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Care for the Older Horse: Diet and Health (8-Oct-2001)

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Age Related Problems Requiring Special Attention

As with humans, chronological age does not always match the aging process in horses. Many horses over 20 years old have conditions that require special care, however many do not. Indeed, aged horses are still valued as riding or performance horses or, in the case of stallions and mares, used for breeding. Age alone should not be a criterion for retirement or special management. If the horse is in good body condition, healthy and active even at 20+ years, don't change the routine. However, if an aged horse has some of the problems listed in Table 1, it may be a candidate for special care.

Management of Changes and Problems Associated with Aging in Horses

Arthritis - As with human athletes, years of general wear and tear can result in painful and crippling arthritic changes in older horses. However, a little stiffness that the aged horse will warm out of fairly quickly, should not be a cause for alarm or retirement. In the author's experience, arthritic old horses do best when not confined to stalls. Owners should be informed that they should not confine the horse to a stall unless absolutely necessary for medical reasons. If it can move about it will be less stiff. Ideally there should be free access to turnout, preferably with another compatible horse or pony.

In advanced age, it is not uncommon for the horse to become reluctant to lie down, due to difficulty in getting back up. This is especially true if it is confined to a small area where it can not exercise. You can tell if a horse is not getting the "down time" it needs by the lack of bedding or stains on it's abdomen, outer thighs or tail for prolonged periods of time. Such horses will often have stains or abrasions only on the front of their front legs. These are caused by the horse starting to fall into REM sleep and collapse, only to wake up and catch itself before going completely down. These horses are at greater risk of being unable to rise if they do go down and should be watched carefully.

If an older horse is down and unable to rise on its own you may need help in assisting it up. Be very careful not to put yourself at risk when assisting a horse that has been down for a long time. If possible roll the horse onto it's chest with plenty of room in front of it. When the horse starts to rise it will extend it's front legs in front of its body and lurch forward as it tries to push up with its hind legs. Provide good traction for the hind feet. Never stand on the side where the feet are visible.

Position someone on the head, slightly to one side, to help steady the horse as it starts to rise, and another person at the back of the rump to help push it forward and up. If the horse has been down for a long time it may be weak and struggle and/or collapse suddenly. Be extremely careful not to be in a position where, if the horse starts to go down again, you would be hit by flailing legs or trapped underneath it's body. Once up, the horse may stagger. Try to support it without putting yourself or others at risk if it collapses. Massaging the limbs and muscles to get the circulating going again may help.

Anti-inflammatory drugs or other remedies should be recommended if the horse is in chronic pain. Alternatives or adjuncts to traditional NSAID therapies should be explored since the treatment will be prolonged and the risk of gastric ulceration is increased. Such alternatives include glucosamine/chondroitin sulfate products, acupuncture and possibly some of the "herbal" products such as yucca that are purported to have pain relieving properties. The owner should be advised not to let the horse become obese, since extra weight will increase the stress on its legs and contribute to other metabolic problems, such as laminitis.

Weight Loss/Poor Condition - The most common causes of weight loss in aged horses are failure to keep up with deworming schedules, debilitating diseases and poor dentition [1] (Ralston, 2000; unpublished data) . In older horses failing to maintain adequate body weight, despite good deworming schedules, normal appetite and adequate ration, the teeth should be checked carefully (see Dentition below). If the teeth are normal, the horse should be carefully checked for disease by a thorough physical exam. Take a blood sample to check for chronic infections, liver or kidney dysfunction. Aged horses tend to have a mild microcytic anemia but all other values should be within the normal range for adult horses [2,3]. Do a rectal examination to check for tumors and other abnormalities. If no other abnormalities are found, the failing older horse may be suffering from malabsorption or other alterations in digestion. In studies in the 1980's of horses over 20 years old, the digestive profile

was similar to that of horses that had had extensive large colon resection [4] with reduced apparent digestibility of protein, fiber and phosphorus. However studies in the 1990's of horses over 20 years old by the same author did not reveal similar alterations [5]. It is hypothesized that the previous findings may have been due to extensive, chronic parasitic damage to the large intestinal mucosa that was not present in horses born after the introduction of safe, effective anthelmintics in the 1970's. In old horses that are capable of maintaining good body condition on traditional feeds, "senior" feeds will not further improve the horse's condition [6]. However, in otherwise healthy aged horses that are losing weight, "senior" rations which provide 12 - 14% protein, with restricted calcium (<1.0%) and slightly increased phosphorus (0.3 - 0.5%) may help. The calcium/phosphorus ratio of the ration, however, should be greater than 1:1. Crude fiber content should be above 7%, preferably above 10%, especially if the feed is designed to be fed without hay. Processing (extrusion or predigestion) and the addition of fat (5 to 10%) will maximize digestibility without increasing the risk of colic. A typical ration for a 1000 lb horse might consist of free access to top quality hay, preferably a straight grass or grass/alfalfa mix or pasture plus 2 to 8 lbs of a feed designed for aged horses plus free choice water and salt. Avoid straight alfalfa. The calcium content is high and may exacerbate failing kidney function [7]. Yeast culture products have been reported to improve digestion of feed in horses and also may be of benefit in the failing aged horse's rations. Two to 4 ounces of brewers yeast and/or up to 1 cup of vegetable oil per day also may help the aged horse to maintain weight and condition. Make all dietary changes slowly, gradually introducing the new feeds over the course of 4 to 5 days.

Older horses are more sensitive to severe weather, be it heat or cold, and often suffer weight loss when temperature fluctuations are extreme [3]. It is essential that adequate shelter is provided and that the higher energy needs in winter are met by providing increased feed in a more highly digestible form such as pelleted or extruded feeds. Insuring free access to clean, fresh, unfrozen water in the winter can reduce constipation and impaction problems. If the horse does not drink well, feeding water soaked feeds (1 - 2 gallons of water per feeding) will help increase fluid intake. Addition of 1 to 2 ounces of salt to the feed may also encourage increased water intake but should be done only if the horse has unlimited access to water and the addition of the salt does not decrease the horse's feed consumption.

Inadequate Dentition and Tooth Loss - All horses should have regular dental care, even if dental abnormalities are not causing a decrease in digestive efficiency [8]. It is especially important in aged horses that have lost premolars or molar teeth. Inadequate dentition predisposes the horse to weight loss and/or choke.

Older horses, especially those known to have missing molars, should have their teeth checked at least twice a year. Use a full mouth speculum. Merely pulling the tongue to one side to look at the back teeth is not a reliable method of detecting dental abnormalities. Large points frequently develop on the back molars which can not be detected easily or corrected without a speculum.

If chewing is difficult even after dental correction, "soups" of soaked hay cubes and/or beet pulp plus pelleted or extruded feeds designed for aged horses should be offered. Enough water should be added to make a soupy consistency (at least 1/2 gallon of water per lb feed) to prevent choke. The soaked feeds can ferment (summer) or freeze (winter) easily so should only be offered in amounts that the horse will consume easily in a single meal. This may require that the horse be fed three or more times a day to meet its nutritional needs. Hay can still be fed if choke is not a problem, even if most of it is wasted.

Access to good pasture is desirable.

If the front incisors are missing or badly aligned, do not rely on pasture as a major source of nutrition. In these cases the horse should be fed loose hay and/or hay cubes as their major source of roughage since they can not graze effectively. Soaking the feeds, however, is necessary only if horses have a tendency to choke on their feeds.

Pituitary and Thyroid Dysfunction - In a study of geriatric horses [3], over 70% of the horses over the age of 20 had at least subclinical signs (altered glucose and cortisol metabolism) of pituitary or thyroid dysfunction, both of which are common in aged horses. Both conditions may adversely affect glucose tolerance and immune function, though pituitary dysfunction usually results in weight loss in advanced cases whereas thyroid dysfunction is thought to contribute to obesity. Aged mares with pituitary dysfunction, even in the early pre-clinical stages, had lower blood vitamin C than did unaffected or younger mares [3]. This may explain in part the increased susceptibility to infections frequently observed in older horses. Both types of dysfunction cause relative glucose intolerance, in which the horse becomes less sensitive to the action of insulin. Blood levels of both glucose and insulin become abnormally high after a high sugar or starch meal in horses with reduced insulin sensitivity. This contributes to the clinical signs of dysfunction, such as polyuria/polydipsia and chronic laminitis. High fat (>5%) and fiber (>7%) feeds that are pelleted or extruded with limited molasses content (<3%) result in more moderate glucose and insulin responses after feeding [5,9] and may help control this problem. "Sweet feeds" with high (>3%) molasses should be avoided.

Management of the clinical problems associated with pituitary or thyroid dysfunction is fairly easy. It is essential that all older horses be maintained on regular vaccination and deworming schedules. If chronic infection is a problem (ie: skin infections, thrush, hoof abscesses), 5 to 10 gm of ascorbic acid (vitamin C) added in the feed twice a day may be beneficial,

but should only be continued until the infections heal. If the horse is polyuric/polydipsic, then fresh, clean water should be available *ad libitum*. If obesity or chronic founder are a problem, the horse's access to grain should be restricted and sudden dietary changes avoided at all costs. Thick hair coats should be clipped in the summer in addition to providing shelter from the sun.

Pharmacological treatments for both pituitary and thyroid dysfunction are available. Many are expensive (cyproheptadine and pergolide for pituitary dysfunction) and others such as thyroxine for so-called "hypopituitary" horses are controversial at this time. Herbal remedies have not been clinically proven to be effective in the reduction of clinical signs. Pergolide and cyproheptadine are effective in reducing the clinical signs in many cases but are not approved for use in horses. Diagnostic tests and treatment regimens have been published in detail elsewhere [7,11].

Reduced Kidney or Liver Function - Chronic kidney or liver failure is not as common in aged horses as it is in cats and dogs, but still can occur. The degeneration of the ability of the kidney and liver to function is progressive and irreversible but can be slowed and the clinical signs managed to a degree with diet.

Reduced kidney function can result in renal and bladder calculi, weight loss, loss of appetite and potentially death. Horses are unique in that they excrete a significant amount of excess dietary calcium through their urine. As a result, if kidney function is reduced, renal and bladder "stones" of calcium oxalate are more likely to occur as well as a potentially lethal increase in blood calcium. Horses with kidney failure should be put on low calcium diets containing less than 0.6% calcium on a dry matter basis. Based on data from other species, protein and phosphorus also should be restricted to 8 to 10% and 0.25%, respectively. Good quality grass hay and corn or complete pelleted rations formulated for mature (not aged) horses are the feeds of choice. Avoid legumes (alfalfa and clover) [10], wheat bran and beet pulp due to high calcium (legumes, beet pulp) or phosphorus (wheat bran) content.

Liver failure results in weight loss, lethargy, jaundice, loss of appetite and intolerance of fat and protein in the diet. Hepatoencephalopathy may be present in severe cases. Affected horses require increased simple carbohydrate sources to maintain their blood glucose levels and are intolerant of high protein or fat in the diet. The diet should emphasize starch intake (grains or concentrates) though fiber sources (hay, beet pulp) are still necessary to avoid gastrointestinal dysfunction [1]. Grass hay, low protein sweet feeds, and corn are recommended components of the ration. Wheat bran and beet pulp are acceptable supplements in these cases. Since the liver is the site of vitamin B (especially niacin) and vitamin C synthesis in the horse, daily oral supplementation with B-complex and ascorbic acid may be beneficial.

Table 1. Conditions requiring special attention in aged horses. See text for more details

Condition Considerations	Clinical Signs	Causes/Management
Arthritis	Chronic lameness Bone deformity around joints Inflexible joints	Shoeing/trimming Bedding, avoid obesity Anti-inflammatory therapy
Weight Loss	Inability to maintain good body condition despite good teeth, and a ration that is adequate for mature horses	Teeth, Diet*, Shelter, Liver or Kidney failure, Tumors, Malabsorption
Inadequate Dentition	Sharp points on molars, loss of teeth Inability to chew feed "quidding" of hay	Regular tooth care Diet*
Pituitary/Thyroid Dysfunction	Failure to shed winter coat in the summer Recurrent viral infections Chronic founder (laminitis) Increased water intake and urination Excessive weight loss (pituitary) or gain (thyroid)	Grooming/clipping Diet* Vaccination Water access Drug therapy(?) Magnesium supplements(?)
Kidney/Liver Failure	Weight loss Lethargy Poor appetite Difficult or frequent urination (kidney) Jaundice (liver)	Diet* Supplements
Grey hair appearing around ears eyes and forehead	This is not a problem, merely a sign of aging	

*See Diet Recommendations in Table 2.

Summary

A horse should not be treated differently just because it has reached a certain chronological age. However, if problems related to aging are present, changes in management and medications may be needed to keep the older horse comfortable. Aged horses that do not have reduced kidney function will benefit from a diet more similar to that recommended for weanlings than that for normal adult maintenance. Calcium and protein, however, will need to be restricted if the horse has kidney failure. Supplements that may help include Vitamin C, yeast cultures, brewers yeast and vegetable oil. If teeth are a problem, soups can be made out of cubed, extruded and/or pelleted feeds.

Teeth should be checked every 6 months or even more frequently if premolars or molars are missing. Vaccinations and deworming schedules should be carefully maintained.

Pituitary and thyroid dysfunctions are very common in aged horses. Management of the clinical signs include clipping long hair coats in summer, feeding low starch complete feeds, and perhaps vitamin/mineral supplementation. Adequate shelter is a must for older horses, especially in the winter. However, confinement of an arthritic aged horse to a stall is not doing the animal any favors.

Table 2. Dietary management of conditions associated with aging in horses		
Condition	Recommended Diet Characteristics	Feeds/Supplements
Weight loss not due to liver or kidney failure	12 to 14% protein 7 to 10% fat High digestibility Easily chewed	Grass or grass mix hay Complete pelleted or extruded feeds Good quality pasture 1/4 to 1 cup vegetable oil/day Yeast culture products Brewers yeast Beet pulp (soaked) Soybean meal (1/4 to 1/2 lb per day) Avoid poor quality or high fiber hay
Inadequate Dentition	Easily chewed	"Soups" of complete pelleted or dentition extruded feeds. Soaked hay cubes or beet pulp Avoid coarse hay and dry pelleted feeds
Pituitary/thyroid tumors	Reduced starch Highly digestible fiber sources Increased vitamin C if chronic infections	Low molasses, high fat/fiber feeds Good quality hay or pasture (if not foundered) 5 - 10 gm twice a day until healed
Kidney failure	Restricted calcium, protein, phosphorus	Grass hay, corn, milo, Complete feeds designed for maintenance adults, not aged horses Avoid legumes, wheat bran, beet pul
Liver failure	Restricted protein Increased starch Increased B-vitamins Increased vitamin C	Grass hay, corn, 10% protein seet feeds Sweet feeds designed for maintenance B-complex supplement 10 gm vitamin C daily Avoid legumes, high fat rations

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