

Lumpy Skin Disease (LSD)

The Threat of Lumpy Skin Disease in Asia



The Emergence and Spread of LSD

Lumpy Skin Disease (LSD) is a highly contagious viral disease affecting cattle and buffalo and a range of wildlife, including Gaur, Mainland serow, and Banteng in Asia. LSD negatively impact both animal health and production [1]. It causes skin lesions, fever, and reduced milk production. Since the first confirmed outbreak in the Asia-Pacific region in Bangladesh in 2019, LSD has quickly spread throughout Asia. In South-East Asia (SEA), eight out of ten ASEAN Member States have reported LSD outbreaks [2]. Besides animal health, LSD has serious implications for the livelihoods of farmers and economic impacts for the cattle value chain.

LSD transmission across borders is closely linked to the introduction of livestock and illegal animal transportation, while within-country spread is often facilitated by animal movement and insect vector [3].

Economic Impact of LSD

LSD causes substantial economic losses across the cattle value chain, negatively impacting both production and market sectors. These impacts include reduced milk production, lower carcass quality, disruptions in animal trade, and increased operational costs for cattle producers. **The economic toll of LSD on the Asian cattle sector is estimated to reach as high as USD 1.45 billion [3].**

In SEA, the negative economic impact of LSD is evident in affected countries, highlighting the urgent need for effective control measures. For example, a dairy cooperative in Thailand experienced a three-month milk loss of 127 tons, valued at USD 68,943, due to LSD outbreaks [1].

Studies indicate that the average loss per affected dairy farm in Thailand is approximately USD 2,461, largely due to the costs of treating infected animals and losses in milk production. In Bangladesh, households with 2–15 cattle incur average losses of USD 276 per outbreak, mainly from treatment expenses and reduced productivity [1]. Notably, these differences in economic loss between the two countries can be attributed to variations in herd size and the intensity of farming practices.

Key drivers and risk factors for the spread of LSD

LSD spread across borders is closely linked to the movement of animals carrying the virus without visible symptoms, often through established trade routes [3]. Additionally, LSDV is transmitted by insect vectors, spreading the disease within herd and in a local region. Animals without immunity are more vulnerable for the disease [3,4].

Vaccination as a Key Strategy for Effective Control of LSD

Vaccination is a proven effective measure for preventing and controlling LSD. **To date, no country has been able to eradicate LSD without vaccination.** There are currently two main types of LSD vaccines - 'homologous' which are based on Neethling-type strains of LSD virus, and 'heterologous', which is based on sheep pox or goat pox virus [5]. Homologous Neethling strain LSD vaccines are recommended due to their strong protection and lower side effects. Successful control and elimination of LSD using the homologous vaccines has been demonstrated in Israel, Cyprus, and the Balkans [5]. Several countries in Southeast Asia also used live attenuated homologous vaccines to control the LSD outbreaks [1].

Heterologous vaccines are regularly used in countries where sheep and goat pox is also known to occur. **If multiple options are available, it is advisable to select the homologous live attenuated vaccine** as it has been shown to provide better protection than heterologous vaccines, both in experimental settings and in the field. In unaffected countries or zones, it is also important to prepare any preventive vaccination or emergency vaccination plans.



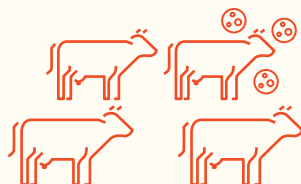
©Ashish Sutar

Benefits of Vaccination

In infected countries, vaccination is the most effective tool for LSD control and potential eradication and provides the following benefits:



Protects the animals from getting infected with LSD and further vector transmission of LSD virus, thus preventing direct and indirect economic losses.



Reduces the total number of susceptible animals within the population, thus preventing entry (in the case of preventive vaccination) and spread of the disease in situations where the risk of introduction is very high.



Easier to implement and more effective than other measures (i.e. stamping out) and, in most cases, less costly.

Key Points for Policymakers on Vaccination Protocols

- **Use of good quality LSD vaccines** that meet the WOAH standards in accordance with a Well-designed vaccination programme is important for effective control of LSD [6, 7].
- **Vaccines should be safe for all cattle breeds, ages, and pregnant animals** [4].
- **Annual administration of live vaccines** to adult cattle is essential, targeting 80% vaccination coverage [5].
- **Coordinated veterinary services** are critical for vaccine delivery, storage, and administration.
- **In resource-limited settings**, it is recommended to focusing on the vaccination of specific animal groups and in those places with higher risks is advised [5].
- **Collaboration among veterinary authorities**, the cattle sector, and stakeholders is essential to develop strategies that ensure sustainable control and encourage uptake by the animal owners.
- WOAH practical guidelines for National Procurement of Veterinary Vaccines describes the different steps of the **procurement process for improving the access to quality vaccines** [8].

Key components of vaccine adoption



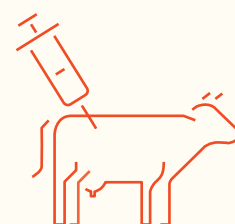
Vaccine Availability



Vaccine Access



Vaccine Demand



Vaccine Adoption

Policy Recommendations

Effective control of LSD spread within the country requires a coordinated, multi-sectoral approach at policy levels. Stakeholder collaboration, targeted investments, and well-defined national action plans are essential. Key considerations include:

Strengthening National Preparedness and Response Strategies

- **Develop contingency plans and control strategy** in the context of the country and epidemiological situation.
- **Develop a national vaccination programme** and prioritise resource allocation.
- LSD-free countries should prioritise strengthening their strategies for LSD **prevention, early detection and rapid response**.

Enhancing Biosecurity and Veterinary Capacities

- Enforce stringent biosecurity measures, including **restricting the movement** of infected animals and **raising stakeholder awareness** on disease transmission risks.
- **Implement comprehensive capacity-building programs** to strengthen the knowledge and skills of veterinary professionals and **ensure accessible laboratory facilities** for timely disease diagnosis.

Cross-Border Prevention and Control

The emergence of recombinant LSD strains across Southeast Asia highlights the need for a coordinated response. **Cross-border animal movement drives the spread of LSD, making regional collaboration essential.** Real-time information sharing, harmonized approaches, and a high-level regional coordination mechanism among the national authorities and stakeholders will strengthen cross-border control efforts.

Given the regional impact of LSD and other transboundary animal diseases, countries with similar epidemiological profiles should mobilise resources and collaborate among themselves to prevent and control LSD in line with the Global Framework for Transboundary Animal Diseases (GF-TADs) Strategy [2021-2025], Regional GF-TADs Strategy for Asia and the Pacific 2023 – 2028 and the **ASEAN LSD Prevention and Control Strategy [2024-2030]**.



©WOAH-SRR-SEA

Resources

WOAH Communication material for local veterinarians and animal health workers

Poster – Lumpy skin disease: a threat to the region

Leaflet – Lumpy skin disease: a threat to the region

WOAH Communication material for Cattle owners, dairy farmers and dairy animal traders.

Poster – Protecting your animals from Lumpy skin disease

WOAH Frequently Asked Questions (FAQ) on LSD for the public and veterinary services.

FAQ on LSD (14 Jun 2022)

FAQ on LSD Vaccination (3 Sep 2021)

References

1. **WOAH. Final Report: Study to assess the impact of Lumpy Skin Disease (LSD) in Asia 2024. Available from:**

https://rr-asia.woah.org/app/uploads/2024/06/Final-Report_Study-to-assess-the-impact-of-LSD_June-2024.pdf

2. **WAHIS. World animal health information system. Available from:** <https://wahis.woah.org>

3. Roche X, Rozstalnyy A, Tago D, Kamata A, Claudia P, Beltran-Alcrudo D, et al. **Introduction and spread of lumpy skin disease in South, East and Southeast Asia** - Qualitative risk assessment and management. 2020. doi: 10.4060/cb1892en.

4. Sprygin A, Pestova Y, Wallace D, Tuppurainen E, Kononov A. **Transmission of lumpy skin disease virus: A short review.** Virus research.

2019;269:197637. Epub 2019/06/04. doi: 10.1016/j.virusres.2019.05.015.

5. Tuppurainen E, Dietze K, Wolff J, Bergmann H, Beltran-Alcrudo D, Fahrion A, et al. **Review: Vaccines and Vaccination against Lumpy Skin Disease. Vaccines (Basel).** 2021;9(10). Epub 2021/10/27. doi: 10.3390/vaccines9101136

6. **Veterinary Vaccines** - Section 2.3 of the Manual of Diagnostic Tests and Vaccines for Terrestrial Animals

7. **Lumpy skin disease** – Chapter 3.4.12C: Requirement for LSD vaccines under Manual of Diagnostic Tests and Vaccines for Terrestrial Animals.

8. **World Organisation for Animal Health (2024)– Practical Guidelines for National Procurement of Veterinary Vaccines.** Paris, 25 pp. Available from: <https://doi.org/10.20506/woah.3437>



Scan QR code to access the LSD page on the WOAH Asia-Pacific website

