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Sherwood Park area for 35 years. Charles primary area of interest is lameness. The focus of the practice has become primarily competition sport horse maintenance. Attaining licenses in England, Ontario and Alberta has allowed for exposure to a full range of horse interests at Olympic, World Championship and various professional levels.

Definition of a competition horse: any horse being worked or ridden three or more days a week with a particular goal or discipline in mind. The focus of this presentation will be to discuss the medications that are available for the horse owner to maintain soundness while competing [1].

A horse that can maintain a very good level of performance may not be absolutely sound, but is able to work within the limitations of its discomfort. This leads to the concept of sound, sounder, and soundest as a day to day description of this horse.

It is wear and tear that will change the status of most horses from sound to some degree of unsound barring an accident. There is a significant amount of strain injuries that are predisposed to by subclinical soundness. Some of the red flags of unsoundness are: becoming difficult in the box (roping & dogging horses), drifts left or right over fences, starting to hit barrels or running wide, more difficult on one rein or circle (dressage & reining) and not stopping straight (penning & roping).

Resting the horse with some of these issues may soften the problem on returning to work, but rest doesn't necessarily attain persistent soundness. Rest also loses fitness and more important, the unsound areas will lose the most fitness. They return to work weaker in those areas. When returning to work, it is impossible to assess when the horse is equally fit all-around. Another important consideration is that older horses take longer to regain fitness. With this in mind, it is better to maintain a level of fitness in older horses than to expect to "get him back" after a long rest.

The goal of various therapies should be to allow the horse to heal; this will achieve comfort which should directly relate to soundness. The effect will be improved willingness to work. The result of this will be to finish work or the season on the same or better level than it started.

Sport horse medicine takes into consideration all of the systems; respiratory, digestive, cardiovascular, skin, immune, skeletal (joints, ligaments, tendons, muscles and bone) and psychological. Sport horse medicine will also involve interaction with many of the alternative therapies that are available. They include acupuncture, chiropractic, massage, naturopathy, magnetotherapy, laser, magnetopulse, shockwave, homeopathy and light therapy.

The respiratory system can be affected positively or negatively from the nose to the smallest parts of the lung. Viruses may be the most significant consideration when maintaining airway health. Influenza and rhinopneumonitis are the two of major concern. They can be kept under control in most situations with an adequate vaccination program [2]. Both of these viral problems cause variable amounts of nasal discharge, cough, that usually affects willingness to work, decreased stamina, and ability to recover. It has been my experience that vaccinating during an episode is beneficial as to the reducing the convalescence period (in addition to the normal vaccinations).

The bacteria of concern year to year, is *Streptococcus equi*, the cause of strangles [3]. A sequelae to this upper respiratory infection may be a chronic pharyngitis, laryngitis or tracheitis which may respond well to various airway medications or the systemic use of prednisone.

Anatomical dysfunction in the airway can occur in cases of hemiplegia (partial paralysis of the left vocal cord) or entrapment of the epiglottis (in the pharynx) in the soft palate. These are usually surgically corrected.

The guttural pouches [4] in the horse function to cool blood flow to the brain. Passive inhalation of bacteria into the pouch (one or both) may result in unilateral nasal discharge most commonly seen while or after eating or drinking water. They respond well in most cases to flushing with a dilute cleansing agent directly into the pouch.

Heaves, broken wind, COPD, and asthma can be expected to negatively affect performance, whether it is the irritating cough, spasmodic thick nasal discharge or in ability to work hard and recover in reasonable time. It may start to occur in horses nine years and over but can be seen earlier. There are various therapies available but what should be considered in a treatment? Does it act just today or will it eventually suppress the problem so the horse can have a productive, comfortable life without persistent medication.

Drugs that effectively open the airway are very good to get the horse breathing again (eg; Ventipulmin [5]). Medications that may affect suppression and longer activity are sodium cromolyn 2%, triamcinolone and dexamethasone [6]. The inhalers used in human medicine can also be used effectively in horses. They contain variations of the drug in Ventipulmin such as albuterol or salmeterol [7]. Withdrawal times for these medications are in the range of seventy-two hours.

Digestive upsets besides clinical colic and parasite derived problems can often be addressed with treatments for gastric ulcers and diet modification. There are three types of treatments (the same as used in human medicine) classified as antacids: acid neutralizers that work locally in the stomach, and two types of therapies that work by suppressing stomach acid production referred to as H2 receptor antagonists and protein pump inhibitors [8].

There are wide variations in the presentation of horses affected by gastric ulcers. They may include changes in appetite, behavior, coat color and production of formed feces to name a few. Diagnostic therapy is one approach to resolution. It is also possible to use a gastroscop to confirm ulceration.

Management changes as to diet and housing may positively affect expression of the problem but returning the horse to the pressure of performance usually requires the use of medication to maintain comfort. As an example, 80% of race horses are considered to have ulcers. Cardiovascular issues are usually more career limiting if they achieve a level of significant

circulation impairment. Large horses with large hearts may have audible amount of valvular insufficiency that doesn't affect performance. Race horses can develop atrial fibrillation that can be relatively successfully treated with digitalis.

Skin problems are more of an issue in young horses. Girth itch and juvenile warts, are the two primary problems. Warts tend to be self-limiting with enough time. Girth itch can be a major issue in maintaining the progression of training. Various treatments work whether it is a dilute bleach solution, various anti-fungal sprays and ointments. A consideration is how to normalize the skin after treatment. An old but good product is witch hazel [9].

A more persistent problem through all ages of horses is scratches, greasy heel or mud foot. This can be very difficult to treat or very easy and can affect soundness to a variable degree. It is impossible to predict responses to applications of antifungals, antibiotics, antipruritics and soothing agents but they tend to aid in recovery. It is good advice not to use water to wash off the scabs. If the horse is rundown for any reason, then getting the horse healthier by increasing feed quality, adding extra vitamins and minerals and even stimulating the immune [10] system helps.

The immune system is often over-looked as the cause or the treatment for some of the horses problems. It is the immune system that is involved in all aspects of this discussion. There are various ways to help keep the immune system healthy. Appropriate vitamin and mineral supplementation in the working stressed horse is the basis. When this appears not to be enough then there are various sources of stimulation that may work. In order of my preference; vaccination boosters, immune stimulant injection [11], increase vitamin supplementation, herbal and homeopathic remedies.

A working horse with an upper respiratory problem (not COPD) with influenza/rhinopneumonitis-like symptoms that has not been vaccinated in the last six weeks is a good candidate for a booster vaccine in the face of infection. If less than six weeks, Eqstim is a good consideration to help what has been boosted with the vaccine.

There is not enough reported research on the effects of homeopathic and herbal therapies to draw more than anecdotal conclusions.

The response of the horse to its various environmental stressors has brought about the use of various antipsychotic medications. The use of these drugs should include the awareness of any side-effects and testability as a prohibitive drug. Tranquilization for treatments requiring sedation is an area of concern close to tested shows.

Examples: acepromazine and chlorpromazine test for 36 hours, have antipsychotic effects but have in rare cases caused paralysis of the retractor muscle of the penis. Fluphenazine, a long acting anti-psychotic effect (about 30 days) tests for up to 10 days in Canada and up to 45 days in the USA. Using too high a dose may cause claustrophobia. The tranquilizers Xylazine and detomidine test for 24 hours and 36 hours respectively. Other herb-based products may have contents listed under names not familiar to us may test. Tryptophan, thiamine and Vitamin B12 are useful in some individuals to quiet excitable horses.

Excitability of mares concurrent with heat cycles is a relatively persistent complaint of mare owners. The use of progesterone or other heat modifying drugs can be useful but requires constant medication. The progesterone implant used for cattle may work in some mares for up to six months per implantation. Another seldom considered procedure is spaying the mare. Removal of the ovaries achieves the same result as castration of stallions. The difference in the mare, in my experience, is relatively consistent in producing a steady state of performance.

Acupuncture is another modality that can also reduce distracting excitability, but is not as predictable as some other methods. Use of this modality is very good for the relief of sore back muscles. I have used it for years as a pre-competition procedure to quickly resolve back muscle issues.

It is often the case that as a horse becomes uncomfortable, they may become more fractious. Use of all the above is a trial and error adventure. What works well in one individual may not get the same results in another. Getting to know what works in specific animal is often the key to successful competition.

Relating to joints, ligaments, tendons, muscles and bones, the first consideration should be, is there a requirement for time to heal? Bones, muscles and tendons are three areas that may do the best, given time to heal. The exception in regards to the bone is a fracture of the end of a splint bone, in most cases they don't heal, they need to be removed. Leaving it in, and expecting it to heal will cause local irritation and inflammation of the adjacent suspensory ligament. Some of these fractures or cracks may not be immediately appreciated on a

radiograph.

Any inflammatory responses in the joints, tendons, ligaments, muscles should be addressed with ice, cold water and non-steroidal anti-inflammatories. In the case of arthritis, intramuscular, intravenous [12]. and intraarticular (Table 2) therapies are available and are effective. Certainly the most predictably effective therapy for arthritis is the intraarticular treatment. They result in focal resolution of joint inflammation.

Maintaining joint comfort will almost consistently result in front suspensory ligaments that do not become inflamed, swollen and sore. A horse that becomes “stumbly” usually has sore suspensory ligaments that are secondary to subclinical arthritis problems.

Joint therapy, whether parenteral or intra-articular, has the effect of improving the health/comfort of the joint surface, joint fluid capsule and ligaments. The whole body approach to these therapies means that not only is the clinically affected joint treated but the adjacent or compensating joints and muscles are made comfortable too. Some uncommon problems I have seen have involved the elbow and the jaw joints.

This raises the much discussed topic of sore backs in horses. It has been my experience that most sore back muscles in horses originate from compensation for poor posture because of sore legs. Addressing the primary problem often causes many secondary issues to resolve. Pain along the middle of the spine or along the side of the withers are regions poorly covered by systemic medications. If they do not respond to chiropractic adjustments for more than a few days, they will usually resolve with local infusion of appropriate anti-inflammatories. There is a variety that can be used to the same effect. Comfort of the compensating joints raises another issue of the effect of wear and tear. Long periods of transport (12hr), regardless of the support supplied (air-ride, rubber mats, soft ride boots [13]) still results in constant joint motion. There is excellent rationale in these situations to medicate with a non-steroidal anti-inflammatory. They inhibit inflammatory change within the joint, resulting in healthy comfortable joints.

Any therapies used prior to testable events should be questioned as to withdrawal times. Most medications clear by 96 hours but this time is larger for some of the international events. Any tested competitions that are entered should always coincide with a personal review of what has been given, or is going to be given to the horse.

Treatment of joints to maintain soundness is not the beginning of the end. Properly maintained horses have a productive and usually long career. The length of time that most intra-articular medications stay in the joint is about 96 hours. The normal production and absorption cycle clears these products from the joint, leaving a healthy quiet joint that can take care of itself. A consistent consideration in treating joints of competition horses is to define wear and tear versus traumatic destruction (chips, cracks, fractures). Again, raising the issue of time to heal versus surgical correction.

The competition horse usually needs some help from its' owner to maintain peak performance. This starts from the ground up, beginning with a good relationship with the farrier and the veterinarian. Listening to the person who is with the horse all the time is the best start to getting to all of the horses issues. From there, a good plan can be formed to maintain the horses.

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Prolotherapy

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