

Pinkeye

Keratoconjunctivitis of Cattle

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Epidemics of pinkeye, or infectious bovine keratoconjunctivitis, can affect cattle of all ages, but it is primarily a disease of calves. The outbreaks in the Midwest are highest during the summer months, in part because of spring calving in cow-calf operations and also because of greater exposure to sunlight and flies. One of the problems associated with this disease is weight losses of as much as one half pound per day in calves with pinkeye. Moreover, calves left with scars on the cornea are known as “blue eyed” and subject to discounts in the markets.

Cause

The primary infectious bacteria is *Moraxella bovis*. The surface of the bacteria is covered by hair-like structures known as pili, which attach or adhere to the conjunctiva or the cornea. Adhesion prevents the bacteria from being washed away by tears and blinking. Other bacteria and viruses can produce the red and swollen eyelids or conjunctivae without the involvement of the cornea that is typical of pinkeye.

Predisposing Factors

Unpigmented eyelids and white hair on the face do not absorb ultraviolet light, which in turn increases the susceptibility of the calf to *M. bovis*. Another factor that increases the susceptibility of the calf to *M. bovis* is irritation of the eye by dust or plant material from mature, unmowed pastures. Also, face flies can carry the bacteria from one calf to another, but they are only one way the outbreak is spread. Pinkeye outbreaks occurred long before face flies became a problem. Poor herd immunity results in a greater number of animals shedding *M. bovis*, thereby increasing the level of exposure of calves.

Transmission

M. bovis bacteria are shed in the tears or discharges from the eye of infected cattle. Carrier animals, shedding *M bovis*, can remain infected for over a year, and can provide the source of the infection from year to year. The conjunctiva of the eye of susceptible cattle is the portal of entry for the bacteria carried by contaminated dust, tall grass, direct contact, or face flies. Face flies can carry infective bacteria for three days after feeding on ocular discharges of afflicted animals.

Clinical Signs

Initially, the eyelid is swollen, and large amounts of watery tears flow from the eye. Photophobia, sensitivity of the infected eye to light, causes the animal to seek shade or refuge in a darkened shed. The center of the cornea appears white in a day or two; this is followed by corneal erosions and ulcerations. The entire cornea of one or both eyes may be involved within six days after the first tearing is observed. As an outbreak progresses, the disease frequently intensifies as the virulence of *M. bovis* increases in the spread among susceptible calves. Some animals recover with no permanent damage to the eye. Some have a permanently scarred cornea but retain a degree of sight. A few are blind in one or both eyes.

Prevention

Because of the several predisposing factors, no single management practice is successful. Paradoxically, the year following a severe outbreak, any of several preventive measures may appear successful. The apparent success results from the high level of herd immunity that persists for at least a year and markedly reduces the number of

carrier animals. Fewer carrier animals reduces the shedding of *M. bovis* and exposure of susceptible calves. Thus, the probability of a severe outbreak on consecutive years is lessened.

Recommended management practices for reducing the incidence and severity of pinkeye include:

- Development of a breeding program that selects for pigmented eyelids and hair surrounding the eye.
- Mowing mature pastures to reduce irritation of the eyes and to reduce contact with plant material contaminated with the tears of affected calves.
- Control of flies with pesticide self-application devices or ear tags.
- Vaccination of calves with a “piliated” *M. bovis* bacterin/toxoid.
- Provision for some form of shade to protect against direct exposure to sunlight. However, overcrowding of animals in a shaded area or a shed can transmit *M. bovis* by contact from those affected to susceptible calves.

Treatment

Treatment of individual animals should be initiated early to prevent permanent damage to the eye. Response to treatment is best if the calves are caught and injected subcutaneously (under the skin of the neck) with long acting tetracycline at label dosage. Antibiotics can also be placed directly onto the eye or injected into the eyelid under the first layer of the bulbar conjunctiva (the “white” of the eye).

This injections requires excellent technical skill and should be performed by a veterinarian or veterinary technician. Severely affected eyes can be treated by covering the eye with an eyepatch or suturing the lids shut after the eyelid conjunctiva has been injected with antibiotic. Application devices to treat the eye of the unrestrained calf from a distance are not effective because most of the medication ends up on the eyelids, not in the eye.

However, carrying out the preventive management practices is more cost-effective than treating calves individually in an outbreak.

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