

**VARICELLA CASE AND OUTBREAK 'QUICKSHEET'**  
**California Department of Health Services (DHS) – updated February 2007**

**Infectious agent:** Human (alpha) herpesvirus 3 (varicella-zoster virus, VZV), a member of the *Herpesvirus* group.

**Modes of transmission:** Varicella-zoster virus is transmitted from person to person 1) from chickenpox cases by droplet spread when a person coughs or sneezes; direct contact with upper respiratory secretions or lesions that have not yet crusted over; or airborne spread; 2) from shingles cases by direct contact with lesions; and 3) from disseminated shingles cases or localized shingles cases in the immunocompromised by direct contact with lesions or airborne spread. Scabs from varicella lesions are not infective.

**Incubation period:** From 2 to 3 weeks; commonly 14-16 days; may be prolonged for as long as 28 days in varicella-zoster immune globulin (VZIG) recipients and shortened in immunocompromised patients.

**Period of Communicability:** As long as 5 but usually 1-2 days before rash onset, and continuing until all lesions are crusted (usually about 5 days). Chickenpox is one of the most readily communicable diseases, especially just before and in the early stages of the eruption. Breakthrough cases with vesicular lesions may sometimes be as infectious as natural varicella cases. Susceptible individuals should be considered potentially infectious 10 – 21 days following exposure and if they develop varicella, until vesicles are crusted over.

**Exposure:** In general, exposure to chickenpox is defined as contact with nasopharyngeal secretions or lesions, face-to-face interaction, or sharing indoor airspace (usually within 3 feet) with an infectious person.

**Immunity:** Documentation of age-appropriate vaccination; or Laboratory evidence of immunity or confirmation of disease; or born in the US before 1980; or a healthcare provider diagnosis of varicella; or health care provider verification of history of varicella disease or history of herpes zoster based on health care provider diagnosis.

**CDC CASE DEFINITION and CASE CLASSIFICATION (for purposes of public health reporting)**

**Clinical Case Definition:** An illness with acute onset of generalized papulovesicular rash without other apparent cause. Note: In vaccinated persons who develop “breakthrough” varicella more than 42 days after vaccination, the disease is almost always mild with fewer than 50 skin lesions and shorter duration of illness. The rash may also be atypical in appearance (maculopapular with few or no vesicles).

**Case Classification:**

**Probable:** A case that meets the clinical case definition is not laboratory confirmed, and is not epidemiologically linked to another probable or confirmed case.

**Confirmed:** A case that is laboratory confirmed or that meets the clinical case definition and is epidemiologically linked to a confirmed or probable case. **Note:** Two probable cases that are epidemiologically linked are considered confirmed cases.

**CLINICAL FEATURES OF CHICKENPOX AND SHINGLES**

**Prodrome**

- In children, rash is often the first sign of disease. Moderate fever may be present for first few days of illness.
- Adults may have 1-2 days of fever and malaise prior to rash onset.

**Rash**

- The rash consists of maculopapules, vesicles and scabs in varying stages of evolution. Skin lesions initially contain vesicular fluid, but over a very short period of time they pustulate and scab. Successive crops of lesions appear for 3-4 days. The typical case has about 250-500 lesions.
- Breakthrough infection in a previously vaccinated person is generally very mild with fewer than 50 lesions that may not become vesicular (fluid-filled blister) or itchy.

**Complications**

- The risk of complications increases after puberty and is also higher in newborns exposed in utero; complications are infrequent among healthy children. Immunocompromised persons have a high risk of serious infection.
- Infection in pregnancy may be associated with congenital varicella syndrome with a 0.7% risk early in pregnancy and 2% risk at 13-20 weeks gestation. The onset of varicella in pregnant women from 5 days before to 2 days after delivery results in severe varicella infection in an estimated 17-30% of their newborn infants.

**Breakthrough chickenpox**

Breakthrough disease is a case of wild-type varicella infection that occurs in a vaccinated individual. Breakthrough chickenpox tends to be mild with shorter duration of illness, absence of fever and fewer than 50 skin lesions.

**Shingles (herpes zoster)**

Following primary infection, VZV remains in human nerve tissues and is reactivated in approximately 15% of infected persons, resulting in shingles. Shingles presents as a red, painful, itchy, and blistering rash, typically in one area on one side of the body, in the distribution of a nerve. There is usually no fever or other systemic symptoms. Pain and itching in the area of the shingles may persist after the lesions have resolved (post-herpetic neuralgia).

## LABORATORY TESTING AND CONFIRMATION

**Laboratory confirmation:** Routine laboratory testing to diagnose varicella in each case is not generally recommended, but testing may be useful in special circumstances to confirm the diagnosis or to determine varicella susceptibility.

## RECOMMENDED TREATMENT AND POST-EXPOSURE PROPHYLAXIS

### Prevention

- Varicella vaccine is effective in preventing infection or modifying the severity of illness if given within 3 days after exposure, possibly up to 5 days. If not exposed, immunization will protect against subsequent exposure.
- Antiviral drugs are not typically recommended for prophylaxis.
- Varicella zoster immune globulin (VZIG) should be administered within 96 hours of exposure to susceptible persons at high risk for developing severe varicella including those for whom the vaccine is contraindicated (e.g., immunocompromised persons, pregnant women) and to neonates whose mothers have varicella within 5 days before to 2 days after delivery.

### Treatment

- Treatment of varicella is supportive for immunocompetent children.
- Acyclovir and similar agents can reduce the duration and severity of illness if given within 24 hours of rash onset. These drugs should be considered for treatment of immunocompromised persons and other persons at high risk for severe varicella. (See the AAP Red Book.)

## REPORTING AND NOTIFICATION

- Single cases of hospitalized or fatal varicella are reportable. Cases of varicella that result in death and outbreaks of any disease are immediately reportable.
- Single cases of non-hospitalized varicella are not reportable.
- Health departments should encourage varicella outbreak reporting in the following situations: ≥ 5 cases over a two month period in children < 13 years of age in a childcare, kindergarten or grade school setting; ≥ 3 cases over a two month period among persons ≥ 13 years of age in a high school or college setting; ≥ 3 cases in an adult or in a daycare or residential institution (e.g., correctional facility, homeless shelter); ≥ 2 cases in an acute care health facility.

## VARICELLA OUTBREAK INVESTIGATION

The main purpose for responding to a varicella outbreak is to prevent transmission to susceptible persons at increased risk of complications of varicella and to offer vaccination to susceptible persons.

- Confirm case/outbreak.
- Identify and notify individuals/groups who have had close contact with the case between 2 days before and 5 days after rash onset. Use the diagram below to help determine cases' period of infection and communicability.

Incubation: 2 to 3 weeks; commonly 14-16 days			Rash	Communicability
-3 wks	-2 wks	- 1 week	Rash Onset	+ 5 days
Onset of rash minus 14 (10-21) days is probable exposure.		May have no prodrome before rash, but infectious period still begins <b>2 days</b> prior to rash.	Rash emerges in 2-4 crops over 3-4 days, vesicles in each crop need up to 24 hours to become crusted.	Until all lesions have crusted (typically up to 5 days after rash onset)
Date:		Date:	Date:	Date:

## STEPS FOR OUTBREAK MANAGEMENT (AS APPROPRIATE)

- Isolate or cohort infectious cases until all lesions are crusted (usually about 5 days).
- Identify susceptible exposed persons at high risk for complications (e.g., immunosuppressed persons, pregnant women); recommend VZIG for post-exposure prophylaxis.
- Refer susceptible persons for vaccination. If outbreak occurs in a school/daycare center, a notification letter should be sent to parents recommending vaccination of susceptible children. If outbreak occurs in a residential institutional setting, vaccination of susceptible persons (staff and residents) should be considered.
- Exclusion of susceptible pregnant or immunosuppressed persons should be considered on a case-by-case basis.
- Exclusion from school of susceptible children and staff is recommended for children or staff at risk of serious infection. Local health authorities could consider excluding susceptible non high-risk pupils with exemptions to vaccination after five or more cases have been identified. Note: California Health and Safety Code 120335 requires that children admitted into a California school after July 1, 2001 receive varicella vaccine (see <http://www.dhs.ca.gov/ps/dcdc/izgroup/handbook.htm>).