

# EXPECT INNOVATION

**NeoGuard™ reduces abortions  
caused by *Neospora caninum*.**

# NeoGuard™



Neosporosis. You may not have heard of this disease, but you've likely felt its impact. Neosporosis has been identified as a major cause of abortion in cattle, with as many as 40,000 annually in California alone at a cost to dairy producers of more than \$35 million.

Now there's a solution:

- **NeoGuard™** is the first and only USDA-approved safe and efficacious vaccine used as an aid in the reduction of abortions caused by *Neospora caninum*.
- **NeoGuard™** is a killed vaccine for added safety.
- **NeoGuard™** features Intervet's proprietary Spur® adjuvant.
- **NeoGuard™** is a 5 mL subcutaneous dose.

Visit your veterinarian or animal health supplier today for complete details about **NeoGuard™**. Prevention is the best solution.



# The Disease

Neosporosis is not a new disease but has only recently been recognized as a major cause of abortion in cattle, particularly dairy cattle, worldwide. The disease is caused by the protozoan parasite *Neospora caninum*.

## Economic Impact

The cost of *Neospora*-induced abortion to the California dairy industry is conservatively estimated at \$35 million annually. These costs result from the failure of cows to enter the milking string if the abortion occurred early in gestation. These estimates do not even consider the costs related to lost calves. Neosporosis is estimated to cost the Texas beef industry up to \$37 million in losses yearly.

## Infective Agent

*N. caninum* resembles *Toxoplasma gondii* and, in fact, was mistaken for *T. gondii* until the mid-1980s. Bjerkas and coworkers identified a cyst-forming protozoan in a litter of six puppies in Norway<sup>1,4</sup>. In five of these dogs, neurologic disorders developed within 2 to 6 months after birth. Organisms resembling *T. gondii* were found in lesions in the brain and muscle; however, the dogs had no antibodies to *T. gondii*, nor was the parasite that was recovered from the dogs infective to mice.

Dubey and coworkers found a similar parasite in 10 dogs in the United States, distinguished it from *T. gondii*, and named the parasite *Neospora caninum*<sup>5</sup>. Subsequently, Dubey and coworkers isolated the parasite from a dog, grew it in cell cultures and in mice, and then induced neosporosis in experimentally inoculated dogs<sup>6</sup>. The protozoans in dogs and calves are different strains of the same species<sup>7</sup>.

## Neosporosis in Cattle

Within one year of its identification, *Neospora* infection was found to be a cause of abortion and neonatal paralysis in animals in the United States and England. Even before Koch's postulates were fulfilled for bovine neosporosis, pathologists were confident that the organism was causing abortion in cattle because of the severity of the lesions in vital organs.

Neosporosis has now become the major diagnosed cause of abortion in the California dairy industry. Until Koch's postulates were satisfied, however, there was skepticism about whether the parasite was causing this new

and important disease. Inoculation of pregnant cattle with cultured tachyzoites reproduced fetal lesions similar to those in natural infections. The parasite was then reisolated from the induced infections<sup>8</sup>.

*Neospora* has been cultured from aborted fetuses. However, it is often difficult to recover the organism from aborted fetuses because of autolysis. Attempts to isolate the parasite from congenitally infected calves are more likely to be successful. Diagnosis based on histolytic lesions from aborted fetus is common and confirms the disease.

## Transmission

Neosporosis can be transmitted vertically (i.e. from cow to calf) through successive generations. Vertical transmission over several generations has been documented to occur in dairy cows. Despite the high prevalence of neosporosis in the dry-lot dairies, there has been little evidence of horizontal transmission. If horizontal transmission occurs, it is apparently infrequent. It probably depends on exposure of cattle to *Neospora* oocysts shed by the definitive host.

## Prevention

The dog has been confirmed as a definitive host<sup>9,10</sup> but there may be other hosts as yet to be identified<sup>11</sup>. Nevertheless, farmers should be encouraged to protect feed and water sources from fecal contamination from a variety of animal species, including feral animals. The ultimate goal must be a vaccine to help prevent the infection.

Because vertical transmission has been documented, culling of seropositive cows has been considered as a control strategy. However, there has been no evidence of economic benefit from culling of seropositive cows. Such culling would probably be economically disastrous for many dairy farmers. It can be argued that the presence of seropositive cows acts to some extent as a means of natural vaccination. Herds consisting only of naive cows might be prone to severe abortion storms.

## Treatment

There are no approved drugs for the treatment of neosporosis.

Ultimately, a vaccine like NeoGuard™, the world's first safe and efficacious vaccine, is recommended as a component of a total program designed to control bovine neosporosis.

## References

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# Product Information

## NeoGuard™

### Killed Protozoa:

For use in healthy pregnant cattle as an aid in the reduction of abortions caused by *Neospora caninum*.

### Dose:

During the first trimester, inject 5 mL subcutaneously followed by a second 5 mL dose 3-4 weeks later. Revaccination with two doses is recommended for subsequent pregnancies.

### Caution:

Shake well before using. Use entire contents when first opened. Store at 35-45°F (2-7°C). Do not vaccinate within 21 days before slaughter. Anaphylactoid reactions may occur.

### Antidote:

Epinephrine.  
Contains Thimerosal and Gentamicin as preservatives.  
Adjuvant - Intervet's proprietary technology.

### Supplied:

Code: B-980-50 50 doses (250 mL)

For more information about Intervet products, call 1-800-835-0541

## FOR VETERINARY USE ONLY

U.S. Patent No. 5,707,617

