Tikrit University
College of Veterinary Medicine

Vaccines and vaccination

Subject name: Poultry Management

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Lecturers link

***<u>Vaccines and vaccination</u>:-**

Vaccination plays a role in the modern poultry industry.

The primary **reason** for vaccinating poultry is:-

1- To **reduce** the **losses** due to **morbidity** and **mortality** caused by infectious agents.

2- Layer and breeder birds need protection against diseases causing **egg production drops** and **eggshell deformities**.

3- **Reduce vertical transmission** of certain pathogens from breeders to progeny, thus preventing early outbreaks of diseases.

4- Vaccinated breeders can pass **maternal antibodies** to their progeny to protect them against infections during the **first weeks** of their life.

5- Increasingly, the aim of vaccination will be to **prevent** dissemination of **zoonosis** such as salmonellosis.

At present there are **two main types** of vaccine available for poultry: **live or killed**. Vaccines against different diseases are combined in a **programme** to give protection against a number of **viral** or bacterial diseases.

Parent stock breeders are vaccinated for a number of diseases to effectively pass on maternal antibodies to broiler chicks. These antibodies serve to protect the chicks during the early portion of the grow out period. However, these antibodies **do not** protect the broilers throughout the entire grow-out period. Therefore, it may be necessary to vaccinate the broilers either in the **hatchery** or in the field to prevent certain diseases.

***<u>METHODS OF ADMINISTRATION</u> :-**

Live vaccines are usually supplied in vials in **freeze-dried form**. They should be kept at **4—8°C** and protected from heat and light.

Most live vaccines are applied by **mass application techniques** such as **drinking water** and **spray**.

1- Drinking water

A) <u>Water vaccination guidelines</u>:-

1- Ensure that the vaccine is stored at the **manufacturer's recommended temperature**.

2- Vaccinate early **in the morning** to reduce stress, especially in times of warm weather.

3- Prepare vaccine and stabilizer mixture in **clean containers** free of any chemicals, disinfectants, cleaners or organic materials.

4- Use of a vaccine manufacturer's approved **dye** or colored stabilizer

5- Calculate the needed **amount of water** by using the following calculation: Number of birds in thousands multiplied by their age in days multiplied by two. This equals the amount of water in liters needed to vaccinate over a **2-hour period**.

6- Mix 2.5 g (2 teaspoons) of powdered **skimmed milk** per **L** of water.

7- Record vaccine product type, serial number and **expiration date** on pen charts or some other permanent flock record.

8- **Open** each vial of vaccine while submerged **under the water-stabilizer mixture**.

9- **Rinse** each vial of **vaccine completely**.

10- **Raise drinker lines**.

11- **Pour** the **prepared vaccine**, stabilizer and color solution into the header tank or storage tank.

12- **Prime** the lines until the stabilizer or **dyed water** comes through the far ends of the lines.

13- Lower drinker lines and allow birds to consume vaccine.

14- Walk through the birds gently to encourage drinking and uniformity of application.

15- Note the **vaccine consumption time** in the records and any adjustments needed for next application of similar age birds and equipment to reach the ideal time of 1-2 hours.

16-Flocks should ingest all vaccine within **1-2 hours** of administration.

B) Open - Bell drinker system:-

1-**Two people** are needed to carry out the vaccination procedure. One person is needed to mix the vaccine solution and the other person is needed to administer the vaccine.

2- **Clean each drinker**, emptying it of water and litter. **Do not** use a **disinfectant** to clean the drinkers.

3- **Carefully fill each drinker** in a predetermined fashion, making sure **not** to over fill the drinker or spill the **mixed vaccine solution**.

4- Start to **monitor** after birds receive vaccine.

5- Vaccination is considered successful when **95%** of birds show **staining**.

2- Aerosol/coarse spray vaccination guidelines:-

1- Spray vaccination requires **careful management**. Spray may be lost through evaporation, settlement and drift before it reaches the birds.

2- Check that the **vaccination equipment** is **working properly** at least **1 week** before vaccination to allow time for repairs if needed.

3- Use the sprayer for vaccination only. Never put disinfectant or any chemicals such as insecticides into your sprayer.

4- Vaccinate early **morning** to reduce stress, especially in times of warm weather.

5- Ensure that the vaccine has been stored within the manufacturer's recommended temperature range prior to usage (**2-8 ºC** / 36-46 ºF).

6- Record vaccine product type, serial number and **expiration date** on pen charts or some other permanent flock record.

7- Prepare vaccine and stabilizer mixture on a clean surface in clean containers free of any chemicals, disinfectants, cleaners or organic materials.

8- Use fresh, cool **distilled water**.

9- Open each vial of vaccine while submerged **under the water**.

10- Rinse each vial of vaccine completely.

11- **Rinse** the **sprayer** with **distilled water** and dispense a small volume through the unit just before adding the diluted vaccine.

12- A typical coarse spray water volume is 15-30 L (4-8 gal) per 30,000 birds. (Again refer to vaccine and equipment manufacturer for specific volumes).

13- **Turn the fans** off before spraying commences and **dim** the **lights** to reduce stress on the birds and to allow easy movement through the house for the vaccinator.

14- Course spray should be about **1 m** (3 ft.) above bird height.

15- **After vaccination**, **rinse** the sprayer with distilled water and allow it to **dry** in a **clean**, dust free environment. Take correct care of this valuable equipment.

3- Eye drop

4- Injection

5- Wing web

6- In ovo

***Poultry diseases:-**

1- Bacterial diseases.

2- Viral diseases.

3- Fungal diseases.

4- Parasitic diseases.

5- Metabolic diseases.

6- Management related diseases.

7- Diseases caused by toxins and poisons.

Poultry diseases characterized by widely separate between flocks or the same flock, especially bacterial & viral diseases**,** and for culturing of large numbers in a single-field or per herd, which helps to move fast and direct.

1-Bacterial diseases :

1- Yolk- sac infection: Called also **amphalitis**, caused by **Escherichia coli** which affects chickens in the first days of old, leading to growth **retardation** and loss of infected chickens and the most important factors to happen is mismanagement of **hatcheries**.

2- **Salmonellosis**: Caused by S.pullorum or S.gallinarum, which characterized by bacillary white diarrhea.

3- **Mycoplasma** infection: caused by M.gallisepticum, which lead to chronic respiratory disease (**CRD**) Symptoms of **sneezing**, **coughing** and eye inflammation and swelling of the pockets of the face leading to significant **economic losses**.

4- Air sacculitis.

5- Infectious coryza.

6-Fowl cholera.

2- Viral diseases:

1- **Newcastle disease**: caused by Paramyxo virus, Infect chickens, turkeys and other types of birds and is characterized by infecting the **respiratory tract**, **digestive** and **nervous** system leading to high mortality up **100%** in the non-vaccinated flocks.

2- **Infectious bronchitis** (IB).

3- **Infectious bursal disease** (Gumboro).

4- **Marek's disease**.

5- **Avian influenza**: Caused by Orthomyxovirus, causing high mortality among infected fowl.

3- Fungal diseases:

1-Aspergillosis.

2-Aflatoxicosis.

4- Parasitic diseases:

1-**Coccidiosis**: Caused by Eimeria species, lead to sever bloody diarrhea.

2-External parasites: Lice, Fleas, Mites and ticks.

3-Metabolic diseases: Vitamins and minerals deficiency.

5- Cannibalsm:

Preys on some of the chicken until killed each others, and their causes is **large intensity lighting**, **high temperature** field, the crowding, the presence of **wounds**, and a **strange** color chicken, hunger, **lack of protein**, **vitamins** and **minerals**.