

HERD HEALTH FOR DONKEYS

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This is an overview of the herd health procedures applicable to all donkeys. It includes information about deworming programs, vaccinations, nutrition, and routine dentistry. Herd health for donkeys is similar to that for horses.

INTESTINAL AND LUNGWORM PARASITE CONTROL

Intestinal parasites affecting donkeys are similar to those that affect horses. These include nematodes (large and small strongyles, ascarids, pinworms), bots, and *Cestodes* (tapeworms). Basic principles of parasite control are the same as for larger equines. Medications used with success in donkeys include fenbendazole, ivermectin, albendazole, and pyrantel pamoate.

Lungworms. Animals in certain areas of the country are also affected by lungworms. These areas are not well defined. Donkeys are the natural hosts for lungworms and as such do not show obvious signs of disease when infected. In fact, the incidence of donkey infestation is not known. Mules are reported to be relatively unaffected by lungworm infestation, much like donkeys. Horses, however, may be severely affected, exhibiting coughing and wheezing. Lungworms should be suspected if an affected horse is pastured with donkeys or mules. Definitive diagnosis is made by demonstrating the presence of *Dictyocaulis arnfeldi* larvae in fresh feces. Treatment is achieved by oral dosing with ivermectin, followed by a repeat treatment in three weeks.

Other strategies of parasite control include pasture rotation, removal of manure, and deworming of new herd additions. Successful use or need for deworming medications should be measured by periodic fecal examinations. I recommend the sugar centrifugation technique of fecal analysis.

VACCINATIONS

Donkeys are vaccinated with the same products as full-size equines and at the same frequencies. However, there have been no conclusive studies regarding the effectiveness or safety of the equine products in donkeys. I was involved in a limited vaccination trial (unpublished study) with a small number of miniature donkeys. Titers were evaluated after vaccination with commercially available equine products against Eastern and Western encephalitis, equine herpes virus 1 and 4, equine influenza virus type A1 and A2, and Potomac horse fever (PHF). Results were inconclusive yet donkeys responded to these vaccines in the majority of instances as demonstrated by increasing titers, except for the PHF vaccine. (While only one brand of PHF vaccine was used, I still recommend vaccination against PHF in at-risk geographical locations.)

Some owners and veterinarians have suggested that miniature equines should be vaccinated with reduced doses of the standard equine vaccines. I do not recommend this practice as there is no scientific evidence for it and, in fact, the lower dose may not stimulate the immune system sufficiently to provide a protective response. No vaccine challenge studies have been or are likely to be performed in donkeys. Since 150-pound equine foals and 2000-pound draft horses are given the same dose of vaccine, I recommend full-size, standard equine vaccine doses for donkeys of all sizes.

The specific vaccines used should be selected based on the disease risks in a particular location and the risk of infection from new arrivals and/or exposure at shows and events. This is particularly true for equine respiratory diseases. No data is available regarding the incidence of equine herpes virus abortion in donkeys therefore the practice of vaccinating donkeys at 5, 7, and 9 months of pregnancy has been questioned. Some owners have reported a high incidence of side effects with these vaccines and even blamed abortions on their use, but to my knowledge there is no concrete evidence to support this.

I have limited experience with the use of vaccines protective against West Nile virus, and no experience with those for Venezuelan equine encephalitis or equine protozoal myelitis (EPM). To date, there have been no reported adverse effects from use of WNV vaccine in donkeys, although it is unlikely that any manufacturer will test vaccine effectiveness specifically in donkeys. The EPM vaccine is no longer available, and unless a donkey resides along the Mexican border, there may not be a reason for administering the Venezuelan equine encephalitis vaccine.

FEEDING PRACTICES

The basic necessities of clean, fresh water, trace mineral salt, and a source of dietary fiber and calories in the form of hay or pasture apply to donkeys. Protein requirements of full-size equines may be safely applied. The specific nutritional requirements of donkeys have not been established. It is reasonable to apply horse data to donkeys, but the donkey's feral origin has adapted them to subsistence on low quality forages.

The donkey is a monogastric herbivore that eats roughage, such as straw and hay, and is able to utilize cellulose and hemicellulose from plants very efficiently.¹ Donkeys are capable of digesting and processing low-quality feed as compared to horses. Their digestive systems adapted to arid areas with poor grazing, as in Africa and Asia. Donkeys are termed "trickle feeders" and evolved to have fiber passing almost continuously through their gastrointestinal tract.² Consequently, when they are fed similar high-quality and high-calorie feeds as given to horses, they become overweight and subjected to nutritional-excess problems, such as obesity, laminitis, and hepatic (fatty liver) disease. Donkeys need more fiber and less protein in their diets than do horses. They are not ruminants so must not be

fed like cattle, sheep, or goats. And, donkeys with access to cattle licks containing urea should be restricted in their intake to avoid urea poisoning¹.

Donkeys generally are more selective than horses in their food consumption, using their relatively narrow muzzles and mobile lips to sort through feed material. Like horses, they spend a great deal of time eating when turned out on pasture in favorable environmental conditions. Donkeys prefer shelter to rain and will remain inside when possible to avoid insects. They may search pastures for the most appealing plants if allowed free access to large areas, resulting in inefficient pasture use; rotational strip grazing is a more efficient method of pasture management. If feeding time is restricted in working donkeys, they may resort to fast, incomplete chewing of forages, leading to digestive problems such as esophageal *choke* (obstruction) or intestinal impaction¹.

Feeding Guidelines

1. Allow all donkeys in a herd access to feed, regardless of age or activity level.
2. An adequate quantity of clean, fresh water must be provided daily.
3. Feeding time and method should be consistent to promote good digestion and to avoid problems.
4. A working donkey should be allowed a rest period after a large meal. It is preferable to allow frequent, small meals throughout the day to simulate the normal feeding behavior of donkeys.
5. Many donkeys will not eat or drink while in harness¹.

The basic nutritional needs for all equines are: energy and calories (provided by dietary carbohydrates and fats), protein, water, and vitamins and minerals. Often these needs may be met adequately through consumption of pasture plants and hay. The amount needed depends on climatic conditions and on individual metabolism. Donkeys in northern climates with wintry conditions need more calories than in warmer months to offset the energy expenditure required to maintain body temperature. A limited amount of moderate quality hay and/or free choice, poorer quality pasture or hay may suffice for donkeys in warmer climates. It is important to regularly assess the body condition of each individual donkey to ensure that he is neither overweight nor too thin; the diet should be adjusted accordingly. It is equally important to ensure that all animals have equal access to food. If pastures are overgrazed due to overcrowding or if animals are kept in close proximity to larger or more aggressive animals, they will not be able to consume enough calories and may suffer serious weight loss and starvation. This is especially critical for winter time feeding in northern climates.

The animal in Figure 1 was presented to a veterinarian in the early spring in the northeastern US for inability to rise without assistance, with severe pressure sores on the legs and in very poor body condition. Due to inclement weather, he had been kept inside where he



Figure 1. Severely malnourished miniature donkey (Purdy).

had to compete with other horses and donkeys that were also in poor condition. His front legs were wrapped to protect severe pressure sores from contacting concrete flooring. The underlying problem was lack of sufficient food for all animals on the property. He survived and progressed to good health when this dietary management situation was corrected.

A study funded by the Donkey Sanctuary and conducted by the University of Edinburgh and University of Central Mexico determined the maintenance requirements for fit, health donkeys. Results showed that donkeys require 1.3% to 1.7% of their body weight in forage daily, depending on the season; the lower value applies to summer. For maintenance, they needed 88 to 117 kJ DE (digestible energy)/kg of body weight, with the lower value corresponding to summer. In practical terms, this means that a donkey requires feedstuffs with low energy values so he can eat large enough quantities to satisfy a natural appetite without becoming obese².

DENTISTRY

The deciduous teeth of a young donkey are replaced by the permanent teeth between the ages of 2-½ and 4 years. The dental formula for the donkey permanent teeth is:

- Incisors 3
- Canines 1 (males)
- Premolars 3 (4 if wolf teeth are present)
- Molars 3

This grouping occurs on both sides of the mouth top and bottom for a total number of approximately 40 teeth in the adult donkey (see Figures 2 and 3). The wolf teeth are the first premolars and have no practical function. They are present in approximately 30% of females and 65% of males¹. The incisors are used to cut off the plants or food so that it may be taken into the mouth for chewing. The molars and premolars (*cheek*

teeth) chew and grind food between the upper and lower arcades. The incisors and cheek teeth continue to grow throughout the animal's life and are kept in level wear by the opposing tooth above or below. Sharp "points" may develop on the outside edges of the upper cheek teeth and/or inside of the lower cheek teeth. These points can irritate or cut the cheeks or tongue and cause the animal to be reluctant to chew food properly. If a tooth is lost, then the remaining opposite tooth may elongate and interfere with normal chewing motion. Signs of poor tooth conformation include: difficult, prolonged, or slow chewing; dropping food; behavioral issues under tack; drooling; quidding; tongue, cheek, or lip injuries; lack of appetite; abnormal mouth odor; weight loss or poor body condition; and colic.

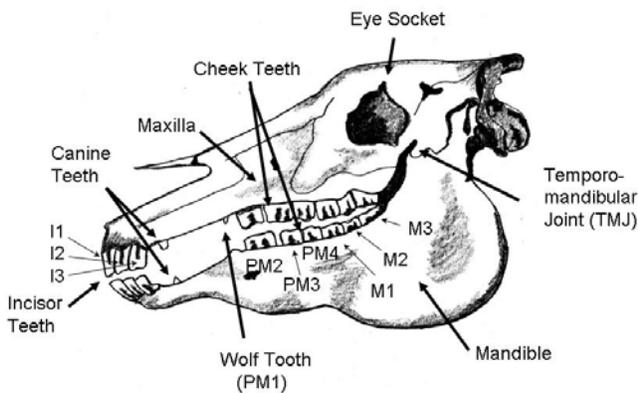


Figure 2. Normal dentition of the donkey (Cunningham).

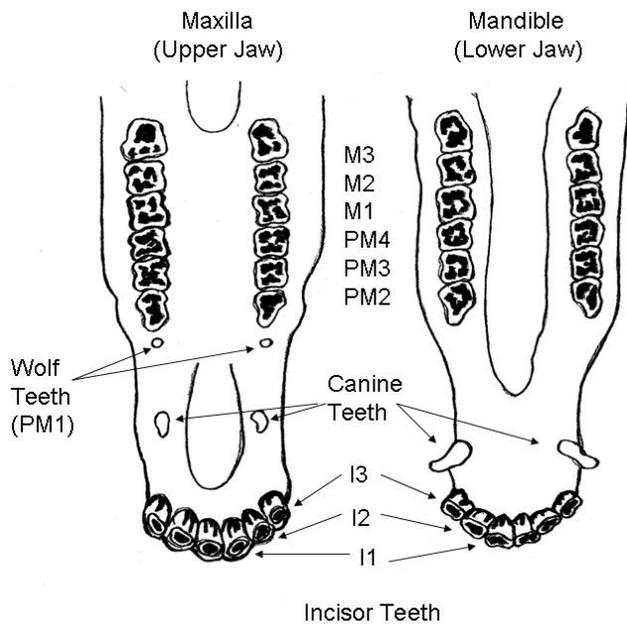


Figure 3. Occlusal surfaces of the donkey teeth (Cunningham).

Common tooth problems (in decreasing frequency of occurrence) include: sharp edges on cheek teeth; short, irregular, missing, uneven cheek teeth in old donkeys; loose teeth; and broken incisors. If the wolf teeth are found in an abnormal position they may angle towards the tongue or become inflamed around the gum, resulting in oral discomfort. Treatment for this is to remove the offending tooth. Overshot jaw conformation may result in uneven wear of the first and last cheek teeth with attendant chewing problems.

An oral exam is best performed by using a speculum to open the mouth. Sedation may be used to facilitate dental procedures and relieve fear and anxiety caused by the equipment or the sensations transmitted to the teeth. As with all procedures on donkeys, patience and a calm attitude are a necessity. Pain medications may be indicated following a prolonged procedure or if mouth sores are discovered. When using a speculum for dental work, it is important not to use it for a prolonged time, particularly in older donkeys as they may have temporomandibular joint (TMJ) problems or cervical spine arthritis that could be aggravated by forced opening of the mouth. All dental abnormalities may not be correctable at one time; it may be better to do a partial repair and then complete the rest at a later time.

In older donkeys, loose cheek teeth may be left in place if not causing any problem as removal may result in loosening of surrounding teeth. An infected cheek tooth may be pulled with extraction forceps or may require further surgical treatment. Removal of a loose incisor tooth may alleviate discomfort.¹ Dietary management, such as feeding chopped forage products or mashes, can compensate for the inefficiency of loose cheek teeth.

Routine dental care for donkeys is similar to that for horses. Small-sized dental floats are available for use in miniature donkeys. Bite abnormalities are relatively common in both miniature donkeys and miniature horses. This results from a lack of genetic diversity and reluctance of breeders to remove animals with improper bites from their breeding programs. When size and sales become over-riding considerations, conformation often suffers. Both over and under-bites are common (Figure 4). These result in problems primarily with the incisor teeth, but severe abnormalities may also affect the cheek teeth. Dwarfism is also relatively common in miniature equines, often accompanied by bite abnormalities and a need for corrective dentistry is especially important in affected animals. Breeding decisions should be made with the long-term health of the animals as the major deciding factor.

SUMMARY

Routine herd health practices for donkeys of all sizes are similar to those for horses with some exceptions as noted above. More research needs to be performed in the areas of vaccination safety and effectiveness for donkeys. Sound breeding decisions are important to prevent conformational faults from adversely affecting



Figure 4. Juvenile miniature donkey with an under bite (Purdy). This disparity was present at birth but disappeared as the animal grew older.

the health of donkeys, just as in other breeds of livestock.

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SUGGESTED READING

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