MMWR
Morbidity and Mortality Weekly Report

MMWR Dispatch
Vol. 53 / March 19, 2004

Brief Report

Imported Measles Case Associated with Nonmedical Vaccine Exemption — Iowa, March 2004

On March 13, 2004, the Iowa Department of Public Health (IDPH) reported to CDC that a male student aged 19 years with measles in the infectious stage had flown from New Delhi, India, to Cedar Rapids, Iowa, on March 12. Because of a nonmedical exemption, the student had not received measles-containing vaccine (MCV). This report describes the measles case, the public health response to prevent secondary cases, and the impact on the public health system. Health-care providers and state and local public health departments should be alert to possible cases of measles in persons who traveled with this student or their contacts. Parents considering nonmedical exemptions for their children should be aware of the potential risk for disease both for their children and the public.

Measles is a highly infectious acute viral illness that can cause severe pneumonia, diarrhea, encephalitis, and death. Measles is not endemic in the United States because of high levels of vaccine coverage (>90% by age 3 years) (*1*) and the requirement that school-aged children receive 2 doses of MCV (*2*). However, an estimated 745,000 measles deaths occur annually worldwide (*3*), making measles a major vaccine-preventable disease.

The index patient was a member of a group of approximately 28 students and two supervisors from college A in Iowa who had traveled to India, where approximately 52,000 cases of measles were reported in 2002 (*4*). A high percentage of students from college A are reported to be unvaccinated because of nonmedical exemptions. Six measles cases occurred among the students while they were in India. The group had been scheduled to return to the United States on March 7. To avoid potential spread during the prolonged airline flights, IDPH recommended that these six students stay in India for at least 4 days after rash onset (i.e., the period of infectivity). Contacts of these infectious students who lacked immunity for measles were asked to stay in India for 18 days after the last possible exposure. Despite these recommendations, the index patient, who was an unvaccinated contact, returned to the United States early, flying on March 12 from New Delhi through Amsterdam and the Detroit Metro Airport to Cedar Rapids, Iowa. During his travel, he had a cough and conjunctivitis, and within 24 hours of his arrival in Iowa on March 13, he had a rash. A local physician reported the case to IDPH. Subsequently, measles was confirmed serologically, and throat swab and urine specimens were collected for viral isolation.

On March 13, IDPH and the Michigan Department of Community Health (MDCH) issued press releases to alert air passengers, visitors, and employees who had been in the involved airports about their risk for measles exposure and state health advisories to alert physicians and enhance surveillance. On March 18, CDC issued a health advisory recommending that every person who had been on the plane with the student or who had been in one of the involved airports at the same time be evaluated and, if determined to be susceptible, receive MCV or immune globulin according to the recommendations of the Advisory Committee on Immunization Practices (ACIP) (*5*). Measles vaccination clinics were held on March 14 at the office of Linn County Public Health (LCPH) in Iowa and on March 15 in Michigan. Passenger lists were subpoenaed from the airline, and LCPH, IDPH, and MDCH attempted to contact all passengers on flights with the index patient. Other states in which exposed passengers reside also are taking public health measures to control the potential spread of measles.

State and local public health departments should be alert to possible cases of measles in persons who traveled with this student or their contacts. Diagnosis can be confirmed by serologic testing. In addition to serologic (IgM) specimens, throat swabs or urine specimens should be collected for viral isolation.

The occurrence of six cases in this group of students who traveled abroad demonstrates the high transmissibility of measles when susceptible persons are exposed. The majority of states require 2 doses of MCV for children attending school and post–high school educational institutions; however, nonmedical exemptions are permitted in certain states. Persons who have chosen a nonmedical exemption from vaccination are >22 times more likely to acquire measles than persons who are vaccinated (*6*). In addition, increases in the number of

persons who have chosen to be exempt increase the risk of disease in nonexempt persons (*7*). To reduce the risk of infection among travelers, ACIP recommends that all international travelers be immune to measles because the disease is endemic or epidemic in many parts of the world (*5,8*).

This case demonstrates the importance of following the ACIP recommendations and underscores the impact of nonmedical exemptions on the public health system. Physicians, public health authorities, and school personnel who counsel parents considering nonmedical exemptions for their children should ensure that parents understand the risk that opting out of vaccination places upon their children and the public.

Reported by: *Linn County Public Health, Cedar Rapids; Iowa Dept of Public Health. MG Stobiersky, DVM, R Swanson, MPH, ML Boulton, MD, Michigan Dept of Community Health. GH Dayan, MD, C LeBaron, MD, Epidemiology and Surveillance Div, National Immunization Program, CDC.*

References

1. CDC. National, state, and urban area vaccination levels among children aged 19–35 months—United States, 2002. MMWR 2003;52:728–32.
2. CDC. State immunization requirements 2001–2002. Atlanta, Georgia, U.S. Department of Health and Human Services, CDC, 2002.
3. World Health Organization. Initiative for Vaccine Research: measles. Geneva, Switzerland: World Health Organization, 2004. Available at http://www.who.int/vaccine_research/diseases/measles/en.
4. World Health Organization. WHO Vaccine Preventable Diseases Monitoring System: 2003 global summary. Geneva, Switzerland: World Health Organization, 2003. Available at http://www.who.int/vaccines/globalsummary/immunization.
5. CDC. Measles, mumps, and rubella—vaccine use and strategies for elimination of measles, rubella, and congenital rubella syndrome and control of mumps: recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 1998;47(No. RR–8).
6. Feikin D, Lezotte DC, Hamman RF, Salmon DA, Chen RT, Hoffman RF. Individual and community risks of measles and pertussis associated with personal exemptions to immunization. JAMA 2000;284:3145–50.
7. Salmon DA, Haber M, Gangarosa EJ, Philips L, Smith NJ, Chen RT. Health consequences of religious and philosophical exemptions from immunization laws: individual and societal risk of measles. JAMA 1999;281:47–53.
8. CDC. Health Information for International Travel, 2003–2004. Atlanta, Georgia: U.S. Department of Health and Human Services, CDC 2003. Available at http://www.cdc.gov/travel/yb/index.htm.