10 useful years in this horse's life as an athlete, and if you can keep it going during that time and not have the year or two or three down, that could be 30% of its athletic lifespan, which is huge."

White concluded by saying "I think the better we're able to understand what's happening in the joint, the better we're going to be able to develop treatments, or as in the case of Adequan [i.m.], justify that Adequan [i.m.] is still a very useful treatment. And I think the better we understand, the better we treat."


Reference

1. Adequan® i.m. Package Insert, Rev 1/19.



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- Corticosteroids
- Regenerative products such as platelet-rich plasma (PRP)
- Polyacrylamide gel
- Bisphosphonates
- Surgery
- Adjunctive therapies (i.e., shock wave, ice)
- Rest/active rest

Not every treatment is appropriate or recommended for every horse. Taking a multimodal approach can improve success. Any treatment plan will need to be evaluated and adjusted over time to assess response and meet the changing needs of the horse.

Gary White, DVM, owner of Sallisaw Equine Clinic in Oklahoma, noted that veterinarians need to take charge of advising proper treatment of horses with DJD. "Injecting a horse that needs surgery is not a very effective bandage," White stated.

Kent Allen, DVM, owner of Virginia Equine Imaging and a founder of the International Society of Equine Locomotor Pathology (ISELP), noted that whatever is used to treat the horse—even if the horse is traveling through and is not staying with you—he suggests that owners or trainers have the horse rechecked.

"Because you have to determine whether or not what you placed in that joint made a difference," stated Allen. "If it didn't make a difference, the process needs to be rethought and another product utilized. But you can't determine that unless there is an objective reality check somewhere along the way. And I try to make it about 30 days."

As far as joint injections go, Robin Dabareiner, DVM, PhD, DACVS, who worked at Texas A&M for 23 years before joining Waller Equine Hospital in Texas, said she has decreased the amount of steroid—regardless of what



ARND BRONKHORST PHOTOGRAPHY

**Veterinarians have to determine whether what they placed in a joint made a difference, so a recheck is necessary.**

corticosteroid it is—in the joints. "And I don't see a difference as far as response. I know Chris [Kawcak] has done some work on it, but I think using more is not better with corticosteroids in joints."

Christopher E. Kawcak, DVM, PhD, DACVS, DACVSMR, ACVS, said the case that always worries him is the jumper that comes in with acute forelimb lameness, blocks to the heel and some effusion in its coffin joint.

"I think most of us have probably had this case, where you inject them with triamcinolone and within weeks—sometimes days—they come up crippled," said Kawcak. "And we find out on the MRI the horse has been cooking a collateral ligament that you just made worse.

"We've done a great deal of research on pretty much everything that's out there that's available," said Kawcak. "And, obviously, we have shown various symptom- and disease-modifying effects for each of them. But at the end of the day, I think, whether you asked me or [veterinarians] Dave Frisbie or Wayne Mcllwraith, there's still that personal approach to it.



THINKSTOCK

**When selecting treatment, cost shouldn't affect initial recommendations of diagnoses and treatments no matter the type of horse.**

"There are areas where I think Depo is far more effective than triamcinolone," Kawcak continued. "I think there's a point with some horses that are IRAP'd [receive interleukin receptor antagonist protein or IRAP] continually that maybe the IRAP is not really helping, and, in fact, I think in some cases the IRAP might be a little bit detrimental in a kind of a chronic-use situation.

"Sometimes just simply using bute—if you can use bute—in the time that you're working or pushing the horse might be just as effective," he said.

Kawcak also said that managing the horse with active rest is important. He suggested that owners don't jump as much with the older jumpers that know their jobs and working on core strength and stability without pounding the horse's joints can be useful.

Zach Loppnow, DVM, formerly an associate veterinarian at Anoka Equine Veterinary Services in Minnesota, is now a first-year equine surgery resident at Steinbeck Country Equine Clinics in California. During the roundtable, he mentioned the issue of using corticosteroid injections and increased laminitis concerns in senior equines.

"I pay a lot more attention to the endocrine status of the older horses," Loppnow said.

## Offer the Best Treatment First

When it comes to selecting treatment, the veterinarians agreed that while owners of top-level performers might have more ability to pay for diagnoses and treatments, cost shouldn't affect initial recommendations for mid-level athletes and backyard/senior horses. White said that all of these horses should be offered "the best alternative first, [and] if that's not workable, find out what is."

Allen said experience with the medications is a big factor in choosing treatments.

"As you do different things and you keep rechecking and questioning your particular view of reality, I think you learn a lot," he noted.

"I'm in the process of relearning and rethinking how I've dealt with backs and necks all these years," Allen continued. "Before, I just grabbed a bottle of Depo and went merrily on my way, and I helped a lot of horses. Well, since we've now switched and started using a lot of PRP in those areas, you know what? I'm shocked. I can actually fix some of these horses. Where before, the only question was 'What's the interval I need to re-inject?' Some of these horses, I don't need to re-inject, or it lasts a really long time. I was not expecting that.

"Like I say, 'Question your version of reality because it may not be correct.' That's why I still get a kick out of doing this at this age; horses debase me of my view of how intelligent I am on a daily basis," Allen concluded with a laugh.

Dabareiner said that sometimes veterinarians forget about the simple things, especially with the older horse that's been through the wringer and now is just asked to tote around a little kid for a playday or teach someone how to ride.

"Those horses have hock issues, stifle issues, maybe [pain in] a knee and coffin joints," she said. "And it's just not efficient to inject multiple joints on an older horse like that. I think some of those tough old horses just need a little daily bute. I've had horses that have been on a gram of bute for years, and they can still go out there and do their job. And I strongly encourage the use of Adequan [i.m. (polysulfated glycosaminoglycan)] and have been impressed with the treatment response. Don't just look at their X-rays; just look at the horse."

As far as treatments in Mitchell's practice go, he said, "We're certainly seeing more and more horses that are 15 years of age and older that are still really working. So, we're seeing more of those horses that potentially have insulin dysregulation of one sort or another, or have PPID, or they have a metabolic condition. They may be more prone to laminitis.

"For those horses, I strongly recommend the regenerative products, and I stay away from corticosteroids altogether if I can convince a client of the importance of it," Mitchell continued. "Obviously, we've tried to help those horses metabolically already, but it helps me sleep at night when I inject the hocks on an 18-year-old, fat Welsh-cross

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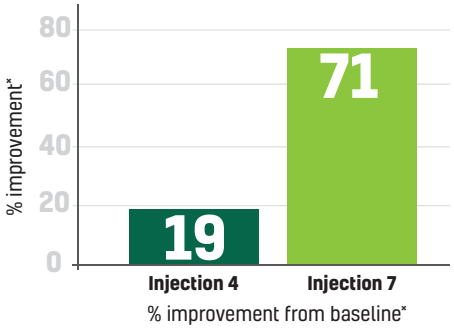
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* All horses improved and the % improvement was mean 19% at injection 4 and mean 71% at injection 7 for over 50% improvement.

[1] Freedom of Information Summary, Adequan® i.m. NADA 140-901, https://animaldrugsatfda.fda.gov/adafda/app/search/public/document/downloadFoi/2489.

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pony with a regenerative product versus a corticosteroid.

"We've got a lot of horses that are just really pleasure horses that get a course of Adequan [i.m.] once a quarter," he noted. "Owners are happy to do it because they perceive that the horses really do benefit from it."

Allen was quick to add, "I'd be remiss if I didn't mention discipline medication rules, because that's a major thing in choosing treatments. Adequan i.m. and Legend are universally accepted across all disciplines, even FEI. Where an NSAID like firocoxib, on the other hand, gets a little misused by clients. Because again, at the regular dose, it takes three days to ramp up to steady state. So, if they're actually trying to give it to a horse for a couple of days to make them feel better after an event … bute and flunixin would be a better choice just for a couple of days.

"Then, additionally, because firocoxib does achieve stasis, it hangs around a lot longer," Allen noted. "So, it's maybe not the best choice for an FEI horse who's going to competitions every 10 days or so."

Mitchell added that adjuvant therapies (such as shock wave therapy) also can be used with these horses, and those modalities also have regulations depending on the regulatory body of the competition.

In addition, Kelly Tisher, DVM, managing partner at Littleton Equine Medical Center in Colorado, mentioned that there are other topical treatments, such as icing, that can be used as a management tool for these horses.

## Supplements

Tisher voiced what the group members all felt was an issue: oral joint supplements.

"We spend an awful lot of time talking with clients about feed-through oral supplements: the one-million-and-one 'flex' products out there that everyone likes to use," he said.

"They ask about the latest [flex] product that is going to 'cure everything.' I've spent an inordinate amount of time talking to people about that," continued Tisher. "I've used some [supplement] products myself, so I feel like perhaps there is a place [for them]. But, if you add up what your feed-through costs [are], you may be able to do a box of Adequan i.m. as an FDA-approved product for about half the price that you're paying for that 'flex' product that has somebody famous on the box."



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**All types of horses in your practice are at risk for developing or worsening of DJD.**

FDA approval was an important consideration among the veterinarians. Loppnow said, "The conversation I always have with a client is that 'I can't tell you yes or no that [a supplement is] going to work for your horse. Some people swear by them. Some people think they don't work at all. If I'm going to recommend that you spend your money, I want to have some research or solid proof that it's going to be effective and that I'm not just throwing your money away.'

"When it comes to recommending things that I think are going to be interventional and helpful for these horses, it really falls back on the science for me," Loppnow continued. "I need things that are going to be provable, things that are going to have concrete results for these clients."

## Take-Home Message

Veterinarians play a critical role in diagnosing, treating and managing degenerative joint disease and osteoarthritis in their patients in order to extend both the working life and the quality of life in those horses.

Horses of any age in competitive disciplines as well as many older horses might require more aggressive management due to the level of wear-and-tear and degenerative changes affecting their joints.

This article provides a list of potential treatment options for equine DJD. This is not intended to be a comprehensive list. All of these modalities could play a role in addressing one or more goals of treatment when used appropriately.

All types of horses in your practice are at risk for developing or worsening of DJD. Whether the horse is a top competitor, is used recreationally or is retired, a "gold standard" of care for that individual should be offered.

When economics factor in, solutions and strategies that best fit both the horse's and the owner's needs must be presented. The basic goals of treatment are to reduce pain and lameness and to minimize the progression of joint deterioration throughout the lifetime of the horse.

As Kent Allen, DVM, noted, saving even a fraction of a performance horse's career can mean a big difference to the horse and the owner. EM

*Veterinarians quoted are paid consultants of American Regent, Inc.*

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BetaVet® (betamethasone sodium phosphate and betamethasone acetate injectable suspension) is indicated for the control of pain and inflammation associated with osteoarthritis in horses. **Learn more at www.betavetequine.com or call 1-800-458-0163.**

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**INDICATION** BetaVet® (betamethasone sodium phosphate and betamethasone acetate injectable suspension) is indicated for the control of pain and inflammation associated with osteoarthritis in horses. **IMPORTANT SAFETY INFORMATION** For **Intra-articular** (I.A.) use in Horses. **CONTRAINDICATIONS** BetaVet® is contraindicated in horses with hypersensitivity to betamethasone. Intra-articular injection of corticosteroids for local effect is contraindicated in the presence of septic arthritis. **WARNINGS:** Do not use in horses intended for human consumption. Clinical and experimental data have demonstrated that corticosteroids administered orally or parenterally to animals may induce the first stage of parturition when administered during the last trimester of pregnancy and may precipitate premature parturition followed by dystocia, fetal death, retained placenta, and metritis. Additionally, corticosteroids administered to dogs, rabbits and rodents during pregnancy have resulted in congenital anomalies. Before use of corticosteroids in pregnant animals, the possible benefits should be weighed against potential hazards. **Human Warnings:** Not for use in humans. Keep this and all medications out of the reach of children. **PRECAUTIONS:** Corticosteroids, including BetaVet,® administered intra-articularly are systemically absorbed. Do not use in horses with acute infections. Acute moderate to severe exacerbation of pain, further loss of joint motion, fever, or malaise within several days following intra-articular injection may indicate a septic process. Because of the anti-inflammatory action of corticosteroids, signs of infection in the treated joint may be masked. Due to the potential for exacerbation of clinical signs of laminitis, glucocorticoids should be used with caution in horses with a history of laminitis, or horses otherwise at a higher risk for laminitis. Use with caution in horses with chronic nephritis, equine pituitary pars intermedia dysfunction (PPID), and congestive heart failure. Concurrent use of other anti-inflammatory drugs, should be approached with caution. Consider appropriate wash out times prior to administering additional NSAIDs or corticosteroids. **ADVERSE REACTIONS:** Adverse reactions reported during a field study of 239 horses of various breeds which had been administered either BetaVet® (n=119) or a saline control (n=120) at five percent (5%) and above were: acute joint effusion and/or local injection site swelling (within 2 days of injection), 15% BetaVet® and 13% saline control; increased lameness (within the first 5 days), 6.7% BetaVet® and 8.3% saline control; loose stool, 5.9% BetaVet® and 8.3% saline control; increased heat in joint, 2.5% BetaVet® and 5% saline control; and depression, 5.9% BetaVet® and 1.6% saline control. **SHAKE WELL IMMEDIATELY BEFORE USE.** For additional safety information, please see full prescribing information. **CAUTION: Federal law restricts this drug to use by or on the order of a licensed veterinarian.**

References: 1. Trotter GW. Intra-articular corticosteroids. In: McIlwraith CW, Trotter GW, eds. Joint Disease in the Horse. Philadelphia: W.B. Saunders; 1996; 237-256.

BetaVet®
betamethasone sodium phosphate and betamethasone acetate injectable suspension

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# BetaVet®

betamethasone sodium phosphate &
betamethasone acetate

INJECTABLE SUSPENSION

**BRIEF SUMMARY OF PRESCRIBING INFORMATION**
(Betamethasone Sodium Phosphate and Betamethasone Acetate Injectable Suspension) 6 mg betamethasone per mL
For Intra-Articular (I.A.) Use in Horses

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

**INDICATION:** BetaVet® is indicated for the control of pain and inflammation associated with osteoarthritis in horses.

**DOSAGE AND ADMINISTRATION: Shake well immediately before use.**

**CONTRAINDICATIONS:** BetaVet® is contraindicated in horses with hypersensitivity to betamethasone. Intra-articular injection of corticosteroids for local effect is contraindicated in the presence of septic arthritis.

**WARNINGS: Do not use in horses intended for human consumption.**
Clinical and experimental data have demonstrated that corticosteroids administered orally or parenterally to animals may induce the first stage of parturition when administered during the last trimester of pregnancy and may precipitate premature parturition followed by dystocia, fetal death, retained placenta, and metritis. Additionally, corticosteroids administered to dogs, rabbits and rodents during pregnancy have resulted in cleft palate in offspring. Corticosteroids administered to dogs during pregnancy have also resulted in other congenital anomalies including deformed forelegs, phocomelia and anasarca. Therefore, before use of corticosteroids in pregnant animals, the possible benefits to the pregnant animal should be weighed against potential hazards to its developing embryo or fetus. **Human Warnings:** Not for use in humans. For use in animals only. Keep this and all medications out of the reach of children. Consult a physician in the case of accidental human exposure.

**PRECAUTIONS:** Corticosteroids, including BetaVet®, administered intra-articularly are systemically absorbed. Do not use in horses with acute infections. Acute moderate to severe exacerbation of pain, further loss of joint motion, fever, or malaise within several days following intra-articular injection may indicate a septic process. Because of the anti-inflammatory action of corticosteroids, signs of infection in the treated joint may be masked. Appropriate examination of joint fluid is necessary to exclude a septic process. If a bacterial infection is present, appropriate antibacterial therapy should be instituted immediately. Additional doses of corticosteroids should not be administered until joint sepsis has been definitively ruled out. Due to the potential for exacerbation of clinical signs of laminitis, glucocorticoids should be used with caution in horses with a history of laminitis, or horses otherwise at a higher risk for laminitis. Use with caution in horses with chronic nephritis, equine pituitary pars intermedia dysfunction (PPID), and congestive heart failure. Concurrent use of other anti-inflammatory drugs, such as NSAIDs or other corticosteroids, should be approached with caution. Due to the potential for systemic exposure, concomitant use of NSAIDs and corticosteroids may increase the risk of gastrointestinal, renal, and other toxicity. Consider appropriate wash out times prior to administering additional NSAIDs or corticosteroids.

**ADVERSE REACTIONS:** Adverse reactions reported during a field study of 239 horses of various breeds which had been administered either BetaVet® (n=119) or a saline control (n=120) were: acute joint effusion and/or local injection site swelling (within 2 days of injection), 15% BetaVet® and 13% saline control; increased lameness (within the first 5 days), 6.7% BetaVet® and 8.3% saline control; loose stool, 5.9% BetaVet® and 8.3% saline control; increased heat in joint, 2.5% BetaVet® and 5% saline control; depression, 5.9% BetaVet® and 1.6% saline control; agitation/anxiety, 4.2% BetaVet® and 2.5% saline control; delayed swelling of treated joint (5 or more days after injection), 2.5% BetaVet® and 3.3% saline control; inappetance, 3.4% BetaVet® and 2.5% saline control; dry stool, 1.7% BetaVet® and 0% saline control; excessive sweating, 0.8% BetaVet® and 0% saline control; acute non-weight bearing lameness, 0.8% BetaVet® and 0% saline control; and laminitis, 0.8% BetaVet® and 0% saline control.

**CLINICAL PHARMACOLOGY:** Betamethasone is a potent glucocorticoid steroid with anti-inflammatory and immunosuppressive properties. Depending upon their physico-chemical properties, drugs administered intra-articularly may enter the general circulation because the synovial joint cavity is in direct equilibrium with the surrounding blood supply. After the intra-articular administration of 9 mg BetaVet® in horses, there were quantifiable concentrations of betamethasone (above 1.0 ng/mL) in the plasma.

**EFFECTIVENESS:** A negative control, randomized, masked field study provided data to evaluate the effectiveness of BetaVet® administered at 1.5 mL (9 mg betamethasone) once intra-articularly for the control of pain and inflammation associated with osteoarthritis in horses. Clinical success was defined as improvement in one lameness grade according to the AAEP lameness scoring system on Day 5 following treatment. The success rate for horses in the BetaVet® group was statistically significantly different (p=0.0061) than that in the saline group, with success rates of 75.73% and 52.52%, respectively (back-transformed from the logistic regression).

**ANIMAL SAFETY:** A 3-week target animal safety (TAS) study was conducted to evaluate the safety of BetaVet® in mature, healthy horses. Treatment groups included a control (isotonic saline at a volume equivalent to the 4x group); 1X (0.0225 mg betamethasone per pound bodyweight; BetaVet®); 2X (0.045 mg betamethasone per pound bodyweight; BetaVet®) and 4X (0.09 mg betamethasone per pound bodyweight; BetaVet®). Treatments were administered by intra-articular injection into the left middle carpal joint once every 5-days for 3 treatments. Injection site reactions were the most common observations in all treatment groups. Injection site reactions were observed within 1 hour of dosing and included swelling at the injection site, lameness/stiffness of the left front limb, and flexing the left front knee at rest. The injection site reactions ranged from slight swelling (in many horses on multiple days in all treatment groups) to excessive fluid with swelling, pain, and lameness (4x group only). Injection site reactions were observed most commonly on treatment days, and generally decreased in number and severity over subsequent days. The incidence of injection site reactions increased after the second and third injection (number of abnormalities noted on day 10 > day 5 > day 0). In the BetaVet® treated groups the number and severity of the injection site reactions were dose dependent. The 4X BetaVet® group had the highest overall incidence of and severity of injection site reactions, which included heat, swelling, pain, bleeding, and holding the limb up at rest. The control group and 4X group (which received similar injection volumes) had a similar incidence of injection site reactions; however, the severity of reactions was greater in the 4X group. Absolute neutrophils were statistically significantly higher in the BetaVet® treated groups as compared to the control group. Trends toward a decrease in lymphocytes and eosinophils, and an increase in monocytes were identified in the BetaVet® treated groups after the initial dose of BetaVet®. Individual animal values for white blood cells generally remained within the reference range. BetaVet® treated horses also had a trend toward increased blood glucose after the initial dose. Some individual animals showed mild increases in blood glucose above the reference range.

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# Dressage Gelding with Fetlock DJD

## Dr. Rick Mitchell discusses treating an older Grand Prix dressage gelding with lameness in the left fetlock.

By Kimberly S. Brown

Rick Mitchell, DVM, MRCVS, DACVSMR, an owner of Fairfield Equine Associates and a founding member of ISELP, shared information about a "type of case seen by many of us" in a presentation based on a 2021 AAEP Sunrise Session on Redefining DJD Diagnosis, Refining Treatment and Mastering Client Communication. *(Editor's note: You can watch a video of that presentation with Drs. Mitchell and Kyla Ortved on EquiManagement.com by searching for "Redefining DJD Diagnosis.")*

Here are some brief facts about the case he discussed:

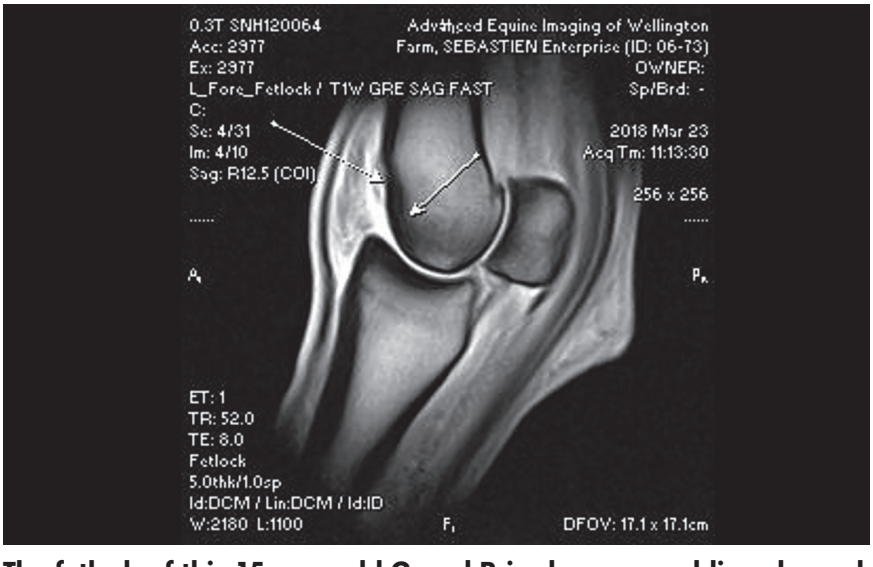
- The patient was a 15-year-old Grand Prix dressage gelding competing at an international level.
- Mitchell had managed the horse for about 10 years.
- It developed a lameness of the left forelimb that blocked to a 4-point low volar and also blocked on a separate occasion to intra-articular anesthesia
- On visual examination he saw dorsal thickening of the fetlock with effusion.
- With hands-on examination, there was reduced range of motion on fetlock flexion, and the horse was lamer post-fetlock flexion.
- When ridden, the gelding had a mild to moderate lameness 2-3/5 in the left fore that was more apparent to the right.
- Mitchell noted that diagnostic blocks regionalized the area and MRI further defined the extent of inflammation and tissue damage.
- Radiographs showed subchondral sclerosis and some changes in the joint margins, indicating some advanced osteoarthritis.
- The horse was treated two times with ProStride intra-articularly followed by immediate extracorporeal shock wave therapy (ESWT) and a series of shock wave treatments afterwards.
- The horse had previous hock, back and fetlock issues during its career, and for those concerns the horse had received treatments such as corticosteroid injections, ProStride and Adequan i.m. (polysulfated glycosaminoglycan).

Mitchell said the horse became sound after a period of about six weeks and was back at work and was doing pretty well. "However, the lameness returned after five months," he noted.

"At that time, we elected to use a polyacrylamide product, Noltrex, with a small amount of triamcinolone acetate," said Mitchell. "We did two injections that were one month apart. We continued to treat the horse periodically from medial to lateral over the dorsal aspect of the fetlock with ESWT.

"The horse became quite happy again and qualified and competed at the Olympic Games in Tokyo," said Mitchell.

Mitchell said the horse had a "pretty bad joint, but with some of our newer techniques and technology, we were able to keep this horse in the show ring for a year to 1.5 years longer with it being comfortable and not having to live on medication." EM




COURTESY DR. RICK MITCHELL

**The fetlock of this 15-year-old Grand Prix dressage gelding showed subchondral schlerosis and changes in joint margins indicating OA.**

*The veterinarian quoted is a paid consultant of American Regent, Inc. PP-AI-US-0850*
*For full safety information please see page 23.*



ARND BRONKHORST PHOTOGRAPHY

Referral veterinarians need to know what a horse was doing for a living and will do in the future.

# A Team Approach to Managing DJD

## The referring veterinarian is at the top of any team caring for a horse.

By Kimberly S. Brown

We often hear the term "team approach" regarding many aspects of life, especially health care. The same is true of equine health care. That team could include the primary veterinarian, veterinary specialists, owner, trainer, barn manager, farrier, acupuncturist, physical therapist and others. Since degenerative joint disease (DJD) or osteoarthritis (OA) are lifetime challenges for many horses, the "team approach" to caring for these horses is especially critical over the long term.

We asked a "team" at the University of Pennsylvania's New Bolton Center to chat with us about a "team approach" to managing a horse with DJD. There are great tips in here for any member of such a team.

### Meet the Team Members

Kyla Ortved, DVM, PhD, DACVS, DACVSMR (American College of Veterinary Sports Medicine and Rehabilitation), is the Jacques Jenny Endowed Term Chair of Orthopedic Surgery at the University of Pennsylvania's New Bolton Center. She is an assistant professor of Large Animal Surgery at the University of Pennsylvania School of Veterinary Medicine. Kara Brown, VMD, DACVSMR, is a lecturer of Equine Sports Medicine and Rehabilitation at the University of Pennsylvania, New Bolton Center. Patrick Reilly, Grad.Dip.ELR, joined New Bolton Center as chief of Farrier Services and director of the Applied Polymer Research Laboratory in 2006. He received his graduate diploma in Equine Locomotor Research at the Royal Veterinary College in 2020.

### Veterinarian

Ortved said a lot of these cases are managed by a single person—the attending veterinarian—but that there are a lot of recalcitrant cases that don't respond in the way the veterinarian expects.

"As veterinarians, we do a lot of joint medications and other medications," she said. "But we might need adjunctive therapy, like a farrier assisting with shoeing."

Ortved noted that the equine veterinary industry has a poor history of rehabilitation using physical therapy, explaining, "That's a major arm of human care."

She said that if a horse isn't on the right track of recovery, veterinarians should reach out to others. "It's important to the horse's comfort," she said. "Physical therapy can help the horse become stronger or improve proprioception."

She also advised more advanced imaging on cases that aren't responding to treatment. The horse might need surgery.

"Some horses have joints with OA that have reached the limit to treat medically," Ortved noted. "Or there might be joints that surgeons can help from the start to fix a fracture or remove a chip or even perform arthrodesis."

### Adding Rehab

Rehabilitation in equine veterinary medicine has made huge advances in the last few years. "Rehabbing a horse with DJD is a three-prong approach," said Brown. First the veterinarian has to assess the damage and manage the pain. "You are treating from a focal standpoint," she explained.

That treatment might include systemic NSAIDS, joint injections, cryotherapy and nerve stimulation. "Once we treat the pain there is so much more we can do," she stated. Horses have to return to function, Brown explained, pointing to the need to get up and down and walk to get food and water. "How do we get that function back?" she asked. While the team focuses on the area of damage,

she said they also address the rest of the horse's overall fitness and strength.

"If surgery requires stall rest, how do we maintain musculature?" Brown asked.

She said that ways to help a horse while at rest are well defined in the literature. That might include dynamic mobilization, Therabands, tucks, walking over poles … exercises that focus on core strength.

## Farrier on Call

Reilly said that the comfort level of the horse reflects how a farrier manages the foot. "It's all trial and error; it's not an exact science," he said. "I need, as a farrier, a diagnosis and to know what we are trying to protect," he said. "That makes the difference in how we shoe."

Reilly said a study in England showed that only 6% of farriers who saw a lame horse recommended that the horse see a veterinarian. He said that if farriers notice early arthritis in how horses flex or move, they should work with the owners and veterinarians on those cases. "It should be easier," he said of the teamwork.

"Keep in mind that great shoeing jobs become terrible shoeing jobs in eight weeks," stated Reilly. "All the work we do becomes obsolete. A great-looking alignment on the day of shoeing looks bad in six weeks!"

He said that all of his shoeing is based on a veterinarian's diagnostics.

## Case Study

We posed a case for this team to figuratively work on together: a horse that has arthritic fetlocks front and back but is more severely affected in the front.

Ortved said the fetlock in all athletes is a high-motion joint that is highly loaded. "You get wear and tear," she said. She said these types of horses are hard to treat because they have such a heavy dependence on the joint.

"In the early stages, you bolster the health of the joint with intra-articular medicines," she said. "We use regenerative medicines that have a more protective effect, such as blood-derived treatments and stem cells. In cases that have moderate intra-articular inflammation, I might use short-acting corticosteroids. HA is an additive that vets like for lubricant. Then there are the polyacrylamide hydrogels. There are a lot of things you can use IA. "I use Adequan [i.m. (polysulfated glycosaminoglycan)] as an adjunctive therapy, especially in the early stages," she added.

If there is fetlock osteoarthritis and a bone chip, she said some horses can benefit from surgery. "If I do arthroscopy, I can see the damage a chip has caused," she noted.

Ortved said that sesamoid fractures don't heal well, so it is important to remove the fragment(s). "With any fracture, we stabilize it to limit OA," she said.

"If we see a horse with severe OA and it is severely lame and its quality of life is compromised, but the owner doesn't want to put the horse down, I have had success fusing the fetlock," said Ortved. "It is complex, and the horse ends up with a 'peg-leg' movement following surgery, but they are comfortable."

Reilly said that for a farrier in this type of case, "I'm a mechanic, and I try to change the force up the leg. Distal to the fetlock, I can use pads. But by the time you get to the fetlock, you can't influence concussion above that."

He said he works with the attending veterinarian to trim, add a wedge or make a shoe that is wider on one side than the other to try and change loading. "I cite human research on this because we are way behind" in researching this type of shoeing, he explained. "You have to remember that each horse is different, each foot is different, and they handle pain differently."

Brown said that depending on the history of the horse and communications with the primary veterinarian, signalment is the No. 1 thing she looks for from the horse. She wants to know what this horse was doing for a living and what it is going to do.

"Exercise is important to maintain comfort," she stated. "That's why older OA horses don't do well with stall rest."

She said focal pain management with therapies (such as cryotherapy) that do decrease pain and inflammation are important. "We want to decrease the inflammatory biomarkers as well with systemic therapies," she added.

In rehab, she will focus on things such as passive range of motion, synovial fluid nutrition, maintaining movement, therapeutic ultrasound to improve elasticity of collagen, underwater treadmill, walking over poles/cavaletti poles, dynamic mobilization and therapeutic bands.

Focusing on nutrition for healing is important, said Brown. "It is easy for some horses to gain weight during this time," she said. "We don't want more weight on the limbs, and fat can add to metabolic issues. And we make sure owners monitor weight when the horse goes home."

## Take-Home Message

Ortved noted, "I'm very reliant on Pat for mechanical support. My knowledge and [areas of] expertise [are] joint and cartilage biology, regenerative medicine and pathophysiology of osteoarthritis. You don't have to know everything about everything."

Brown stressed that the attending veterinarian and the owner are important parts of the team once the horse is sent home. "The owner can pick up on subtle signs and let us know and the referring vet who sees the horse," she said.

Ortved agreed, saying, "There are three of us on this team, but the person at the top of any team is the referring vet." EM

*Dr. Kyla Ortved is a paid consultant of American Regent, Inc. PP-AI-US-0851*
*For full safety information please see page 23.*

# Closing Words of Wisdom

The following quotes were taken from the participants at the 2020 roundtable on DJD sponsored by American Regent Animal Health.

**"We should try to ingrain in our clients the need for periodic veterinary evaluation for the performance horse."**
*—Dr. Rick Mitchell*

**"You asked us about the backyard, the medium-level and the high-end horse. My thoughts on Adequan [i.m.] is that it is such a great product to recommend for all three of those groups."**
*—Dr. Kelly Tisher*

**"It costs the same amount to give your intramuscular Adequan as it does to feed this [supplement] that's not available and not absorbed."**
*—Dr. Robin Dabareiner*

**"If you've got 10 useful years in this horse's life as an athlete and you can keep it going during that time and not have the year or two or three down, that could be 30% of its athletic lifespan, which is huge!"**
*—Dr. Kent Allen*

**"I do think in those young, hardworking, active young [cutting horse] athletes especially that there's a big push in their 3-year-old year ... that the incidence [of DJD] has gone up, especially in the stifles and hocks."** *—Dr. Chris Kawcak*

**"It doesn't matter what people look like or what their horse looks like, offer the best treatment first. If they don't want to go with that, then you can find ground where you can go ahead and treat. Offer the best alternative first; if that's not workable, find out what is."**
*—Dr. Gary White*

**"When it comes to recommending things that I think are going to be interventional and helpful for these horses, it really falls back on the science for me. I need things that are going to be provable, things that are going to have concrete results for these clients."**
*—Dr. Zach Loppnow*



Veterinarians quoted are paid consultants of American Regent, Inc.
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# 30+ years of supporting horses—and you.

Adequan® i.m. (polysulfated glycosaminoglycan) was created more than 30 years ago to make a difference for all types of horses. And we couldn't do it without equine veterinarians like you who have prescribed Adequan® i.m. since the beginning. We're honored to work alongside you to support fellow equine professionals, owners and the countless people who share our dedication to the health and well-being of horses.

**1989**

Adequan® i.m. became the first (and still only) FDA-approved PSGAG (polysulfated glycosaminoglycan) for treating degenerative joint disease in horses.

**1993**

The *Journal of Equine Veterinary Science* publishes a major study on the efficacy of Adequan® i.m.

**2006**

Began sponsoring the American Association of Equine Practitioners (AAEP), as well as the PATH International Convention and Veterinarian of the Year award.

**2009**

Became the corporate partner for The International Society of Equine Locomotor Pathology and began Gold Sponsorship of the American Horse Council.

**2018**

Luitpold Animal Health becomes American Regent Animal Health, a division of American Regent, Inc., manufacturer of Adequan.®

**2021**

Adequan® i.m. is reintroduced for use in Canada.

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**INDICATIONS** Adequan® i.m. (polysulfated glycosaminoglycan) is recommended for the intramuscular treatment of non-infectious degenerative and/or traumatic joint dysfunction and associated lameness of the carpal and hock joints in horses. **IMPORTANT SAFETY INFORMATION** There are no known contraindications to the use of intramuscular Polysulfated Glycosaminoglycan. Studies have not been conducted to establish safety in breeding horses. **WARNING:** Do not use in horses intended for human consumption. Not for use in humans. Keep this and all medications out of the reach of children. **CAUTION:** Federal law restricts this drug to use by or on the order of a licensed veterinarian. For full prescribing information, visit adequan.com.

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