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## Neonatal Intensive Care Unit for Foals

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*University of Pennsylvania*

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## Neonatal Intensive Care Unit for Foals

**A** neonatal unit for horses may sound farfetched, but one exists at New Bolton Center. In the Spring of 1984, the climate controlled, separate unit was opened and its staff has been busy every since.

"Newborn foals are very delicate," said Dr. Wendy Vaala, a lecturer in medicine at the University of Pennsylvania's School of Veterinary Medicine whose primary interest is pediatrics. "They are susceptible to many diseases and if they are ill, they need specialized intensive care and treatment which this unit provides."

The breeding and raising of horses is a multi-million dollar industry. Each foal is carefully planned to enhance a bloodline. "Most of the horses we see are destined to be athletes," Dr. Vaala said. "When a sick foal is brought here, we not only have to think about the treat-

ment, we also have to consider whether the animal can be an athlete two or three years hence or whether the illness will affect it permanently. That often is very difficult. We have a little more leeway with fillies, colts though must be outstanding; for both there can be no lingering effects of neonatal illness."

The greatest number of patients admitted to the unit are foals with septicemia, a bacterial infection which either can be general or localized in an organ or a joint. One of the most dreaded sequela of septicemia is meningitis and for this the prognosis is poor. A newborn foal is exposed to bacteria the minute the birth process begins but nature has devised a system to fortify the newborn animal against these organisms: colostrum.

"A great number of septicemia cases can be prevented," Dr. Vaala said. "It takes careful supervision of the foaling and close monitoring of mare and foal for at least a week after birth."

She explained that a mare should not be shipped during her last four weeks of pregnancy. "This gives her time to develop antibodies to organisms in her environment," she said. "These antibodies are concentrated in the colostrum during the last three weeks of the mare's term. If the environment is changed shortly before birth, the mare won't have time to develop the proper antibodies, leaving the foal vulnerable and unprotected." According to Dr. Vaala, the pressures of the horse industry are such that breeders frequently have to ship mares shortly before giving birth so that the mare can be bred again as quickly as possible.

Dr. Vaala pointed out that generally a healthy, strong foal is not susceptible to septicemia but that weak animals quickly succumb to it. "If a foal has a difficult birth or if it is premature, it may not be able to nurse right away, so it won't get the colostrum," she said. "Premature foals

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## Neonatal Intensive Care

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are at great risk as there may be no colostrum or very little of it." She emphasized that newborn foals must receive colostrum shortly after birth in order to be protected. "There is only an 18- to 24-hour period after birth in which the animal is able to absorb the antibodies from the colostrum into its bloodstream. After that the gut changes and the large antibodies can no longer pass directly into the foal's system. This brief period can be shortened further if the birth was a difficult one, then steroids, released by the foal, will hasten the change in the gut."

Dr. Vaala said close supervision and observation during birth can avoid potential septicemia. "If it is known that the foal cannot nurse then other steps can be taken to give it the colostrum," she said. "The veterinarian can tube-feed the colostrum." Sometimes it appears that a foal is nursing, though examination of the mare reveals that the foal was just nuzzling, such foals too need tube-feeding. Dr. Vaala explained that colostrum freezes well and keeps for about a year. "Large breeding farms keep it on hand for foals at risk (i.e. premature, weak or orphan foals) and we have it here at New Bolton Center."

She also recommends that all newborn foals be tested for an antibody titer when they are 24 hours old. "That simple blood test will tell

whether the animal has sufficient protection. If the titer is low then the veterinarian can boost it through a plasma transfusion. It is not an expensive procedure and can save a lot of trouble later."

Sometimes though all these precautions do not help and a foal becomes seriously ill. This occurs frequently with the premature animal. Often such a foal is not able to breathe properly and must be given oxygen or even put on a respirator. Recently a foal at New Bolton was kept on a respirator for ten days and then successfully removed from it.

The young patients in the unit require a lot of specialized care. There are tests to be run, cul-

tures to be taken and above all, the animal has to be fed very frequently to keep it alive. "A foal consumes 10 percent of its body weight in milk daily," Dr. Vaala said. "This requires careful calculation and frequent meals." An added problem is that newborn foals are very prone to stress. "They can develop gastrointestinal ulcers when stressed, this can lead to internal bleeding or intestinal constrictions. Our nurses are trained to handle these young animals in such a manner as to keep stress to a minimum."

Whenever possible the mare is brought along with the foal. She has to be kept near her offspring and has to be able to watch it. "It helps the foal to recover quicker if it is near its dam," Dr. Vaala said. "But we then need extra hands to



*Orphan, 23-day premature filly/48 hours old; She is resting on foam cushions and pillows and is receiving intravenous fluids to maintain her hydration and provide nutrition. Her legs are wrapped to prevent self-trauma.*



*The same premature filly being encouraged to walk, note how weak she appears. She can not hold her head up in a normal position. Her tendons are very weak and she is unable to walk without a great deal of assistance.*

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calm the mare when we treat the foal. We have to make sure that she can see it at all times during treatment, otherwise she may become frantic."



The filly can now rise, stand and walk on her own. She has been moved to the mare/foal stall. A nurse mare has been brought in and is standing in the background behind the movable partition.

If the mare cannot accompany her foal then a foster mare may be brought in to nurse the animal. "These mares are usually very placid and will accept a strange foal," she said. "Though we do have to fool her a bit by putting a scent on the foal and into her nostrils."

The stay at New Bolton Center for a septicemic foal can be a long one. However, Dr. Vaala explained, owners are willing to spend the time and money to save a valuable future race or breeding animal.

The unit does not only see foals with septicemia. Each year a number of very young animals with botulism are seen. This disease, caused by the toxin of the spore forming *Clostridium* bacteria used to be fatal. "We now have an antitoxin which can be given to the animal," Dr. Vaala said. "It will not cure the disease but will stop its progress." Botulism causes an animal to be weak and uncoordinated, it cannot swallow and in advanced cases the breathing is affected. "Such animals need great care and supportive treatment. They have to be sustained until their body has regenerated the nerve endings affected by the toxin. It is a long and labor-intensive process." The staff at New Bolton works with these foals intensively. They are given physical therapy, they are held in a sling to enable them to attempt to stand and they are carried outdoors if the weather is nice. "We use the respirator for these animals and we have been able to pull them through," she said.

Another type of patient seen in the neonatal unit is the "dummy" foal. These foals are normal at birth but within the first twenty four hours they suddenly become disoriented and forgetful. They don't nurse and they wander around the stall. They quickly weaken and require intensive care. "It is believed that this condition, neonatal maladjustment syndrome, is caused by oxygen deprivation during birth," she explained. "Brain cells die and this causes the foal's behavior. If the damage is not too severe, these animals can be saved through intensive supportive therapy."

The neonatal unit at New Bolton Center is small but plans to build a larger unit as part of the new intensive care unit are being completed.

The building is being designed by Bohlin Powell Larkin Cywinski and the neonatal unit will have three foal stalls and two larger stalls. Construction will begin this year. The building is funded by private gifts and it will be the first structure to be funded by the Second Century Fund.

Helma Weeks

## Second Century Fund

Vincent B. Murphy, Jr., Second Century Fund campaign chairman, reported to the Jan. 16 Board of Overseers meeting that campaign gifts, subscriptions and bequests to the end of 1984 totalled \$15,337,482 or 37 percent of the five-year campaign goal of \$41.5 million.

Among the major new gifts reported was a \$325,000 challenge grant from the Mabel Pew Myrin Trust for laboratory renovations for the Department of Pathobiology. Under the terms of the grant, the Veterinary School must raise the same amount from other new sources by Sept. 1 to receive the challenge commitment.

The School also received an unrestricted distribution of \$129,324 from the Estate of Alfred Rosenthal, and we were informed that an initial distribution of \$100,000 from the Estate of Judith A. Sankey would be made to endow a memorial research fellowship "relating to the care of the diseases affecting dogs and other domestic animals."

The Mrs. Cheever Porter Foundation made a \$10,000 grant toward the proposed Contagious Disease Isolation Unit at New Bolton Center, and the Janet A. Hooker Charitable Trust made two gifts totalling \$15,000 for research in kidney disease and neurological disorders in dogs.

Other gifts included \$3,149 from the American Shetland Sheepdog Association for research into Sheltie Skin Disease; \$1,000 from the Norwich & Norfolk Terrier Club for the Canine Genetic Disease Information System; \$2,000 from the Delaware County Kennel Club, PA, for equipment in neurology; \$1,000 from the Chester Valley Kennel Club, PA, for the scholarship fund; \$1,000 from the Bucks County Kennel Club, PA, for the hospital equipment fund; and \$1,500 from the Rockland County Kennel Club, NY, for canine genetic research.



A nurse is bottle-feeding the filly during one of her walks. She can walk and trot on her own and is ready to be sent home with her nurse mare.

