RWBAHC 2014 Newsletter
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While our last issue discussed the impact of traumatic brain injuries (TBIs), this week we're sticking with the head as we cover the importance of "counting sheep!" That's right -- we're diving into sleep: why we need it; how to get it; and what happens if we don't!

Finally, this week's "Pet Corner" focuses on meeting the individual needs of your horse when it comes to feeding, from performance to brood mare to geriatric.

I hope you enjoy this week's newsletter! And, as always, you can check out our previous issues by visiting the RWBAHC web site. Have a great week!

CPT Baldwin

Sleep Awareness!

How Much Sleep Do You Need?

The number of hours of sleep you need to stay healthy and alert differs according to your gender and age.

Sleep is key to your physical health and emotional vitality, but did you know just how many hours you need depends on your age, your stage of development, and your gender?

Without question, sleep is important for mental function: alertness, memory consolidation, mood regulation, and physical health. Case in point, through undergrad and vet school, I was a machine! I could cram all night with my NoDoz and Red bull study partners with little more than a yawn the next day. Today, however, if I stay up all night – whether it's delivering a foal or treating a colic, etc. - I'm essentially a walking coma the following morning.

Too few hours of sleep or poor sleep paves the way to a myriad of emotional and physical problems, from diabetes to obesity and heightened stress to anxiety. In fact, data shows that with chronic sleep loss, there are changes in the way the body handles glucose in that we become insulin resistant (pre-diabetic). There is also evidence that lack of sleep alters appetite regulation with an increased affinity to overeat and/or make food choices high in salt/sugar… i.e. Carbs.

So, What's the Magic Number?
How much sleep you need to stay healthy, alert, and active depends on your age and varies from person to person with the majority of adults needing seven or more hours of sleep per night.

Here's a snapshot of the ideal hours of sleep needed throughout our lives:

- Infants (younger than 11 months): 14 to 15 hours of sleep
- Toddlers: 12 to 14 hours
- Preschoolers: 11 to 13 hours
- Children: 10 to 11
- Adults: 7 to 8 (adolescents need a bit more)
- Older adults: 7 to 9 hours of sleep

Gender Affects Sleep Patterns

Everyone with a significant other has likely realized that sleep patterns vary between men and women. More specifically, women often sleep more than men and experience a lighter sleep that is more easily disrupted, resulting in many women suffering from undiagnosed sleep disorders.

But it's not just your partner's snoring making you restless at night. Problems that disrupt women's sleep may also include depression, major life events, pregnancy, hormonal changes related to menopause, obstructive sleep apnea or restless leg syndrome, and medical problems ranging from arthritis and back pain to fibromyalgia (more on this below).

Research shows that men often toss and turn over job-related stress. Men also tend to take sleep for granted as they stay up later than their female counterparts. Additional stressors noted to cause men to lose sleep include life issues (marriage/divorce, children, employment, money), medical problems such as heart disease, sleep disorders, substance abuse, and depression.

What Are the Stages of Sleep?

Sleep stages are divided into non–rapid eye movement (non-REM) and rapid eye movement (REM).

Non-REM sleep

Non–rapid eye movement (non-REM) sleep has four stages:

- Stages 1 and 2 are light sleep in which breathing is slower than when a person is awake.
- Stages 3 and 4 are called slow-wave (delta) sleep, in which the person's rate of breathing slows down further.

REM sleep

Rapid eye movement sleep is deeper than non-REM sleep. During REM sleep:

- The eyes and eyelids flutter.
- Breathing becomes irregular. During REM sleep, it is normal to have short episodes when breathing stops (apnea).

During sleep, a person usually progresses through the four stages of non-REM sleep before entering REM sleep. This takes about 60 to 90 minutes after dozing off. The cycle is repeated three to four times nightly with more time spent in the REM sleep stage and less time in sleep stages 3 and 4.

Sleep Disorders

Sleep disorders can sap energy levels, affecting our emotions and even our weight as described above. When you don't sleep well, you don't feel well, and it often becomes difficult to concentrate. And unfortunately it works in both directions — we know that mood symptoms like depression can cause sleeplessness while sleep deprivation may lead to secondary depression..

Why We're Losing Sleep

From your life to your hormones to what you're reading at night, there are a host of causes preventing your deep slumber.

Life:

- Stress
- Depression
- Life events
- Medication: Did you know common headache medications contain caffeine? Make sure to check the ingredient list prior to popping one before bedtime.

- Poor sleep habits (see below)
- Aging (discussed above)

Pre-Bed Time Patterns

Regardless of the technological distraction used, the bright light emitted by phones and computers as well as their stimulating effect on brain activity hinder our ability to nod off.

- Tweet Dreams **:**Twitter and Facebook are an increasing part of our bedtime routines with 38% of people admitting they use a social networking site within an hour of bedtime. Stimulating activities like these are known sleep stealers.

- Cell Phones Cut Sleep Short**:** The 22% of Americans who leave their cell phone ringers on during the night (instead of switching to vibrate or silent mode) would sleep better if they shut them down. Incoming calls, texts, or emails rouse 10% of Americans in the middle of the night. There is some good news: 65% of those surveyed leave their phones out of the bedroom or turn them off completely.

- Counting Sheep Goes High-Tech**:** Surpassing Twitter and facebook, 35% of Generation Z and 21% of Gen Y say they turn to texting when they wake in the middle of the night. Thirty-two and 13%, respectively, cue up their iPod or mp3 player for soporific sounds. Texting before sleep is popular too: 21% do so almost every night. Not surprisingly, the under-30 set is the most text-obsessed as 56% of Gen Z and 42% of Gen Y say they text prior to nodding off.

- Laptops as Bedmates**:** Forget your spouse, or even a body pillow: 36% of Americans curl up with their computers or laptops in bed before they fall asleep. Around 75% of the younger Gen Z and Gen Y do so. Not surprisingly, these laptop lovers are likelier to report not getting a good night's sleep compared to those who refrain from logging on before bed. Stress may be a factor, too: 19% of people fire back work emails right before bed (39% check personal email).

- Coping with Caffeine**:** Sleep-deprived Americans can thank caffeine for their next-day energy boost. Seventy-four% have at least one caffeine beverage each weekday, guzzling 3.1 beverages on average. For a smaller group, caffeine is a major stay-awake must: 9% of Americans say they sip 6 to 10 beverages a day and 18 % down four to six drinks. Drinking caffeinated beverages too close to bed can mess with your sleep, so it's wise to curtail the java habit early in the day (around 1400) if you're insomnia-prone. And don't forget the caffeinated drugs such as most headache medications.

- Naps Are Necessary?**:** Daytime snooze sessions help teens recover to some extent from their lack of nighttime "Zzzs." While 53 % of Gen Z say they nap during weekdays, only 33 % do so over the weekend. Adults crave naps, too: Overall, 44 % of Americans nap on both weekdays and weekends. The National Sleep Foundation says a **short,** power nap is a good way to boost alertness and mood — just **keep it to 20-30 minutes** (any longer and you may wake up feeling tired instead of refreshed).

- Afraid of the Dark**:** 11% of Americans sleep with a light on in the bedroom at least a few nights a week. This sleep-stealing habit is most common among teens; 21 % of Gen Z'ers leave on the lights. A too-lit room can affect your ability to snooze by suppressing Melatonin levels; experts say the ideal sleep environment is dark, quiet, comfortable, and cool.

- Early Bird Society**:** One reason our sleep suffers, particularly in the military – early wake-up calls. Among the civilian population, 8% of people leave home to go to work or school before 0600, 22 % head out between 0600 and 0659, and 31 % leave between 0700 and 0759. Non-stop, jam-packed days play a role in our sleep deprivation as well, but many Americans seem to be in denial about their over-loaded schedules. While 71 % of people say their current work or school schedule allows for enough sleep, only 35 % say they get all the sleep they need on weeknights.

Biological and hormonal factors

Unfortunately, women have sleep disorders simply because we're female. We have changes based on ovulation that affect sleep with our slumber waning both before and during menstruation.

In addition, the physical and hormonal changes that take place in pregnancy hinder sleep. Any woman who has had a child knows how uncomfortable that third trimester can be. Pregnant women also are more likely to snore, develop sleep apnea, and have leg cramps. Moreover, a recent study found that pregnancy hormones measured during sleep increase a woman's risk for developing restless legs syndrome (RLS) secondary to reduced iron levels.

Finally, if we're not menstruating or pregnant, hormonal changes during and after menopauseare, you guessed it, are further sleep disrupters, increasing the risk of sleep apnea, fibromyalgia, and leg cramps.

Medical reasons

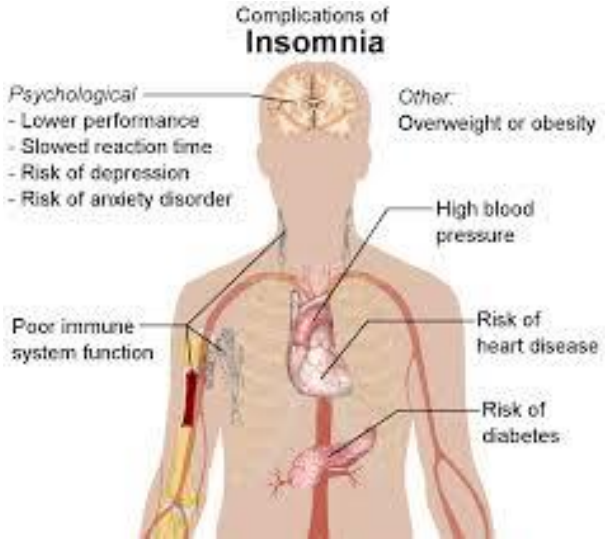
- Insomnia: Women often have more difficulty than men falling or remaining asleep (see above).
- Obstructive sleep apnea: Apnea occurs when throat tissue blocks the airway and interrupts breathing with obstructive sleep apnea plaguing 2 to 4 % of women,
- Restless legs syndrome (RLS): This condition causes a powerful urge to move the legs in addition to persistent pain/a tingling sensation in the limbs. (prevalence: women > men)
- Snoring
- Nightmares: Believe it or not, nightmares or night terrors may be classified as a medical cause of sleep disruption

Health Risks of Long-Term Sleep Deprivation

Lost sleep causes more than just bags under your eyes.
Getting enough sleep is a basic human need that all too often gets overlooked in the rush to squeeze more hours into the day. Ignoring that need, however, can lead to serious health consequences some of which we've discussed above. Sleep deprivation jeopardizes your safety, ability to concentrate, mental stability, and long-term well-being. But it's not just the quantity but also the quality of snooze you're getting.

The mind and the body repair and refresh themselves during sleep. The mind uses this time to consolidate memories and "reset" the brain for the coming day. The body needs sleep to release important hormones, perform needed repairs, increase blood flow to the muscles, and boost the immune system.

When a person misses even one good night's rest, all these functions falter. You might have trouble staying awake or paying close attention. You feel less energetic and are more likely to come down with a cold. Chronic sleep deprivation amplifies these problems and increases health risks; your body simply cannot replenish itself. Think of it as building up a sleep debt. Every single night you're adding to that debt, and unless you pay down the balance on a regular basis, you will see an effect on your ability to think and perform.



Emotional and Cognitive Effects
Chronic sleep deprivation has been shown to drastically affect a person's mood and anxiety level. You might feel angry and irritable or sad and depressed. You might find yourself acting impulsively or lacking motivation to do much of anything. A lack of sleep ramps up the part of the brain that contributes to excessive worrying, making a sleep-deprived person edgy and anxious. Sleep deprivation also has been linked to suicidal ideations and risk-taking behavior.

What's more, cognitive dysfunction stems from a reduction in metabolism of the frontal – "executive-" portions of your brain.

Perhaps the most serious health risk from sleep deprivation is also the most obvious: sleepiness itself. According to the National Highway Traffic Safety Administration, about 56,000 car crashes are attributed to driver fatigue each year, leading to 1,550 deaths and about 40,000 injuries.

Chronic Health Risks
The cognitive effects of chronic sleep deprivation are obvious. However, the metabolic and physiological effects are much more insidious. By eroding the body's ability to replenish and repair itself, you become vulnerable to chronic health risks including:

Obesity. Sleep deprivation plays havoc with the hormones that govern a person's hunger, causing night owls to overeat and indulge in fatty foods. The hormones leptin and ghrelin become dysregulated. We get less of the hormone that helps us feel satiated and more of the "hunger hormone." We also process calories less efficiently. Researchers note that the effect of sleep deprivation on obesity is so strong you can predict which children will become obese within five years based upon their current snooze habits.

Diabetes. A lack of sleep creates an insulin resistant state as fat cells suffer a 30 % reduction in their ability to respond to insulin. Our metabolism requires that in order for us to process glucose, we need to have that full seven to nine hours of sleep a night. If unchecked, such insulin resistance can lead to chronically high blood sugar levels and ultimately diabetes.

Heart disease. Sleep deprivation can increase the amount of inflammation in the body. Such inflammation, when coupled with other health risks such as obesity and diabetes, may increase a person's risk for cardiac disease.

Other health risks. Sleeplessness also has been linked to nephropathies (kidney disease), high blood pressure, and stroke. Individuals even become more keenly aware of pain and body discomfort. And don't forget the immunosuppressive effects of sleep deprivation on the immune system.

Even your skin suffers! Poor sleepers show increased signs of aging with more noticeable fine lines and wrinkles, acne, reduction in skin elasticity, and suppressed cell turn-over/repair. Just take a look in the mirror the next time you pull an all-nighter.

Most mental and physical health risks are reversible if people return to a healthy sleep pattern; but that's a big "if."

<u>Can We Make Up For Lost Sleep?</u>

A stressful work week generally means fewer hours of sleep at night. Then when the weekend comes around, most figure they will catch up on their sleep deficit. While this sounds familiar to many, recent studies show that this just does not work, at least not as much as we'd like. In actuality, even as we attempt to make up for lost sleep, the effects on the body linger. After years of losing sleep, chronic conditions can arise (see above). Here is what one study found when they tested adult sleep patterns.

For nearly 2 weeks, a group of healthy adults were taken to a sleep lab for observation. The group was allowed to sleep a normal 8 hours for the first few days. They were then tested for stress, attention, and productivity. Once this baseline was established, the hours of sleep were reduced and each subject was again evaluated. Attention span was poor, as was retention; productivity and concentration were down

as well. Changes in stress hormones and sugar levels could also be observed.

Patients were monitored for inflammation, cortisol, and sleepiness. After several days of less than adequate sleep, a period of normal sleep was granted. This type of recovery mimicked the typical weekend. After the recovery sleep, testing resumed. The good news was that many of the levels returned to normal. However, some did not. For example, the attention portion of the exam continued to yield poor results even after several days of recovery.

Researchers are therefore worried that those not receiving sufficient sleep during the week and trying to compensate during the weekends can yield negative consequences in the long run. The moral of the story—sleep is important and is not something that adequately responds to "I.O.U's." To take care of your health, catching up on the weekends is just not enough.

How to Enjoy Better "ZZZ's"

Don't let lying awake at night become your routine. The first step to getting more sleep is to make it a priority and keep a regular schedule that allows for enough shut-eye. These 8 lifestyle changes will help you battle your insomnia and finally give you a good night's rest!

Make the room you sleep in a peaceful retreat.
It's a no-brainer! If your bedroom is a place of distraction and chaos, it will be that much more difficult for you to fall asleep. Remove the alarm clock from sight — instead, put it under the bed or in a drawer. Adjust the room temperature for your comfort — for most people that's between 65°F and 70°F — and make sure you have comfortable pillows and enough blankets. Hang blackout curtains or wear an eye mask if you are easily awakened by light.

Add white noise.
For many people, noise that is steady and not easily identifiable is easier to tune out than the sound of snoring, the rumble of traffic, or the musical stylings of your iPod. For those who find total silence disturbing, try a white-noise machines which emits a steady sound without distracting you, or simply turn on your fan or bathroom ventilation.

Practice good sleep habits.

Sleeping well is often about establishing the right habits. If your bed has become a place of tension from an extended bout of insomnia, you have to work that much harder to associate bed with sleep again. Stick with a regular schedule of going to bed and waking up on both week nights and weekends; your body should consequently learn to associate certain times of day with a particular part of your sleep rhythm. Turn off all electronics at least 15 to 20 minutes before bed. Try keeping smartphones, laptops, and tablets out of the bedroom to reduce the temptation to check email. Finally, don't let insomnia back into the bedroom. If you are unable to fall asleep within 20 minutes, get up, go to another room, and do something relaxing.

Wean yourself off long naps.

People with insomnia often resort to prolonged afternoon naps to catch up on their missed sleep, but that's a mistake. Extended napping can become a counterproductive habit. Fight the urge; but if you must nap, don't sleep for more than 20 minutes and keep it before mid-afternoon. After a day or two, your body will learn that the proper time for sleep is when you lie down in bed at the end of the day.

Make a to-do list.

People tend to lie awake in bed angst–ridden over all the things they need to get done. If this sounds like you, draft a list of tasks for the following day prior to climbing into bed. Getting it down on paper helps get it out of your mind

Learn to relax.

You can't run a crazy life and expect to just unplug your mind when you slip into bed. Sleep requires relaxation of mind and body. Try to take 30 minutes out at the end of each day to unwind.

Exercise regularly, early in the day.

Some scientists believe that regular exercise may be the single best and safest method for improving sleep. Exercise forces the body to work harder than usual, which means we generally need more sleep to recuperate from the physical exertion. Exercise also increases the body's production of endorphins and other hormones that lead to feelings of calm and wellbeing. However, time of day does matter. If you're struggling with insomnia, limit vigorous exercise to the morning or afternoon.

Sources: American Academy of Sleep Medicine
Army.mil
AMEDD.army.mil
Runner's World
Everyday Health
National Sleep Foundation

The Pet Corner: Equine Nutrition

From foal to geriatric, proper nutrition is paramount to a healthy horse. Read below for tips as they relate to the age and/or discipline of your horse.

Help Your Foal Grow with Proper Nutrition

Source: aaep.org

A healthy foal will grow rapidly, gaining in height, weight, and strength almost before your eyes.

From birth to age two, a young horse can achieve 90 % or more of its full adult size, at times gaining as much as three pounds daily. Feeding young horses is a balancing act, as the nutritional start a foal receives can have a profound effect on its health and soundness for the remainder of its years.

By eight to ten weeks of age, mare's milk alone may not adequately meet a foal's nutritional needs. Moreover, as the foal's dietary requirements shift from milk to feed and forage, your role in providing the proper nutrition gains in importance.

To help you meet your young filly/colt's nutritional needs, below are a few reminders from the American Association of Equine Practitioners (AAEP):

1. Provide high quality roughage (hay and pasture) free choice.
2. Supplement with a high quality, properly balanced grain concentrate at weaning, or earlier if more pronounced rates of gain are desired. Be wary of over-supplementing, however, as too rapid of a growth rate, particularly within your larger breeds, often predisposes to OCD (osteochondrosis dessicans) or other musculoskeletal lesions!
3. Start by feeding 1% of a foal's body weight per day (i.e., 1 pound of feed for each 100 pounds of body weight), or 1 pound of feed per month of age.
4. Weigh and adjust the feed ration based upon growth and fitness. A weight tape can help you approximate a foal's size (available at most feed stores as well as yourveterinarian).
5. Foals understandably have small stomachs, so divide the daily ration into two to three feedings.
6. Make sure feeds contain the proper balance of vitamins, minerals, energy, and protein.
7. Use a creep feeder or feed the foal separate from the mare (to ensure it remains your foal's meal, not your mare's). Try to avoid group creep feeding situations.
8. Remove uneaten portions between feedings.
9. **Do not overfeed!** Overweight foals are more prone to developmental orthopedic disease (DOD).
10. Provide unlimited fresh, clean water.
11. Provide opportunity for abundant exercise.

The reward for providing excellent nutrition and conscientious care will be a healthy foal that grows into a sound and useful horse. For more information about providing proper nutrition for your foal, talk with your equine veterinarian. Additional information about foal nutrition can also be found on the AAEP's website www.aaep.org/horseowner.

Feeding the Performance Horse
Source: The Horse

Small errors in feeding can make a big difference in competitive horses' performance. This fact sheet reviews athletic horses' nutritional needs and describes how to determine if your feeding program is working. As with any nutrition recommendations, be certain to temper your enthusiasm and make changes to your horse's diet slowly to avoid colic or other detrimental health issues.

What's a Performance Horse?

By nature, horses are athletes. A once or twice weekly trail ride or training session does not qualify him or her as a performance horse. "Performance horses" are those actively in training for a competition and are typically ridden or trained at least than five times per week. Even among performance horses, nutritional needs will vary depending on the level of work: light work (such as Western and English pleasure); moderate work (such as ranch work, roping, or jumping); or heavy/intense work (such as polo, racing, or endurance).[1,2]

Nutrient Basics

All horses need a balanced daily ration consisting of six things: water, carbohydrates, proteins, fats, vitamins, and minerals. For performance horses, "energy" is widely considered the most important part of the diet.[2,3] This energy is what fuels the body and is primarily derived from metabolizing carbohydrates. Fat is also an important energy source. The exact amount of energy a horse needs (measured in megacalories per day) depends on his body condition and work level. Exact energy, protein, and mineral requirements for horses in various levels of work are detailed in *Nutrient Requirements of Horses: Sixth Revised Edition*,[4] are summarized online by various equine extension specialists,[5] and are touched on here:

Feeding Horses in Light Work Like most non-performance horses, those in light work can usually meet all their energy requirements from a forage-only diet (pasture and/or hay). If you choose to feed a lightly working horse concentrates, decrease the amount of forage so the total daily energy intake does not exceed the recommended maximum daily energy intake, or your horse will go from fit to fat. For example, an average-sized (1,100 lb) lightly working horse can be fed 20 lbs of hay (a mix of alfalfa and grass) or only 14 lbs of the hay if 3-4 lbs of oats are added. The amount of hay that should be fed will change again if only grass hay is fed (which is lower in energy than the alfalfa/grass mix) or if a commercial grain mix, rather than just oats, is added to the diet.[2]

Energy is widely considered the most important part of a performance horse's diet.

Feeding Horses in Moderate Work Moderately working horses do need more energy than lightly working horses, but they can often still meet their energy requirements from forage alone. If additional calories (energy) are required, add concentrates as described above for horses in light work, being sure not to overfeed.

Feeding Horses in Heavy Work Horses in heavy work are unlikely to meet their energy needs from forage alone. These horses will need concentrates (and probably fat) to meet their energy needs. For example, intensely working horses might need 15-17 lbs of alfalfa/grass hay plus 10 lbs of oats. Alternatively, they will need 18 lbs of grass hay plus 10 lbs of a commercial grain.

If large amounts of concentrates (i.e., more than 5-7.5 lbs) are needed to meet your horse's daily energy requirements, consider replacing some of the concentrates with a dietary fat source such as corn, canola, or soybean oil. These vegetable oils have significantly more energy than oats; 1 cup of vegetable oil has the same number of calories as 1.5 lbs of oats.[2]

When to Feed

In general, experts advise feeding grain no less than four hours before riding. Similarly, for light, moderate, and intense workers, remove hay four hours before riding to avoid "gut fill." Endurance horses are the exception to this rule; offer free access to hay right up until riding, and offer hay when possible during the competition.[2]

Nutritional Supplements

Depending on hay quality and choice of concentrate, some performance horses could benefit from vitamin, mineral, or other nutritional supplements for the coat, hoof, musculoskeletal system, or as a source of antioxidants. Various products are available either as single-ingredient or multi-ingredient products. Be cautious not to oversupplement, as this can have deleterious health effects (e.g., toxicity) and is expensive. To avoid oversupplementing, carefully review the type and amount of each ingredient included in all of the feeds and supplements you provide your horse.

Challenges

Although feeding performance horses might seem relatively straightforward, there are some key issues that owners

and trainers should recognize.[3] Some important feed-related considerations are:

1. High-performance horses need concentrates to meet their daily energy requirements; however, there is a limit to how much concentrate they can eat in a day. Replace some concentrates with oil, and feed the grain in small amounts throughout the day to minimize the chances of laminitis due to grain overload;
2. Horses fed high-concentrate diets eat their meals quickly, leaving hours with nothing to do. Bored horses can damage their stalls or develop stereotypies such as cribbing, weaving, and headshaking;
3. Oats and other single grains are not balanced foods. Oats are high in phosphorus, and if fed in conjunction with poor-quality forage, the phosphorus:calcium ratio will be reversed from recommendations. In turn, horses can potentially develop a disorder called secondary hyperparathyroidism, which can cause bone deformities and predispose the horse to fractures. Some nutrition experts recommend not using single grains at all, but rather commercial concentrates that are nutritionally balanced;
4. Hay quality varies markedly from batch to batch, making it difficult to know the mineral or protein contents. Type of hay, where it is grown, and what time of the year it is cut all impact the hay's quality and content (e.g., minerals and selenium levels). Have your hay analyzed by a local extension service.

Monitoring Success

One of the best ways to determine whether your feeding regimen is working is to routinely assess your horse's body condition score (BCS). Details on accurate condition scoring is available at www.TheHorse.com/pdf/nutrition/bcs.pdf.

Finally, consider working with an equine nutritionist.[7] Olivia Martin, owner of Performance Feeding Inc., studied the diets of 181 horses competing at the 2008 Winter Equestrian Festival. Various disciplines such as polo, pony hunter, show hunter, show jumper, and dressage were included in the analysis. Many of the performance horses had significant nutrient deficiencies, except those whose owners/trainers worked with an equine nutritionist.

"This survey revealed that some of the fundamentals of feeding horses were understood; however, much of the decision-making surrounding feeding practices was based on folklore, tradition, and misinformation," said Martin.

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3. Briggs Waller S. Challenges of feeding high-performance horses. www.TheHorse.com/19307
4. Committee on Nutrient Requirements of Horses,

Feeding Broodmares

Source: horse.com

Proper broodmare nutrition is one of the most important contributors to a successful breeding program

Overview

Broodmares are the cornerstones of the equine industry. They are the only source of new stock and often are expected to produce a healthy foal year after year. Proper nutrition is widely considered to be one of the most important contributors to a successful breeding program.[1] Over the past several years, research studies have greatly contributed to our knowledge regarding proper and optimal nutrition in broodmares.[2] Broodmare nutrition must be consciously considered and revised throughout the season. In addition, the mare's breed, age, stage of pregnancy, and the nutrient content of the feed all need to be taken into account.[3]

From breeding to weaning, the nutritional demands of any broodmare are divided into three key time intervals: During early pregnancy, the last two trimesters of pregnancy, and early lactation.[4]

During the last trimester, the mare needs about 15% more dietary energy for the growing foal.

Feeding During Early Pregnancy: Open and Maiden Mares

A mare's gestation lasts approximately 11 months (foaling usually occurs 338 to 345 days from the last breeding date). During the first two trimesters of gestation, from conception to the end of the sixth month, the foal's growth rate is not particularly remarkable. In fact, by month seven the foal is still only 20% of its birth weight and weighs only 2% of the mare's weight. Thus, a mare's nutrient requirements throughout this period do not differ greatly from those of an adult horse at maintenance.[4,5] Mature, idle horses and many mares in early pregnancy require only good-quality hay fed at 1.5% to 2% body weight (approximately 20 pounds of hay per day for an average 1000-pound horse).[6] Free-choice grazing is also sufficient for most mares in early pregnancy.

To circumvent excessive weight gain, avoid overfeeding a mare during early pregnancy.[4] Overweight or obese mares can have trouble foaling.

Feeding During Late Pregnancy

Late pregnancy, also called the last trimester, is from about seven months gestation until foaling. During this period, the foal's growth is phenomenal: He grows from 20% to 100% of his birth weight—about 0.75 to 1 pound per day. While a mare's digestible energy requirements increase only by about 15% during this period, her protein and mineral requirements increase more dramatically. It is therefore important to not overfeed energy (i.e., do not simply feed larger amounts of hay, pasture, or grain). These feeds are not high in protein, calcium, or phosphorus. The excess energy will not deliver enough nutrients to the foal, the mare will gain too much weight, and foaling problems could ensue.[4]

Instead, the goal is to provide slightly more energy but high amounts of protein (16% rather than 8% in non-pregnant mares), calcium (0.45%), and phosphorus (0.35%). Provide a concentrated feed specially formulated with the protein, calcium, and phosphorus needs of the mare in mind. The calcium to phosphorus ratios in these feeds are typically 1.8:1.[3]

Trace minerals (iron, zinc, copper, and manganese) are also an important consideration at this point in gestation. While the growing foal uses the protein, calcium, and phosphorus in utero, he stores the trace minerals to use during the first few months of life. These trace minerals are very important in growing foals and can help foals avoid such problems as developmental orthopedic disease. Minerals are included in most high-protein grain mixes designed for gestating mares. In addition, offer a trace mineral block for "free choice" access.

Feeding Lactating Mares

During early lactation, the mare's energy demands are very high. Milk yields range from 2 to 3% of the mare's body weight per day and are high in energy, protein, calcium, phosphorus, and vitamins.

Forage is the basis of all equine feeding programs; however, typical lactating mares require an additional 10 to 14 pounds of grain along with the forage per day (depending on the quality of the forage). Like during the last trimester of pregnancy, the grain needs to be fortified with protein, calcium, and phosphorus. It is very important to start increasing the amount of grain in the mare's diet over the course of the last few weeks of gestation. Sudden increases in grain intake can result in laminitis and/or colic—two serious health conditions that should be avoided at all costs.

In early lactation, trace mineral supplementation is not as important as it is during the last few months of gestation. The foal already has trace mineral stores in his liver, and adding more trace minerals to the lactating mare's diet will not increase the concentration of them in her milk.[4]

If a mare is bred back during early lactation, surprisingly little needs to change in her diet at this point. Remember that the fetus is growing very slowly during the first two trimesters of pregnancy. Lactation, not pregnancy, is the major concern in terms of nutrition.

Foals are typically weaned at six months of age. Around the time of weaning, as the mare's milk production decreases, it is important to also decrease the amount of grain being fed to the mare to avoid obesity. If the mare is not bred back, then she can be managed like any mature healthy horse, with a hay-based diet fed at 1.5% to 2% of her body weight.

Ensuring Success

Experts recommend that all mares undergo a careful, veterinary-supervised nutritional assessment before the start of every breeding season.[7] Correct nutritional management will ensure that your mare's body condition is optimal every step of the way and that foals are getting the nutrients they need to grow and develop properly.[5]

Routinely (i.e., weekly) determine your mare's body condition score (BCS) to ensure she is properly conditioned.[8] Frequent BCS evaluations will allow plenty of time to alter the mare's condition during pregnancy and in preparation for foaling and lactation. Make dictary changes slowly and consult your veterinarian or equine nutritionist with any questions or concerns.

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Feeding Geriatric Horses

Source: horse.com

Aging equines that can't properly chew or digest their food need special nutritional care

Overview

Just because a horse is older does not necessarily mean he requires a special diet; aging is not a disease.[1] That said, many older horses with special physical or nutritional needs might benefit from being fed a specific diet or feed modification(s) to maintain good health and body condition.

Before jumping in and changing an older horse's diet, however, it is imperative to have a licensed veterinarian perform a complete physical examination of the horse and to fully discuss the special needs of the horse with this veterinarian.

Routine examinations, vaccination, deworming, dental care, and farrier visits are integral components of horse ownership and can potentially minimize the development of feeding-related issues as horses age. Because we now have a generation of horses that received these basics on a regular basis, we are seeing more horses living and working until they are in their late 20s, 30s, and beyond.

Keep in mind that horses, like humans, all age differently. A 15-year-old horse might have physical problems due to age (tooth loss, arthritis, metabolic problems) and require a special diet, or you might have a 25-year-old horse that needs no special nutritional care.

LARS BYRUM

For older horses with missing or worn teeth, consider feeding forage cubes, chopped hay products, or soaked hay.

Geriatric Feeding Basics

As long as a horse is healthy and happy, there really is no reason to change his diet.[1] For geriatric horses that are starting to show signs of their age, a diet change can markedly improve their health. Simply switching to a more suitable feed can potentially have a tremendous impact on body condition and health problems.

Just as a growing horse has special dietary needs, a horse on the other end of the age spectrum also requires special attention. Inefficient absorption of nutrients from feed by an aging (and potentially battle-scarred) intestinal tract, and problems with chewing surfaces or loss of teeth can impact how horses "use" their feed.

Also, many "old horse disorders" can negatively affect an older horse's ability to digest and absorb nutrients, and an inappropriate feeding protocol can exacerbate these conditions. These senior maladies can include equine Cushing's disease; liver, kidney, and intestinal dysfunction; decreased saliva production; tumors; recurrent airway obstruction (formerly known as chronic obstructive pulmonary disease, COPD), or summer pasture-associated obstructive pulmonary disorder (SPAOD).[1] Conversely, good nutrition can help owners better manage these conditions. Owners should avoid feeding most geriatric horses, especially those with pituitary dysfunction (i.e., equine Cushing's disease), grain-based feeds. The high sugar content of the grain (or other concentrates like sweet feed) can stimulate extreme changes in blood sugar and insulin levels. Nutritionists also report bran is a potential kidney stressor because of its high phosphorus content.[2]

There are a tremendous variety of "senior" feeds available on the market designed for geriatric horses (and other horses with dental or digestive problems), but it is important for owners to understand what is in these feeds. For example, some of the high-sugar senior feeds have been reported to exacerbate liver dysfunction.

Know what problems your aging horse has before changing his diet. For example, one nutritionist reminds us that horses excrete excess calcium via their kidneys, so alfalfa (which is calcium-rich[3]) isn't recommended for horses with kidney dysfunction.

Ideally, most horses are on a forage-only diet. Unfortunately, forage-only diets are not appropriate for aged horses that can't chew properly, and will not have all of the nutrients required by an older horse.

All horses should be offered free-choice water and a plain white salt block. Not all horses require a red (mineral) block or extra nutritional supplements.[4]

Finally, score horses' body conditions frequently to assess and adjust the amount of feed you offer your horse to maintain an ideal body weight.

Special Considerations

Dental Care Many horses now are outliving their teeth. Because equine teeth are pushed out of the gum as they are worn down, at some point horses can simply "run out" of tooth. Just being able to properly tear off and chew grass and hay is challenging for these horses.

Chewing For horses with missing or

worn teeth, consider feeding forage cubes, chopped hay products, soaked hay, or pelleted senior feeds with warm water to make a soupy mash. You can also do this with complete feeds (those in which the forage portion of the diet is included).[1,5]

Weight loss Weight changes, particularly weight loss, are not uncommon in aging horses. Metabolic alterations, dental problems, chronic discomfort/pain, internal parasites, malabsorption of nutrients, liver or kidney dysfunction, or debilitating diseases are all thought to be potential causes for loss of condition. Improvements in body condition can likely be achieved by increasing the energy density of the feed and offering a senior ration that is extruded, predigested, or pelleted to improve digestibility, and easy to chew.[1,5]

Winter Older or geriatric horses living outside might need more calories in winter since they're burning more energy to keep warm. Hay and forages ferment in the hindgut, and this actually warms the horse from the inside out. Grains don't do this. If you try feeding your older horse extra grain, it won't provide the resources he needs to generate extra body heat. He'll likely shiver for warmth instead, which can be exhausting for the older horse.

Summer All horses need shelter from the sun, and geriatrics with Cushing's disease might cease sweating and require extra measures to keep them cool. Deworming is also important, as research has shown some older horses (particularly those with Cushing's disease[6]) might have decreased immune responses to parasites. Parasites can damage the gastrointestinal tract and make it harder for the geriatric horse to absorb the necessary nutrients.

Competition Remember that sometimes older horses cannot compete with younger or more aggressive herdmates that chase or keep them away from food or water sources. Some horses might have slower rates of food consumption, thus they don't get the calories they need in a herd situation.

Change slowly It is imperative to make all dietary changes slowly over the course of several days to minimize the potential for gastrointestinal upset.[4]

Additional Information

Owners using "senior" feeds should read the labels and/or contact manufacturers for product-specific questions regarding energy, mineral content, type and quality of forage (if a complete feed), amount and source of fat, etc. Not all senior feeds are made the same. Agriculture extension specialists are widely available to provide free services for farm and horse owners and can help you find answers to your nutritional questions about your aging horse.

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Feeding the "Easy Keeper"

Source: The Horse; aaep.org

Horses that maintain their weight easily are prone to obesity, laminitis, and metabolic issues

Overview

The term "easy keepers" refers to horses and ponies that maintain or gain weight on a minimum amount of food. While easy keepers are widely considered a joy to own in terms of feed costs, the downside is their potential for obesity, laminitis, and metabolic issues.

Overfeeding a horse is hard on his musculoskeletal system, is contraindicated if he has osteoarthritis, decreases his athletic stamina, interferes with heat dissipation, and can contribute to metabolic syndrome, insulin resistance, and laminitis. Owners of easy keepers should routinely perform body condition scoring and modify feeding regimens to ensure these horses maintain a healthy body weight.

PHOTOS.COM

Easy keepers have a tendency to be overweight and might be at risk for developing equine metabolic syndrome and/or insulin resistance.

Body Condition Score

Easy keepers have a tendency to be overweight. One of the contributing factors (besides metabolism) to obesity in horses is that owners often fail to recognize what constitutes a healthy body condition score (BCS). While various body condition scoring systems exist, scoring does not have to be a complicated or time-consuming process.

Horses at an appropriate body weight have rib and hip bones that are not visible, but easily felt. In contrast, a horse is considered overweight if:[1,2]

- His ribs are difficult to feel with firm digital pressure;
- He has a "cresty" neck;
- His withers are rounded and covered in fat;
- The saddle and girth make indents in his fat when positioned;
- His shoulder blades are not easily seen;
- The area surrounding his tailhead is bulging or feels soft; and
- His inner thighs are in contact more than a quarter of the way down the inner thigh region when he is standing square.

Forage-Only Diets for Easy Keepers

Horses require six basic classes of nutrients in their diets: Water, carbohydrates, protein, fats, vitamins, and minerals. Forage alone (grass and/or hay) can meet the dietary needs of most horses not involved in moderate to heavy work.[3]

You can offer forage either free-choice or as a daily ration. A healthy adult horse requires 1.5-2.5% of his body weight in hay per day. Easy keepers generally require only 1.5% of their body weight in hay each day. Thus, an average 1,000-pound easy keeper only needs 15 pounds of hay daily. The quality of the hay the horse requires depends on his nutrient needs and can be determined by observing how well he holds his weight; some easy keepers can do fine on just grass hay, while others require hay that is more nutrient-dense. Having the hay tested is the only reliable way to determine its nutrient content. For more information on hay analysis, contact your state's local equine extension specialist or check out www.extension.org/pages/Hay_Analysis:_Its_Importance_and_Interpretation.

Once you have established adequate nutrition and feed volume, weigh your easy keeper's hay rather than simply eyeballing or "guesstimating." This is an integral step to avoid overfeeding.

All horses should be offered free choice water and a plain white salt block as well as a red mineral block.

Remember that horses can experience gastrointestinal upset secondary to abrupt dietary changes. Make any changes to a horse's diet slowly over the course of several days, even if you're eliminating components.

Metabolic Syndrome and Insulin Resistance

Overweight easy keepers are at risk for developing equine metabolic syndrome (EMS) and/or insulin resistance (IR). EMS is associated with obesity, abnormal fat deposits, and chronic insulin resistance. IR is a condition in which an increased production of insulin is required in order to maintain (or attempt to maintain) circulating blood sugar levels within normal limits. Horses with EMS/IR have a higher chance of developing laminitis than other, non-EMS/IR horses.[4]

There is no specific treatment or cure for horses with EMS/IR. Instead of relying solely on pharmaceutical drugs, treatment is aimed at altering the horse's diet and instituting a strict exercise regime to limit disease progression.

Diet

Easy keepers' pasture access should be limited in some way during the spring and fall when the grasses tend to be highest in their sugar/starch content. Avoid turning easy keepers out on overgrazed pastures, especially during these periods of rapid growth, because the shorter grasses often accumulate more sugar and starch during periods of stress. The grasses should be at least three to four inches tall (fully mature and, therefore, lower caloric content), but mowed to eliminate any seed heads (grain). Grazing muzzles also can be used to restrict intake.[6]

Low-sugar and low-starch hays are recommended for easy keepers. Again, go that extra mile and have the hay analyzed to ensure its sugar content is low (i.e., the hay contains less than 10-12% soluble sugars). If the sugar content is either known or suspected to be high, soak the hay in cold water for 60 minutes or hot water for 30 minutes to remove some of the sugar before feeding it to your horse (be sure to drain the water before feeding the horse).

Eliminate grain and other concentrated feeds and high-sugar feeds from easy keepers' diets. If a horse needs to consume extra fiber or energy, try adding beet pulp and "low starch" concentrates, respectively, to the diet.

Exercise

Veterinarians also recommend owners increase the exercise level of overweight horses or those with EMS/IR. This involves daily or near daily exercise in the form of hand walking, longeing, long-lining, driving, riding, ponying, or any combination of the above. Simply turning horses out is not considered sufficient exercise. In some cases it might not be possible to immediately institute an exercise regime (if the horse is suffering from a laminitic episode, for example). In such cases, institute the dietary changes first, wait for the episode to resolve, then slowly increase the horse's exercise level.

Supplementing the Easy Keeper

Horses usually do not require nutritional supplements if they are fed good quality hay. Nutritional supplements are widely considered safe; however, be aware that you can oversupplement horses.

Additional Information

Discuss easy keeper concerns with your veterinarian. Contact your local agriculture extension specialist for free information on feeding guidelines, pasture management, and testing forages and hay.

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10 Tips for Choosing the Best Hay for Your Horse

Source: aaep.org

While increasingly pricey, high-quality hay is an important source of essential nutrients in your horse's diet. A horse's protein and energy requirements depend on age, stage of development, metabolism and workload.

A mature horse will eat 2 to 2.5% of its body weight a day, and for optimum health, nutritionists recommend that at least half to 75% of this should come from roughage such as hay. For a 1000-pound horse, that means at least 10-15 pounds of roughage daily.

Hay generally falls into one of two categories – grasses or legumes. Legume hay is higher in protein, energy, calcium and vitamin A than grass hays. While hay alone may not meet the total dietary requirements of young, growing horses or those used for high level performance, sufficient amounts of high quality hay may supply ample nutrition for less active adults and your "easy keepers.".

While most owners select hay based upon how it looks, smells, and/or feels, try using the following tips from the American Association of Equine Practitioners to select the best hay for your horse:

1. It's what's inside that counts! Ask that one or several bales are opened so you can evaluate the Interior flakes. Don't worry about slight discoloration on the outside, especially in stacked hay.

2. Choose hay that's as fine-stemmed, green and leafy as possible to improve digestibility and reduce the risk of impaction colic. It should be soft to the touch.
3. Avoid hay that is over-cured, excessively sun-bleached, or smells moldy, musty, dusty or fermented.
4. Select hay that has been harvested when the plants are in early bloom for legume hay or before seed heads have formed in grasses. Examine the leaves, stems and flowers or seed pods to determine the level of maturity.
5. Avoid hay that contains significant amounts of weeds, dirt, trash or debris.

6. Examine hay for signs of insect infestation or disease. Be especially careful to check for blister beetles in alfalfa, and ask the grower about any potential problems in the region.

7. Reject bales that seem excessively heavy for their size or feel warm to the touch, as they could contain excess moisture resulting in mold.
8. When possible, purchase and feed hay within a year of harvest to preserve its nutritional value.
9. Store hay in a dry, sheltered area or cover in the stack to protect from the elements.
10. When buying in quantity, have the hay analyzed by a certified forage laboratory to determine its actual nutrient content.

Remember that horses at different ages and stages of growth, development and activity have different dietary requirements. Consult your veterinarian or a qualified equine nutritionist when formulating your horse's ration. We can help you put together a balanced diet that's safe, nutritious and cost-effective.

Case Discussion

Case 1: Alright, I'm stepping onto my soap box for a second. NSAIDs such as Banamine and Bute should NEVER be given IM (intramuscular)! While both drugs are labeled for this route, the drug creates an environment deep within your horse's muscle perfect for an anaerobic (does not need oxygen) bacterial infection, namely Clostridium species.

Case in point, the horses below received an IM injection of an NSAID. What followed, Clostridial Myositis/Fasciitis - a deep, severe clostridial infection within the muscle or fascial planes. The most effective method of treatment is unfortunately to fenestrate (filet open) the affected area to introduce oxygen deep to the underlying tissues. More specifically, ultrasonography (photo 1) is used to identify the affected regions (air (white) should not be seen in muscle (grey); multiple, deep surgical lacerations are made into the horse's musculature (photo 2-3, 7-8), necrotic tissue is debrided (removed) and the area lavaged. This method of therapy is continued for weeks to months during which time the tissues are kept open via drains (photo 3). If the spread of infection continues, additional lacerations are made. It truly is unnecessary.

So, how can you administer an NSAID to your horse? With the liquid form, if you're not comfortable with intravenous (in the vein), you can give the exact same dose orally (by mouth). The paste/tablet/powder forms, of course, should always be given by mouth.




Additional Images, Clostridial Myositis: