

Backyard poultry medicine for cattle veterinarians

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Abstract

With the continuing rise in backyard flocks comes the need for more veterinarians to treat them. This includes the (1) protection of their health and welfare, (2) prevention and relief of their suffering, as well as (3) regulations they are subject to and how these promote public health. Understanding poultry health requires knowledge of their behavior, nutrition, and avenues for disease transmission. Diagnosing disease in poultry, as in any other species, requires understanding what happens when their care and management is not ideal and/or biosecurity standards are not met. Similar to other farm and food animal species, poultry are subject to a number of regulations aimed at preventing the spread of reportable and zoonotic diseases. These laws and regulations may extend from homeowner associations to federal regulatory agencies. If you are currently seeing backyard poultry or hoping to start, this seminar will be a starting point, with a plethora of resources to continue your journey.

Key words: backyard poultry, diseases, biosecurity.

22 Introduction

23 The definitions of backyard poultry may be jurisdiction dependent and with that, variable. The
24 United States Department of Agriculture (USDA) defines poultry as “*any domesticated bird*
25 *used for food,*” including chicken, turkey, goose, duck, Rock Cornish hens, pheasant, squab,
26 guinea fowl, ostrich, emu, and rhea (ratites)¹. The Code of Federal Regulations (CFR) defines
27 poultry as “*any domesticated bird whether live or dead.*” This definition includes chickens,
28 turkeys, ducks, geese, guineas, ratites, or squabs (9 CFR, Part 381.1)². The most important
29 thing to remember is that regardless of how clients consider them, they are considered food
30 animals under the federal law.

31 A basic understanding of the regulations that impact backyard poultry ownership can
32 enhance our role as an advisor to our clients. There may be ordinances, laws and regulations at
33 the neighborhood, city, state, and federal levels that directly impact backyard flocks. Ensure
34 that when suspecting infectious diseases, you contact the relevant diagnostic laboratory to
35 ensure the adequate sample is submitted for isolation, culture and sensitive. Poultry are
36 considered farm animals regardless of pet status, and therefore we must be cautious regarding
37 antimicrobial use and follow the appropriate regulations.

38 Evaluation of backyard birds should include subjective information, objective
39 information, an assessment, and a plan. Knowing normal and having a general idea of common
40 signs of disease in poultry are paramount for assessing their health.

41

42 Laws and Regulations

43 Before starting a backyard flock, owners should review the covenants, conditions, and
44 restrictions (CC&Rs) of the neighborhood as well as any rules the homeowner’s association

45 may have. In addition, the city's codified ordinances may include rules regarding zoning laws,
46 lot sizes, setbacks, health codes³. The CFR includes the regulations of federal agencies such as
47 the USDA and the Food and Drug Administration (FDA).

48 At the neighborhood, city and county level, regulations may include whether poultry
49 can be owned, how many birds can be owned, how and/or where they can be housed and
50 whether roosters are allowed^{3,4}. At the state and federal level, regulations include movement of
51 backyard birds within and between states, the vaccines and medications that can be used on
52 certain species and the slaughter, process and distribution of meat and eggs.

53 The FDA has authority over shell eggs wholesomeness and safety through a number of
54 acts, rules, and standards. On the other hand, USDA oversees meat and shell eggs, diagnostics,
55 and reportable diseases through the Animal and Plant Health Inspection Service (USDA-APHIS)
56 and the Food Safety and Inspection Service (USDA-FSIS). FSIS focuses on food safety at the
57 processing plant for both meat and shell eggs. USDA APHIS oversees Animal Health
58 Emergency Management, specifically relevant for reportable diseases such as avian influenza
59 and Newcastle disease. Veterinary services, and the national laboratory network also fall under
60 USDA jurisdiction.

61 Any poultry to be moved off premises to be sold, traded, or exhibited are subject to the
62 National Poultry Improvement Plan (USDA-APHIS-NPIP), which falls under APHIS⁵. NPIP
63 was established in the 1930s as a cooperative program between the poultry industry, state, and
64 federal government for the eradication of *Salmonella enterica* subspecies *enterica* serovar
65 Gallinarum biovar Pullorum, the causative agent of Pullorum disease. NPIP has now expanded to
66 include *Salmonella* Gallinarum (Fowl Typhoid), *Mycoplasma gallisepticum*, *M. synoviae*, *M.*
67 *meleagridis* and low pathogenicity avian influenza.

68 NPIP examines the health status of commercial poultry and establishes regulatory
69 standards for sample collection, diagnostic tests performed, and the laboratory protocols for
70 conducting tests. It includes chickens, turkeys, waterfowl (ducks, geese, swans), pheasants, quail,
71 peafowl, guineas, chukars, grouse, ostrich, emu, rhea, and cassowary⁶. Benefits of participation
72 in NPIP include knowing the health status of flocks, using it for interstate movement, and using
73 health testing as proof for shows, swaps, or exhibitions.

74

75 Antimicrobial Use

76 Poultry are considered farm animals regardless of pet status! Ensure antibiotics are labelled for
77 them and make sure to follow withdrawal periods. Contact FARAD with questions regarding off-
78 label use. While a multitude of the drugs within veterinary feed directive are labelled for use in
79 meat chickens and broilers, only chlortetracycline is labelled for use in poultry that lay eggs for
80 human consumption⁷. The use of enrofloxacin was banned in poultry in 2017.

81

82 Examination

83 Subjective information varies significantly between backyard flocks, and it is possible to miss
84 factors that can impact the overall health of the bird and the flock. The subjective should
85 include information regarding morbidity and mortality, as well as current medication, vaccines,
86 and supplements. It is common for management practices to lead to stress, which in turn
87 increases the bird's susceptibility to disease. Use FLAWLESS as a reminder of areas to
88 evaluate:

89 F – food

90 L – liter/ flooring

- 91 A – air
- 92 W – water
- 93 L – lights
- 94 E – environment
- 95 S – sanitation, staff
- 96 S – security, space

97 The physical examination or objective portion of the visit should include evaluation of
98 parameters observed in any other species. This includes weight, capillary refill time,
99 temperature, pulse, and respiratory rate. All systems should be evaluated, including
100 integumentary, orthopedic, musculoskeletal, cardiovascular, and urogenital. The assessment
101 should include considerations of species variations, such as the lack of lymph nodes in chickens
102 and turkeys. Poultry are subject to a variety of diseases, including infectious nutritional and
103 genetic diseases. The plan is variable upon the assessment, and may include anything from
104 quarantine, treatment, diagnostic sampling to euthanasia.

106 Disease Prevention

107 Disease prevention in poultry consists of a combination of biosecurity, vaccines, limiting
108 stressors and at times the use of chemicals and ionophores. Stress secondary to mismanagement
109 is the most common cause of disease in poultry. Biosecurity of backyard flocks is typically less
110 stringent compared to commercial flocks. Infectious agents can be introduced by instructions to
111 the flock, humans, free-living birds and other animals, pests, and insects as well as through
112 contaminated food, water, vehicles, and equipment. Biosecurity can help minimize and prevent
113 disease transmission⁸.

114 Biosecurity recommendations in backyard flocks include:

- 115 • Limiting visitors
- 116 • Washing hands before and after handling poultry
- 117 • Dedicated clothing and footwear
- 118 • Changing clothes before entering/ exiting the area where poultry are kept
- 119 • Keeping poultry away from free-living birds and pests
- 120 • Cleaning and disinfecting all equipment and surfaces
- 121 • Sourcing new birds from NPIP approved flocks
- 122 • Quarantining any introductions to the flock
- 123 • Quarantining sick birds

124

125 Reportable diseases

126 Reportable diseases are conditions of great public health concern that are required by law to be
127 reported to the state when diagnosed. Reportable diseases can be notifiable or monitored diseases⁹.
128 Notifiable diseases and conditions require immediate reporting by animal health professionals.
129 Monitored diseases, on the other hand, require monthly reporting by State Animal Health Officials
130 and Laboratories.

131 Each state has its own department of agriculture that sets regulations regarding poultry.
132 The state veterinarian who should be considered the primary reference. USDA works with federal,
133 state, and tribal partners, as well as industry stakeholders, to coordinate emergency response to
134 animal disease outbreaks.

135 Notifiable diseases:

- 136 • Duck viral hepatitis

- 137 • Fowl typhoid
- 138 • Highly pathogenic avian influenza
- 139 • Low pathogenic avian influenza
- 140 • Pullorum disease
- 141 • Turkey rhinotracheitis
- 142 • Virulent Newcastle disease

143 Monitored diseases:

- 144 • Avian chlamydiosis
- 145 • Avian infectious bronchitis
- 146 • Avian infectious laryngotracheitis
- 147 • Avian mycoplasmosis (*M. gallisepticum* and *M. synoviae*)
- 148 • Infectious bursal disease

149 Notifiable reportable diseases such as highly pathogenic avian influenza will result in quarantine
150 of the premise to restrict movement of poultry and equipment followed by humane euthanasia to
151 minimize animal suffering and dissemination of the condition. There is normally a designated
152 testing zone to ensure the infectious agent has not spread. The depopulated premises will be
153 disinfected and tested to confirm that they are free of the infectious agent. If you suspect a
154 reportable disease in a flock, contact the state veterinarian as soon as possible, and limit
155 movement in and out of the premise.

156

157 Other Considerations

158 Other considerations regarding diseases of poultry include diseases that are zoonotic, as well as
159 those that are more common in backyard and/or commercial flocks. Diseases such as avian

160 influenza, avian tuberculosis, campylobacter, chlamydiosis, erysipelas, fowl mites, Newcastle
161 disease and some strains of salmonellosis are zoonotic.

162 Some conditions such as bumble foot, coccidiosis and Escherichia coli are common in
163 both commercial and backyard flocks. Conditions such as laryngotracheitis, Marek's disease,
164 Mycoplasmosis and fowl pox are significantly more common in backyard flocks due to lack of
165 vaccination.

166 When assessing the flock, samples consider the clinical signs and the diseases they point
167 out. Tissue samples, for example, can be used fresh for bacterial or viral isolation, or fixed for
168 histopathology. Swabs, serology, and tissue can be used for molecular identification of the
169 organism depending on the type of organisms and the course of the infection. For other
170 conditions, serology can be used to identify antibodies that would indicate exposure.

171 Some infectious agents such as Marek's disease virus, infectious laryngotracheitis virus,
172 and pox viruses cause pathognomonic lesions that can be easily identified using histopathology.
173 Other infections, such as avian influenza and Newcastle disease, do not result in
174 pathognomonic lesions. Because these two viruses move through a flock very quickly,
175 identifying the agent using molecular diagnostics.

176

177 **Summary**

178 There are a lot of conditions that impact the health of backyard flocks. And along with medical
179 knowledge, a basic understanding standard of care and the regulations that impact backyard
180 poultry ownership can enhance our role as an advisor to our clients. Minimizing stress and the
181 entry of infectious organisms into the flock are of the utmost importance in preventing disease.
182 Trust your medical knowledge and use the tools available to you when evaluating these flocks.

183 Make sure to always practice good biosecurity to prevent transmission of any infectious
184 organisms between flocks, and zoonotic organisms from infection people.

185

186 Resources:

187 Organizations:

- 188 • American Association of Avian Pathologists (AAAP)
- 189 • American College of Poultry Veterinarians (AAAP)
- 190 • Association of Avian Veterinarians (AAV)

191 Books:

- 192 • Carpenter JW, Marion C. Exotic Animal Formulary-E-Book: Exotic Animal
193 Formulary-E-Book. Elsevier Health Sciences; 2017.
- 194 • Greenacre CB, Morishita TY. Backyard poultry medicine and surgery: a guide for
195 veterinary practitioners. John Wiley & Sons; 2021.

196 Courses

- 197 • Incorporating Chickens In Your Practice Course, VetAhead -
198 <https://www.vetahead.vet/join-the-flock-iincorporating-chickens-in-your-practice/>
- 199 • Poultry Medicine Course for Veterinarians in Private Practice, AAAP -
200 <https://www.aaap.info/poultry-medicine-for-veterinarians-course>

201 Websites:

- 202 • Atlas of Avian Diseases, Cornell University - Partnersah.vet.cornell.edu/avian-atlas/#/
- 203 • Avian Necropsy Examination , Cornell University -
204 Partnersah.vet.cornell.edu/veterinarians/avian-necropsy-examination

- 205 • PoultryDVM - <https://poultrydvm.com/>
206 • Vespecon - <https://vespecon.com>

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