Varicella

Chickenpox Outbreak Management

What should school staff do when a possible case of varicella (chickenpox) is brought to their attention?

When a staff member finds out that a child or adult at school might have chickenpox, someone, preferably a school nurse, should follow-up to verify the diagnosis, if possible. Epidemiology staff at the Spokane Regional Health District (SRHD) can help with this determination.

What should school staff do when they identify a single case of chickenpox?

One case has the potential to be the start of an outbreak. Acting promptly and not waiting for additional cases to occur is critical. The first step is to exclude or isolate the case from the school setting immediately. Next, notification by letter or phone can be made to those who may have been exposed to the case. How broadly to notify about a single case will be up to the discretion of the involved agencies (e.g., SRHD and the school). The notification should alert the reader to the possibility of exposure to chickenpox, describe the disease, recommend vaccination if the person is not already considered immune, and recommend exclusion if disease develops.

What is an outbreak?

The Center for Disease Control and Prevention (CDC) has defined an outbreak of varicella (chickenpox) as five or more cases that are *related* by person, place, and time ("*epidemiologically* linked").

Why are five or more cases considered to be an outbreak in an elementary school with an enrollment of 400 students as well as in a high school with an enrollment of 1,600?

The number that the CDC uses to define an outbreak of chickenpox is five cases that are *epidemiologically* linked. An outbreak is *not* defined based on the size of the facility affected. SRHD uses the CDC definition to define an outbreak, as supported by the Washington State Department of Health. Responding rapidly to the first case of chickenpox at a school will help reduce the risk for an outbreak regardless of the size of the school.

When an outbreak occurs in an elementary school, control efforts are generally applied only to any classroom where there is a case because students generally spend their days in one classroom. Unless there are unusual circumstances to support doing so, SRHD doesn't recommend expanding control measures to include all grades in a school as long as there are no new cases occurring in *additional* classrooms.

Note: It is important to also evaluate risk for exposure during school programs in small spaces, e.g., extended care (Express), to/from school or fieldtrip busing, and combined classes.

In middle schools and high schools with students circulating to different classes, control measures are applied more broadly. For example, one sick high school student could expose people in six classes as well as close school friends, sports teammates, etc., so a school-wide notification should be made.

What happens during a chickenpox outbreak?

If five cases of chickenpox should occur and an outbreak is declared in any type of school setting, those who cannot provide proof of immunity will be recommended for exclusion through the issuance of a health officer exclusion order.

As of the 2016-17 school year, every PreK-12th grade student must be completely (two doses) immunized against chickenpox or have medical documentation of immunity by a positive varicella antibody titer (blood test) or healthcare provider's (HCP) clinical diagnosis in order to attend school. During an outbreak, any child with a vaccination status that is not up-to-date according to CDC recommendations **or** without medical documentation of immunity will be recommended for exclusion until they are either vaccinated [see post-exposure treatment below] **or** testing by varicella antibody titer shows immunity or until 21 days after the last case of chickenpox is identified.

An outbreak is considered to be over when no new cases have occurred for two incubation periods following the last identified case. For chickenpox, two incubation periods are 42 days, so any new case within 42 days is considered to be part of the same outbreak.

When I was a student, an outbreak of chickenpox didn't result in exclusions. Why is it different now?

Many things in medicine and public health have changed in the last few decades. A vaccine to protect against chickenpox has been available since 1995. It is not possible to predict who will have a mild case of chickenpox and who will have a serious or even deadly case of the disease. Even in uncomplicated cases, children with chickenpox miss an average of five to six days of school and parents or other caregivers miss an equal number of work days to care for

them. Compared with children, adults are at increased risk of complications related to chickenpox. CDC recommends that *during an outbreak*, people with no immunity (no shots, no documentation of immunity) or inadequate immunity to chickenpox (one shot) be removed from any setting where exposure to infection is likely, unless they are vaccinated soon after exposure (See *post-exposure treatment* below).

Why is it that a parent report that their child had chickenpox meets Washington state school immunization requirements (for students with parent report prior to September 1, 2014), but is not adequate during an outbreak?

Because CDC says evidence of immunity is required to prevent exclusion *during an outbreak* and parental history alone does not adequately document evidence of immunity.

Note: as of September 1, 2014, parent report of history of chickenpox illness is no longer acceptable for school entry requirements, though is acceptable for students with history of illness reported prior to that date

How much does a varicella titer cost?

The cost depends on what kind of insurance a person has and what their policy covers. A varicella antibody titer can sometimes be ordered without an office visit. The price of testing varies between labs and providers. The cost of a "varicella-zoster antibody IgG" serologic (blood) test is at least $50, if paid for out-of-pocket. There may be additional costs, e.g., blood drawing fee and office visit.

How much does a chickenpox vaccine cost?

The vaccine is provided without cost to everyone under age 19 in Washington. The vaccine cost for other family members will depend on what kind of insurance the family has. There may be costs associated with giving the vaccine and the office visit. Many insurance plans cover vaccine administration with no out-of-pocket cost to the patient. Many pharmacies also offer vaccinations. Patients should call their HCP to discuss specific costs.

Is it safe for a person to get a chickenpox vaccination if they think they have had chickenpox but illness was never confirmed by a healthcare provider?

A varicella antibody titer (blood test) is available to check immunity, but it is not required before vaccination. The vast majority of adults born before 1980 will show immunity when their blood is tested, so testing adults who don't have a HCP verified history of chickenpox may be cost saving over vaccine. If testing is not available, it is still safe for a person that previously had chickenpox to receive the vaccine.

Should staff members be immunized against shingles, if there is an outbreak of chickenpox in their school?

No. If a person has never been infected with chickenpox, they are not at risk for getting shingles (herpes zoster skin lesions). If exposed to the virus for the first time, people develop chickenpox; shingles is a reactivation of a previous chickenpox infection. If a person is less than 60 years old and unsure of immunity, they should be vaccinated with the chickenpox vaccine or tested for immunity. CDC recommends shingles vaccination for *everyone* 50 years and older, even if they have previously suffered a bout of shingles.

Note: Students and adults who have shingles if their skin lesions can be appropriately managed (covered with no leakage through covering) and they have the capacity to maintain appropriate hygiene (regular hand washing) *can be at school*.

Students and adults with chickenpox *cannot* be at school until they are no longer contagious (when all their skin lesions have crusted over).

What precautions should be taken if there is a chickenpox outbreak and there are pregnant staff members or students?

Someone who is pregnant and unsure whether she is immune to chickenpox should talk to her HCP, who can order laboratory testing to determine her immunity status. If not immune, she will need to discuss with her HCP how she can best protect herself and her baby.

Susceptible pregnant women are at risk because chickenpox can cause severe complications in pregnancy; 10- 20% of infected pregnant women develop varicella pneumonia with mortality (death) reported as high as 40%. Intrauterine infection may result in stillbirth, herpes zoster in the baby during infancy or early childhood, or congenital varicella syndrome. Newborns whose mothers develop chickenpox rash that starts from five days before to two days after delivery are at risk for neonatal varicella, which is associated with mortality as high as 30%.

Is there a post-exposure treatment for those who are unimmunized or under-immunized?

Yes, people who are unimmunized (no shots, no documentation of immunity) or under-immunized (one shot) should call their HCP and arrange to receive the chickenpox vaccine after exposure. Vaccination within 72 hours of exposure is 70-100% protective. Post-exposure vaccination is not effective for prevention if given more than five days after exposure but will provide protection against future exposures if they were not infected. Excluded people vaccinated within five days of their last exposure may return to school immediately but will need to be on a symptom watch for 21 days following their last exposure and stay away from the school if symptoms develop. Symptoms in adults may include one to two days of fever and malaise prior to rash onset, but in children the rash is often the first sign of disease.

Is there a post-exposure treatment for people at high risk for complications?

VariZIG is approved for use as post-exposure prophylaxis to chickenpox in persons at high risk for severe disease, who lack evidence of immunity to chickenpox and for whom chickenpox vaccine is contraindicated. It is the only varicella zoster IG treatment preparation currently available in the United States. It is approved for use as soon as possible following varicella-zoster virus exposure, ideally within 96 hours for greatest effectiveness but use within ten days is acceptable. The HCP's decision to administer VariZIG depends on three factors: 1) whether the patient lacks evidence of immunity to chickenpox, 2) whether the exposure is likely to result in infection, and 3) whether the patient is at greater risk for chickenpox complications. Live chickenpox vaccine should *not* be given to any woman who is known to be pregnant.

The CDC's *Strategies for the Control and Investigation of Varicella Outbreaks 2008* provides guidance on the control and mitigation of varicella outbreaks among children in school settings and among adult in closes settings.

To access, go to:
www.cdc.gov/chickenpox/outbreaks/downloads/manual.pdf

For more information:

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