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Chickenpox (Varicella) Update

Background

Chickenpox, or varicella, is a highly contagious illness caused by the varicella zoster virus; illness is characterized by sudden onset of a diffuse maculopapulovesicular rash, fatigue, pruritus, and fever. While chickenpox is usually mild and self-limiting, it can lead to severe illness. A two-dose vaccine series is about 98% effective at preventing chickenpox. Breakthrough varicella can still occur, but presents atypically with fewer lesions and little or no fever.¹ Since vaccine was introduced in the 1990s, morbidity and mortality associated with varicella has declined by more than 80% in many age groups.² In Alaska, varicella vaccination is required for children aged ≥ 12 months before they can be admitted to child care, preschool, Head Start, or public school.³

Varicella is reportable to the Alaska Section of Epidemiology (SOE); approximately 50 reports are received annually. A probable case consists of an acute illness with diffuse maculopapulovesicular rash. A confirmed case is a probable case with laboratory confirmation or an epidemiologic link to another case (probable or confirmed). Although laboratory testing is recommended, most cases reported to SOE are only clinically diagnosed. This *Bulletin* describes three recent instances where laboratory testing supported public health action and provides varicella testing procedures and recommendations.

Investigations

Outbreak among School Children on the Kenai Peninsula

Over a 6-week period beginning in September 2012, 14 cases of varicella were identified among Kenai Peninsula school children and their families. Two cases were laboratory-confirmed; the remaining ill cases were confirmed by an epidemiologic link to another case. Cases involved four schools and the surrounding communities. SOE worked with the Kenai Peninsula Borough School District to issue recommendations for school exclusion and vaccination among susceptible children.⁴ Positive laboratory test results provided school employees, parents, and other stakeholders assurance that the public health control measures were warranted.

Outbreaks Averted among Fish Processing Workers

In July 2012, SOE worked with two fish processing sites to manage confirmed cases of varicella. Site 1, a fish processing vessel, had four confirmed cases. Site 2, a cannery, had one confirmed case. SOE coordinated with the parent companies and local health care providers to collect clinical specimens. The companies successfully limited transmission by isolating ill persons and vaccinating all contacts who were presumed to be susceptible. Positive laboratory test results provided assurance that implementation of control measures was warranted in these occupational settings.

Community Rash Illness Cluster

In May 2012, SOE was notified of a cluster of nine children aged 7–28 months from a Southwest Alaska community with rashes suspected to be chickenpox. Before implementing varicella control measures, SOE requested digital pictures of the rashes, immunization histories, and clinical specimens for laboratory testing. The rashes were heterogeneous. Of the five ill children who were aged ≥ 12 months, two had received a single varicella vaccination. The laboratory results were negative for varicella in three of three patients tested. The negative laboratory test results helped assure SOE that varicella control measures were not warranted.

Laboratory Testing Procedure

Serologic testing for ill persons is no longer performed at the Alaska State Virology Laboratory (ASVL). Instead, specimens are now routed through ASVL for polymerase chain reaction

(PCR) testing and genotyping at a Centers for Disease Control and Prevention contract laboratory.

When to Test

Varicella testing should be considered to confirm every diagnosis. In some scenarios, laboratory testing is especially important to inform control measures and to reduce transmission to susceptible persons (Box).

Box. Example Scenarios where Laboratory Testing for Varicella is Strongly Recommended

Patients with a rash illness who were symptomatic and:

- in a congregate setting where there may be susceptible persons, such as at a daycare;
- in close contact with a non-immune pregnant woman;
- traveling on an airplane to determine if contact tracing of other passengers is indicated;
- fully vaccinated to determine breakthrough disease; or
- developed severe sequelae or died.

Discussion

Disease surveillance and outbreak detection depends on consistent and timely reporting by health care providers to ensure that appropriate disease control measures are implemented. True varicella cases do not occur in isolation. Confirming the diagnosis allows for understanding the virus source and transmission path. This is particularly important in congregate settings where numerous susceptible persons might have been exposed, as control measures might require restricting persons from school or work to mitigate disease spread. Moreover, control measures often involve vaccinating susceptible persons to protect individuals from becoming ill and to prevent disease propagation in the community setting.

Recommendations

1. Health care providers should report cases of suspected and confirmed cases of varicella (chickenpox) to SOE via fax at 907-561-4239 or telephone at 907-269-8000. Digital pictures of rashes can be a useful tool in assisting with diagnosis (see the rash diagnosis guide available at: www.epi.alaska.gov/pubs/mmm/MMM_Chapter_Varicella.pdf).
2. Follow recommended immunization schedules available at: <http://www.epi.alaska.gov/id/iz/schedule/birth18.htm> and <http://www.epi.alaska.gov/id/iz/schedule/adult.htm>.
3. Providers should consider testing any patient with suspected varicella, as the results can provide assurance in the clinical setting and impact public health decisions. Acceptable specimens for molecular testing include the scab (the “hat” of the lesion) or a dry swab of the liquid from the skin lesion. Place specimens in a sterile vial, *not universal transport media*, and send as soon as possible on cool packs. For more information, call 907-371-1000 or go to: <http://www.dhss.alaska.gov/dph/Labs/Documents/LaboratoryTests.pdf>

References

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4. Alaska SOE Public Health Advisory. Spike in Varicella (Chickenpox) Cases, Kenai Peninsula – Fall 2012 (September 28, 2012). Available at: http://www.epi.alaska.gov/phan/AKPHAN_20120928_VaricellaKenai.pdf