

Use and Abuse of Medications at Horse Shows – An Emerging Welfare Issue?

Marjorie W. Miller, DVM

The sole priority incumbent upon every individual involved in equestrian sports is to preserve the health, safety, and welfare of the equine athletes. Veterinarians have a primary role in protecting the health and welfare of the horse, and decisions regarding dispensing or the administration of therapeutic medications should be based on the specific health concerns of each individual horse. Author's address: 2307 64th Street Court East, Bradenton, Florida 34208; e-mail: blumoon9@gte.net. © 2010 AAEP.

1. Introduction

The use of medication in horses competing at equestrian events is a very polarizing topic because some people believe that medication has no place in equestrian sports and others believe that the judicious use of medication is in the best interest of equine health and welfare.

The Fédération Equestre Internationale (FEI) was founded in Lausanne, Switzerland, in 1921 to regulate international events in Jumping, Dressage, and Eventing. The FEI has evolved into the international governing body of equestrian sports, overseeing the disciplines of Show Jumping, Dressage, Eventing, Driving, Endurance, Reining, Para-equestrian, and Vaulting. There are 133 participating National Equestrian Federations, and the FEI is a member of the International Olympic Committee.

The FEI accepted the recommendations of the FEI Task Force on Anti-Doping and Medication Policy, resulting in the adoption of the Equine Anti-Doping and Medication Control Rules (EADMC Rules) in 2005.¹ In the summer of 2009, the Steven's Commission began an investigation to combat doping

after several well-publicized incidents in the disciplines of Show Jumping, Dressage, and Endurance threatened to permanently tarnish the image of equestrian sports. The Steven's Commission joined the Ljungvist Commission for Clean Sport to propose changes for medication reform.² When the Equine Prohibited Substances List was reviewed by the FEI, a revised list was sent to National Federations for review on October 20, 2009. An alternative "Progressive List" was subsequently sent to National Federations on November 13 after protests by anonymous horsemen were made regarding the proposed strict zero tolerance regulations.³ The FEI General Assembly met in Copenhagen in November 2009, approved the new EADMC Rules, and voted on the new Equine Prohibited Substances List. The FEI General Assembly voted to approve the Progressive List by a very narrow margin, and this resulted in an uproar of disapproval from National Federations, equestrians, the media, and veterinarians because the Progressive List purportedly raised the permitted levels of phenylbutazone, flunixin, and salicylic acid and allowed the use of acetylcysteine, lactanase, and isoxsuprine.⁴ On December 1,

NOTES

2009, the FEI Bureau passed a resolution delaying the implementation of the Progressive List,⁵ and on December 18, 2009, the FEI Bureau passed another resolution that allowed the original Equine Prohibited List, Rules, and Veterinary Regulations to remain in effect through April 4, 2010. Effective April 5, 2010, the new EADMC Rules and the “20 October List” have been implemented.⁶ Further research will be conducted to arrive at a 2011 version of the Equine Prohibited Substances List that is scheduled to proceed to a vote before the 2010 FEI General Assembly.

Although certain medications such as gastric ulcer treatments or preventatives, some antibiotics, most dewormers, and rehydration fluids are permitted under FEI rules, most medicines and drugs are prohibited if detected in a horse at the time of competition. The philosophy of the FEI is that a horse should compete on its own merits without any unfair advantage that might follow the use of drugs. The stringent no foreign substances medication policy is intended to protect and prevent horses from damaging themselves or their athletic potential through the use of medications masking lameness, disease, or degree of fitness.

The medication rules of Equine Canada⁷ specify that permitted medications may be present in a horse participating at Equine Canada-sanctioned competitions. Permitted medications are limited to certain levels of the non-steroidal anti-inflammatory drugs (NSAIDs) flunixin meglumine, ketoprofen, phenylbutazone, vedoprofen, or acetylsalicylic acid, but only one permitted NSAID may be present in the horse's system. The use of clenbuterol and the anti-ulcer medications cimetidine, ranitidine, and omeprazole is allowed.

The American Horse Shows Association (AHSA) began its Drugs and Medications Program in 1969 with the objective of providing a level playing field of competition for all of its members. The AHSA grew and evolved into the U.S. Equestrian Federation (USEF), the National Governing Body for Equestrian Sports. The USEF Drugs and Medications Rules⁸ apply to the 28 breeds and disciplines that participate in equestrian competitions sanctioned by the Federation. Each breed or discipline may choose to operate within the No Foreign Substance Provisions (GR 409) or the Therapeutic Substances Provisions (GR 410). The only USEF Discipline currently operating under the No Foreign Substance Provision is Endurance, and all other breeds and disciplines function within the Therapeutic Substance Provisions.

Organizations such as the American Quarter Horse Association⁹ (AQHA), the American Paint Horse Association¹⁰ (APHA), the Appaloosa Horse Club¹¹ (ApHC), the National Reined Cow Horse Association¹² (NRCHA), the National Cutting Horse Association¹³ (NCHA), the National Barrel Horse Association¹⁴ (NBHA), and other organizations are separate entities not operating under the jurisdic-

tion of the USEF. Although the rules pertaining to medication of horses competing at AQHA and USEF events are similar, other organizations have their own medication policies ranging from guidelines adapted from the USEF Drugs and Medications Guidelines to the absence of any medication rules. The absence of specific medication rules is generally addressed through a policy stating that the safety, care, and welfare of the horse are paramount.

The Equine Drug Testing and Research Laboratory (EDTRL) was established by the USEF Equine Drugs and Medications Program in 1995 and currently performs all sample analysis of specimens collected in the United States for all USEF competitions and for all FEI competitions in the western hemisphere. Additionally, The EDTRL contracts with the AQHA to implement its Drug and Medication Program.

2. USEF Forbidden Substances

A substance is forbidden if it contains an ingredient or a drug that might affect the performance of a horse or pony by acting as a stimulant, depressant, tranquilizer, local anesthetic, or psychotropic (mood and/or behavior altering) substance,¹⁵ is potentially dangerous to the horse, or interferes with drug detection procedures. Certain analgesics are also forbidden such as fentanyl, tramadol, and any NSAIDs not designated as Restricted Substances. A horse or pony that has been administered any forbidden substance for an approved therapeutic purpose must be withdrawn from competition for a minimum of 24 h, and a medication report must be filed with the steward or technical delegate at the event, documenting the therapeutic use of the forbidden substance.

Veterinarians need to know that the administration of any drug, medication, or foreign substance with the intent of altering a horse's performance is illegal under USEF rules. It makes no difference if the substance is available by prescription or sold over the counter. Any product that claims to calm a horse is, by definition, illegal, whether promoted as herbal, natural, or with the claim that the product will not test.

The veterinarian has a responsibility to treat an injured or ill horse at a USEF or AQHA event with whatever medication that is warranted for that condition, and the welfare of the horse always should be placed above any exhibitor's desire to compete. It is unethical for a veterinarian to administer or to be party to the administration of any medication to a horse for the non-therapeutic purpose of altering or affecting its performance.

3. USEF Permitted Substances

The USEF, AQHA, and other associations allow the use of certain medications in the horse during competition, and these permitted substances do not require a medication form to be completed and turned into the appropriate show official. Examples of per-

mitted substances are anti-ulcer medications, antibiotics not containing procaine, and antiparasitic drugs.

4. USEF Restricted Substances

Certain medications allowed with quantitative restrictions are the NSAIDs dexamethasone, methocarbamol, and theobromine.

Theobromine is a restricted substance because of its prevalence in plants and dietary feedstuffs. The established threshold for the maximum permissible urine concentration of theobromine is 2.0 $\mu\text{g/ml}$.

The seven permitted NSAIDs, phenylbutazone, flunixin, ketoprofen, diclofenac liposomal cream,^a meclofenamic acid, naproxen, and firocoxib, may be used therapeutically to reduce inflammation or as an aid in the recovery from exertion. All other NSAIDs are prohibited, and the simultaneous presence of phenylbutazone and flunixin is forbidden. Before the USEF enactment of rules restricting the use of these substances in the horse, NSAIDs were commonly overused with the intent to obscure pain or lameness. In 1998, limits on the maximum concentrations of the most commonly used anti-inflammatory drugs were established, and some exhibitors began to use combinations of multiple NSAIDs (stacking). The American Horse Shows Association Veterinary Committee recommended limitation of NSAIDs to the use of a single drug in 1998, but the motion did not gain the necessary support to effect a rule change. As research showed the adverse effects on horses' gastrointestinal systems¹⁶ and the synergistic effects of mitigating lameness^{17,18} resulting from the stacking of NSAIDs, horse organizations began to enact rule changes. The AQHA limited the use of NSAIDs to one permitted medication in 2007, and in January 2010, the USEF Board of Directors passed a rule restricting the use of NSAIDs in competition horses to one permitted drug effective December 1, 2011. Beginning April 1, 2010, any horse showing at a USEF sanctioned competition that receives two permitted NSAIDs within 5 days of showing must file a NSAID Disclosure Form, a different form than the standard USEF Medication Form.

Dexamethasone is the only corticosteroid that is permitted to be used during sanctioned competitions, and this medication may be administered topically, PO, IV, or IM. Two milligrams of dexamethasone sodium phosphate per 100 lb of body weight may be administered to an animal for 5 consecutive days without exceeding the permitted level of 3 ng/ml, and this dose is routinely administered to Hunter horses and ponies for the purpose of eliminating "spookiness." It should be reiterated that this use of the medication is illegal under USEF rules, but statistics regarding the use of dexamethasone in the Hunter Divisions are not available.^b There is currently no rule restricting the use of dexamethasone in combination with the permitted NSAIDs.

Methocarbamol is a skeletal muscle relaxant with a selective action on the internuncial neurons of the spinal cord. Polysynaptic reflex pathways are blocked without affecting the striated muscle contractile mechanisms, nerve fibers, or the motor endplate. Signs of behavior modification or ataxia have not been observed at the allowed dosage of 5 mg/lb.¹⁹ Methocarbamol is permitted to be administered PO or IV, with the maximum permissible plasma concentration set at 4.0 $\mu\text{g/ml}$. This translates to 50 ml of the injectable solution or 5 g of the oral tablets or powder twice daily for a 1000-lb horse. This drug is frequently used by Hunter and Western Pleasure trainers to "take the edge off" the horses, despite constituting an illegal use of medication that violates the tenets of sportsmanship and fair play.

5. A Fine Mess

As the FEI navigates its way through the process of determining what to do with levels of NSAIDs, proponents of a "zero tolerance" medication policy need to understand that "FEI zero tolerance" is a misnomer because it depends on the sensitivity of testing used. If high performance liquid chromatography is used, levels of flunixin will be detectable for 3–5 days after administration. If liquid chromatography-mass spectrometry is used, flunixin will be detected for 10 days before the competition.^c The 8.0 $\mu\text{g/ml}$ concentration of phenylbutazone in the serum or plasma of a horse advocated by the Progressive List represents a fourfold increase of the current FEI maximum concentration and exceeds the 5.0 $\mu\text{g/ml}$ concentration that is considered the lower limit of a therapeutic dose allowed for racing in the United States. "If you give 2 g of phenylbutazone to a horse IV, 24 h later, there is almost no way the blood concentration would be $>5.0 \mu\text{g/ml}$." That was how that level was set. Allow Bute in training, but force its withdrawal 24 h before the race. The show horse cut-off is 15 $\mu\text{g/ml}$, and at that level, the horse is certainly enjoying some anti-inflammatory effects.^d

The argument has been proffered that, if the elite equine athletes successfully compete within the FEI no foreign substances policy, all horses at any level of competition should be able to compete without medication. This argument is unsound because, in essence, one is comparing apples and oranges. Many of the safest and best horses for beginner and intermediate riders are veteran campaigners or horses that were unable to reach or sustain the level of competition at the upper echelons. Riding errors may also contribute to mild discomfort in some horses, and the excitement and tension experienced by green horses may cause mild muscular soreness. Medication is no substitute for good horsemanship, but there is also a learning curve involved for the inexperienced rider or horse. Footing can be an issue in instances where the surface is too hard or too deep, because all competitions are not available

at world class or premier facilities. Lamé horses should not be awarded prizes nor should they be permitted to compete.

In any sport, there will unfortunately be a small group of individuals desiring to cheat to gain a real or perceived advantage. Increasing the frequency of testing, continuous development of tests for new medications, and stiff penalties or suspensions are deterrents to such behavior. A more subtle, insidious abuse of medication occurs when exhibitors or trainers feel compelled to treat all the horses in their show strings with permitted medications. Each horse is an individual, and decisions to medicate any horse should be based on the individual needs of that particular animal. The “cookbook” formula, where all animals receive the same set of medications at night before the next day of competition, runs contrary to good management, horsemanship, and stewarding the best interests of the horse. Education may be the most critical component in creating a cultural shift away from reliance on medication. Most competitors are committed to the health and welfare of the horses under their care. As information became more available to the equestrian community in 2008 regarding the deleterious effects to the horse associated with stacking of NSAIDs, the percentage of horses tested by the USEF with multiple NSAIDs in their systems decreased from 4.8% in 2008 to 3.1% in 2009.^e The limiting of NSAID use to one medication is certainly a step in the right direction, but medication issues remain that warrant revisiting existing rules. The concurrent use of dexamethasone and NSAIDs has the potential for the same detrimental effects that the elimination of stacking NSAIDs is trying to prevent. The permitted use of dexamethasone may predispose a horse or pony to laminitis and the possibility of other negative physiological effects. Dexamethasone is also contraindicated in animals with Cushing’s syndrome or equine metabolic syndrome. Medication rules themselves must be subject to re-examination and review as evidence becomes available that medication practices may be harmful to the horse. It is the sole priority, and incumbent upon every individual involved in equestrian sport, to make absolutely certain that the health, safety, and welfare of all equine athletes be maintained at all times. Welfare statements are just words unless each individual, breed, or discipline places substance into their words through appropriate actions.

6. Role of the Veterinarian

The veterinarian is best suited to act as the guardian of the horse with regard to medication because of his or her scientific and pharmacological training. Veterinarians are bound by the precept of *primum non nocere*, “above all, do no harm.” Although it is easy to deflect blame onto national federations, the AQHA, or other associations for allowing the use of medication, a veterinarian is ultimately the person

responsible for the administration or dispensing of all prescription medications.

The drug trunks of many trainers often contain a greater number and variety of medicines than a well-stocked veterinary hospital. Many of the prescription drugs used in competition horses are administered without veterinary oversight and without understanding the mechanisms of action and possible interactions of the medications being used. The horse is dependent on its caretakers to make decisions regarding its health and care, and it is the responsibility of the veterinarian to diagnose and treat the horse for a specific condition before dispensing medication. It is also the responsibility of the veterinarian to educate the client regarding potential risks to the horse. For example, 2 g of phenylbutazone is considered a safe dose to be administered to a 1000-lb horse. If a horse does not like the taste of the water at a show, reducing his fluid intake, or if the horse is performing in high temperatures and not allowed to drink between classes, mild dehydration can result. Dehydration and the use of phenylbutazone increase the likelihood of renal papillary necrosis.²⁰ Should the horse begin to show signs of colic, the trainer may reach for additional NSAID medication, and the situation can quickly spiral out of control, resulting in gastric ulceration, colitis, and renal crest necrosis. Veterinarians must educate their clients that safe is not to be conflated with “without risk.”

There are a multitude of equestrian disciplines functioning with different medication rules as indicated in the introductory section of this paper. This list is not intended to be all inclusive; rather, it is intended to show the need for the veterinarian to be knowledgeable to comply with all applicable rules. The integrity of the veterinary profession is defined by the actions of each individual veterinarian.

Veterinarians also have a collective responsibility to advocate for the horse. Strong recommendations against the practice of stacking NSAIDs by the American Veterinary Medical Association, the USEF Veterinary Committee, and the American Association of Equine Practitioners (AAEP) were integral in effecting the USEF General Rule change in January 2010. There is a faction of the AAEP membership requesting a stronger, more comprehensive statement than the 2002 AAEP “Medication Guidelines of the Non-Racing Performance Horse.”²¹ A document for sport horses analogous to the AAEP White Papers, “Putting the Horse First: Veterinary Recommendations for the Safety and Welfare of the Thoroughbred Racehorse”²² and “Putting the Horse First: Veterinary Recommendations for Ending the Soring of Tennessee Walking Horses”²³ would proactively place equine veterinarians in the frontlines as the guardians and advocates for the horse.

References and Footnotes

1. FEI Equine Anti-Doping and Medication Control Rules 2006 1st edition.
 2. The Chronicle of the Horse Vol. LXXII, No. 49 December 4, 2009:128.
 3. The Chronicle of the Horse Vol. LXXII, No. 49 December 4, 2009:129.
 4. <http://www.eurodressage.com/news/dressage/fei/2009/fei-newdopinglists4.html> Accessed on November 24, 2009.
 5. <http://www.eurodressage.com/news/dressage/fei/2009/fei-newdopinglists-delay.html> Accessed on December 1, 2009.
 6. <http://www.eurodressage.com/news/dressage/fei/2009/fei-newdopinglists7.html> Accessed on December 18, 2009.
 7. 2010 Rules of Equine Canada. Article A1003 Permitted Medications:40–41.
 8. 2010 United States Equestrian Federation, Inc. Rule Book. Chapter 4, Drugs and Medications:GR45–54.
 9. AQHA Official Handbook of Rules and Regulations. Rule 441 2009:123–134.
 10. American Paint Horse Association 2010 Rule Book. SC-085: 86–87.
 11. Official 2010 Handbook of the Appaloosa Horse Club. Rule 40:32–36.
 12. National Reined Cow Horse Association 2010 Rule Book. 14.2.5:47–52.
 13. National Cutting Horse Association. 2010 Official Handbook of Rules and Regulations. Standing Rule 35B and 35D:59–60.
 14. <http://www.nbha.com/membership/rulebook/index.shtml>
 15. USEF Drugs and Medication Guidelines. Therapeutic Substance Provisions 2007:4.
 16. Reed SK, Messer NT, Tessman RK, et al. Effects of phenylbutazone alone or in combination with flunixin meglumine on blood protein concentrations in horses. *Am J Vet Res* 2006; 67:398–402.
 17. Keegan KG, Messer NT, Reed SK, et al. Effectiveness of administration of phenylbutazone alone or concurrent administration of phenylbutazone and flunixin meglumine to alleviate lameness in horses. *Am J Vet Res* 2008;69:167–173.
 18. Foreman JH. Does stacking of non-steroidal anti-inflammatories work? in *Proceedings*. American College of Veterinary Internal Medicine Forum 2004.
 19. Muir WW, Sams RA, Ashcraft S. Pharmacologic and pharmacokinetic properties of methocarbamol in the horse. *Am J Vet Res* 1984;45:2256–60.
 20. Gunson DE, Soma LR. Renal papillary necrosis in horses after phenylbutazone and water deprivation. *Vet Pathol* 1983;20:603–610.
 21. http://www.aaep.org/theramedsnonracing_position.htm. Accessed on January 2010.
 22. <http://www.aaep.org/images/files/Racing%20Industry%20White%20Paper%20Final.pdf>. Accessed on February 2009.
 23. <http://www.aaep.org/images/files/AAEP%20White%20Paper%20on%20TWH%20Soring.pdf>. Accessed on August 2008.
- ^aSurpass, IDEXX Pharmaceuticals, Greensboro, NC 27410.
^bSchumacher S. Columbus, OH. (personal communication) 2010.
^cCole C. Greensboro, NC (personal communication) 2010.
^dCole C. Greensboro, NC (personal communication) 2010.
^eSchumacher S. Columbus, OH (personal communication) 2010.

There is a small but growing base of evidence on animal welfare interventions which suggests that there are cost-effective ways to make progress on this problem. Campaigns to try to get large companies to reduce their impact on animal suffering are one of the most promising types of intervention. "Animal welfare is an area that receives a lot of attention and funding, but most of this is focused on pets and animals used for lab testing; farm animals receive less attention. This may be because people don't want to think about where their food comes from, because they find it disgusting or don't want to feel as if they should change their diet. Certain events have created short-lived increases in public interest, such as Mad Cow disease or the horsemeat scandal. A simpler system that tried to encourage work at every step would fit with the grain of American society. Americans who find jobs often stop claiming benefits to which they are entitled. This may be because the system forces them to re-apply for such benefits, which can be a hassle. But it may also be because they take pride in supporting themselves, says Mr Tanner. Mirta Rodriguez certainly does. Four years ago she signed up for benefits in Boston so that she could support her family while looking for work. A single mother of three, she eventually received cash assistance, food stamps and Med