BOVINE INFECTIOUS DISEASES

The information below indicates the importance of establishing a program of herd biosecurity including maintenance of a closed-herd wherever possible. Throughout the abstracts the reader is advised to differentiate the terms "infection" and "disease."

IBR--Transient infertility can result following use of intramuscular modified-live-virus-IBR vaccine in cattle. Modified-live or killed IBR vaccines that are currently available will neither prevent infection nor prevent latency by Bovine Herpes Virus 1 (IBR-virus). Vaccination will, however, reduce the severity of the resultant disease.

BVD--Persistent infections are acquired as a result of in-utero infection with a noncytopathic strain of BVD virus. A persistently infected animal will shed BVD virus throughout its life, thus exposing nonimmune pregnant and nonpregnant cattle to the virus. The most important reason to identify and remove persistently infected animals from the herd may be because they may represent a source of continued mutations of the BVD virus. This resultant genomic diversity is likely to create problems in developing an effective vaccination program for the rest of the herd.

BRSV--There are thought to be 2 components associated with viral pathogenicity in BRSV infections. The first is a derangement of the animal's innate defense mechanisms, such as pulmonary macrophages. This sets the stage for the development of secondary bacterial pneumonia. The second component, although not yet demonstrated experimentally, is thought to be an immunopathologic event which results in "self-damage." Natural infections with BRSV, while not protective to reinfection are likely protective against a second episode of disease. Vaccine-induced immunity in calves is difficult to achieve because of interference by colostrally-acquired antibodies. In animals where colostral interference is not present there is evidence that vaccination will reduce the incidence and severity of disease.

Leptospira hardjo--is the host-adapted Leptospira serovar in cattle. Because of adaptation there is little immune response to infection by the host and titers are frequently less than 1:100. The result is often failure to diagnose L. hardjo infection by the standard microagglutination test. Leptospira hardjo infection is associated with infertility, late-term abortion, stillborn or weak calves.
Infections in the newborn and the adult may also be clinically inapparent. In some locations, prevalence of infection may be greater than 30% of cattle.

In serovars in which cattle are an incidental host (eg. grippotyphosa, icterohaemorrhagiae, and pomona), currently available vaccines appear to be very effective. The situation is different, however, with L.hardjo. Dr. Bolin's work indicates that the duration of protective immunity following vaccination with currently available L. hardjo vaccines may be less than 2 months. In herds in which L. hardjo infection is endemic, Dr. Bolin recommends vaccination of heifer calves at 2, 4, and 6 months of age followed by vaccination every 3 months.

Note: Several Ohio practitioners have identified an apparent high prevalence of L. hardjo infection in herds experiencing excessive rates of infertility.

Rotavirus--The peak field incidence of rotavirus-associated diarrhea is in calves 8-14 days old. Field studies of the modified-live-virus maternal vaccine have shown poor efficacy. In other countries, an inactivated oil-adjuvenated maternal rotavirus vaccine has shown good efficacy. Use of MLV oral calf vaccine has also not resulted in good efficacy. This is likely because of neutralization of the vaccine virus by colostrally-acquired antibodies, failure of the vaccine virus to stimulate an active local immunity, and the occurrence of serotypes of rotavirus in the cattle population which differ from those in the vaccine. At present, in the U.S., the best advice to control rotaviral diarrhea in calves is excellent sanitation for calves (beef and dairy) and providing adequate amounts of high quality colostrum including its continued supplemental feeding throughout the period of peak susceptibility (8-14 days).

Cryptosporidiosis--Infection rate approaches 100% in the bovine neonate. Seven to ten days of age is most common time for cryptosporidia-associated diarrhea. Feces of affected calves are chalky, pasty, and have a strong odor. Cryptosporidia are not species specific among mammals and infection is zoonotic. Sanitation is very important in control. Unlike coccidia, sporulation occurs in the host and fully pathogenic forms are shed in the feces. Preliminary experimental work at Ohio Agricultural Research and Development Center suggests that decoquinate when used early and in high doses may ameliorate clinical signs in young calves.

Coccidiosis--Low level infection with or without diarrhea or with only mild diarrhea is very common and significantly reduces performance. Coccidia are known immunosuppressants. The relative importance of finding oocysts in the feces in the overall diagnosis requires the skills of practitioners. Histopathology is the only true laboratory test and then only in clinical disease. Oocyst counts from feces are often not a reliable test of disease but only an aid in diagnosis.