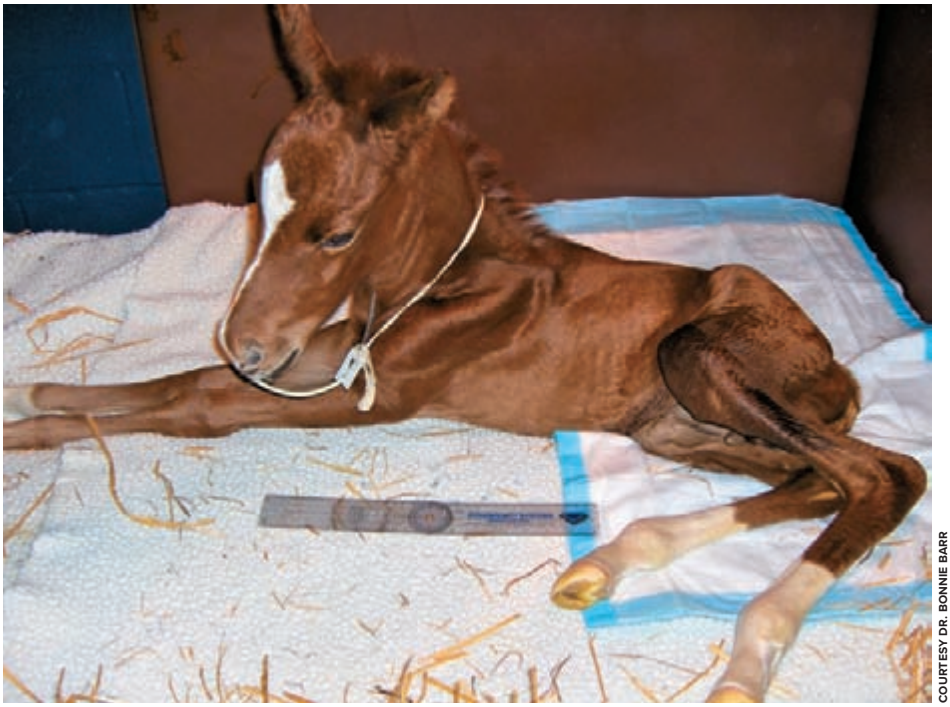
Dealing with Premature Foals

Survival rate depends on how compromised the foal is at birth

BY HEATHER SMITH THOMAS



COURTESY DR. BONNIE BARR

Stress in the mare can trigger labor, which can cause a foal to be delivered prematurely

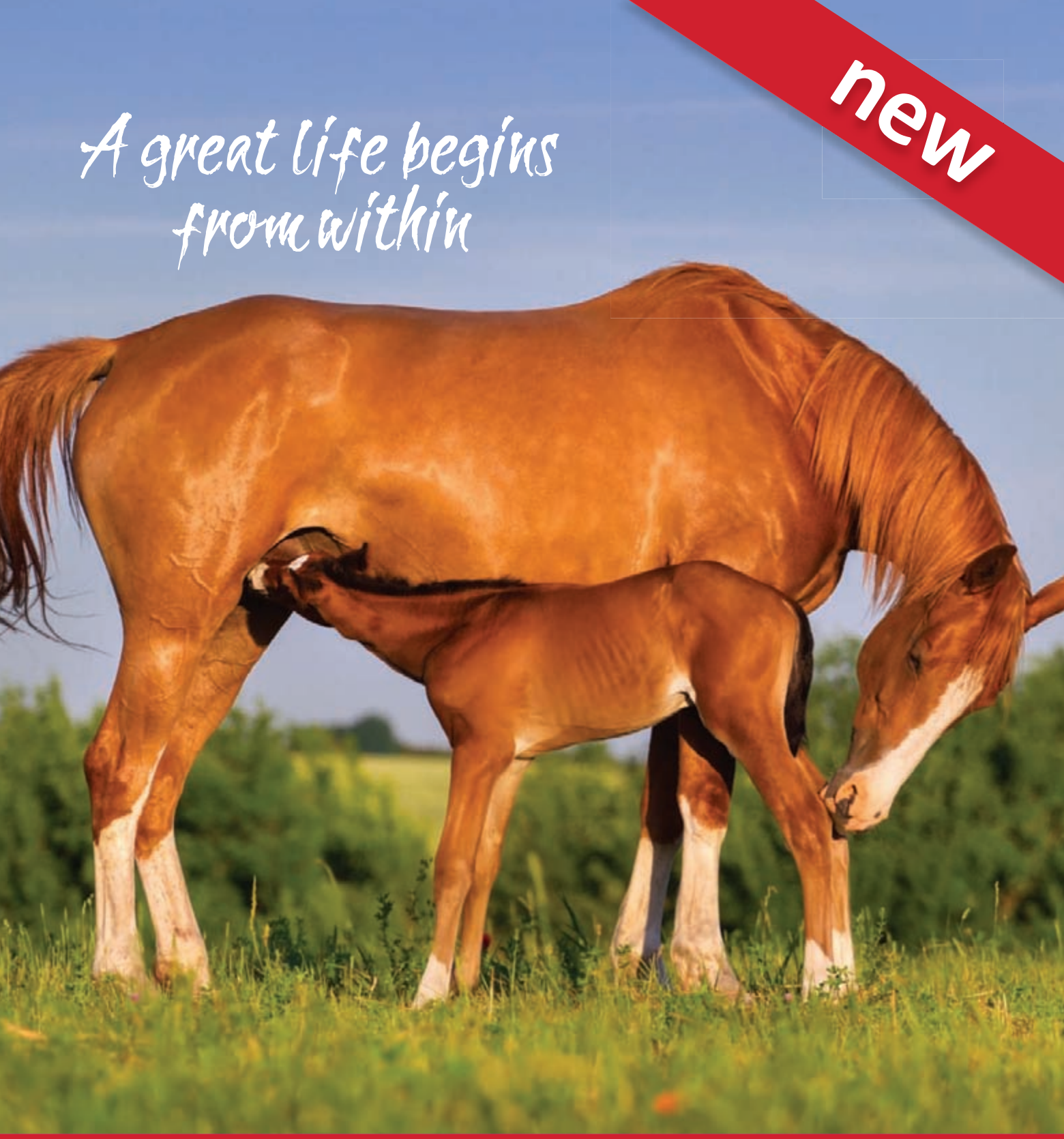
OCCASIONALLY A MARE WILL FOAL too early, and the foal arrives prematurely. Foals born at less than 320 days' gestation are considered premature, and chances for survival decrease considerably if a foal comes earlier than 300 days. These foals are not ready for life outside the uterus and might need intensive care to survive.

REASONS FOR FOALS COMING TOO SOON

Dr. Bonnie Barr (Rood & Riddle Equine Hospital, Lexington) says one of the main reasons the foal will come prematurely is that something is not quite right.

"One of the most common reasons is placentitis—which is inflammation or infection of the placenta," she said.

Labor starts too soon, and the fetus is expelled before it is ready. If a mare shows signs she might be getting ready to foal (relaxed muscles alongside the tail-head, the



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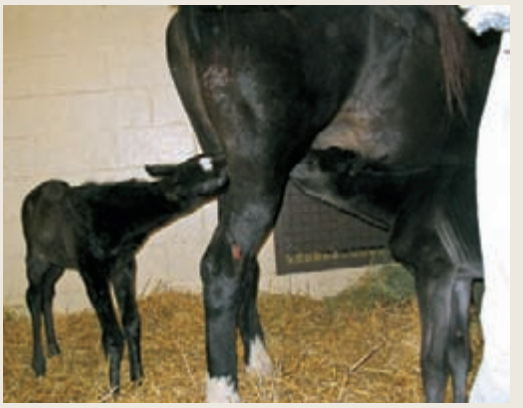
TWINS



Most Thoroughbred breeders try to prevent the problem of twins, terminating one of them in early pregnancy, but sometimes a twin is missed and the mare carries both foals. They generally don't do well, however, and are usually born prematurely.

Dr. Bonnie Barr of Rood & Riddle Equine Hospital near Lexington, has dealt with only a few cases of twins.

"Those mares all foaled prematurely," she said. "Except for one mare whose foals survived and did well, the twins I've seen were not ready for birth. They were alive but were not normal enough to try and treat them. The owners chose not to try to save them.

"It's much different with a premature foal than a premature human baby—mainly just because of the difference in environment," she explained. "A foal needs to be able to get up and nurse and outrun predators. With humans we can give babies intensive care; it's harder with foals that are severely compromised."

If the owner wants to try to save them, twin foals can be given intensive care.

"But these foals often end up with severe pneumonia, sepsis, and/or gastrointestinal issues because the GI tract can't tolerate milk," Barr said. "You have a premature foal that may also have immature bones."

It can be an uphill battle to save twins, and then there's the question of whether they could ever be athletes.

"We have to be realistic when talking with owners, and tell them that the odds are that neither twin will survive or one might survive but probably be compromised and have some problems," she said. "There are some instances where twins are born and they're fine—but they are the exceptions."

— By Heather Smith Thomas

start of udder development), she should be checked by a veterinarian. Infection of the placenta or premature separation of the placenta can be detected by ultrasound.

The mare can be put on antibiotics if there's placentitis and given Regumate or progesterone to try to keep the cervix tight. She can also be given drugs to keep the uterus from contracting, and sometimes she will hang onto the pregnancy long enough to have a foal that will have a better chance of surviving.

Onset of labor can be triggered by the mare, by the placenta, or by human management, or by reasons we don't fully understand. Placentitis can lead to premature delivery by causing fetal stress. Severe stress to the mare can

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Rood & Riddle's Dr. Bonnie Barr

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Premature foals need close monitoring to make sure they can function normally while others will need intensive care

also cause an early delivery.

"Stress stimulates the body to produce more cortisol, which can trigger labor," Barr said. "Stress in the mare may be due to severe infection, pneumonia, colic, etc. The fetus itself may also trigger onset of labor. This may be due to genetic problems causing organ malfunction, or other problems. Twins can be another reason for foals to be born prematurely."

Sometimes human error such as giving a mare the wrong medications causes a premature birth. Some tranquilizers might cause uterine contractions, and steroids sometimes trigger labor, as can accidentally giving the mare prostaglandin. There are some drugs and medications that should not be given to pregnant mares.

In some instances a late-gestation mare might be dying and the owner chooses to have the veterinarian induce labor to save the foal.

For example, a mare might have a broken leg or some other problem for which there is no hope (the veterinarian and mare owner have decided she cannot survive), but labor can be induced, or the foal can be taken by Cesarean section. This may not work, but there's sometimes a chance to save a foal.

Many of the foal's organ systems mature very late in gestation, particularly the respiratory system—which actually matures due to maternal cortisol levels rising (as happens in a normal birth). That's why sometimes an induced labor gives the foal a better chance of survival than a C-section.

SIGNS OF PREMATURITY

"Textbook definition of prematurity is gestational length, but we generally make our determination based on the characteristics of the foal at birth," Barr said. "This would be a smaller-than-normal foal, low body weight, poor musculature, laxity of the limbs, etc. The premature foal often has a very short, fine hair coat, floppy ears, and sometimes a small, domed forehead."

The foal might be weak or have trouble doing the basic things a normal foal would do.

"Premature foals may have a hard time regulating body temperature, and you have to keep them warm," she said. "They have a lower heart rate than normal. The foal may have a harder time getting up, and may not nurse right away."

DYSMATURE FOALS VERSUS PREMATURE FOALS

"The dysmature foal may have the same characteristics as a premature foal, but is full term. Some are actually over-due and may be what I call 'overcooked' with developmental problems," said Dr. Bonnie Barr of Rood & Riddle Equine Hospital near Lexington.

By number of days the foal is full term or overdue, but looks premature. It hasn't been developing at the proper rate. A dysmature foal often has the same prognosis, same complications, and same treatment as a premature foal.

Some mares carry foals longer than normal—365 or 370 days—but the foal is very small. There is usually some kind of uterine insufficiency or placental problem that interfered with normal rate of development; this is why the mare held onto the foal longer, trying to get it more fully developed.

When a mare goes overdue, the veterinarian may recommend an ultrasound examination across her abdomen and evaluate the condition of the foal—to make sure there are no signs of stress in the fetus. If everything is going well, the fluids look good, the foal is moving, and its heart rate is good, with no signs of stress, often the best thing to do is just wait and watch.

— By Heather Smith Thomas

Premature foals don't maintain their hydration very well, either, and their kidneys might not be as functional. If a foal is dehydrated, its eyelids are more likely to be flipped inward.

The premature foal's skin is a lot thinner than normal, and the hair coat very short, soft, and fine. If the foal spends much time lying down, it ends up with ulcers and abrasions just from the pressure on tender skin. This is why it's important to have soft bedding for the foal and make sure the foal doesn't keep lying on the same side too long.

MANAGING THE PREMATURE FOAL

"What the foal will need depends on how premature it is and how many of these characteristic problems are evident—and how much help is needed," Barr said. "I have seen some foals from mares with a documented placentitis

that an owner or veterinarian has been trying to manage the best they can, yet the foal is born prematurely—but is up and walking around. If the foal is doing everything right, it doesn't need as much management and intensive care as a foal that isn't able to stand and walk around."

Some of these foals just need close monitoring for a while to make sure they can function normally while others will need intensive care.

"One thing we always do, if we are suspicious that it's a premature birth, is X-ray the knees and hocks," she said. " We know those bones are the last to mature during gestation. If the foal is born early, those bones may not be completely calcified. You don't want that foal to be up and walking around too much and putting stress on those bones, or you might end up with the bones being crushed. If that happens, the foal will not be able to grow and develop normally and won't be an athlete—and might have some crippling in those joints. I always make sure I know what those bones look like before the foal is turned outside with its dam."

Since the premature foal may also be more vulnerable to infections than a normal foal, prophylactic antibiotics may be given.

> If a premature foal is really struggling to breathe, the foal often doesn't survive

"The immune system may be too immature to deal with all the different challenges and various things the foal will be exposed to during and after birth," Barr said.

"We want to make sure the foal gets adequate colostrum, and if it doesn't, we may follow up with some plasma to provide the necessary antibodies. If the foal is not able to nurse, it will need some type of nutrition, whether by IV or by feeding tube—milking out the mare and feeding the foal by tube every hour.

"The foals we take care of here in the hospital that are unable to stand are closely monitored; we measure their urine output and make sure they are passing feces—all the basic functions," Barr continued. "Some of them end up with secondary complications like septicemia, and some may end up as dummy foals due to the fact there was some type of hypoxic insult (oxygen shortage) in utero or during birth. This can lead to neurologic problems."

Sometimes the lungs are not mature enough to function normally.

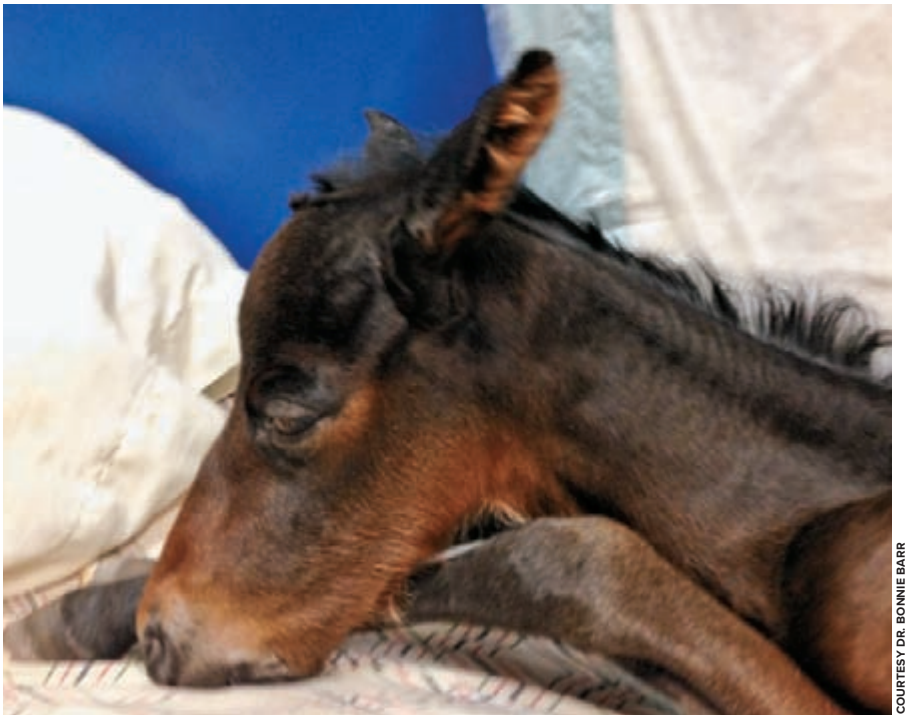
"These are the foals we really worry about and keep a close eye on," Barr said. "We put them on prophylactic antibiotics to prevent pneumonia. If it were a human baby, it would be given some kind of surfactant (a surface-active lipoprotein complex that reduces surface tension of fluid in the lungs)."

Surfactant is naturally produced in the lungs, and makes the tiny air sacs more stable and keeps them from collapsing when the air is exhaled. The fetus begins making surfactant in late gestation, in preparation for breathing air when it is born, but the premature foal or baby may not have enough yet, and will have trouble breathing.

"Human babies can be given a surfactant product, but we don't have an equivalent product for horses," she said. "In my experience, if a premature foal is really struggling to breathe, with respiratory problems due to premature lungs, the foal often doesn't survive."

Premature foals might need fluid more often, but this depends on the situation and the extent of their problems. If the foal is showing neurological signs, this may be due to brain swelling—and overhydrating the foal can make that problem worse. This is one reason a premature foal has the best chance for survival at a neonatal unit in a veterinary clinic where he can be very closely monitored and given proper intensive care. It is a very fine line with these fragile babies, regarding fluid and electrolyte balance.

You have to know which electrolytes to give because the balance can be skewed either way; the sodium might go



COURTESY DR. BONNIE BARR

Premature foals might need fluid more often...but it is a fine line regarding fluid and electrolyte balance

too high or too low, and the calcium can go too high or too low. The foal needs intensive—and expensive—monitoring and care, but its best chances are at a medical facility where it can be closely monitored.

"You need to know some answers quickly, and the foal will likely need to be on oxygen and fluids—fed by nasogastric tube or intravenously," Barr explained. "You have to also prevent positional pneumonia and pressure sores; these foals need to be continually repositioned so they are not always lying the same way. They need to be moved and rotated, on water beds or some other material that gives least pressure and is non-abrasive."

There have been a lot of advances in the care of premature foals, with the ability to save some now that could not have been saved 20 years ago. The neonatal intensive care units are becoming more specialized and high-tech every year, but there is a long way to go yet, compared to human babies.

PROGNOSIS

Survival rate will depend a lot on how compromised the foal is at birth and any secondary complications. The foal might live but end up crippled or impaired in ways that would negate an athletic career.

"I can only think of a few studies looking at this, following these foals through life and describing the outcome and athletic careers of premature foals," Barr said. "A study from the University of Florida suggested premature Thoroughbred foals are less likely to be successful athletes when compared to their siblings, but the number of foals in that study was small.

"Another study from Rood & Riddle Equine Hospital, which evaluated the athletic potential of foals with poorly calcified hock bones, concluded that these foals were less likely to race and earned less money than their maternal siblings," she said. "A great project for someone would be to look at a large number of premature foals and their outcome and athletic careers. Here in the Thoroughbred world it would be easy enough to do, based on whether they are able to race. If they go on to do something else, it might be harder to track them."

Some might end up sound enough to be used for breeding, and some might manage alright in a less-strenuous career than racing.

"They might be able to become riding horses for pleasure out on the trail, for instance," she said. BH

Heather Smith Thomas is a freelance writer based in Idaho.