AVIAN POXVIRUS

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<th>Animal Group(s) Affected</th>
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<td>Avian</td>
<td>Mechanical spread by invertebrate vectors. Direct contact between birds or indirect contact with contaminated surfaces.</td>
<td>Cutaneous or “dry” form: skin nodules. Diphtheritic or “wet” form: internal lesions in upper alimentary or respiratory tracts. Systemic infection.</td>
<td>Small, focal skin lesions to widespread severe lesions; respiratory difficulties, to peracute death in certain species.</td>
<td>Treat secondary bacterial infections. May need to provide supportive fluids and food.</td>
<td>Vector control and good hygiene.</td>
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Fact Sheet compiled by: Sharon L. Deem
Sheet completed on: 22 September 2010; updated 13 December 2012.
Fact Sheet Reviewed by: Becki Lawson; Fred Dustan Clark

Susceptible animal groups: Avians. Over 275 species of birds in 23 orders are known to be susceptible.

Causative organism: Avipoxvirus in the family Poxviridae. Large (up to 400 nm) double-stranded, enveloped DNA. 17 types of Avipoxvirus spp. have been identified to date.

Zoonotic potential: No

Distribution: Worldwide with exception of no published reports from the Arctic or Antarctic.

Incubation period: Variable with approximate range of 4 days up to several months.

Clinical signs: The signs vary with virulence of the virus, susceptibility of the host, distribution and type of lesions in an infected bird, and other complicating factors. Manifestations are cutaneous (“dry”), diphtheritic (“wet”), systemic, or some combination of the three. Cutaneous lesions are characterized by the appearance of nodular lesions on feather-free regions of the body; in editor’s experience, often in non-gallinaceous species, these lesions occur as single nodules which may resemble a proliferative neoplasm. Diphtheritic lesions are moist, necrotic lesions on the mucous membranes of the mouth and upper respiratory tract. Septicemic form is associated with acute depression, anorexia, dyspnea and death and has been most frequently reported in certain passerine species (e.g., canary). Infected birds can have peracute infections (death) or may become latent carriers. Also note that when stressed (e.g., during transfer intra- and inter-zoo, other illness), it has been suggested that birds may recrudesce and develop new lesions which may first appear as red-swollen areas. Any bird with these developing lesions should be immediately separated from other birds and caged individually while avian pox is or is not confirmed.

Post mortem, gross, or histologic findings: Gross lesions are proliferations of epithelial cells. Diphtheritic form may appear as white, opaque, slightly elevated nodules to coalescing yellowish, caseous, necrotic material with the appearance of a pseudomembrane.

Diagnosis: Gross lesions in cutaneous infections are often highly suggestive of pox infection but are not definitively avian pox. Diphtheritic infections are often harder to diagnosis on gross observations due to differential diagnoses (e.g., trichomonosis). Histologic evaluation for Bollinger bodies (eosinophilic
intracytoplasmic epidermal inclusions) on light microscopy is acceptable for diagnosis. Virus isolation on the chorioallantoic membrane of embryonated chicken eggs or in cell cultures of avian origin may be used. PCR techniques are also available for detection of avian pox DNA from DNA-extracted direct from lesion or extracted virus culture. PCR targeting the 4b core protein has been widely used for construction of avian poxvirus phylogenies and virus strain differentiation.

**Material required for laboratory analysis:** Biopsy of cutaneous nodules and diphtheritic mucous membranes for detection of the pathognomonic Bollinger bodies.

**Relevant diagnostic laboratories:**
State or university veterinary diagnostic laboratories in most states can perform diagnostic testing.

National Wildlife Health Center  
6006 Schroeder Road  
Madison, WI 53711-6223.  
Phone: (608) 270-2400  
Fax: (608) 270-2415

National Animal Disease Center  
P.O. BOX 70  
1920 Dayton Avenue  
Ames, IA 50010

**Treatment:** No direct treatment for virus infection itself exists. However, secondary bacterial infections should be treated. Supportive care may be needed to provide supplemental food and water for those birds that cannot see or eat properly.

**Prevention and control:** Mechanically transmitted virus, therefore control of vectors (e.g., mosquitoes, flies) and fomites is very important. Perch design and cage structure important to minimize cross infections and to decrease abrasions that allow entry of the virus.

**Suggested disinfectant for housing facilities:** Any strong disinfectant, including bleach.

**Notification:** None required.

**Measures required under the Animal Disease Surveillance Plan:** None required.

**Measures required for introducing animals to infected animal:** Keep birds with pox lesions in quarantine until no clinical signs are present.

**Conditions for restoring disease-free status after an outbreak:** Clean with common disinfectants (e.g., bleach) and keep mosquitoes and other mechanical vectors to a minimum.

**Experts who may be consulted:**
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### References:


