**Newcastle Disease (ND)**

**Presentation:** Acute, highly contagious, respiratory/neurologic dz, ALL birds

Five strains grouped by pathotype:

1. **Viscerotropic velogenic Newcastle disease (VVND): Reportable**
   - Highly virulent, ~100% mortality in 2-3 days
   - **Respiratory** Gaping, coughing, wheezing, sneezing, nasal discharge, Facial edema- ‘Square head’
   - **Neurologic** (encephalitis) Tremors, droopy wings, opisthotonus, circling, paralysis, torticollis
   - **Digestive** Inappetence, violent watery **green diarrhea**
   - **Decreased** egg laying: thin shells, abnormal shapes
   - **Sudden death**

2. **Neurotropic velogenic:** Reportable
   - Highly virulent, ~100% morbidity, 50% mortality
   - +/- Respiratory signs followed by **neurological** signs

3. **Mesogenic:** Reportable
   - Moderate virulence, low mortality
   - **Young** (up to 50% mortality) Gasping, coughing, hoarse chirping, ataxia, ‘star gazing’
   - **Adults** Mild depression & **respiratory signs**, Increased morbidity due to 2° infections ↓ egg production, Abnormal eggs

4. **Lentogenic:** NOT reportable. Used for **modified-live vaccines**

5. **Asymptomatic enteric:** NOT reportable

**Test of choice(s):** Field diagnosis – clinical signs and necropsy

- **Viscerotropic velogenic:** Hemorrhage and necrosis of lymphoid organs. Depletion of lymphoid tissue
- **Neurotropic velogenic:** No gross lesions, lymphoid depletion, myocarditis, CNS gliosis
- **Mesogenic:** Thickened air sacs, tracheal and pulmonary hemorrhages, brainstem encephalitis, myocardial, splenic, pancreatic necrosis

- **VIRUS ISOLATION:** GOLD STANDARD TEST
  - Positive hemagglutination activity (HA)=ND or Av. flu; specific amino acid motif of F protein is notifiable
  - **ICPI (intracerebral pathogenicity index):** Most sensitive, widely used test for measuring virulence

**Rx of choice:** NO treatment – CULL all birds on premises of NDV outbreak

**Prevention:** Vaccination does **not** fully protect, **Strict biosecurity and sanitation protocols**

**Pearls:** Newcastle disease virus (RNA): **Avian paramyxovirus** serotype 1 (APMV-1)

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**Classic Question(s)**

Name the five strains of Newcastle disease by pathotype. Which pathotypes are reportable?
What is the gold standard test for Newcastle disease? What is the best test for virulence?
What is the treatment of choice if a reportable form of Newcastle disease is detected?
If a strain is positive for hemagglutination activity (HA), what disease of chickens is ruled out?