

K-11053/69/2019-LH

DEPARTMENT OF ANIMAL HUSBANDRY & DAIRYING

GUIDELINES FOR PREVENTION OF LSD (LUMPY SKIN DISEASE)

- 1. Movement control of animals:** In order to minimize the economic impact of the outbreaks and to control LSD, the movement of animals to and from the infected area should be completely banned. This will check the transmission/spread of LSD

- 2. Restriction to be enforced with affected animals and the persons dealing with infected animals:** Movement of people to and from the affected area should be restricted. The animal handlers and those attending to the affected animals should be advised to keep away from healthy animals. It is therefore, of utmost importance to ensure these safety measures

- 3. Vaccination:** The infected villages be identified so that precautionary plans will be carried out in a specific area and ring vaccination will be carried out in villages upto 5 km around the affected village.
 - Cattle and buffaloes should be vaccinated with available Goat pox vaccine (cattle and buffalo at the age of 4 months and above through S/C route) with $10^{3.5}$ TCID₅₀ of GTPV vaccine (Uttarkashi Strain). However, The dose of $10^{3.0}$ TCID₅₀ (same dose of vaccine for goat against goat pox) can be used for prophylactic vaccination/ring vaccination in cattle and buffalo.
 - Affected animals should not be vaccinated
 - Preventive vaccination should also be undertaken in high risk areas like border area of affected district and state and animals should be identified and documented
 - The staff and vaccinators should be trained for vaccination drive including storage and preparation of vaccine, dosing and injection and identification of animals

- 4. Bio-security measures:**
 - Isolation of sick animal from the healthy animals
 - Clinical surveillance against LSD in affected districts and around surrounding villages should be intensified

- The buffaloes should be kept separately till complete recovery of the affected animals, if reared together
 - Disinfection of premises at regular intervals
 - Ecto-parasiticide should also be applied to healthy animals on the infected and on surrounding farms
 - The persons dealing with the infected animal should wear gloves and face mask
 - Care should be taken to report any unusual sickness of other animals to nearest veterinary Hospital/Dispensary
 - Hygiene practices should be followed at the animal farm and by the people in area where animals are infected
 - Farms with affected animals should be visited regularly by the field veterinarians until all the cases are recovered. The veterinary staff should take all precautionary hygiene measures to avoid further spread of disease to other farms/households
 - In case of mortality, carcass should be disposed of by deep burial method observing all hygienic measures
 - Cattle markets located within 10 km radius of the epicentre of infection should be closed
 - Trade of live cattle, participation in fairs, shows should be banned immediately upon confirmation of the disease in the affected areas
- 5. Vector control:** Control of vector population in the area, premises and the animal body should be carried out using the insecticide, repellents and other chemical agents.
- 6. Disinfection and cleaning measures:** Affected Premises, vehicles plying through the affected animal holdings should be carried out with appropriate chemicals / disinfectants [Ether (20%), chloroform, formalin (1%), phenol (2% /15 minutes), sodium hypochlorite (2-3%), iodine compounds (1:33 dilution) and quaternary ammonium compounds (0.5%)].
- 7. Guidelines for Sample Collection and Dispatch for Diagnosis and surveillance of Lumpy Skin Disease (LSD) for testing at ICAR-NIHSAD, Bhopal:** Format, guidelines including general and transport guidelines may be seen at ICAR-NIHSAD, Bhopal website http://www.nihsad.nic.in/pdf/LSD_%20REVISED%20Guidelines%20for%20Sample%20Collection%20and%20Dispatch%20for%20Diagnosis%20of%20Lumpy%20Skin%20Disease.pdf

8. Awareness programme: Mass awareness campaign to be taken up to make the public aware of the disease and report to the veterinary authority immediately when suspected cases are detected. This will help in prevention and control of LSD.

9. Related suggestions:

- a) Strict implementation of advisories. Rapid Action Teams should be deployed in the affected areas.
- b) Strict implementation of bio-security measures including disinfection drives and carcass disposal in cooperation with local authorities including municipal authorities. The possibility of using state/district emergency funds may also be explored.
- c) Movement restriction and isolation of affected animals.
- d) Movement control of vehicle, animals from affected area to free area.
- e) Disinfection measures to be followed strictly in liaison with Municipal bodies and administration including regular fogging and lime spray in the infected and surrounding area.
- f) Stray animals to be monitored regularly and the affected animals should be isolated under veterinary care with the help of municipal and administrative authorities.
- g) Waste disposal including feed, fodder and dead animal to be followed as per protocol and scientific method with marking and displayed safety guidelines.
- h) Animal movement from affected area to be monitored to prevent spread of the infection.
- i) Animal trade and fare should not be allowed in the affected area.
- j) Vehicle passing through the infected area should be monitored and disinfected. Check post should be made active at border roads and bridges to control the entry of affected animals from affected states and districts.

- k) Insecticides spray and fogging to be undertaken in the animal sheds, common grazing area, veterinary hospital and dispensaries, animal gathering spots and animal movement tracks to control vectors like mosquito, flies, ticks, fleas etc.
- l) Surveillance of vector should also be undertaken by sending the samples to ICAR-NIHSAD to understand disease epidemiology and accordingly making control strategies.
- m) Monitoring of pastures, grazing area, water bodies, feed and fodder to prevent contamination by infected animal.
- n) Infected feed, fodder and bedding material should not be used and disposed scientifically.
- o) Infected animals should be kept separately in isolation with close monitoring till recovered and should not be kept in same animal shed. The milk of infected animals should not be used and mixed in the milk of healthy animals.
- p) Unnecessary post-mortem and sampling of infected animals should be avoided so that disease may not spread during such operations. The staff should wear all preventive gears during PM and sampling.
- q) The sampling should be done as per the prescribed SOP and protocol with due care at all times and proper and safe transport shall be ensured. Sampling should only be done by expert personnel by the veterinarian or under veterinary supervision.
- r) Except in unavoidable circumstances, the treatment of infected animal should be done through oral medication and topical application to avoid spreading of disease through treatment procedures and contamination of treatment accessories and personnel during treatment.
- s) The veterinary hospitals and dispensaries should have proper supply of medicines, supplements, disinfectants, treatment accessories, foggers, awareness material PPE kits and other related items at all times.
- t) Control room and 24x7 toll free number to be activated to address the issues of farmers immediately and also awareness.

- u) Role of MVUs should be increased in awareness, treatment and vaccination drive and the MVU operating in infected area should not enter the free area and if required proper disinfection protocol should be followed.
- v) Door to door awareness and vaccination drive should be undertaken with the help of NGOs, village leaders, youths, cooperatives, school teachers and other stakeholders.
- w) Milk collection centers should educate the farmers at the time of milk collection and ensure healthy milk collection without mixing of the milk of infected animals. The consumption and transport of raw milk of infected animal should be discouraged. The milk from affected animals may be used after boiling.
- x) Group grazing area and animal groups should be monitored and vaccinated and the infected animals should be immediately separated and kept under isolation under veterinary care. Special care should be taken to monitor the movement of animals from affected districts and states and round the clock check post with disinfection system should be activated and documented.
- y) Veterinarians and para-veterinarians working in the infected zone should not be deputed for other works so that their services are available round the clock and they can contribute effectively in disease control programme.
- z) Proper TA/DA and incentives should be given and announced for veterinarians, para-veterinarians and other staff to motivate them in disease control operations.

Advisory - Lumpy Skin Disease (LSD)

Lumpy skin disease (LSD) is an infectious viral disease of cattle and buffaloes caused by the *Capripox* virus of family *Poxviridae*. It is transmitted by arthropod vectors such as mosquitoes, biting flies and ticks. The disease is characterised by mild fever for 2-3 days followed by development of stiff, round cutaneous nodules (2-5 cm in diameter) on the skin all over the body. These nodules are circumscribed, firm, round, raised and involves the skin, sub-cutaneous tissue and sometimes muscles. Symptoms may include lesions in mouth, pharynx and respiratory tract, emaciation, enlarged lymph nodes, oedema of limbs, reduction in milk production, abortion, infertility and sometimes, death.



Although infected animals often recover within a period of 2-3 weeks, there is reduction in milk yield in lactating cattle for several weeks. The morbidity rate is around 10-20% and mortality rate is around 1-5%.

Clinical Surveillance

Clinical surveillance of susceptible cattle population for nodular skin lesions should be carried out along with recording of morbidity and mortality data in LSD-suspected areas. Monthly clinical surveillance data should be communicated to DAHD in the format annexed.



Referral of Samples from clinically affected animals

Representative samples (EDTA blood and skin biopsies/scabs) from animals in LSD suspected outbreaks should be referred to ICAR-NIHSAD, Bhopal for laboratory testing.

Prevention and Control:

- a) Immediate isolation of sick/ infected animals from the healthy animals

- b) Any animal suspected of febrile nodular skin disease should not be introduced into the unaffected holding or farm
- c) In affected villages and animal holdings, the affected animal should be kept separate from unaffected animals by avoiding common grazing and thereby direct contact
- d) Efforts should be made to reduce the vector population in affected areas. Unaffected animal should be applied with insect (ticks, flies, mosquitoes, fleas, midges) repellent to minimize mechanical transmission of LSD
- e) Ensure strict control of animal movement from affected areas to free areas and to local animal markets
- f) Trade of live cattle, participation in fairs, shows should be banned immediately upon confirmation of the disease in the affected areas
- g) All biosecurity measures and strict sanitary measures for disposal of personal protective equipment (PPE) etc. used during sampling from affected animals should be followed
- h) Cattle markets located within 10 km radius of the epicentre of infection should be closed
- i) Thorough cleaning and disinfection of affected personnel, premises and contaminated environment including vehicles plying through the affected animal holdings should be carried out with appropriate chemicals/disinfectants [Ether (20%), chloroform, formalin (1%), phenol (2%/15 minutes), sodium hypochlorite (2–3%), iodine compounds (1:33 dilution), quaternary ammonium compounds (0.5%)].



Bovine Semen:

1. Semen should not be collected and processed for frozen bovine semen production and distribution from the animals showing clinical sign of LSD
2. The blood and semen from affected and clinically recovered animals shall be subjected to agent detection by PCR with negative results before use for AI/natural service

Awareness campaign

Awareness campaign regarding the clinical signs and production losses due to LSD shall be conducted. Reporting to the veterinary authority should be done immediately when suspected cases are noticed.

Treatment

- a. Sick animals are to be kept in isolation
- b. Symptomatic treatment of affected animals may be carried out in consultation with veterinarian
- c. Administration of antibiotics for 5-7 days to check secondary infection may be considered on case to case basis to check secondary bacterial infection.
- d. Administration of anti-inflammatory and anti-histamine preparation may also be considered.
- e. In case of pyrexia, paracetamol can be given
- f. Application of antiseptic ointment with fly-repellent property over the eroded skin is recommended
- g. Parenteral / oral multivitamins is advised.
- h. Feeding of liquid food, soft feed and fodder and succulent pasture is recommended for the infected animals.



Disposal of carcass of LSD-affected animals

In cases of mortality, animal carcass should be disposed of by deep burial.

Annexure

Format for Reporting on Monthly clinical surveillance data on LSD

Month:

Name of the State:

Sl. No	No. of Samples screened at State level	No. of Samples submitted to NIHSAD, Bhopal	No. of animals found positive	Name of the District

Format of Sample Submission form for Lumpy Skin Disease

Sender's details:

Date of sample collection:.....

Date of dispatch of samples:.....

Place of Collection (Village/Block/District):

Specimen Detail:

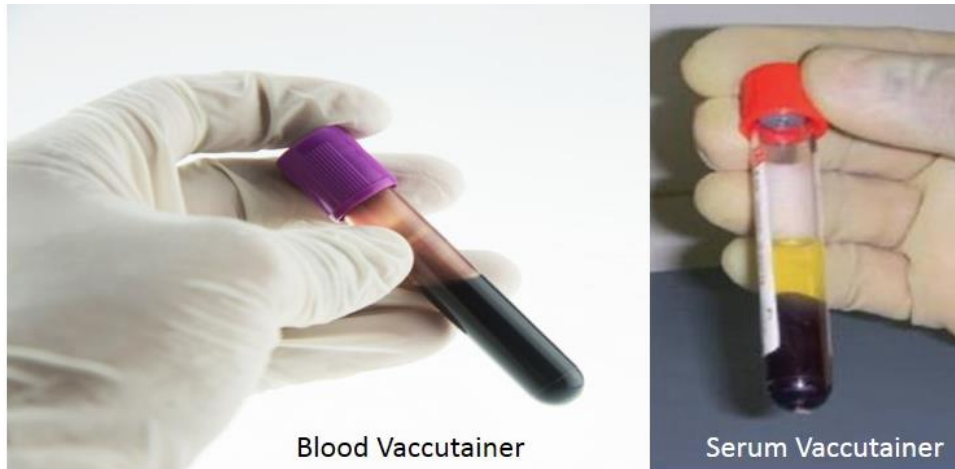
Address of farm/Owner	Organized Farm/ Backyard	Herd Strength/ (No. affected)	Animal/ Sample ID	Age	Sex	Species /Breed	Clinical History of Disease, duration of disease	*Specimen Collected 1. Skin nodules/Scab 2. EDTA blood 3. Serum 4. Swabs (Ocular, Nasal or Oral) 5. Semen

* Cold Chain must be maintained at each stage with frozen gel packs or dry ice as per requirement.

Guidelines for Sample Collection and Dispatch for Diagnosis of Lumpy Skin Disease (LSD)

The following specimens should be collected from LSD suspected cattle or buffalo and sent to the laboratory for LSD testing.

- **Whole Blood:** Collect sufficient volume of blood (a minimum of 5 ml) from the jugular or tail vein (coccygeal vein) in sterile vaccutainers (10 ml) with EDTA (purple stoppers) and store at refrigerated temperature (4⁰C) until shipping in ice within 2-3 days.



- **Serum:** Collect sufficient volume of blood (3/4 vol. of tube) from the jugular vein in sterile vaccutainers (10 ml) without anticoagulant (red stoppers). After collection, tubes should be allowed to stand at ambient temperature for at least 1-2 hours in an upright position to let the clot begin to contract. Store the serum vaccutainers at refrigerated temperature (4⁰C) until shipping in ice within 2-3 days. If shipping period is >48 hrs., ship in dry ice.

- **Skin nodular lesions or scabs:** *Restrain the animal and use suitable local anaesthetic to avoid injury to both animal and sample collector.* Collect skin biopsy from skin nodules or scabs (2-4 numbers) preferably from upper body parts of each animal and place them in sterile leak-proof containers having 4-5 ml of viral transport medium or sterile phosphate buffer saline with antibiotics (Streptopenicillin). Store the samples at refrigerated temperature (4⁰C) until shipping in ice. If shipping period is >48 hrs., ship in dry ice.



- **Swabs (Ocular, Nasal or Oral):** Collect samples using sterile swabs and place into leak-proof sterile tubes having 1ml of viral transport medium or sterile phosphate buffer saline with antibiotics (Streptopenicillin) and store at refrigerated temperature (4⁰C) until shipping in ice. If shipping period is >48 hrs., ship in dry ice.



- **Semen:** In case of affected bulls used for breeding, besides blood, skin lesions/scabs and other samples, collect 2-3 ml of raw semen in sterile leak-proof containers and store at -80°C or liquid nitrogen until shipping in dry ice or LN₂. In case of frozen bovine semen, send at least 2-3 straws of semen in dry ice or LN₂.

General Guidelines:

1. Avoid undue stress or injury to animals during sampling.
2. Collect appropriate samples based on the clinical signs. Skin lesions and scabs, nasal, oral and ocular swabs, EDTA blood and serum are preferred samples for laboratory testing.
3. All materials used for sampling skin tissue should either be autoclaved or be disposed off safely.
4. Sample aseptically, avoid cross-contamination between samples, disinfect the sample collection site, change needles, scalpels and gloves.

TRANSPORT OF SAMPLES

- Samples should be labelled properly before their dispatch to ICAR-NIHSAD, Bhopal as soon as possible to prevent them from deteriorating and to ensure a reliable result, as well as to prevent the samples and the environment from being contaminated during transport. **Ensure that the samples reach NIHSAD within 2-4 days of collection or send the samples through special messenger.**
- Shipped samples must be provided with adequate amounts of cooling materials, e.g. ice packs/dry ice, to prevent deterioration. It is important always to maintain a "triple layer" packing structure when transporting diagnostic samples.
- The primary (leak-proof, water resistant and sterile) container holds the sample. The lid of each sample container must be sealed with adhesive tape or parafilm and wrapped with absorbent material. Several sealed, wrapped primary containers may be placed in one secondary container. The secondary leak-proof container should contain a sufficient amount of absorbent material. Required labels must be affixed to the rigid outer (third) layer, with sufficient cushioning or dry ice inside.

**Information for Immediate Notification of Lumpy Skin Disease
(Separate sheet for each epicenter)**

Name of Epicenter -	Details to be given
1) Date of start of the event / outbreak /symptoms noticed	
2) Date of sample submission	
3) Date of confirmation of the event by NIHSAD or RDDL	
4) Name of the state, district, block, village i.e. details of the epicentre of the outbreak	
5) Type of establishment	
6) Latitude and longitude of the epicentre	
7) Animal species affected and number of each species affected	Cattle Buffalo Others specify
8) Number of susceptible animals	Cattle Buffalo Others specify
9) Number of cases	Cattle Buffalo Others specify
10) Number of animals died (mortality cases)	Cattle Buffalo Others specify
11) Number of animals killed and disposed of	
12) Number of animals slaughtered (meat used for human consumption)	
13) Epidemiological findings	
14) Control measures applied	
15) Whether treatment given to animals, if so specify	
16) If Vaccination done name of the vaccine and animals vaccinated	
17) Date of end of the event or outbreak if all animals have recovered	