Sir,

An emergence of a novel avian-origin reassortant influenza A (H7N9) virus in Eastern China has caused an alarming situation due to severe lower respiratory tract infections in humans. As of January 2015, a total of 486 humans infections of H7N9 (resulting in 185 deaths) have been reported. Human infections of H7N9 virus have been associated with poultry exposures in live bird markets although H7N9 virus is not easily transmitted to humans. In the scenario of emerging avian influenza (AI) viruses in Asia, it is necessary to monitor high-risk population groups such as poultry workers for human infections. In India, the outbreaks of highly pathogenic AI H5N1 virus were first reported in February 2006 in poultry at Navapur, Maharashtra, and then, several outbreaks have been reported in north-eastern India. Considering the proximity of north-eastern regions of India with China and likelihood of introduction of this virus, the present study was conducted to detect AI H7N9 virus infections among poultry workers as a high-risk group in western and north-eastern India during 2014.

The surveillance of AI H7N9 virus infections among poultry workers working at live poultry markets and farms in Pune (Western India), West Bengal and Assam (north-eastern India) was planned and executed with the approval and support of the local Municipal and State Health Departments. The study was also approved by the Institutional Human Ethics Committee of the ICMR-National Institute of Virology at Pune, as per the guidelines laid down by the Indian Council of Medical Research for research on human subjects. Written informed consent was obtained from individual study participants. The study participants were interviewed for pre-existing co-morbid diseases, health conditions or illnesses in the recent past (last six month), current or routine nature of work and any other work assignments of similar or related nature.

An assumption of <5 per cent antibody prevalence against AI H7N9 virus was made based on the similar studies performed outside India. The sample size calculations were performed using online OpenEpi software. The estimated sample size was 500 assuming 5 per cent prevalence, 95 per cent confidence and precision of 0.02 per cent by 2-sided test with finite population correction for population size of 5000 for the study area. Following this, the prospective clinical surveillance of acute respiratory illness (ARI) or influenza-like illness (ILI) was also undertaken in Pune and Assam among surveyed poultry workers. The follow up of the poultry workers for any ARI/ILI episodes was carried out from January to July 2014.

A total of 540 poultry workers were enrolled in the study during January to November 2014. The samples were collected from Pimpri-Chinchwad Municipal Corporation and Pune Municipal Corporation areas in Pune; Siliguri, Alipurduar, Dhupguri-Jalpaiguri, Kalimpong-Darjeeling, West Bengal and Dibrugarh, Assam. Blood samples (3-5 ml) were collected from 540 poultry workers by venipuncture, and serum was separated and stored at -20°C until tested (Table). The serum samples were tested by the hemagglutination inhibition (HI) and microneutralization (MN) assays as per the WHO recommended protocols for the detection of antibodies against H7N9 virus. HI assay was performed using 1 per cent horse red blood cells. The reference H7N9 virus A/Shanghai/2/13 (H7N9)-PR8, V-VIE2 ID-CDC-RG-32A from CDC, Atlanta, USA, was used in the study. A total of 31 throat and nasal swab samples were collected from individuals with ILI and tested for the presence of influenza A virus using real-time reverse transcription polymerase chain reaction (qRT-PCR) as per the protocol recommended by the CDC, USA. RNase P and RNA from known positive sample served as positive controls. Nuclease-free water served as a negative control.
The poultry workers were individuals involved in handling, transport, cleaning and slaughter of poultry in live poultry markets, shops or farms. The age group of poultry workers ranged from 15-79 yr with the median of 30 yr (mean 32, standard deviation 11.86). The male to female ratio was 14. Only 6.5 per cent were females as poultry workers were predominantly males.

Clusters of severe ARI (SARI) or individual SARI cases were not reported. A total of 31 poultry workers reported ILI during the study; however, all samples were negative for antibodies against influenza H7N9 virus by HI and MN assays. All the ILI cases were negative for the presence of influenza A virus using RT-PCR. RT-PCR, reverse transcription-polymerase chain reaction; HI, hemagglutination inhibition; MN, microneutralization

In conclusion, an emergence of a novel avian-origin influenza A H7N9 virus in China has caused concern in the neighbouring countries. However, the limited surveillance of H7N9 virus conducted among poultry workers as a high-risk group in western and north-eastern India revealed the absence of H7N9 virus infections during 2014.

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