



# **PRACTICAL APPROACHES FOR DIAGNOSIS AND TREATMENT OF POULTRY DISEASES**

## **POULTRY DISEASES FIELD DIAGNOSTIC TREE**

**Prof. Paul Gichohi Mbutia**

# ON THE FARM LEVEL

## ■ WHAT DO YOU SEE?

1. Something is wrong in the flock

2. Affected birds

■ - < 2 weeks old

■ >2 weeks old or multiple age

■ Mortality rates (<50 % or >50%)

3. Skin disorders

4. Respiratory signs

5. Digestive disturbances

6. Nervous disorders

7. Reproductive disorders

8. Others – skeletal/joints, muscular, etc

## SCENE A

| What is seen at farm level  | age | species  | Mortality   | DDX   |
|---|-----|--|---|---|
| <p>Sudden mortality, often with few or minimal signs</p> <p><u>Nervous</u>: Balance &amp; walking problems, twisted necks, <b>tremors</b>, inability to fly</p> <p><u>Respiratory</u>: gasping, difficulty breathing, swelling of the head &amp; neck; <b>pasted eyelids, nasal discharge</b></p> <p><u>Digestive</u>: diarrhea, <b>decreased appetite, thirst</b></p> <p><u>Reproductive</u>: decreased egg numbers, soft-shelled or shell-less eggs</p> | any | <p>Most domestic birds<br/>or<br/>Wild domestic water fowls<br/>Or<br/>Pigeons</p> | <p>Mortality 100% often lower in ducks<br/>Or<br/>5- 100%, more older birds</p> | <ol style="list-style-type: none"> <li>1. VVN D</li> <li>2. <b>HPAI</b></li> <li>3. <b>Duck viral enteritis</b></li> <li>4. Pigeon PMV</li> </ol> |
| Causative agent = Virus   |     |  |   |   |

### Category 1 Diseases

| Disease   | Cause | Ages affected                               | Species                           | Mortality   | Signs and Symptoms  | Control                                  |
|---|-------|---|-----------------------------------|---|---|--|
| 1. Velogenic viscerotropic Newcastle Disease (VVND) | Virus | Any   | Most domestic birds               | Mortality may reach 100% but often lower in ducks             | Sudden mortality, often with few or minimal signs<br><u>Nervous</u> : Balance & walking problems, twisted necks<br><u>Respiratory</u> : gasping, difficulty breathing, swelling of the head<br><u>Digestive</u> : diarrhea<br><u>Reproductive</u> : decreased egg numbers         | Vaccination, biosecurity                 |
| 2. Highly Pathogenic Avian Influenza (HPAI)         | Virus | Any   | Most domestic birds               | Mortality may reach 100% but often lower in ducks and pigeons | Sudden mortality, often with few or no signs<br><u>Respiratory</u> : gasping, swelling of wattles & combs<br><u>Nervous</u> : tremors of the head and neck<br><u>Digestive</u> : diarrhea, thirst<br><u>Reproductive</u> : soft-shelled or shell-less eggs, decreased egg numbers | Biosecurity, depopulation, (vaccination) |
| 3. Duck viral enteritis (duck plague)               | Virus | Any, although adults more severely affected | Wild and domestic ducks and geese | 5-100% with the highest mortality in older birds              | Sudden mortality, often with few or no signs<br><u>Digestive</u> : watery diarrhea, decreased appetite, thirst<br><u>Reproductive</u> : decreased egg numbers<br><u>Nervous</u> : difficulty walking, tremors<br><u>Respiratory</u> : pasted eyelids, nasal discharge             | Biosecurity, (vaccination)               |
| 4. Pigeon Paramyxovirus (PPMV)                      | Virus | Any   | Pigeons                           | Mortality may reach 100%                                      | Adults neglect squab, resulting in their deaths.<br><u>Nervous</u> : Balance & walking problems, twisted necks, head tremors, inability to fly<br><u>Digestive</u> : diarrhea, thirst   | Vaccination, biosecurity                 |

## Group 2

| What is seen at farm level   | age   | species                              | Mortality  | DDX  |
|--|---|--------------------------------------|--|--|
| <p>Signs vary by species (no signs in waterfowl). Birds may be depressed with ruffled feathers.</p> <p>Death may be the first sign of disease.</p> <p><u>Nervous</u>: twisted necks, paralysis (leg &amp; wings), pale eyes, <b>tremors</b></p> <p><u>Respiratory</u>: sneezing, coughing, difficulty breathing, wheezing, nasal discharge, wet eyes</p> <p><u>Digestive</u>: loss of appetite (diarrhoea)</p> <p><u>Reproductive</u>: decreased egg numbers (<b>thin-shelled, rough and misshapen eggs</b>)</p> <p><u>Skin</u>: scabby, raised pocks on the face;</p> <p><u>Others</u>: Unthriftiness, weight loss or poor wt gains</p> | Any   | Most domestic birds (Mostly chicken) | Usually 0-25% but in some cases, may be <b>low or up to 100%</b> | 5.L,M<br>ND<br>6.LHPAI<br>7. ILT<br>8. IB<br>9. MD<br>10. AL<br>11. DVH<br>12. IBD<br>13. AE<br>14. FP |
| 06/08/2014   | Poultry workshop 2014<br>vetpathology.uonbi.ac.ke |                                      |  |  |

## Category 2 Diseases

| Disease  | Cause | Ages affected                 | Species             | Mortality   | Signs and Symptoms  | Control  |
|--|-------|-------------------------------|---------------------|---|---|--|
| 5. Newcastle Disease (lentogenic or mesogenic) | Virus | Any                           | Most domestic birds | Low, except in very young birds where mortality may reach 20%                   | Signs may vary by species. There may be no signs in waterfowl.<br><u>Respiratory:</u> sneezing, coughing, difficulty breathing<br><u>Nervous:</u> twisted necks<br><u>Reproductive:</u> decreased egg numbers | Vaccination, biosecurity                       |
| 6. Low Pathogenicity Avian Influenza (LPAI)    | Virus | Any                           | Most domestic birds | Usually <5% but may be up to 60% in turkeys.                                    | Signs vary by species and infecting virus. There may be no signs in waterfowl.<br><u>Respiratory:</u> sneezing, coughing, wheezing<br><u>Reproductive:</u> decreased egg numbers                              | Biosecurity, depopulation, (vaccination)       |
| 7. Infectious Laryngotracheitis (ILT)          | Virus | Any but mostly in adults      | Chickens            | Usually 10-20% but may be very mild <2% mortality or very severe >50% mortality | <u>Respiratory:</u> nasal discharge, difficulty breathing, coughing, bloody mucus<br><u>Reproductive:</u> decreased egg numbers   | Vaccination, biosecurity                       |
| 8. Infectious bronchitis virus                 | Virus | Any but most severe in chicks | Chickens            | 0-25%   | Birds may be depressed with ruffled feathers.<br><u>Respiratory:</u> gasping, coughing, sneezing, wet eyes<br><u>Reproductive:</u> thin-shelled, rough and misshapen eggs, decreased egg numbers              | Vaccination, medication for secondary bacteria |
| 9. Marek's Disease                             | Virus | Usually 3-30 weeks of age     | Chickens            | 0-30% in unvaccinated flocks  | Unthriftiness, failure to gain weight.<br><u>Nervous:</u> paralyzed in one or both legs or wings, difficulty standing. Pale eyes.   | Vaccination                                    |
| 10. Avian Leukosis                             | Virus | >30 weeks of age              | Chickens            | Usually <3% although it may exceed 20% in some cases                            | Unthriftiness, weight loss, enlarged abdomen<br><u>Reproductive:</u> decreased egg numbers  | Chicks from clean flocks, biosecurity          |
| 11. Duck virus hepatitis                       | Virus | Young, <6 weeks               | Ducks               | Close to 100% in ducklings <1 wk old. 50% in 1-3 wk old, very low in >4 wk old  | Death may be the first sign of disease.<br><u>Nervous:</u> birds fall on their sides, kicking   | Isolation of young ducks, (vaccination)        |
| 12. Infectious bursal disease                  | Virus | Mostly 3-6 weeks              | Chickens            | Usually 0-25% but in some cases, may be up to 100%                              | Prostration and death<br><u>Digestive:</u> vent picking, soiled vent feathers, whitish or watery diarrhea   | Vaccination, biosecurity                       |
| 13. Avian Encephalomyelitis                    | Virus | Mostly 1-3 weeks              | Chickens            | May reach 50% in young birds  | <u>Nervous:</u> difficulty walking, paralysis, tremors  | Vaccination                                    |
| 14. Fowl Pox                                   | Virus | Any, except newly-hatched     | Chickens, turkeys   | <5% in skin form; 10-50% in respiratory form.                                   | Poor weight gain.<br><u>Skin:</u> scabby, raised pocks on the face<br><u>Digestive:</u> Loss of appetite<br><u>Respiratory:</u> nasal discharge, difficulty breathing   | Vaccination, biosecurity                       |

### Group 3

| What is seen at farm level   | age     | species                              | Mortality                                       | DDX  |
|--|---------|--------------------------------------|---|--|
| <p>Depression, weakness, lost or decreased weight gain, unthrifty dehydration, anemia, injury</p> <p><u>Nervous</u>: trembling, imbalanced gait, difficulty walking, convulsions, feather picking, neck paralysis</p> <p><u>Respiratory</u>: swollen eyelids, nasal &amp; eye discharge, gasping, difficulty breathing, facial swelling &amp; eyelids,</p> <p><u>Digestive</u> : loss of appetite, <b>diarrhea (variable)</b></p> <p><u>Reproductive</u>: decreased egg numbers, reduced fertility and hatchability.</p> <p><u>Skin</u>: parasites, itching, loss of feathers.</p> <p><u>Others</u>: swollen joints,</p> | Any     | Any<br>(variable according to agent) | Variable.<br>May reach 100% or it may be small. | 15.FC<br>16.Omp<br>17. Myco<br>18. Chyla<br>19. Cory<br>20. Tryc<br>21. Cocc<br>22. Histo<br>23. ecto<br>24. endo<br>25.Afla<br>26.Botu<br>27.pois<br>28.pred<br>29.Vit De |
| 06/08/2014   | Poultry |                                      | workshop 2014                                   |  |
| vetpathology.uonbi.ac.ke   |         |                                      |   |  |

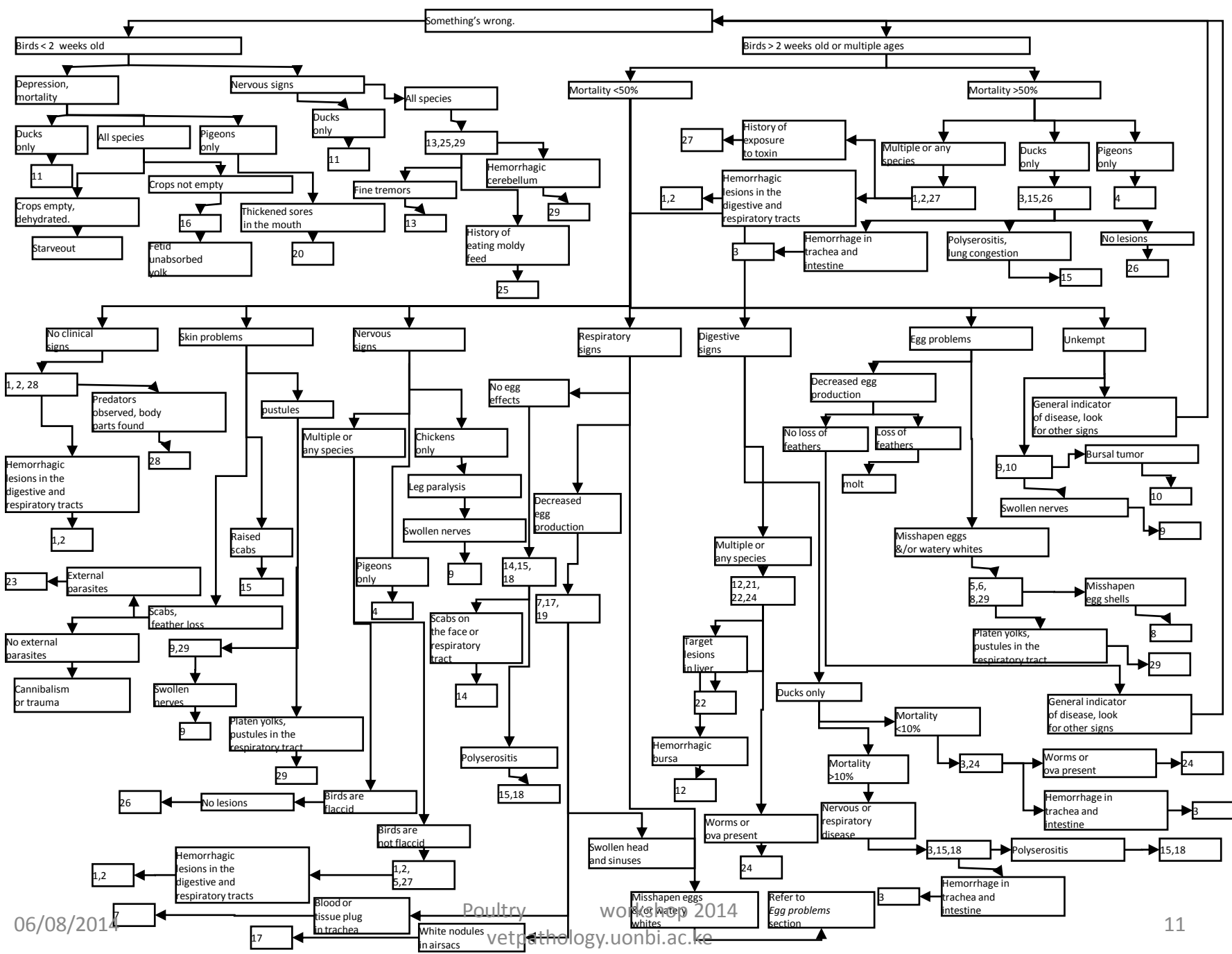
|                                   |          |   |  |   |   |  |
|-----------------------------------|----------|---|--|---|---|--|
| <b>15.</b> Fowl cholera           | Bacteria | Birds > 4 weeks are most susceptible        | Chickens, ducks, geese, most birds                                   | 10-90% mortality. Mortality is highest in turkeys, ducks.                     | Death may be the first sign of disease.<br><u>Respiratory:</u> Gasping, difficulty breathing<br><u>Digestive:</u> diarrhea, especially in ducks   | Medication, remove reservoirs, vaccination   |
| <b>16.</b> Septicemia, omphalitis | Bacteria | Birds less than 2 weeks old                 | Any  | Variable. May reach 100% or it may be small..                                 | Late incubation mortality. Navel is inflamed and the abdomen is distended.  | Medication, hatchery sanitation              |
| <b>17.</b> Mycoplasmosis          | Bacteria | Any   | Chickens, pigeons, turkeys   | Very low.   | <u>Respiratory:</u> Facial swelling, nasal discharge, coughing, foamy eyes<br><u>Reproductive:</u> Decreased egg numbers, decreased hatchability<br><u>Skeletal:</u> joint swelling                                       | Vaccination, biosecurity                     |
| <b>18.</b> Chlamydiosis           | Bacteria | Any   | Ducks, pigeons, turkeys  | Variable, but severe cases may have 5-30% mortality                           | Depression, weakness.<br><u>Nervous (young ducks):</u> trembling, imbalanced gait<br><u>Respiratory:</u> swollen eyelids, nasal discharge, difficulty breathing<br><u>Digestive (young ducks):</u> yellow-green diarrhea. | Medication, biosecurity                      |
| <b>19.</b> Infectious Coryza      | Bacteria | Any, disease most severe in mature birds    | Chickens   | Rapid onset and high mortality.   | <u>Respiratory:</u> Facial swelling, especially around the eyes, nasal discharge, rales<br><u>Digestive:</u> Loss of appetite, sometimes diarrhea.<br><u>Reproductive:</u> decreased egg numbers                          | Vaccination, remove reservoirs, biosecurity. |
| <b>20.</b> Trichomoniasis         | Protozoa | Young birds                                 | Pigeons  | Can be up to 50% without treatment  | Young birds lose weight and may die.<br><u>Digestive:</u> thick, yellow areas inside the mouth, difficulty closing mouth  | Sanitation, medication                       |
| <b>21.</b> Coccidiosis            | Protozoa | Young birds, older birds become immune      | Most, although the coccidia of one species do not infest other birds | Variable depending on how severe the case is and the type of coccidia.        | Depression, weakness, decreased weight gain, dehydration.<br><u>Digestive:</u> may have mucoid or bloody diarrhea.  | Self immunization, medication                |
| <b>22.</b> Histomoniasis          | Protozoa | Turkeys: 3-12 weeks.<br>Chickens: 4-6 weeks | Turkeys, chickens  | Mortality is generally low in chickens <30% but higher in turkeys (up to 70%) | Depression, weakness<br><u>Digestive:</u> loss of appetite, yellow feces in turkeys, bleeding droppings from chickens.  | Medication, put birds on wire or cement      |



### Category 3 Diseases

| Condition              | Cause  | Ages affected                                     | Species                                      | Mortality   | Signs and Symptoms  | Control  |
|------------------------|--|---|--|---|---|--|
| 23. External parasites | Insects, arachnids                               | Any   | Any  | Usually low unless infestations are severe  | Birds can become weak and unthrifty if heavily infested.<br><u>Skin:</u> Mites, ticks, fleas and lice can cause itching, loss of feathers.<br><u>Reproductive:</u> decreased egg numbers  | Cleaning of environment between flocks, pesticides applied to the bird and the environment |
| 24. Internal parasites | Various worms                                    | Any but the most severe disease is in young birds | Any  | Mortality is variable depending on the age of the birds, type and severity of infestation | Depression, failure to gain weight, anemia.<br><u>Digestive:</u> Diarrhea   | Medication. sanitation   |
| 25. Aflatoxicosis      | Toxin from fungus                                | Young birds more severely affected                | Any although signs more severe in ducks      | Variable  | <u>Nervous:</u> difficulty walking, convulsions, feather picking<br><u>Reproductive:</u> Reduced fertility and hatch rates. Decreased egg numbers.  | Remove contaminated food   |
| 26. Botulism           | Toxin from fungus that grows in rotting material | Any   | Any, although more severe in ducks and geese | It depends on how many birds consume the toxin  | <u>Nervous:</u> paralysis, especially of the neck. Birds will be flaccid.   | Remove source of toxin, pick up carcasses, control flies, fix leaking water                |
| 27. Chemical toxins    | Pesticides, disinfectants and other              | Any   | Any  | Depends on the toxin, the amount consumed or inhaled, and the number of birds exposed.    | Signs vary depending on the toxin.  | Remove source of toxin, may need to clean environment                                      |
| 28. Predators          | Wild and domestic predators                      | Any   | Any  | Predators usually kill a few birds but do not cause the deaths of large flocks            | Missing birds or eggs. Occasionally, injured birds may appear or body parts may be discovered after an attack.  | Secure housing can reduce losses to flocks.  |
| 29. Vitamin deficiency | Lack of complete nutrition                       | Any   | Any  | Usually low in free-ranging birds. May be moderate to high in young, confined birds.      | <u>Vitamin E:</u> Death before 4 days of age<br><u>Nervous:</u> difficulty walking and standing, 15 - 30 days of age<br><u>Reproductive:</u> Decreased hatchability.<br><u>Vitamin A:</u> Slow growth, drowsiness, and mortality.<br><u>Respiratory:</u> Discharge from nose and eyes.<br><u>Reproductive:</u> decreased egg numbers and hatching, increased blood spots in eggs. | Supplement vitamins in the water or feed. Add antioxidants to feed. Rotate feed.           |

**ALL THESE CAN BE PRESENTED  
DIAGRAMMATICALLY FOR FIELD DIAGNOSIS**





**THANK YOU AND GOD BLESS YOU**

06/08/2014

Poultry workshop 2014  
vetpathology.uonbi.ac.ke