

**Revue**

Emerging Infectious Diseases

**Titre**

Persistence of Highly Pathogenic Avian Influenza Viruses in Natural Ecosystems

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**Abstract**

Understanding of ecologic factors favoring emergence and maintenance of highly pathogenic avian influenza (HPAI) viruses is limited. Although low pathogenic avian influenza viruses persist and evolve in wild populations, HPAI viruses evolve in domestic birds and cause economically serious epizootics that only occasionally infect wild populations.

We propose that evolutionary ecology considerations can explain this apparent paradox. Host structure and transmission possibilities differ considerably between wild and domestic birds and are likely to be major determinants of virulence. Because viral fitness is highly dependent on host survival and dispersal in nature, virulent forms are unlikely to persist in wild populations if they kill hosts quickly or affect predation risk or migratory performance. Interhost transmission in water has evolved in low pathogenic influenza viruses in wild waterfowl populations. However, oropharyngeal shedding and transmission by aerosols appear more efficient for HPAI viruses among domestic birds.