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Outbreak of Varicella at a Day-Care Center despite Vaccination

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ABSTRACT

Background In seven studies of the effectiveness of the varicella vaccine conducted since it was licensed, the effectiveness was 71 to 100 percent against disease of any severity and 95 to 100 percent against moderate and severe disease. We investigated an outbreak of varicella in a population of children with a high proportion of vaccinees who were attending a day-care center in a small community in New Hampshire.

Methods Using standardized questionnaires, we collected information about the children's medical and vaccination history from parents and health care providers. The analysis of the effectiveness of the vaccine and of risk factors for vaccine failure was restricted to children who were enrolled in the day-care center continuously during the outbreak and attended for one week or more and who were cared for in the building that represented the epicenter of the outbreak, since transmission was not documented in a second building.

Results Varicella developed in 25 of 88 children (28.4 percent) between December 1, 2000, and January 11, 2001. The index case occurred in a healthy child who had been vaccinated three years previously and who infected more than 50 percent of his classmates who had no history of varicella. The effectiveness of the vaccine was 44.0 percent (95 percent confidence interval, 6.9 to 66.3 percent) against disease of any severity and 86.0 percent (95 percent confidence interval, 38.7 to 96.8 percent) against moderate or severe disease. Children who had been vaccinated three years or more before the outbreak were at greater risk for vaccine failure than those who had been vaccinated more recently (relative risk, 2.6 [95 percent confidence interval, 1.3 to 5.3]).

Conclusions In this outbreak, vaccination provided poor protection against varicella, although there was good protection against moderate or severe disease. A longer interval since vaccination was associated with an increased

risk of vaccine failure. Breakthrough infections in vaccinated, healthy persons can be as infectious as varicella in unvaccinated persons.

Source Information

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