cases can be expected as pressure on marine fish stocks and consumption of uncooked fish increase. As a protective measure against this emerging foodborne zoonotic threat, the public should be made aware of risks associated with consumption of fresh, raw marine fish.

Acknowledgments
We thank Amanda Rogers from SA Pathology for her contribution.

References

Address for correspondence: Gerhard F. Weldhagen, Microbiology and Infectious Diseases Laboratory, SA Pathology, PO Box 14, Rundle Mall, Adelaide, SA5000, Australia; email: gerhard.weldhagen@sa.gov.au

Influenza A(H7N7) Virus among Poultry Workers, Italy, 2013

Simona Puzelli,1 Caterina Rizzo,1 Concetta Fabiani, Marzia Facchini, Paolo Gaibani, Maria P. Landini, Carlo Gagliotti, Maria L. Moro, Roberto Rangoni, Luisa Lolì Piccolomini, Alba C. Finarelli, Marco Tamba, Giovanni Rezza, Silvia Declich, Isabella Donatelli, Maria R. Castrucci

Author affiliations: Istituto Superiore Sanità, Rome, Italy (S. Puzelli, C. Rizzo, C. Fabiani, M. Facchini, G. Rezza, S. Declich, I. Donatelli, M.R. Castrucci); St. Orsola University Hospital, Bologna, Italy (P. Gaibani, M.P. Landini); Agenzia Sanitaria Regionale Emilia-Romagna Region, Bologna (C. Gagliotti, M.L. Moro, R. Rangoni, L.L. Piccolomini, A.C. Finarelli); Istituto Zooprofilattico Sperimentale della Lombardia e dell’Emilia Romagna, Brescia, Italy (M. Tamba)

DOI: http://dx.doi.org/10.3201/eid2208.160246

To the Editor: In August 2013, an outbreak of infection with highly pathogenic influenza A(H7N7) virus occurred in Emilia-Romagna, Italy, and >1 million birds were culled (1). Prevention measures were immediately applied, and all workers involved in culling activities wore personal protective equipment (PPE), including face masks with eye protection. These workers were monitored for clinical symptoms, and 3 workers with laboratory-confirmed cases of conjunctivitis caused by infection with influenza A(H7N7) virus were reported during the 3-week outbreak (2). Workers did not receive chemophrophylaxis.

A serological study was conducted in December 2013 to identify potential asymptomatic infections following exposure to influenza A(H7N7) virus. This study was approved by the ethics committee of the Istituto Superiore di Sanità (protocol no. PRE787/13CE13/401).

A total of 93 of 140 workers directly involved in culling activities, including the 3 confirmed case-patients with conjunctivitis, participated in the study. All participants completed a questionnaire that obtained information for demographics, poultry exposure, and use of PPE.

Paired acute-phase and convalescent-phase serum samples were available only for the 3 H7 subtype–positive persons with conjunctivitis. We tested these paired serum samples and single serum samples obtained from virus-exposed workers for antibodies against influenza A(H7N7) virus strain A/Italy/3/2013 (2) by using hemagglutination inhibition (HI) and microneutralization (MN) assays (3,4).

1 These authors contributed equally to this article.
Other H7 subtype viruses previously circulating in Italy were included in the analysis to rule out potential cross-reactivity with influenza A(H7N7) virus (5). HI titers ≥10 and MN titers ≥20 were considered positive; only HI-positive serum samples confirmed 3 times by MN assay were considered positive results for influenza A(H7N7) virus.

We detected antibodies against influenza A(H7N7) virus in convalescent-phase serum samples from the 3 H7 subtype-positive patients and 2 asymptomatic persons but found no seropositivity against other H7 subtype viruses (Table). Because of lack of acute-phase serum samples, we could not assess whether seropositivity for the 2 asymptomatic persons, 1 (RA32) of whom worked with poultry before the outbreak, was caused by infection acquired during the outbreak. All workers were trained and most participants, including the 2 asymptomatic influenza A(H7N7) virus–seropositive persons, reported that PPE was commonly used during culling on infected premises. Nevertheless, it is likely that worker compliance with PPE was not always 100% during the 3-week outbreak because of poor knowledge and real perception of biologic risks among workers.

Future efforts should ensure timely collection of paired serum samples from all workers involved in avian influenza outbreaks, especially when infections occur in humans. Strict compliance with recommended preventive control measures and serologic surveillance programs are crucial to avoid and eventually assess risk for infections with avian influenza viruses in persons exposed to infected poultry.

This study was supported by the Italian Ministry of Health (grants CCM 2012 and RF-2010-2318269).

References

Address for correspondence: Simona Puzelli, National Influenza Centre, Department of Infectious, Parasitic and Immune-Mediated Diseases, Istituto Superiore di Sanità, Viale Regina Elena, 299-00161, Rome, Italy; email: simona.puzelli@iss.it

Increase in Eyeworm Infections in Eastern Europe

Vito Colella, Zvezdelina Kirkova, Éva Fok, Andrei D. Mihalca, Suzana Tasić-Otašević, Adnan Hodžić, Filipe Dantas-Torres, Domenico Otranto

Author affiliations: Università Degli Studi di Bari, Bari, Italy (V. Colella, F. Dantas-Torres, D. Otranto); Trakia University, Stara Zagora, Bulgaria (Z. Kirkova); Szent István University, Budapest, Hungary (É. Fok); University of Agricultural Sciences and...