Current Lessons from 20th Century Serosurveillance Data on Rubella

Louis Z. Cooper
Department of Pediatrics, Columbia University, New York

(See the article by Dykewicz et al. on pages 1279–86)

By using serum specimens from the third National Health and Nutrition Examination Survey, Dykewicz et al. [1], from the Centers for Disease Control and Prevention (Atlanta), have offered a clear picture of the epidemiology of rubella seropositivity in the United States during the period of 1988–1994. These data reflect the interaction between the immunization program in the United States and the natural history of rubella. Antibody rates were highest among children 6–11 years old and in persons ≥40 years old (92% and 93%, respectively). The lowest rate of rubella seropositivity (78%) was found among persons born during the period of 1970–1974. As a reference point, rubella vaccine was licensed in 1969, and measles-mumps-rubella vaccine was licensed in 1971. I found several valuable lessons in this report.

First, too many women of child-bearing age in the United States remain unprotected from rubella, even though reported cases of rubella and congenital rubella reached all-time lows in 2000. Until international immunization efforts, which are now underway, reduce the risk of importation of rubella from infected travelers, all settings (including emergency departments) where women seek health services must be alert to the women’s immunization needs. Two factors compound this hazard: (1) in many urban areas, high rates of immigration have brought into the country young women from countries where rubella immunization is not routine, and (2) young adults have the lowest coverage rates for health insurance in the United States. High immunization rates among children only reduce the rubella risk for seronegative women; they do not eliminate that risk.

Second, the lowest seropositivity rates among the 1970–1974 birth cohort are reminders of the following:

1. When new vaccines are introduced, acceptance may be slow, and extra catch-up efforts may be necessary. Experience with varicella vaccine offers the best current example of this slow acceptance, which is particularly troublesome, because of the greatly increased morbidity and mortality associated with varicella in adults, compared with the morbidity and mortality in children.

2. Introduction and enforcement of state immunization mandates did not begin in earnest until the late 1970s. These mandates have played an essential role in our current high national levels of immunization and low rates of vaccine-preventable disease. Few of today’s parents, clinicians, and legislators are aware of the reasons for and positive impact of state immunization requirements. As readers of Clinical Infectious Diseases know, mandates now are under attack in many states. Understanding the history and positive impact of state immunization requirements is an aspect of the story that should not be overlooked. These serological data are relevant to that story.

Ongoing serosurveillance for protective levels of antibody remains a useful tool in helping to formulate national vaccine policy. Almost 25 years passed between the licensing of measles vaccine and the recommendation to add a second dose routinely (to protect those who failed to have seroconversion after the initial immunization). Small outbreaks of measles were the final “wake-up call” that led to that recommendation. Timely attention to serosurveillance would have been preferable, and it might have helped avert the national epidemic of measles in 1989–1991.

Finally, including selected infectious disease serosurveillance in ongoing surveys of the health of our nation’s citizens should not be overlooked as a means of protection against the complacency that has accompanied the success of our immunization programs.

Reference