

# LECTURE NOTES ON

## RESPIRATORY DISEASES OF POULTRY

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### CHRONIC RESPIRATORY DISEASE (CRD)

#### Cause :

*Mycoplasma gallisepticum* and *E. Coli*. Stress, make the birds more susceptible. The condition is frequently triggered by respiratory viruses such as ND and IB.

#### Transmission

Through the **egg to their offspring**. In addition, by contact or by airborne dust or droplets. The incubation period varies from 4 days to 3 weeks.

**Species affected-** Chickens and turkeys.

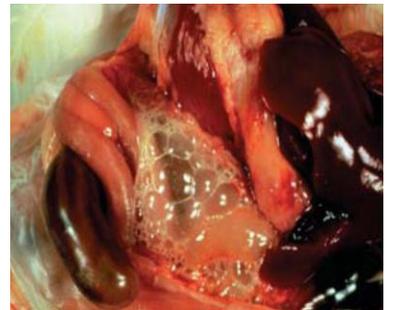
#### Clinical signs

Young chickens will show **respiratory distress**. In adult birds the most common symptoms are sneezing, coughing and general signs of respiratory congestion. Drop of egg production between **20-30 %** can occur. CRD does not normally cause an alarming number of deaths. The effect is more of a chronic nature thus; overall economic loss can be very great in broilers but less dramatic in breeders and layers.

#### Lesions

A **reddish inflamed trachea and/or cheesy exudate in airsacs**, especially in complicated cases (e.g. with secondary *E. coli* infections) are observed. In mild *Mg* infections the only lesion might be slight mucus in trachea and a cloudy or light froth in the airsacs. Turkeys with *Mg* infection usually have swollen sinuses under the eyes.

Airsacculitis



**Diagnosis**

Diagnosis of Mg infection can be made by blood testing of chickens, post-mortem examination and ultimately by isolating the causative Mg organism from tracheas or airsacs of affected birds.

**CONTROL**

Medication or vaccination and eradication of Mg infections have been by far the most effective method of combating the disease. Fertile eggs from infected birds can be treated with antibiotics such as tylosin. Methods used are the injection of fertile eggs or egg dipping. Blood serum testing of breeder chickens for Mg antibodies has become a routine to test flocks for a Mg infection.

## Infectious Coryza

### **Cause**

*Hemophilus paragallinarum*.

### **Transmission**

By contact and airborne infected dust particles and via the drinking water. Spread by equipment and personnel has also been reported. The incubation period varies from 1 to 3 days.

### **Species affected**

**Chickens** appear to be the only natural hosts.

### **Clinical signs**

Inflammation of eyes and nose with foul-smelling discharges, conjunctivitis, sneezing and facial swellings. Mortality will vary with the virulence of the infection but is generally low.

### **Diagnosis**

The most certain diagnosis may be obtained by the isolation of the organism from the sinus or airsac exudate from affected birds. This procedure must be carried out in the laboratory.

### **Control**

Vaccines have been developed, but are only used in areas where the disease is endemic and cannot be eradicated.

Typical facial edema



## Aspergillosis (Fungal Pneumonia)

**Cause-Fungus, *Aspergillus fumigatus*.**

### **Transmission**

Inhalation of fungus spores from Contaminated litter (e.g. wood shavings) or contaminated feed. Hatcheries may also contribute to infection of chicks.

### **Species affected**

**Young chicks are very susceptible**, older chickens are more resistant to infection. Turkey poults, pheasant chicks, quail chicks, ducklings, and goslings may also become infected.

### **Clinical signs**

Infected chicks are depressed and thirsty. **Gasping and rapid breathing (“pump handle breathing”)** can be observed. Mortality is variable, from **5 to 50 %**.

### **Lesions**

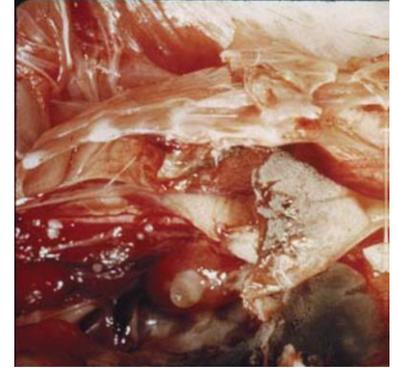
Involve the lungs and airsacs primarily. Yellow white pinpoint lesions can be found. Sometimes all body cavities are filled with small yellow-green granular fungus growth.

**Diagnosis**-identified microscopically or sometimes even with the naked eye in the air passages of the lungs, in the airsacs or in lesions of the abdominal cavity.

### **Treatment and control-**

There is no treatment for aspergillosis. Affected chicks should be removed and destroyed.

Gross lesions of the lungs



## Newcastle Disease (ND)

### **Cause**

*Paramyxovirus*. Only one serotype of ND is known. ND virus has mild strains (**lentogenic**), medium strength strains (**mesogenic**), and virulent strains (**velogenic**).

### **Transmission**

Highly contagious through infected droppings and respiratory discharge between birds. Spread between farms is by infected equipment, trucks, personnel, wild birds or air. The incubation period is variable but usually about 3 to 6 days.

### **Species affected**

**Chickens and turkeys.**

### **Clinical signs**

High mortality with depression and death in 3 to 5 days as major signs. Affected chickens do not always exhibit respiratory or nervous signs. Mesogenic strains cause typical signs of respiratory distress. Labored breathing with wheezing and gurgling, accompanied by nervous signs, such as paralysis or twisted necks (torticollis)

are the main signs. Egg production will decrease 30 to 50 % or more, returning to normal levels in about 2 weeks. Eggs may have thin shells and eggs without shells may also be found. In well-vaccinated chicken flocks clinical signs may be difficult to find.

### **Internal lesions**

Inflamed tracheas, pneumonia, and/or froth in the airsacs are the main lesions. **Haemorrhagic lesions in the proventriculus** and the intestines.

### **Diagnosis**

Is made by virus isolation from tracheal or cloacal swabs together with blood testing to demonstrate high antibody levels. Infectious bronchitis or infectious laryngotracheitis can give similar clinical signs, but lesions, blood tests, and virus isolation tests are decisive.

Neurotropic form of ND



Haemorrhagic proventriculus



**Treatment and control**

There is no treatment for Newcastle disease. Vaccination against ND with live and/or inactivated (killed) adjuvant vaccines is the only reliable control method. The strains used for live vaccines are mainly lentogenic.

## Infectious Bronchitis (IB)

### Cause

*Corona-virus*. Several different serotypes of IB virus are known to exist.

### Transmission

Airborne route..

### Species affected

Only chickens.

### Clinical signs

In young chicks IB virus infection causes cheesy exudates in the bifurcation of the bronchi, thereby causing asphyxia, preceded by severe respiratory distress (**“pump handle” breathing**). In older birds IB does not cause mortality. Egg production will decrease dramatically, **deformed eggs** with wrinkled shells will often be laid.

### Internal lesions

Mucus and redness in trachea, froth in air sacs in older chickens. In young chicks a **yellow cheesy plug at the tracheal bifurcation** is indicative of IB infection.

### Diagnosis

There are three main factors to be considered in order to arrive at a diagnosis. Post-mortem findings, Isolation of the virus and a rising antibody titre when the serum is tested against a known strain of bronchitis virus.

### Treatment and control

There is no treatment for infectious bronchitis. vaccination is the best method to control IB.

Misshapen, shellless and normal eggs



Respiratory symptoms of IB in chickens



# Infectious Laryngotracheitis (ILT)

## Cause

ILT is caused by a virus belonging to the *herpes* group. Only one serotype is known.

## Transmission

by the respiratory route. Most outbreaks of ILT on farms are traced back to

transmission by contaminated people or equipment (visitors, shoes, clothing, egg boxes, used feeders, waterers, cages, crates etc.). The incubation period varies from 4 to 12 days.

## Species affected

Chickens and pheasants are natural hosts for ILT.

## Clinical signs

Respiratory distress is usually quite pronounced due to build up of blood, sloughed tracheal lining and even caseous exudates in larynx and trachea. When a caseous plug occludes the larynx or trachea, the affected chickens will have extreme difficulty breathing (“pump handle” breathing) and will

frequently die from suffocation. Mortality is approximately 1 % per day in a typical ILT outbreak. Milder forms of ILT outbreaks

occur where less virulent strains of ILT virus are involved. Conjunctivitis and respiratory sounds (wheezing) can be observed, with little or no mortality in such cases. The disease spreads through a chicken house more slowly than either IB or ND. Egg production in laying flocks will usually decrease 10 to 50 %, but will return to normal after 3 to 4 weeks.

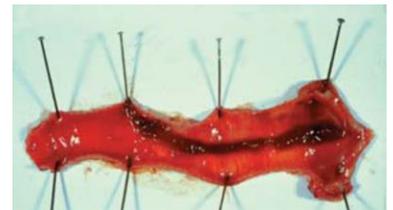
## Diagnosis

In a chicken flock, spreading of respiratory distress, with possible coughing up of blood and mortality is indicative of ILT. Bloody mucus and cheesy exudate can be found in larynx and trachea. In the laboratory a definite diagnosis can be made by histological examination of tracheal tissues or virus isolation from tracheal mucus in embryonated chicken eggs.

Some birds show symptoms of gasping with the head extended and the beak open



Haemorrhagic lesions in trachea



**Treatment and control**

Prevention of ILT by vaccination with mild eye-drop vaccine is by far the best control method.

Sometimes such vaccines are applied by drinking water or spray methods with variable success. immediate vaccination is advisable to stop the spread of infection.