

## Lumpy Skin Disease

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### ABSTRACT

Lumpy Skin Disease (LSD) is a viral infection that primarily affects cattle, causing cutaneous nodules and other symptoms. LSD is found in Africa and other regions like the Middle East, Eastern Europe, and Asia. It drives economic effects by reducing productivity and affecting livestock's milk production, weight and fertility. Vaccination, insect control, biosecurity, isolation, quarantine and surveillance are important for preventing and containing the disease. Reliable information is crucial for effective management. Effecting these measures can reduce LSD spread protect domestic animals and improve the agricultural sector's finances.

#### 1. Introduction

Lumpy skin disease (LSD) is a viral infection that predominantly targets bovine populations and is typified by the emergence of protuberant nodules on diverse anatomical regions of the animal's integument. The etiology of this condition is attributed to the viral agent commonly known as the lumpy skin disease virus (LSDV). This virus is classified as a member of the Capripoxvirus genus. The LSDV is a type of vast, double-stranded DNA virus that targets ruminants with a primary preference for cattle. The primary method of transmission involves direct contact with infected animals. This phenomenon may transpire during intimate interactions including inter-animal communication or physical proximity to contaminated substances. Insects acting as mechanical vectors such as biting flies, mosquitoes and ticks have been shown to transmit the virus from infected to vulnerable animals. These particular arthropods ingest the contaminated blood of animals and subsequently disseminate the viral agent to uninfected animals upon their feeding. The transmission of LSDV may also occur indirectly via inanimate objects or surfaces that have been contaminated and subsequently come into contact with susceptible hosts, including but not limited to equipment, vehicles and housing facilities. There exists a lack of awareness about the capacity of LSDV to be transmitted to human beings and no empirical data substantiates any occurrences of human contagion or corresponding health hazards attributable to LSD [1].

#### 2. Clinical features of Lumpy skin disease

##### Species are affected by Lumpy skin disease

Lumpy skin disease is a prevalent affliction that primarily impacts bovine populations. Nevertheless, bovines of various species, including water buffalo, yaks and certain undomesticated ungulates, exhibit susceptibility to the aforementioned ailment.

##### Clinical signs and symptoms of Lumpy skin disease

**Nodules or lumps on the skin:** One of the characteristic indications of lumpy skin disease involves the development of nodules or protuberances on the dermal layer. The dimensions of these nodules are subject to variation, with possible sizes ranging from several millimeters up to multiple centimeters. It is customary for these entities to possess a rigid texture, elevated position, and potential locations on diverse bodily regions such as the cranium, cervical area, dorsal region, as well as extremities.

**Fever:** Animals that have been infected frequently demonstrate a rise in their body temperature, leading to the manifestation of fever.

**Appetite loss:** Affected animals may exhibit a diminished or complete lack of appetite.

**Milk production reduced:** Lumpy skin disease has been observed to cause a substantial reduction in milk yield among dairy cows.

**Ocular and nasal discharge:** The administration of LSD to animals has been observed to result in the development of ocular and nasal discharge, possibly accompanied by presenting symptoms including conjunctivitis and respiratory distress.

**Lymph node swelling:** The phenomenon of lymph node enlargement and swelling, mainly in close proximity to the head and neck area, may manifest.

**Mortality rates:** Severe manifestations of lumpy skin disease in animals may result in significant systemic sickness, characterized by widespread cutaneous involvement, internal organ impairment, and elevated mortality rates which can potentially escalate to 10-20% in certain predominant incidences [2].

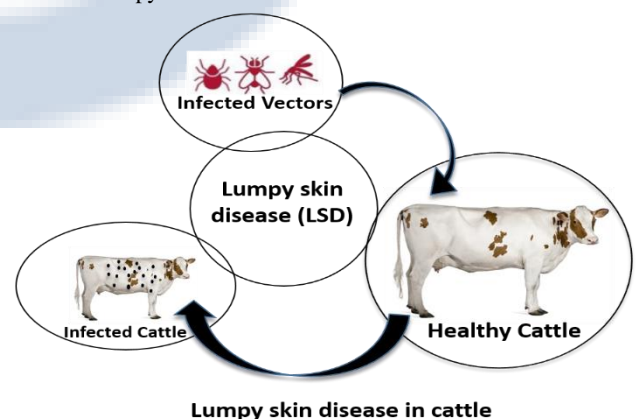
#### 3. Geographic distribution of Lumpy skin disease

##### Prevalence of Lumpy skin disease

Lumpy skin disease is regarded as an endemic affliction prevailing in numerous African nations, notably in sub-Saharan areas. The incidence of the disease has been documented in diverse African nations, encompassing South Africa, Kenya, Tanzania, Ethiopia, Uganda, Sudan, and Zimbabwe, among others. The African region experiences considerable economic and agricultural ramifications as a result of LSD, primarily due to the extensive impact it imposes on cattle populations. Additionally, the dependence on livestock for sustenance and income amplifies the significance of these impacts on the region's food security.

##### Outbreaks of Lumpy skin disease in other regions

In recent times, there have been reports of lumpy skin disease outbreaks across diversified geographical regions beyond Africa, prominently encompassing the Middle East, Eastern Europe, and Asia. An occurrence of outbreaks has been documented in various countries, including but not limited to Israel, Turkey, Greece, Bulgaria, Russia, Kazakhstan, Iran, Pakistan and India. The introduction of the disease to the said regions is frequently attributed to the transportation of affected animals encompassing the trade of livestock and the movement of animals for a diverse array of objectives. The emergence of these disease outbreaks has instigated apprehension and prompted heightened vigilance regulatory strategies and global cooperation aimed at forestalling the proliferation of the disease [3]. Figure 1 shows the Lumpy skin Disease in Animals.



#### 4. Effect on Livestock

##### **Economic Consequences of Lumpy skin disease**

The disorder known as lumpy skin disease holds considerable implications for both livestock breeders and the agricultural sector in terms of economic impact. The ailment may result in considerable financial setbacks attributable to diminished output, escalated morbidity and mortality ratios and trade limitations imposed by countries impacted by the ailment. The occurrence of lumpy skin disease outbreaks may lead to financial losses for farmers as the affected livestock may necessitate veterinarian intervention enforced isolation and amplified supervision. The secondary economic ramifications encompass a decrease in milk production a deterioration in the quality of meat and a detrimental impact on reproductive efficacy all of which have the potential to negatively impact the overall financial viability of livestock enterprises.

##### **Reduced productivity during Lumpy skin disease**

Lumpy skin disease has been observed to cause a noteworthy reduction in milk yield in dairy cows. The decline in milk production has the potential to significantly affect both individual dairy farms and the wider dairy industry. Affected animals have a propensity to suffer from a reduction in feed intake and metabolic disorders attributed to the ailment ultimately leading to weight loss. This phenomenon may result in attenuated growth rates reduced body condition scores and impaired overall wellness. The condition known as lumpy skin disease has been shown to have a deleterious impact on the reproductive capabilities of both male and female animals. In bovine species, exposure to the aforementioned factor may result in aberrant estrus patterns, prolonged intervals between calving occurrences and a heightened incidence of embryonic mortality. Bovine individuals may be affected by testicular lesions which can result in diminished semen quality and fertility [4].

#### 5. Prevention and Control of Lumpy skin disease

##### **Vaccination strategies**

Vaccination is a pivotal tool in protecting against and managing the incidence of lumpy skin disease. Numerous vaccines have been developed and are currently accessible for employment in impacted zones. Vaccination initiatives endeavor to establish herd immunity and mitigate the severity of clinical manifestations in afflicted animals. Vaccination tactics may comprise of customary immunization of vulnerable creatures, for example, juvenile stocks, alternative creatures, or complete herds ascertained by the epidemiological predicament.

##### **Control of insect vector**

The management of insect vectors plays a critical role in decreasing the spread of lumpy skin disease. The implementation of vector control measures both on the farm premises and in the adjacent vicinities holds the potential for mitigating the risk of transmission of diseases.

##### **Measures biosecurity**

The formation of rigorous biosecurity protocols is vital to impede the incursion and propagation of lumpy skin disease. In order to mitigate the spread and potential escalation of communicable diseases it is advisable to impose constraints on the free locomotion of animals inhabiting regions that have been impacted or are at an elevated risk of infection. One potential preventive measure to evade exposure to diseases is the abstention from interaction with sick animals or possibly contaminated implements or substances. The implementation of appropriate sanitation protocols, such as the thorough cleansing and disinfection of both equipment and facilities is deemed imperative. The management of visitors and vehicular ingress onto the farm compound is achieved through undertaking monitoring and control measures.

##### **Separation and quarantine**

It is recommended that diseased animals be promptly segregated from the remainder of the livestock in order to curtail any further dissemination of the illness. To mitigate the risk of viral transmission among vulnerable populations the application of quarantine protocols is recommended in the case of newly introduced wildlife.

#### Reporting and Surveillance

It is recommended that active surveillance systems be implemented for the purpose of monitoring the existence and dissemination of lumpy skin disease. The timely notification of suspected or confirmed cases to veterinary authorities is of critical importance to ensure that appropriate response and control measures are implemented. The efficacious monitoring timely identification and rapid limitation of outbreaks can be facilitated through collaborative measures involving veterinary services, livestock farmers, and pertinent stakeholders [5].

#### 6. Conclusion

Lumpy skin disease is a major concern for livestock, harming animal health, productivity, and economic stability. Managing it is crucial to protect vulnerable ruminants. Effective control measures, including vaccination, insect control, biosecurity, and surveillance, are key to preventing and managing the spread of lumpy skin disease, which is complex and constantly evolving through scientific research. Farmers, vets, and stakeholders must stay aware of recent info from reputable sources like the OIE and local vets regarding controlling lumpy skin disease. Effective management of lumpy skin disease relies on informed stakeholders and proper prevention control measures to mitigate its impact on livestock populations and farmer livelihoods, and the agricultural industry.

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