

Measles outbreak in Japan: Why now?

Kanako Masuno, Chushi Kuroiwa

Key Words: Measles, outbreak, Japan, vaccine, immunity

A significant number of schools and colleges in Japan have been closed for several weeks because of a measles outbreak this May. The National Institute of Infectious Diseases (NIID) reports a record 68 measles cases among individuals over the age of 15 in the period from the 14th to the 20th of May 2007, the highest recorded incidence since the reporting system was initiated in 1999. As of May 29th, the number of cumulative cases since January 2007 has reached as many as 286, of which 80% were individuals between the ages of 15 and 29. This outbreak has developed into a testament to the country's flawed vaccine policy.

In 2005, the NIID carried out a study targeting 5,614 populations that revealed that after the surge in measles antibody levels occurring in children between the ages of two and three years old the antibody levels in teenagers dropped remarkably, particularly between the ages of ten and fourteen. The proportion of individuals having antibody levels sufficient to prevent measles infection was around 80% within the vaccinated population and 50% within the non-vaccinated population of those from 10 to 14 years of age.

In developing countries, low antibody levels can be attributed to a limited cold chain and low vaccination coverage. Japan has developed an almost perfect infrastructure for the cold chain; however, immunization coverage from 1979 to 1994 was reported to be around 65%. During this period, the measles-mumps-rubella vaccine (MMR) had been introduced, followed by continuous reports of adverse effects such as aseptic meningitis, possibly due to MMR, resulting in a certain number of disabilities and deaths. The Government has offered compensations for those affected, as compulsory vaccination was being implemented under the law at that time. The Government paid bereaved families 43 million yen (about \$353,000) and continues to pay each person affected 5.75 million yen (about \$47,000) a year. This event could have made Japanese parents wary of vaccination, and the Government switched its immunization policy from a compulsory to a recommended regime in 1994. Significantly, the current outbreak has occurred among those who were born around this troubled period.



Another possible explanation for the low antibody levels in the population is the lack of opportunities to gain natural immunity. Some experts suggest that vaccine-induced immunity cannot be long sustained without natural infection. Because of the decrease in measles cases in Japan, younger generations might have fewer chances of acquiring natural immunity.

Because vaccination is now just a recommendation rather than a requirement in Japan, an individual's immunization history is not ascertained when entering school. Experts in the US criticized Japan's vaccination policy, claiming that Japan is exporting the measles overseas. Against this backdrop, the notoriously bureaucratic Japanese Ministry of Health, Labor, and Welfare in April 2006 finally adopted a policy calling for two doses of measles-rubella vaccine (MR), which was subsequently adjusted to one dose of measles vaccine. Hopes are that this policy will contribute to elevated and sustained immunity levels among Japanese children and minimize expected outbreaks to the extent possible.

(Kanako Masuno, Chushi Kuroiwa: *Department of Health Policy and Planning, Graduate School of Medicine, The University of Tokyo, Tokyo, Japan.*)