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## Outbreak of Chickenpox at a Child Care Facility — Kenai Peninsula, 2011

### Background

Varicella is a highly contagious viral illness caused by the varicella-zoster virus. Symptoms typically include low-grade fever and a pruritic, vesicular rash. About half of infected children develop prodromal symptoms, including fever, malaise, anorexia, and headache for 1–2 days prior to appearance of a rash. Considerable respiratory or gastrointestinal symptoms are unusual. The incubation period is typically 14–16 days (range: 10–21 days); infected persons are usually contagious beginning 1–2 days before rash onset and continuing until all skin lesions have crusted over, usually within 5 days. Although typically a mild, self-limited disease in children, serious complications including secondary skin infections, pneumonia, and encephalitis can occur. Severe illness is more common in neonates, adolescents, adults, pregnant women, and immunocompromised persons.

Varicella vaccine was licensed by the U.S. Food and Drug Administration in 1995 and was added to the national routine childhood immunization schedule in 1996. Prior to this, virtually the entire birth cohort of U.S. children acquired varicella. The initial recommendation was for one dose for children aged 12 months to 12 years, and two doses (spaced 4–8 weeks apart) for persons aged  $\geq 13$  years. In 2006, the recommendation changed to include a second dose for children aged 12 months to 12 years in order to increase vaccine efficacy to upwards of 99%.<sup>1</sup> The current recommendation for children aged  $< 13$  years is for the first dose to be given between the ages of 12–15 months and the second dose to be given between the ages of 4–6 years. The second dose may be given sooner than age 4–6 years in outbreak settings, with a minimum recommended spacing interval of 3 months (Box).

In Alaska, age-appropriate immunization against varicella is required for admission to child care, preschool, Head Start, and public school.<sup>2</sup> In Alaska, exemptions to this requirement are available for medical or religious reasons. Varicella is a condition reportable by regulation to the Alaska Section of Epidemiology by health care providers and laboratories. An average of 55 cases of varicella have been reported to the Section of Epidemiology annually since 2007.

### Outbreak Investigation

On November 3, 2011, the Section of Epidemiology (SOE) received notification of an outbreak of varicella at a licensed child care facility (Facility A) on the Kenai Peninsula. Investigation revealed that a 7-month-old child care attendee was diagnosed with varicella on October 21, 2011. This infant was reportedly recently exposed to varicella at home by an older sibling who had a religious exemption from vaccination. Three additional cases of varicella were then identified in Facility A during November 1–8. The first two cases occurred in infants too young for vaccination, and the third case occurred in a child with a religious exemption to vaccination.

Local public health nurses worked with Facility A staff to exclude unvaccinated, susceptible children during the outbreak and to vaccinate those eligible for their first and second doses. Twenty-three children were in regular attendance at Facility A when the outbreak occurred. Two of these children had religious exemptions from immunizations and were excluded from Facility A for 21 days (one incubation period) after the last case of varicella. Seventeen children were age-appropriately vaccinated with one dose of vaccine, including two children who previously had religious immunization exemptions. Three infants too young for vaccination were excluded from Facility A for 21 days. Although 10 children who previously had one dose of vaccine were eligible for the

second dose (at the 3-month interval), only one child received this second dose. Beyond the original four cases, no further cases of varicella were identified.

### Box. Varicella Vaccination Guidelines

- Children should receive their first dose of varicella vaccine between 12–15 months of age, and their second dose between 4–6 years of age.
- Children may receive the second dose sooner than 4–6 years of age in outbreak settings. The recommended minimum interval between doses is 3 months for children aged  $< 12$  years.

### Discussion

Outbreaks of varicella continue to occur despite the availability of an effective vaccine. In this outbreak, a vaccine-eligible child with a religious exemption from vaccination transmitted varicella to a vaccine-ineligible 7-month-old sibling, who was the source of the Facility A outbreak.

Alaska has one of the highest immunization exemption rates in the country,<sup>3</sup> and this pool of unvaccinated children substantially increases the risk of vaccine-preventable disease outbreaks in our state. As demonstrated in this report, some parents are willing to consider vaccinating their religiously exempted, unvaccinated children in an outbreak setting. This underscores the fact that many parents do not fully understand the risks they are taking by choosing not to vaccinate their children, and only vaccinate their children when the threat is perceived to be imminent. Many of these parents might choose to vaccinate their children prior to an outbreak through increased awareness. Raising parental awareness about vaccine-preventable disease risk can be achieved most effectively through concerted cooperation between health care providers, public health personnel, school and child care personnel, the media, and other stakeholders.

### Recommendations

1. Health care providers should routinely educate parents regarding the ongoing threat of vaccine-preventable diseases and the importance of vaccinating their children with *all* of the recommended childhood vaccines according to the recommended schedule.
2. Health care providers should inform parents of vaccine-exempted children that their children might be excluded from child care and/or school for extended periods of time during vaccine-preventable disease outbreaks.
3. Concerned parents should be encouraged to ask about vaccine exemption rates at child care facilities and schools in order to make an informed decision about which facility is best for their children to attend.
4. School leadership and child care facility personnel should *strictly* adhere to vaccination laws and not allow children to attend class or child care unless they are compliant with immunization requirements.
5. Health care providers and school and child care facility personnel should promptly report all suspected outbreaks of varicella or any other reportable condition to the Section of Epidemiology via fax at 907-561-4239 or telephone at 907-269-8000 or 800-478-1700.

### References

1. CDC. Prevention of Varicella: Recommendations of the Advisory Committee on Immunization Practices. *MMWR* 2007;56(RR-04). Available at: <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5604a1.htm>
2. State of Alaska School/Child Care/Head Start and Preschool Immunization Requirements 2011-12. Available at: <http://www.epi.alaska.gov/id/iz/factsheet/IZReqFactSheet.pdf>
3. CDC. Vaccination Coverage Among Children in Kindergarten – United States, 2009-2010 School Year. *MMWR* 2011;60(21):700-4. Available at: <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6021a4.htm>