

Peste des Petits Ruminants (PPR): An Emerging Challenge and Control Strategies

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Abstract

Peste des Petits Ruminants (PPR), or goat plague, is a highly contagious viral disease of sheep and goats that causes heavy economic losses, especially for smallholder farmers. The disease spreads rapidly and can lead to fever, pneumonia, diarrhea, and high mortality. Although there is no specific cure, early diagnosis, vaccination, biosecurity, and good supportive care can effectively control the disease. With the WOA–FAO goal of eradicating PPR by 2030, stronger vaccination, surveillance, and farmer awareness are key to protecting livestock and securing rural livelihoods.

Keywords: Peste des Petits Ruminants (PPR), PPR Virus (PPRV), Biosecurity, Disease Control.

Introduction

Imagine losing an entire flock of sheep or goats within a few days. For millions of smallholder farmers, this is the harsh reality of Peste des Petits Ruminants (PPR), commonly known as goat plague. This highly contagious viral disease spreads rapidly, causing fever, mouth sores, pneumonia, diarrhea, and high mortality, leading to major economic losses and threatening food security and rural livelihoods.

PPR is caused by the Peste des Petits Ruminants virus (PPRV), a Morbillivirus, and is widespread across Asia, Africa, and the Middle East, with Lineage IV predominating in India and other Asian countries. Since its first recognition in West Africa in 1942 and its first confirmed outbreak in India in 1987, PPR has become one of the most important transboundary animal diseases affecting sheep and goats.

Although there is no specific antiviral treatment, the disease can be effectively controlled through early diagnosis, vaccination, biosecurity, and surveillance. Recognizing its huge economic impact, the **World Organisation for Animal Health (WOAH)** and the **Food and Agriculture Organization (FAO)** have launched a global programme to eradicate PPR by **2030**. This article explores how timely diagnosis, effective prevention, and vaccination are helping protect small ruminants and secure the livelihoods of farmers worldwide.

Etiology

The disease is caused by the Peste des Petits Ruminants virus (PPRV), a highly contagious Morbillivirus closely related to the viruses that cause rinderpest, measles, and canine distemper. It primarily infects sheep and goats, spreading rapidly and causing severe disease.



Although PPRV has four genetic lineages (I–IV), all belong to a single serotype, meaning the same vaccine can protect against them. **Lineage IV** is the most common strain circulating in Asia, including India, and is responsible for most recent outbreaks. Understanding these viral lineages helps scientists track disease spread, monitor outbreaks, and strengthen vaccination and eradication programmes.

This knowledge has become especially important as the world moves toward the WOA–FAO goal of eradicating PPR by 2030.

Transmission

PPR spreads mainly through **close contact** with infected sheep and goats. The virus is released in droplets during coughing and



sneezing and is also present in nasal and eye discharges, saliva, and feces. Shared feed, water, equipment, and overcrowded housing further increase the risk of transmission.

Young animals between 4 and 12 months of age are the most vulnerable, especially after the protection from maternal antibodies declines. Animals that recover usually develop **lifelong immunity**, while rapid isolation of sick animals, good hygiene, and timely vaccination remain the most effective ways to stop the disease from spreading.

Pathogenesis

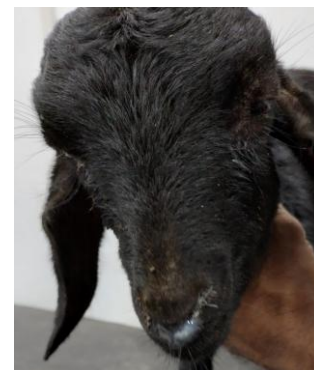
After entering through the nose or mouth, the PPR virus first multiplies in the **lymph nodes**, weakening the animal's immune system. It then spreads through the bloodstream to the **respiratory and digestive tracts**, where it damages the lining of the eyes, nose, mouth, lungs, and intestines.

This damage leads to the typical signs of PPR, including eye and nasal discharge, mouth ulcers, pneumonia, and severe diarrhea. As the immune system becomes weakened, secondary bacterial infections, especially pneumonia, often develop and are a major cause of death in affected animals.

Clinical Signs

PPR usually begins with a **high fever**, dullness, loss of appetite, watery eyes, and nasal discharge after an incubation period of **3–6 days**. Within a day or two, painful **mouth ulcers** develop, making it difficult for animals to eat and causing excessive salivation and a foul-smelling breath.

As the disease worsens, the nasal discharge becomes thick, followed by **severe diarrhea, dehydration, rapid weight loss, coughing, and difficult breathing**. Secondary pneumonia is common and is a major cause of death. Most severely affected animals die within **7–10 days**, while sheep often develop a milder form of the disease and recover more frequently than goats. Animals that survive usually develop **lifelong immunity**.



Treatment

There is **no specific antiviral treatment** for PPR, so management focuses on relieving symptoms, preventing complications, and supporting recovery. Early veterinary care greatly improves the chances of survival.

Treatment includes **fluid therapy** to correct dehydration, **broad-spectrum antibiotics** to control secondary bacterial

infections such as pneumonia, and **anti-inflammatory medicines** to reduce fever and pain. Good nursing care, including soft nutritious feed, clean drinking water, vitamins, and mineral supplements, helps affected animals recover faster.

During an outbreak, **prompt isolation of sick animals, strict hygiene, and supportive care** are the most effective measures to reduce deaths and limit the spread of the disease.

Prevention and Control

Since there is **no specific cure** for PPR, **vaccination** remains the most effective and affordable way to prevent the disease. Modern live attenuated vaccines provide long-lasting protection and have become the cornerstone of PPR control programmes worldwide. In India, **thermostable vaccines** have made vaccination easier, even in remote areas where maintaining a cold chain is difficult. Lambs and kids are usually vaccinated at **3–4 months of age**, when maternal immunity begins to decline.

However, vaccination alone is not enough. **Early detection, isolation of sick animals, quarantine of new arrivals, movement control, proper disposal of carcasses, regular disinfection, and good farm biosecurity** are equally important to stop the spread of infection.

These measures form the foundation of the **WOAH–FAO Global PPR Eradication Programme**, which aims to eliminate PPR worldwide by **2030** and safeguard the health and livelihoods of millions of sheep and goat farmers.