



Top 10 Poultry Part 1

5 Poultry Conditions To Know For NAVLE® Success:

1. Newcastle disease (avian pneumoencephalitis)

- **Classic case:** high mortality rate
 - Acute onset severe respiratory and/or neurologic and/or GI signs:
 - Respiratory:
 - Gasping, sneezing, coughing
 - Facial edema ("square head")
 - Reddened lower eyelid (over lymphoid patch)
 - Neurologic:
 - Paralysis, tremors, droopy wings
 - Torticollis, circling
 - Bright and alert despite severe neurologic deficits
 - GI: Watery green diarrhea
 - Sometimes sudden death
 - Decreased egg production with thin shells and watery albumen
- **Dx:**
 - Etiology: RNA avian paramyxovirus-1 (APV1 or PMV-1)
 - Gold standard test: virus isolation
 - Dead birds: lung, kidney, GI tract
 - Live birds: nasopharyngeal and tracheal exudate swabs
 - RT-PCR for pathotyping and genotyping
 - Intracerebral pathogenicity index (ICPI): inoculating day-old chicks to determine virulence
 - Hemagglutination positive
 - Almost pathognomonic necropsy lesions: multifocal necrosis, hemorrhagic intestinal mucosa (especially at lymphoid foci - cecal tonsils)
- **Rx:** None, CULL all birds on premises
 - Prevention:
 - Good management practices, spreads quickly through facility via aerosol exposure
 - Indoor operations better, outdoor flocks at higher risk
 - Vaccines in countries where virulent virus disease outbreaks occur
- **Pearls:**
 - APV1 are labeled depending on how fast they kill chick embryos post-innoculation
 - Lentogenic (slow), used in vaccines and not reportable
 - Mesogenic (medium)
 - Velogenic (fast); further divided into:
 - Viscerotropic (GI) velogenic Newcastle disease (VVND)
 - Neurotropic (brain) velogenic Newcastle disease (NVND)
 - Clinical signs vary with strain
 - Strains vary by differences in surface glycoproteins: hemagglutinin-neuraminidase (HN) and fusion (F)
 - Mesogenic and velogenic Newcastle disease are REPORTABLE in USA
 - ZOONOTIC: transitory conjunctivitis in humans



Torticollis, a sign of Newcastle disease



Petechiae in proventriculus and gizzard; inflammation of duodenum (outside & inside view), Newcastle disease

2. Marek's disease

- **Classic case:** Clinical signs based on which organ/tissue T-lymphocytes infiltrate
 - Sciatic nerve paralysis (one leg forward, one backward)
 - "Grey eye" (due to lymphocytic infiltration of iris)
 - Young chicken (2-5 mos)
 - Decreased growth rate and egg production
 - Enlarged feather follicles (cause for condemnation)
- **Dx:**
 - Etiology: Oncogenic lymphotropic alphaherpesvirus (genus *Mardivirus*)
 - Virus isolation, PCR (for viral DNA in lymphoid tumors), AGID
 - Enlarged peripheral nerves (esp. sciatic) at necropsy
 - Lymphoid tumors in liver, spleen, gonads, heart, lung, kidney, muscle and proventriculus
 - Bursa is rarely affected and usually atrophic (distinguishes from lymphoid leukosis)
 - Histopathology and immunohistochemistry
- **Rx:** None
 - Supportive care in pet poultry
 - Prophylaxis: vaccinate in ovo or day-old chicks decreases shedding
- **Pearls:**
 - Virus causes in lymphoproliferative disease/neoplasia in chickens
 - No vertical transmission; horizontal transmission is mainly via inhalation of aerosolized "chicken dander" & can travel on the wind between flocks
 - Virus practically ubiquitous; assume flocks infected
 - Silent recovered lifelong carriers are main reservoir



Normal eye on left, grey eye (from lymphocytic infiltration of iris) on right, Marek's disease



Enlarged sciatic nerve on left, Marek's disease

3. Avian influenza (AI)

- **Classic case:** Depends on pathogenicity/strain
 - Low-pathogenicity AI (LPAI): often subclinical
 - Mild to moderate respiratory signs
 - Poor weight gain
 - Egg drop
 - High-pathogenicity AI (HPAI): "Fowl plague"
 - Peracute death, prostration
 - Cyanosis of head appendages, petechiation in viscera, oral/nasal bloody discharge
 - Diarrhea
 - Neurologic signs
 - Hemorrhages of the limbs
 - Spreads rapidly!
- **Dx:**
 - Etiology: Orthomyxovirus, influenza type A
 - Virus isolation in eggs from clinical samples with rRT-PCR for typing
 - Hemagglutination positive
 - Haemagglutinin and Neuraminidase (H and N) typing and subtyping also done by inhibition tests using antisera (H5 & H7 HPAI subtypes are most commonly implicated)
- **Rx:**
 - Prevention: autogenous vaccination (requires state veterinarian approval) and strict biosecurity
 - HPAI: no treatment, depopulate
 - Supportive care and antibiotics for LPAI
- **Pearls:**
 - Highly contagious



Hemorrhaging of the limbs with HPAI

- HPAI is REPORTABLE, possibly ZONOTIC (H5N1, H7N7 can be fatal to humans)
- Often carried long distances by subclinically infected waterfowl or seabirds
- Gene re-assortment occurs in developing countries or markets where humans, fowl, and swine intermix, creating new genotypes

4. Infectious laryngotracheitis

o **Classic case:**

- Acute outbreak of gasping, coughing, conjunctivitis, dyspnea, depression
- +/- Bloodstained beaks in chickens under 4 weeks
- Decreased egg production
- Mortality variable, often high
- Chronic: poor weight gain in broilers
- Latent infection in survivors, can recrudesce when birds stressed

o **Dx:**

- Etiology: *Gallid herpesvirus 1*
- Necropsy: blood, mucus, caseous exudate, or hollow cast in trachea
- Intranuclear inclusion bodies
- Clinical cases: virus isolation, PCR
- Screen flocks with ELISA or virus neutralization (VN) serological tests

o **Rx:**

- No treatment
- Immediately vaccinate adults during outbreak
- Prevent with biosecurity and vaccination

o **Pearls:**

- Highly contagious
- Worldwide; transmission horizontal through aerosol, fomites
- Vaccination with attenuated vaccines has regularly resulted in disease through serial virus passage in vaccinates
- Recovered birds are lifelong carriers
- REPORTABLE



Dyspneic chicken, infectious laryngotracheitis

5. Infectious bronchitis

o **Classic case:**

- YOUNGEST birds: acute onset upper (sneezing, conjunctivitis, swelling) and lower (rales, coughing, dyspnea) respiratory signs
- Breeders & layers: SHARP decrease in egg production and misshapen or wrinkled egg shells
- Variable mortality, but almost 100% morbidity

o **Dx:**

- Etiology: RNA coronavirus
- Necropsy: white urates in renal tubules
- NEGATIVE hemagglutination reaction
- Virus isolation in chick embryo
- Paired serology

o **Rx:** None, supportive care

- Antibiotics for secondary infections
- Prophylaxis:
 - Vaccines
 - Strict biosecurity

o **Pearls:**

- Worldwide, common, contagious
- Reportable in some states



Upper respiratory signs with infectious bronchitis



Wrinkled egg, infectious bronchitis

- Some strains cause reproductive issues, some are nephrotrophic

Images courtesy of The Poultry Site ([torticollis/Newcastle](#), [laryngotracheitis](#)), USDA ([grey_eye/Marek's](#), [avian influenza](#)), [Raketenpilot](#) (walking chickens), [Lucyin](#) ([Marek's sciatic nerves](#), [Newcastle hemorrhages](#)), [Copleft](#) (wrinkled egg), Dr. Marina Brash (infectious bronchitis), [Benjamint444](#) (silkie), and [Dimus](#) (turkey).

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