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Address for correspondence: Xiao-Mei Wang, National Key Laboratory of Veterinary Biotechnology, Harbin Veterinary Research Institute, Chinese Academy of Agricultural Sciences, 427 Maduan St, Harbin 150001, People's Republic of China; email: xmw@hvri.ac.cn

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Healthcare Worker Acceptance of Pandemic (H1N1) 2009 Vaccination, Morocco

To the Editor: In Morocco, the first case of pandemic (H1N1) 2009 was diagnosed on June 12, 2009 (1). Because a main determinant of public immunization success is healthcare workers' support and recommendations and because little is known about such with regard to pandemic (H1N1) 2009 vaccination in Morocco, our aim was to document healthcare workers' knowledge, attitudes, practices, and acceptance of pandemic (H1N1) 2009 vaccination in Morocco.

From January 15 through February 28, 2010, a structured, self-administered, anonymous questionnaire was distributed to a convenience sample of 1,332 healthcare workers in 5 public hospitals in Rabat, Morocco. Completed questionnaires were analyzed by using SPSS version 10.0 (SPSS, Chicago, IL, USA). The 1,002 responses gave a response rate of 75% ($\approx 17\%$ of the entire staff of the University Hospital of Rabat).

We found that the hospital staff had acquired basic knowledge about transmission and prevention of the pandemic (H1N1) 2009 virus. Responses indicated that 218 (22%) study participants had accepted vaccination (i.e., had been vaccinated) against this virus. Markedly more healthcare workers in Morocco were undervaccinated than were those in the United States; by mid-January 2010, estimated vaccination coverage among healthcare workers was 37.1% (2). Some evidence indicates that willingness of healthcare workers to be vaccinated with the new vaccine is poor: 48.0% in Hong Kong Special Administrative Region, People's Republic of China (3) and 22.3% in the United States (4). Vaccination coverage was significantly higher for those 20–30 years of age

than for those in other age groups ($p = 0.001$). The analysis by occupational category showed significantly higher coverage for paramedical staff (26%) than for physicians and pharmacists (19%) ($p < 0.01$). The main causes for this reluctance were fear of adverse effects, concerns about the new adjuvant used, the short duration of clinical trials, and influence of the media.

The low acceptance rate of vaccination for pandemic (H1N1) 2009 among healthcare workers in Morocco is alarming because they serve as an example for their patients and the public. Vaccination is needed to keep the healthcare system operating at maximum capacity during a pandemic. The following factors appear to play a major role in acceptance: accessibility of the vaccine within the service; free vaccine; and a display explaining vaccination's benefits, protective value, and risk for adverse effects (5,6). Policy makers could use our findings to improve the vaccination strategy for healthcare workers in future vaccination campaigns.

**Rida Tagajdid,
Hicham El Annaz,
Taoufik Doblali, Kawtar Sefiani,
Bouchra Belfquih,
and Saad Mrani**

Author affiliations: Mohammed V Military Teaching Hospital, Rabat, Morocco (R. Tagajdid, H. El Annaz, B. Belfquih, S. Mrani); and Mohammed V-Souissi University, Rabat (R. Tagajdid, H. El Annaz, T. Doblali, K. Sefiani, B. Belfquih, S. Mrani)

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Address for correspondence: Rida Tagajdid, Military Hospital of Rabat, Virology, Hay Riad, Rabat 10100, Morocco; email: reda.tagajdid@laposte.net

New Rural Focus of Plague, Algeria

To the Editor: Plague is a deadly rodent-associated flea-borne zoonosis caused by the bacterium *Yersinia pestis* (*Y.*). Human plague periodically reemerges in so-called plague foci, as illustrated by the 2003 reemergence of human plague in the Oran area, Algeria (2,3). We report emergence of a new plague focus in a remote region of Algeria.

In July 2008, three patients came to Laghouat University Hospital with signs of severe infection and painful, inflamed, enlarged lymph nodes suggestive of buboes. One additional patient became ill with pneumonia and coma after a bubo appeared. The patients were nomads living in a 24-person camp in Thait El Maa in the Laghouat area, 550 km southwest of Algiers (Figure). Plague was confirmed by

culturing *Y. pestis* from 1 bubo aspirate. Ten days of oral doxycycline (4 mg/kg/d) combined with oral rifampin (20 mg/kg/d) and intramuscular gentamicin (3 mg/kg/d) cured the patients with bubonic plague, but the patient with pneumonic plague died.

In January 2009, eight individuals of the rodent species *Meriones shawii* (Shaw's jird) and 2 *Psammomys obesus* (fat sand rats) were trapped inside nomads' tents (H.P. Sherman Traps, Tallahassee, FL, USA). At time of capture, there was a cold wind with blowing sand, and, after visual inspection of the rodents, efforts to recover fleas failed. DNA from the rodents' spleens was extracted by using the QIAamp Tissue Kit (QIAGEN, Hilden, Germany) at the Medical Entomology Unit Laboratory, Pasteur Institute, Algiers, and subjected to PCR amplification of the plasminogen activator gene (*pla*) from 6 *M. shawii* jirds. Negative con-

trols (DNA extracted from uninfected fleas maintained as colonies in Medical Entomology Unit Laboratory was used in the absence of negative animal tissue) remained negative.

After sequencing, the PCR amplicons showed 100% sequence identity with *Y. pestis* reference sequences. Identification was further confirmed in Marseille, France, by culturing 2 rodent glycerol-negative *Y. pestis* isolates (Algeria 1 and Algeria 2) and sequencing *pla*, *caf*, and *glpD* genes. The latter sequence was identical to the reference *Y. pestis* CO92, an Orientalis biotype. Multispacer sequence typing found the following combination: spacer Yp3, type 5; Yp4, 1; Yp5, 1; Yp7, 8; Yp8, 2; Yp9, 2; and Yp10, 1, a pattern that is typical for all Orientalis isolates investigated by this method but does not match the combinations observed for other genotypes. The original spacer Yp7 type 8 ruled out contamination (4).



Figure. Location of a new rural plague focus in a nomad camp in Laghouat (dark gray shading; 35°29'N, 0°32'E), Algeria.