

Foal Talk: NI Foals - Two Scenarios

by Danielle Ray-Swords

Reviewed by Dr. Jerylyn Jacobs, Dr. Tammy Macnemrra & Dr. Ted Johnson

Vermont/New Hampshire Vet Clinic

Dummerston, VT

802-254-5422

Photography by Danielle Ray-Swords

THE FRIESIAN published an article on Neonatal isoerythrolysis in 2003, written by Dr. Hein Van Haeringen, PhD, Vet. Med., founder of the Van Haeringen Laboratories in Wageningen, The Netherlands. According to Dr. Van Haeringen: "It has been known for many years that foals can die when the difference between the blood groups of mare and stallion is too great. For a long time, this was a familiar problem among English thoroughbreds and riding horses such as the ones registered by the KWPN. It was not until recently that this problem was cropping up and possibly increasing among Friesian horses. This article is more practical than theoretical in nature. After all, it is more important to try to avoid this misery or to recognize it in the early stages." This is still true in 2006. Danielle Ray-Swords addresses exactly the practical nature of avoiding and dealing with NI in the early stages.

Spring is the most awaited season among Friesian breeders, as those sweet nickers and the pitter-patter of little hooves fill our hearts and our dreams. In most cases, foaling goes smoothly and without incident. When our maternity stalls are full of those adorable babies and our mares are settling into their mother roles, we can finally get some well deserved sleep and turn off the monitors.

This idyllic scene has played out in my barn for almost a decade and I have come to love that feeling of security when the babies are nursing happily, and nature is providing the colostrum that is nourishing their systems and providing the first line of defense in those fragile little bodies. Unfortunately, nature has another scenario that can turn this blissful scene into a frenzied nightmare, and the culprit is none other than that liquid gold, colostrum. In this nightmare, a frisky, thriving foal can turn into a lethargic, highly compromised baby in less than 12 hours, and its survival depends entirely on immediate veterinary care at a well-equipped equine facility. There is very little time to lose and often, by the time foal owners realize that there is a problem, the culprit is already well at work.

The incidence of Neonatal isoerythrolysis (NI) foals is on the rise in the Friesian breed and as responsible breeders we need to be informed, alert and prepared to deal with this life threatening reality. NI is caused when the mare produces antibodies against the foal's red blood cells and transfers those antibodies through colostrum during the early stages of lactation and nursing. The purpose of this article is not to inform the reader of the medical/clinical ramifications of NI foals, but rather, to share two radically different personal accounts and that, fortunately, both have happy endings. However, some NI foals are not so lucky and some do not survive. It is suspected

that in some foal deaths, NI was not even recognized as the primary cause of death. It is extremely important for breeders to understand this complication and to be on the lookout for the rapid progression of presenting symptoms.

Our first NI foal, Lilly (Jorrit x Pike), was born in 2003. Her mother's pregnancy was difficult from the start and included multiple breedings to conceive and many months of regumate to maintain the pregnancy. We watched her like a hawk during the long gestation period and as the foaling date neared, we readied ourselves with video monitoring and a well-equipped foaling kit. Our vet was put on alert and we began our vigil. Finally, on a warm April evening at midnight, Lilly was born. We all drew sighs of relief, as her birth had occurred without incident and without complication. The only incident of note was that the mare had retained her placenta and, therefore, the vet was summoned. While waiting for the placenta to deliver, we attended the newborn foal, making sure that her "milestones" were met. She stood quickly, nursed vigorously and passed her meconium. By 2:00 A.M. the little filly was practically doing somersaults in her stall and we looked forward to letting her out to run the next day. With the placenta delivered and the foal suckling happily, we retired for some much needed sleep and left mother and baby to bond.

The first sign of a problem was about 12 hours later. The once vivacious little filly had become quite lethargic and her pattern began to change. Initially she would sleep, eat, run a few laps around the stall and then sleep again. By noon the next day, she had struggled to get up, and once nursed would immediately fall back to the ground. At closer examination, her eyes appeared yellowish and her urine had become traced with pink. The vet was again summoned and, at once, NI was suspected. Within

the hour, the mare and filly were on the trailer enroute to Tufts University Veterinary Hospital, a two hour ride that seemed like forever that day. Once at the hospital, Lilly's NI was confirmed and the long and expensive road to recovery began. To make matters worse, the mare developed a uterine infection (an ultrasound had revealed an abnormal shape of her uterus) and the filly had developed some secondary infections as well. Our high spirits and the elation of her birth fell to the ground like a lead balloon and we buckled in for the difficult journey ahead. Ten days and \$7,800 later, our little filly returned home. She arrived with a catheter in her neck and a full regiment of round the clock medications. Her follow up care lasted for several weeks and as Lilly grew and became stronger, it took quite an effort to hold her down for meds and daily care (a good sign of course, but increasingly difficult!). Even the unsuspecting UPS driver, who had spare hands and ten extra minutes, was enlisted into the cause! Lilly became somewhat of a neighborhood celebrity and her well-wishers were rooting for her recovery. Much to everyone's delight, this story has a happy ending and Lilly is a treasure in our barn today.



Our second incidence of NI occurred this past spring. The outcome is the same - the filly (Tallulah, "Lulu" - Teade x Melle) is beautiful, healthy and vivacious, but the story had a very different twist. Armed with the knowledge and information that we had gained from our first round with NI foals, we proceeded with a highly proactive defense strategy. Having been through the costly and emotionally draining experience once before, NI testing became a routine in our breeding program. The sire's blood type was readily available (much praise to Iron Spring Farm for making this information available and for recommending NI testing), and the mare's blood was collected for testing at approximately three weeks prior to her foaling date. The blood was collected by our veterinarian and sent to the UC Davis laboratory in California for an antibody screening. The test results, which came back in about a week, revealed the presence of a lytic anti-Aa antibody, thus indicating that the likelihood of NI was high. With this information at hand, we had about two weeks to put together a plan for intervention. It is really important at this point to stress the necessity of having a solid plan for the treatment of the newborn and to have all of the necessary equipment available and functioning. Our first option was to take the pregnant mare to Tufts Veterinarian Hospital to foal out, and it is important to note that this is a very wise choice for many people in this situation. The "home intervention" method requires round the clock monitoring, specialized equipment and the availability of substitute colostrum. Because the intervention requires much handling of both the foal and the mare, it is important to consider the mare's suitability for intervention. If she is a fussy or agitated mare with a high likelihood of aggression toward a handler, it may be a wise choice to keep her in the hands of professionals. In our case, this mare is a seasoned broodmare who is trusting and patient, and yet we seriously considered taking her to Tufts, as we knew that one drop of the dreaded colostrum could set

the whole disaster in motion. As we debated the pros and cons of home intervention, the mare decided to deliver a few days early, and our plans were abruptly made for us. As her labor began, we carefully assessed our game plan and readied our work force. Our success story is the result of a well coordinated effort between our vets, dedicated friends/horse professionals, and Tufts medical personnel. Our plan went exactly according to the script and the result is a healthy vigorous filly. The overall cost of this intervention was about \$700, which included vet calls, colostrum and testing.

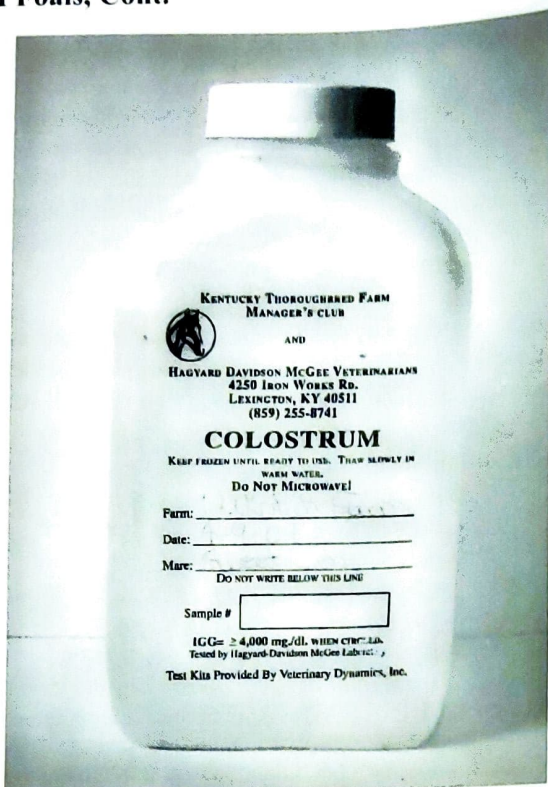
Once the filly was born, we gave her time to acclimate and to "find her legs." This is always a very exciting phase of foaling, as we experience each little step along with the foal! And of course, we feel it every time they come crashing down, too, as it is all part of the journey. Once the filly was walking and searching for her first meal, the intervention began. Prior to this birth, we purchased 3 pints of colostrum from two different sources. Two pints were on hand from last year's foaling, and one pint was purchased for this particular foal. We decided to have colostrum on hand last year, but did not need to use it. Colostrum can be frozen for up to two years and it certainly does not hurt to have some on hand. Two high quality colostrum banks were used: Hagyard Davidson McGee in Lexington, KY, and Rood and Riddle, also in Lexington, KY. Colostrum (in both cases from thoroughbreds) is sold in pint containers and is pretested for IgG levels prior to sale. Availability depends on supply and demand and runs approximately \$100 per pint, plus the cost of FedEx overnight. Colostrum should be frozen until used and allowed to thaw slowly in warm water once needed. It is NOT microwavable, as the valuable properties will be killed.

Once our foal was ready to nurse, we used a baby bottle with a standard "nuk" baby nipple and a slightly enlarged hole, and brought her in close proximity to the mare. Foals can also be given colostrum in a bucket or through a tube if necessary, but it is important that the colostrum is not allowed to be fed too quickly. The foal needs to employ its sucking reflexes and colostrum, if bottle-fed, must be sucked, not poured or squeezed into the foal. We thawed the colostrum slowly, and placed the bottle in hot water, which provided a nice warm meal for the filly. Each feeding used approximately 6 ounces of colostrum and we went through 3 pints of colostrum in the first 12 hours (this is more than is necessary; 1-2 is recommended). After the colostrum was ingested, our vet did a quick blood test in the field to assure that passive transfer was successful and that the newborn had absorbed sufficient antibodies. The reading should range between 400 and 800 milligrams of IgG per deciliter of blood. Many vets adhere to a target concentration level of 800 mg/dl and, fortunately, our little foal had reached this desired level. After the colostrum was gone, we switched the baby to a milk replacer, which is available commercially. We used Land of Lakes Mare's Match Milk Replacer and found it easy to prepare, as well as pleasing to the foal's palate!

Continued...



NI Foals, Cont.



Colostrum is sold in pint containers

A critical part of our intervention plan was a specially designed mask, made for us by a Tufts vet hospital technician. The newborn foal mask needs to be securely fastened to a halter (put on shortly after birth) and easy to take on and off, as it will need to be removed repeatedly every hour to feed the foal. It is important that the mask be roomy enough around the muzzle for good air circulation, as aspiration/respiration is an issue.



Foal mask - secure and dependable



Milk replacer and bottle

We found this particular filly to be very comfortable with the mask, although I can remember other foals that would not have been so accommodating!! The mask was made of a durable mesh and allowed adequate room for breathing, nickering and chewing - all common foal activities! It also had four secure tie points designed to prevent the mask from slipping or being nudged off.



LuLu with her mask



The other component of successful intervention is the care of the mare. We were extremely fortunate in both cases to have mares that were trusting and easy to deal with, as the mare must be vigorously milked over the first 24 hours. We milked almost 3 1/2 gallons of colostrum milk from our mare at intervals of 2 hours. The colostrum is thick and yellow in appearance and clearly present in the first gallon. Colostrum has the appearance of eggnog in color and, when put in a glass or plastic container, has a very different look than the milk that eventually replaces it. We were told that a mare has approximately 1/2 gallon of colostrum and the switch to milk is very obvious. We decided to err on the side of caution and milked 3 1/2 gallons out of the mare. It was a long and tedious process, continuing through the day and night. We were fortunate to have a mare that was very cooperative; she stood quietly for long periods of time as we milked. During these periods, we let the foal watch and be involved in the process, knowing that eventually, she would need to find her way to her mother's udder. Several times, I gave the filly her bottle from underneath

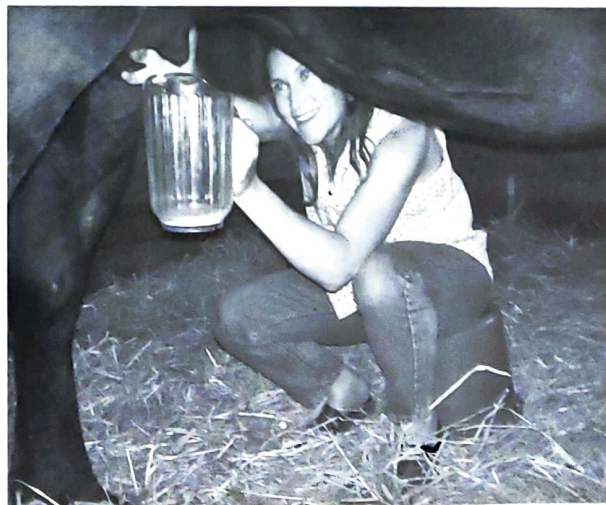
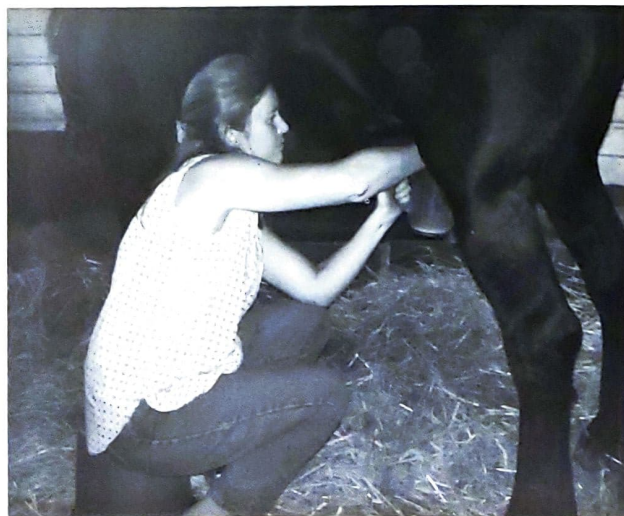
the mare and it seemed instinctively logical for her. Her transition away from the bottle to her mother took all of 5 minutes - we wonder if this was a factor.

After a long night of hourly feeding, milking and catnaps, both mare and foal were doing well. The filly ate regularly and was very active inside her stall. The vet made his rounds and started her on antibiotics, as we suspected she inhaled milk into her lungs, resulting in some wheezy breathing. This did not surprise us since we were on the lookout for aspiration complications. The filly responded immediately to the first few doses of antibiotics and was soon ready to make her first venture outside. With her mask still on, and her mother close by her side, she made her maiden voyage to the outside world. After three full spins around the paddock, she fell deeply asleep and we knew that the time was soon approaching for her to remove the mask.

Continued...



Collected colostrum



Helping hands were invaluable! Heather Bell assists in milking over 3 gallons from the mare.

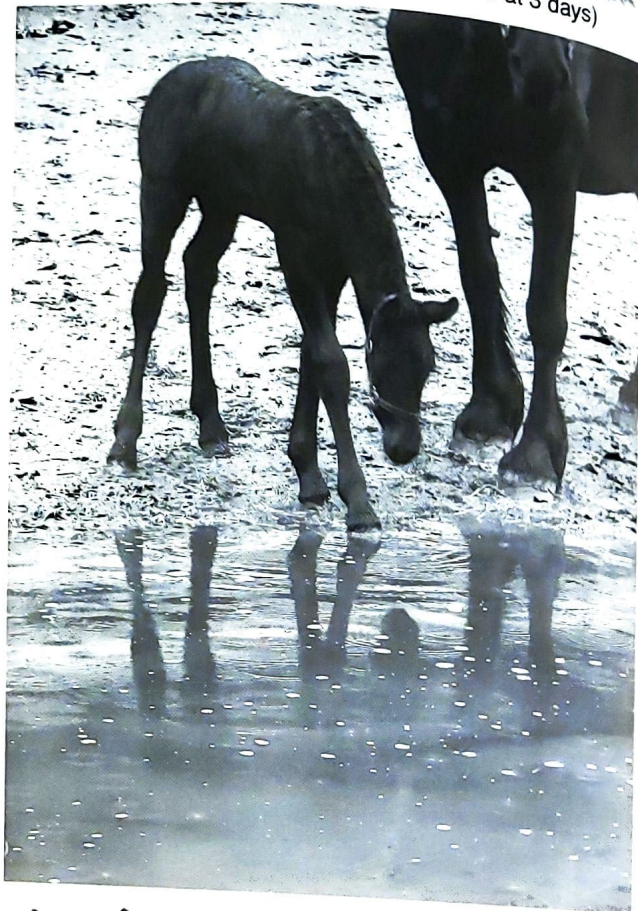
Our vet conferred with Tufts's doctors and was told that after 24 hours the mask could come off and normal nursing could resume. I was surprised and a little bit hesitant to remove the mask so quickly, but I was assured that two very important things had occurred. First, and very obvious was the fact that the mare had stopped producing colostrum and the milk from our collection had turned thin and white. She had probably stopped producing colostrum after the first gallon, but we felt it better to be safe than sorry. The second important factor was that the ability of the foal's intestine to absorb Ig declines rapidly and progressively over 24 hours and is essentially gone by 12 hours. These two realities convinced us that it was time to remove the mask and time to let nature take over. Twenty-six hours after her birth we removed the mask from the little filly and began the process of introducing her to her mother's udder. After a thorough washing of the entire underside of the mare, we encouraged the filly to follow the bottle down to the teats, spraying the streaming milk into her mouth. Again, we were lucky, because this little filly found her mother's teat after only 2 tries, and within 5 minutes she was nursing as if none of this had ever happened. It often takes quite a bit more effort to get a foal to nurse after being bottle fed, and I really do believe that our early efforts to feed her alongside and under the mare had a hand in her quick transition.

We continued to watch the filly carefully, as she was still at risk for a full 4-6 days. We continued to watch her through the night and any variation from the "eat, play, sleep" pattern was quickly attended to. "Lulu" (as my vigilant daughter had nicknamed her) resumed the normal activities of a healthy, happy well-adjusted, and curious foal. Today she still knickers at the sound of my voice, as her early association of my voice with food remains. Her mother is a lovely star mare and is still quite young; she will be bred many more times in her life. People have asked me whether I would breed to the same stallion knowing what I know now, and the answer is "absolutely yes!" This combination of mare and stallion makes beautiful babies and I would not hesitate, knowing that the complication is manageable if detected ahead of time. It is really important to stress here that for many, the risk of this complication is far too great to incur and that, too, makes perfectly good sense. I think that the most important factor in the decision is prior testing, as knowledge is most definitely power. NI can be invited or it can come unannounced; I cannot even begin to stress the importance of a simple blood test. If NI complications are expected, the mare owner can make the decision to foal at a clinic or at home. I do not recommend home intervention for every one either. The effort must be carefully coordinated with your veterinarian and some very dedicated help. The equipment must be infallible and there is very little room for error. Most importantly, the foal must be watched and monitored around the clock and a vet must be readily available. In our case, we notified Tufts of a NI birth and they were ready to admit if necessary. They were very

helpful with their advice and information. As mentioned, it took a dedicated team and many pots of coffee!!



Yippee! Life is good! (Above and Below - Lulu at 3 days)



The author with NI foal, Lilly, in 2003