

Is the disease can be confused with other diseases? Yes,

- ✓ Low pathogenic avian influenza
- ✓ Infectious laryngotracheitis
- ✓ Infectious bronchitis (respiratory form)
- ✓ Fowl pox (wet form)
- ✓ Fowl cholera
- ✓ Infectious coryza
- ✓ Mycoplasmosis
- ✓ Aspergillosis

Prevention: Mainly by vaccination.

Vaccination Schedule for ND

Vaccine	Age of vaccination	Route	Dose per bird	Remarks
Lentogenic type Lasota/F/BI/ Cloned (D-58)	5-7 days 28 days (Booster dose)	Eye drop, Nasal drop, Drinking water	1 drop	Available as 200/500/1000 doses (1 dose means 1 bird)
Mesogenic type R2B/Mukteshwar Komrov)	8-9 weeks	Intramuscular or sub cutaneous	0.5 ml	Available as 1000 doses
Killed vaccine	14-16 weeks	Intramuscular or sub cutaneous		Available as 1000 doses. Also available as combination with Gumboro disease.

- ✓ In breeders and commercial layer stocks, vaccination must be performed periodically based on Haemagglutination inhibition (HI) titers (serological testing). However, in conditions where testing is not possible, vaccination with live attenuated vaccines can be done once in three months.
- ✓ Sero-monitoring of vaccinated birds by determining the HI titers is important to evaluate vaccinal immunity (protective titers) based on which the decision on further vaccination of birds is taken. If the titer values are more than log10 3, then the birds are considered protective in the event of any disease outbreak. If the values are lesser than log10 3, then it is essential to consider for vaccination.

Cover page image adopted from Ganar et al. (2014). *Virus Research*



“Entrepreneurship opportunities and skill development for self-sustainable livelihood and nutritional security of socially privileged groups”

Major activities:

- ✓ Skill development through training on
 - Poultry Rearing
 - Vaccination
 - Debeaking
 - Setting up small hatchery unit & Chick sexing
 - Feed formulation & manufacturing.
- ✓ Entrepreneurship development & livelihood generation
 - Broiler integration
 - Rural poultry rearing practices
- ✓ Nutritional security
 - Improving the awareness about the importance of poultry meat and eggs.
 - Nutritional security to rural masses through consumption of eggs & meat.



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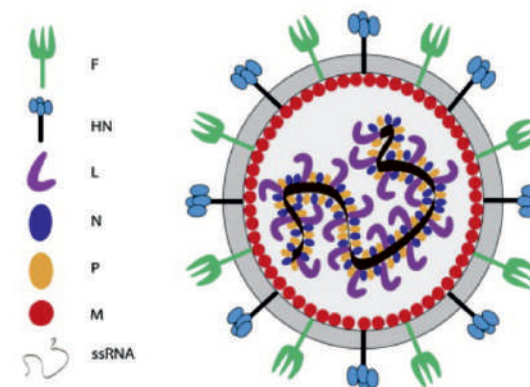
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NEWCASTLE (RANIKHET) DISEASE: OCCURRENCE AND PREVENTION IN POULTRY

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What is Newcastle/Ranikhet Disease?

- ✦ Ranikhet is a highly infectious disease in almost all classes of poultry with severe economic loss.
- ✦ Caused by Avian Paramyxovirus type-1 and mortality may reach 100%.
- ✦ In India, this disease is first identified in chicken at Ranikhet (a place in Uttarakhand), so it is also called as Ranikhet disease.
- ✦ This disease is declared as notifiable disease by World Organization for Animal Health (OIE).

How disease is spread?

- ✦ Ingestion of contaminated water and feed from the nasal discharges of affected birds.
- ✦ Ingestion of feces or droppings of infected birds.
- ✦ Aerosol spread (inhalation) and also by vehicles, humans etc.
- ✦ Virus can survive in environment for several weeks mainly during cold conditions.
- ✦ Infection can start within 5-6 days after entry of virus into the bird.

Forms of disease:

New castle disease occurs in four different forms based on which clinical signs appear

- ✦ **Viscerotropic velogenic/Doyle's form:** Most commonly seen and is highly pathogenic.
- ✦ **Neurotropic velogenic/Beach form:** Causes high mortality with respiratory and nervous signs.
- ✦ **Mesogenic/Beaudette form:** a form that presents with respiratory signs, occasional nervous signs, but low mortality.
- ✦ **Lentogenic/Hitchner/Respiratory form:** mild or sub-clinical respiratory infection and is not very dangerous.
- ✦ **Asymptomatic-enteric form:** Causes mild infection in intestine with apparently no symptoms.

Clinical signs:

- ✦ Greenish diarrhoea
- ✦ Nasal discharge
- ✦ Sleeping eyes with head down appearance
- ✦ Gasping (Birds often find difficulty in breathing/open mouth breathing)
- ✦ Torticollis (twisting of head and neck)
- ✦ In layers, marked drop in egg production.
- ✦ Thin shelled eggs with watery albumen.
- ✦ Birds that recover from severe infection may still have torticollis, drop in egg production and water albumen for some time.

Postmortem lesions:



Birds showing nervous signs, torticollis, twisting of neck



Thin shelled eggs



Watery albumen



Trachea showing severe mucosal congestion



Proventriculus showing hemorrhages at the tips of proventricular glands



Intestine showing severe hemorrhages



Cecal tonsils showing hemorrhages



Duodenum showing necrosis of the mucosa and the necrosed area covered with necro-caseous material

Is the Ranikhet disease is zoonotic?

- ✦ Yes, but causes mild infection conjunctivitis (a mild eye infection) within 24 hours after exposure.

Diagnosis:

- ✦ Based on clinical symptoms and post-mortem lesions.
- ✦ Haemagglutination inhibition titers in serum to correlate the disease outbreak and vaccination efficacy.
- ✦ Detection of virus in fecal samples/cloacal swabs/oro-pharyngeal swabs by PCR or egg culture techniques. Cloacal or oro-pharyngeal swabs may be collected with sterile swabs in a glycerol phosphate buffered saline media (pH-7.4) and antibiotics.

Control of Newcastle disease

In the event of disease outbreak:

Type of medication	Usage recommendations
Water sanitizers (anti-viral) mainly containing Potassium mono-persulphate	Water sanitation: 1 -2 g/liter of drinking water.
VIRKON S TRIPPOWER G BIOBUSTER BIOBUSTER PLUS VIRACID-S	✓ House sanitation: 2 -4 g/liter of water and sprayed in house in presence of birds to reduce virus load inside the house. ✓ Addition of sugar or jaggery improves the water intake along with this sanitizer.
Antibiotics to counteract secondary bacterial infections like E. coli, CRD etc. Doxycycline and Neomycin combination Sulphamethaxazole and trimethoprim	1g/liter of drinking water for 12 hrs in a day for a period of 3-4 days.
Multi-vitamin and amino acid supplements may improve physiological systems and therefore production and body score.	10-20 ml/100 birds for 12 hrs in drinking water.
Respiratory stimulants like essential oils can relieve respiratory distress.	In drinking water as per manufacturer's instructions.
Managerial strategies	✓ Tighten the biosecurity measures to a very high extent. ✓ Temporary feed restriction in terms of quantity and quality may reduce mortality. ✓ Never use immunity boosters or immune stimulants. ✓ Vaccination during disease conditions must be done after consultation with poultry veterinarian.