Patients admitted to the hospital with pulmonary infiltrates were empirically treated with high dose oseltamivir (150 mg 2×/d) for 5 days, other antimicrobial drugs, and, eventually, steroids. In 2 patients, the respiratory disease progressed initially but they eventually recovered; 2 patients (1.2% of admissions to hospital) with acute respiratory failure died. Despite improvement in clinical symptoms at discharge, chest radiographs performed on a limited number of patients showed no substantial changes at 72–96 h after admission.

Clinical manifestations of pandemic (H1N1) 2009 have not yet been fully characterized. We observed a mild to moderate lower respiratory disease in ≈8% of consecutive patients with ILI during the current pandemic in Argentina. A more severe respiratory disease was observed in Mexico during the current pandemic (*4*) In contrast, early reports indicated that pandemic (H1N1) 2009 disease might be similar in severity to seasonal influenza (*3*). A lack of microbiologic confirmation may bias our observation. Because pulmonary infiltrates are uncommon in previously healthy persons with ILI, a simultaneous circulation of other respiratory pathogens may explain our observation. Furthermore, early empirical use of antimicrobial drugs could overshadow clinical features of bacterial pneumonia.

We observed an unexpectedly high rate of lower respiratory disease in adults with ILI during an outbreak of pandemic (H1N1) 2009 in Argentina. This finding suggests that a unique pattern of virulence, pulmonary tropism, or both may characterize the current influenza A (H1N1) infection, although we could not rule out co-infection with other viral or bacterial respiratory pathogens. Considering the evolving nature of influenza viruses, the wide clinical spectrum of pandemic (H1N1) 2009 should be further investigated.

Carlos Zala and Roberto Gonzalez

Author affiliation: Hospital Central de San Isidro, Buenos Aires, Argentina

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Address for correspondence: Carlos Zala, Amenabar, 1750 3D, 1426 Buenos Aires, Argentina; email: czala@teletel.com.ar

Susceptibility of Poultry to Pandemic (H1N1) 2009 Virus

To the Editor: During April 2009, cases of acute respiratory disease in humans caused by influenza A pandemic (H1N1) 2009 virus in Mexico were reported (*1*). By August 21, 2009, a total of >182,166 human cases, including 1,799 deaths, had been reported from 177 countries (www.who.int/csr/don/2009_08_21/en/index.html).

The origin of the new virus appears to be a reassortant event of a virus from swine in North America that contained the classic swine, human, and avian influenza genes and a virus of unknown origin that contributed neuraminidase and matrix genes of swine in Europe. On May 2, 2009, the first nonhuman infections were detected in a swine operation in Canada (www.who.int/csr/don/2009_06_24/en/index.html).

Historically, human seasonal influenza A viruses have not been reported to infect poultry, but clinical cases of respiratory disease or reduction in egg production have been reported for domestic turkeys after infection with subtypes H1N1, H1N2, and H3N2 swine influenza viruses and for multiple poultry species with subtype H1N1 avian influenza virus (*2*–*4*). The presence of avian and swine influenza virus genes in pandemic (H1N1) 2009 virus increases the potential for infection in poultry after exposure to infected humans or swine.

To determine infectivity potential, 3-week-old chickens (*Gallus domesticus*) (n = 11), 2-week-old domestic ducks (*Anas platyrhynchos*) (n = 11), 73-week-old reproductively active turkey hens (*Meleagris gallopavo*) (n = 9), 3-week-old turkey poults (n = 11), and 5-week-old Japanese quail (*Coturnix japonica*) (n = 11) were intranasally inoculated with 10^6 mean chicken embryo infectious doses of A/Mexico/4108/2009(H1N1). Five uninfected chickens, ducks, turkey poults, and quail, and 3 uninfected turkey hens were contact exposed to intranasally inoculated birds to assess transmission potential. Cloacal and oropharyngeal swabs were taken on 2, 4, 7, and 10 days postinoculation (DPI) from all birds, and internal tissues were taken from 2 birds on 2, 4 and 7 DPI for virus detection by quantitative real-time reverse transcription–PCR (qRRT-PCR) assay

specific for the influenza virus matrix gene (*5*).

To improve sensitivity because of several primer mismatches, we updated the reverse primer to 3′-CAGAGACTGGAAAGTGTCTTT GCA-5′. Virus isolation in embryonating chicken eggs was used on a subset of samples to verify qRRT-PCR results at 4 DPI. Serum samples were collected on 15 DPI for antibody testing by hemagglutination inhibition. Shams were intranasally inoculated with culture media and sampled on 4 and/or 7 DPI. We inoculated ten 4 week-old chickens intravenously to determine pathotype by using the intravenous pathogenicity index (IVPI). All animal studies were conducted under BioSafety Level 3 enhanced conditions with approval by Institutional Animal Care and Use and BioSafety committees.

During the 15-day observation period, clinical signs did not develop in any of the birds; none of the birds died. An IVPI of 0.00 indicated the virus was not of high pathogenicity for chickens. No virus was detected by qRRT-PCR or isolated in chicken eggs from swabs or tissues from chickens, turkeys, or ducks. All chickens and turkeys were negative for antibodies to the virus on 15 DPI, but 1 intranasally inoculated duck had a hemagglutination inhibition (HI) antibody titer of 16. Virus was detected in oropharyngeal swabs at 2 and 4 DPI from intranasally (IN)–inoculated quail (Table), and these quail had antibodies against influenza A at 15 DPI. The intranasally inoculated quail had heterophilic-to-lymphocytic rhinitis, and influenza virus was visualized by immunohistochemical analysis of epithelium and macrophages within the mucosa of the nasal cavity; neither lesions nor antigen were identified in other respiratory and nonrespiratory tissues. Virus was not isolated from contact-exposed quail (Table), and they lacked antibodies on 15 DPI.

Table. Results of testing for influenza A pandemic (H1N1) 2009 virus in oropharyngeal swabs of experimental quail

	Sampling day (days postinoculation) for oropharyngeal swab*			
Group	2	4	7	10
Intranasally inoculated	2/5 ($10^{0.9}$)	5/5 ($10^{2.8}$)	0/5	0/5
Contact	0/5	0/5	0/5	0/5

*Number virus positive/total sampled (average titer of positive samples, mean chicken embryo infectious doses). Test results for all cloacal swabs were negative.

Infection with swine influenza viruses in turkeys has been frequently reported, and experimental intranasal inoculation studies using 5 such viruses have produced infection and disease with associated contact transmission to uninfected turkeys (*3*,*4*,*6*). However, infection of chickens by swine influenza viruses has been rare in the field, and experimental studies have shown limited respiratory replication after intranasal inoculation but no transmission (*3*,*6*–*8*). Experimental inoculation of ducks failed to produce infection or transmission (*8*).

Recently, subtype H3N2 swine influenza A virus infection with respiratory disease in Japanese quail has been reported in Canada, and such infections have been experimentally reproduced by intranasal inoculation (*9*,*10*). However, in our studies, pandemic (H1N1) 2009 virus was biologically distinct from swine influenza viruses, failing to produce infection in experimentally inoculated turkey hens or chickens, and only 1 serologically positive IN-inoculated domestic duck. In addition, Japanese quail were infected by high dose IN exposure, but replication and shedding was limited to the respiratory tract, and the virus did not transmit to quail by contact, suggesting low potential of poultry involvement as an amplification host for current pandemic (H1N1) 2009 virus. Pandemic (H1N1) 2009 virus is unlikely to produce sustained outbreaks in poultry unless the virus mutates or reassorts with existing avian influenza viruses. Since the submission of this report, the virus has been detected in 2 turkey flocks in Chile (www.oie.int/wahis,/public.php?page=single_report&pop=1&reportid=8404). Currently, only limited data are available, and it is unknown if pandemic (H1N1) 2009 has changed and acquired the ability to infect and transmit in turkeys or if the 2 cases are isolated events without epidemic potential in turkeys.

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David E. Swayne, Mary Pantin-Jackwood, Darrell Kapczynski, Erica Spackman, and David L. Suarez

Author affiliation: US Department of Agriculture, Athens, Georgia, USA

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Address for correspondence: David E. Swayne, Southeast Poultry Research Laboratory, Agricultural Research Service, US Department of Agriculture, 934 College Station Rd, Athens, GA 30605, USA; email: david.swayne@ars.usda.gov

Oropouche Fever Outbreak, Manaus, Brazil, 2007–2008

To the Editor: Oropouche virus (OROV) is an arbovirus, *Orthobunyavirus*, transmitted among sloths, marsupials, primates, and birds by the mosquitoes *Aedes serratus* and *Culex quinquefasciatus*. Notably, this virus has adapted to an urban cycle involving man, with midges (*Culicoides paraensis*) as the main vector (*1*). Oropouche fever is the second most frequent arboviral disease in Brazil, surpassed only by dengue. OROV causes large, explosive outbreaks of acute febrile illness in cities and villages in the Amazon and central regions of Brazil. An estimated 500,000 cases of OROV infection have occurred in Brazil in the past 48 years. In addition to outbreaks, OROV can also cause sporadic human infections (*2*).

The Tropical Medicine Foundation of Amazonas State (TMF-AM) is a tertiary care center specializing in tropical and infectious diseases and is located in the city of Manaus. Syndromic surveillance for acute febrile illness has been conducted by TMF-AM since 1998. During January 2007 through November 2008, we obtained blood samples from 631 patients who had acute febrile illness for ≥5 days but who had negative results at initial screening for malaria (thick blood smear) and dengue (MAC-ELISA). Blood samples were tested for OROV immunoglobulin (Ig) M antibodies by an indirect enzyme immune assay using infected cells as antigen, as previously reported for dengue (*3*).

For the indirect enzyme immune assay using infected cells as antigen, C6/36 *A. albopictus* cells were grown in 96 well microplates; these cells were infected with OROV (BeAn 1991 strain). After 4 days, the cells were fixed in the wells with 7% formalin buffered at pH 7.0. The microplate was blocked with 5% skim milk and, after washing the wells, 100 μL of serum diluted 1:400 was added into infected and uninfected wells. After incubation and washing the wells, a peroxidase-conjugated goat anti-human IgM was added; finally, the ABTS substrate (KPL, Inc., Gaithersburg, MD, USA) was added into the wells. The plates were incubated and read on a spectrophotometer at 405 nm. The cutoff for the test was determined to be the mean of optical densities read in all wells containing uninfected cells plus 3 standard deviations.

Of the 631 patients in the study, 128 (20.3%) had IgM antibodies to OROV. The age range was 2–81 years (mean 29.5 ± 14 years), and 77 (60.2%) were women or girls. Most of the cases occurred November through March during the rainy season. In addition to fever, the patients had headache (93 [72.7%]), myalgia (90 [70.3%]), and arthralgia (74 [57.8%]). Rash was observed in 54 patients (42.2%), and hemorrhagic phenomena (petechiae, epistaxis, and gingival bleeding) were observed in 20 patients (15.5%). All patients recovered without sequelae and were not hospitalized.

Despite the knowledge of the occurrence of several arboviruses in the Amazon region, most cases of arboviral diseases remain undiagnosed, probably because of their generally mild and self-limited clinical manifestations. Patients usually recover completely after a couple of days. However, even more severe cases may remain undiagnosed, especially because of long distances to health care facilities, difficulties in sample transportation, and lack of laboratory facilities capable of conducting the diagnostic assays. With regard to OROV infections, diagnosis of OROV may be easily confused with other acute febrile illness, including malaria and dengue, both of which are highly endemic in Manaus.

In the present study, an inhouse enzyme immune assay for IgM using infected cell culture as antigen was