

## Caprine Respiratory Diseases

Neelam Meena, Surendra Singh Shekhawat, Subhash Chand Meena, Vipin Chand Bairwa and  
Anupriya

Department of Veterinary Public Health & Epidemiology  
Post Graduate Institute of Veterinary Education & Research, Jaipur, Rajasthan-302021  
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### Abstract

Small ruminants are valuable assets for the Mediterranean, African, and Southeast Asian countries with the potential for providing meat, milk, and wool. These animals are highly susceptible to respiratory diseases, which account for almost 50% mortality amongst them. Irrespective of the etiology, the infectious respiratory diseases of sheep and goats contribute to 5.6 percent of the total diseases of small ruminants. Respiratory diseases can affect goats of all ages. The infectious respiratory disorders are classified into two groups: the diseases of upper respiratory tract including sinusitis caused by the larvae of parasites, nasal foreign bodies, gaseous irritation & enzootic nasal tumors and the diseases of lower respiratory tract comprising mainly pneumonia, often these are of infectious origin (bacterial, viral, or fungal). In kids, respiratory diseases are usually from infectious agents. Respiratory problems due to trachea injury can arise from improper use of balling and drenching guns.

### Lower Respiratory Tract Diseases

#### 1. Blood-borne infections

Most respiratory disease problems of baby kids are due to septicemia or blood-borne infections. While these diseases involve all systems of the kid, respiratory symptoms often predominate. Commonly, these infections are due to inadequate colostrum consumption and housing in an environment with heavy bacterial loads. Some organisms responsible for these infections include *E. coli*, *Mannheimia haemolytica*, *Pasturella multocida*, *Mycoplasma* and *Streptococci*.

#### Signs and symptoms

These diseases generally occur where wet, unsanitary, and crowded conditions exist. The onset is sudden with kids becoming weak and depressed, refusing to eat, running a fever, and breathing rapidly. Sometimes, sudden death is the only sign. Large numbers of triplet or quadruplet litters may increase incidence.

#### Treatment, prevention, and control

Kids exhibiting these signs are in a medical emergency. Treat using antibiotics having a gram negative/gram positive spectrum to counteract a wide variety of organisms. A veterinarian may

prescribe ceftiofur (Naxcel), florfenicol (Nuflor), or oxytetracycline. Anti-inflammatory drugs will help alleviate signs and symptoms. Provide fluids and ensure the kid is eating.

Proper management of dams and kids can prevent occurrence. Late gestation dams should be in good body condition (3–3.5). Maternity pens and kidding pens should be clean and adequately ventilated. Ensure navels are dipped in iodine at birth and that kids consume adequate colostrum.

## 2. Enzootic Pneumonia

Enzootic pneumonia is the end stage of infections by a variety of primary agents (mycoplasma, chlamydia, adenovirus, syncytial virus, IBR, PI-3, Caprine herpes virus) or by the various stresses experienced in intensive weanling management, most notably coccidiosis. This pneumonia is usually a herd problem in goats raised in confinement or under intensive management. Predisposing conditions include crowding, inadequate ventilation, and high humidity.

### Signs and symptoms

Animals will have a moist, soft cough, increased respiratory rate, nasal discharge, watery eyes, and decreased gains. When listening to the lungs, crackling and wheezing is heard.

### Treatment, prevention, and control

Many of the pathogens associated with caprine pneumonias are not susceptible to certain drugs. Products that may be effective include tetracyclines, tylosin, Lincocin, Nuflor, and Spectagard given under the supervision of a veterinarian. Reduce stress and overcrowding, maintain adequate ventilation and sanitation to reduce incidence.

## 3. Pasteurella

Pneumonic pasteurellosis (pasteurella) is a killer pneumonia in all livestock species affected. Pasteurella pneumonia is caused by either *Mannheimia hemolytica* that causes sudden death or *Pasturella multocoda* that causes respiratory signs with pneumonia. *M. hemolytica* is blood-borne and outbreaks usually occur in feedlot conditions where animals are stressed, transported, and commingled. Usually several animals will be involved. They will be noticeably sick and off by themselves. Commonly, nutritional management, ventilation, and parasite control are less than ideal.

### Signs and symptoms

Typically, the first animal is found dead followed by signs of pneumonia noticed in herdmates. Affected animals will be off feed, have a moist cough, and appear depressed. The lungs will typically make a wheezing or crackling sound. *P. multocoda* is capable of entering the blood stream and causing arthritis and mastitis (Blue bag mastitis).

### Treatment, prevention, and control

Drugs such as penicillin, ampicillin, tetracycline, oxytetracycline, tylosin, florfenicol, and ceftiofur have been reported to be effective in the treatment of pneumonia in goats. Vaccination is the best form of control of the disease. Effective vaccine such as alum precipitated and oil adjuvant vaccines have been developed. Recently, recombinant DNA vaccines that confer significant protection



and antibody response in goat have been reported.

#### 4. *Mycoplasma pneumonia*

The *Mycoplasma* species are commonly involved in pneumonias of goats, although usually more of a problem for dairy goat than meat goat producers. Mycoplasmosis is now regarded as an emerging disease and posing huge economic constraints for farmers and small ruminant rearing countries. In general, they cause a “cuffing” pneumonia with bronchitis that is commonly seen as a form of Enzootic Pneumonia. Pleuropneumonia is a specific disease caused by *Mycoplasma mycoides* and is a significant cause of sickness and death in does and kids. In kids, the organism is transmitted orally through contaminated milk or colostrum. Outbreaks often occur when animals are stressed, such as in overcrowded conditions and up to 80 to 90% of affected kids die or are euthanized as a result of permanent joint damage. The mycoplasma organisms are commonly isolated from the ear canal of goats. It is postulated that ear mites (*Psoroptes cuniculi*) may be involved in transmission.

#### Signs and symptoms

The disease is highly contagious and usually involves multiple animals in the herd. Signs include fever, cough, respiratory distress, joint damage and lameness, nervous system disorders, and/or mastitis. Young animals are usually involved with outbreaks of the pneumonic or polyarthritic forms. Three clinical syndromes seen in goats include:

Peracute illness characterized by high fever and death within 12 to 24 hours.

Central Nervous System syndrome with neurologic signs and death within 24 to 72 hours.

Acute to subacute syndrome with high fever, multiple joint arthritis, mastitis, and pneumonia.

#### Treatment, prevention, and control

Antibiotics must have a mycoplasma spectrum of activity. Penicillin, amoxicillin, and cephalosporin may not be effective. Products such as tylosin, tetracycline, erythromycin, and Nuflor may be effective. Consult your veterinarian. Treatment can assist in relieving symptoms of the disease but affected animals may shed the organism for life. Some animals may appear to respond to treatment but will relapse and be chronically poor performing.

The organism is spread by direct contact, through the air, milk, and ear mites. Control is by the following program.

1. Separate groups by age (adults and weanlings).
2. Maintain all-in-all-out flow of animals or quarantine all new arrivals.
3. Pasteurize milk prior to feeding.
4. Control ear mites with Ivermectin.
5. Optimal sanitation and air quality for housed animals.

#### 5. Verminous pneumonias

Verminous pneumonia is a chronic and prolonged infection of sheep and goats caused by



any of several parasitic nematodes (e.g., *Dictyocaulus filarial*, *Muellerius capillaries*, and *Protostrongylus rufescens*), characterized clinically by respiratory distress and pathologically by bronchitis and bronchopneumonia. It is infection of the lower respiratory tract, resulting in bronchitis or pneumonia, or both. In goats *Muellerius capillaris* is the most common lung worm. There is diffused pneumonia in affected goats without the presence of any nodular lesion. The parasite predisposes animals to secondary infections thereby compromising with the health in general. Young grazing animals (weaners) are most commonly affected. These parasites prefer low lying, moist pastures. Some of the parasites, *Muellerius* and *Protostrongylus*, for example, require snails or slugs as intermediate hosts in their life cycle.

### Signs and symptoms

Signs usually consist of a persistent, chronic coughing in a herd or flock. Animals will have increased respiration rate and lose weight. The most severely affected animals will be young animals on their first full season of grazing.

### Treatment, prevention, and control

It is unclear how effective treatment is for this condition. Anthelmintics will stop parasite egg production but may not effectively remove the parasite. Prevention strategies include avoiding low, wet pastures, particularly during the early morning hours or at night. Clean up piles of wet, rotting vegetation where snails may live. Avoid mixing different age groups of animals or having young animals graze on pastures contaminated by adults. Frequent deworming with certain anthelmintics can also help control the parasite. However, this is not recommended as frequent, herd-wide use of anthelmintics will increase the rate of drug resistance by other internal parasites such as *Haemonchus contortus* (barberpole worm).

## Upper Respiratory Tract Diseases

### 1. Irritants, trachea injury

Constant or long-term inhalation of irritants, such as dust or ammonia, and trachea damage through incorrect use of balling or drenching guns can cause respiratory problems.

### Signs and symptoms

The predominant sign is coughing and sneezing. Animals may have nasal discharge. With simple inflammation of the respiratory passages due to inhaling dust or other irritants, animals appear healthy other than the annoying cough and sneeze. In the case of pharynx injury, the animal may be in severe respiratory distress and may make a snoring sound when exhaling. Other signs would include foul odor to the breath, off feed, cough, and nasal discharge.

### Treatment, prevention, and control

Remove all sources of respiratory irritants from the environment. Dispose of moldy hay, shake



dusty hay away from animals, or wet the hay. Environmental dust can be eliminated by wetting the area. Clean bedding to remove urine and feces. Ensure good ventilation and maintain as clean an environment as is possible. Follow proper procedure when using balling and drenching guns.

## 2. Nasal bots

The larvae of *Oestrus ovis* are commonly found parasites in the nasal cavity, frontal sinuses and the maxillary sinuses of domestic sheep, goats, and wild ruminants causing a clinical condition called oestrosis. The larvae of *Oestrus ovis* are commonly found parasites in the nasal cavity, frontal sinuses and the maxillary sinuses of domestic sheep, goats, and wild ruminants causing a clinical condition called oestrosis. The larvae of *Oestrus ovis* are commonly found parasites in the nasal cavity, frontal sinuses and the maxillary sinuses of domestic sheep, goats, and wild ruminants causing a clinical condition called oestrosis.

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### Signs and symptoms

The main symptom is violent sneezing in the late summer. Affected animals have a copious nasal discharge that may be tinged with blood. Some animals may make a snoring sound due to nasal obstruction. During larval deposition, animals are very agitated and run in circles, and flock under trees or buildings. Animals may also not exhibit breeding behaviors, hence, the name *Oestrus ovis*.

### Treatment, prevention, and control

Ivermectin will kill the larvae at any stage. Other treatments include Ruelene sprayed in each nostril in the fall or winter. It is the need of hour to establish a proper management and treatment regime for the establishment of an appropriate control strategy.

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