



Guidelines for Evaluating Chickenpox-like Rash in Recipients of Varicella Vaccine

Varicella (chickenpox) vaccine has been available for use in the United States since March 1995. The Connecticut Department of Public Health (CTDPH) distributes vaccine to health care providers to administer to all children through 18 years of age.

Varicella vaccine is a live virus vaccine that can cause a mild case of chickenpox in 1-5% of vaccine recipients. Distinguishing a rash induced by varicella vaccine virus from a rash caused by wild-type virus in a vaccine recipient is critical to making appropriate community infection control decisions and patient management decisions, particularly regarding individuals at risk for serious complications of varicella. The two most important features to consider when evaluating a chickenpox-like rash in a vaccine recipient are: 1) the time interval since receipt of varicella vaccine; and 2) the severity of the chickenpox-like illness. The following guidance is provided to assist in making clinical and public health decisions.

There are three possible categories of chickenpox-like rash in vaccine recipients:

1. **Wild-type chickenpox** - This illness usually presents as typical chickenpox with a generalized rash averaging 200-400 lesions with many vesicles, fever, and cough. The patient should be considered infectious and excluded until the lesions dry and crust over, usually 5 days after rash onset. This typically occurs during two time frames:

- a) <1 week post-vaccination - In this case, exposure to wild-type virus happens prior to or immediately following vaccination. Wild-type chickenpox can occur in this scenario because there has been insufficient time for immunity to develop prior to exposure.
- b) >6 weeks post-vaccination - In this case, exposure to wild-type virus happens well after vaccination and the vaccine recipient did not respond to the vaccine prior to exposure ("vaccine failure"). Total vaccine failures are unusual.

2. **Vaccine-associated rash ("side effect" from vaccine)** - This occurs in 1% to 5% of vaccine recipients and typically occurs 1- 3 weeks, but is possible up to 6 weeks, post vaccination. It usually presents as a generalized rash, usually more maculopapular than vesicular, consisting of <20 lesions (but can be up to 50 lesions) and a few vesicles at the site of injection (median = 2). Patients are afebrile and otherwise asymptomatic. This type of rash is caused by attenuated vaccine virus, and is much less infectious than disease caused by wild-type virus. If transmission of vaccine virus does occur, infection has been found to be mild or asymptomatic. ***Such patients do NOT need to be considered infectious for public health purposes***, and if local day care/school policy permits, do NOT need to be excluded. However, day care and school programs will need to develop their own policies on this issue.

3. **"Breakthrough chickenpox"** (also known as vaccine-modified chickenpox) - This is a form of wild-type chickenpox that is less severe due to the development of "partial immunity" that was not sufficient to prevent disease, but was able to attenuate symptoms. Typically, it occurs > 6 weeks post-vaccination. Breakthrough chickenpox usually presents as a generalized rash consisting of <50 lesions, usually more maculopapular, with a few vesicles. Patients are often afebrile and minimally symptomatic. Although individuals with breakthrough varicella are usually much less infectious than those with typical wild-type disease, such patients should still be considered infectious and excluded until any vesicular lesions dry and crust over, usually a much shorter time period (1-4 days) than for wild-type chickenpox.



These guidelines can be used to assist with the evaluation of chickenpox-like rash in vaccine recipients, to help decide whether or not they are infectious, and if they need to be excluded from day care or school settings. The two most important features to consider in making these determinations are: 1) the time interval since receipt of varicella vaccine; and 2) the severity of the chickenpox-like illness.

Timing Post Vaccination	<i>If rash occurs at < 1 week</i>	<i>If rash occurs at 1-3 weeks (typically) but can occur up to 6 weeks</i>	<i>If rash occurs at > 6 weeks</i>	
Symptoms	<ul style="list-style-type: none"> -Generalized rash (typically 200-400 lesions with many vesicles) -Fever -Cough (if “partial” immunity has developed, symptoms may be attenuated) 	<ul style="list-style-type: none"> -Generalized rash, more maculopapular than vesicular (usually <20 but can be up to 50 lesions [median=5]) -Some localized vesicles at the site of injection (median=2) -Afebrile -Asymptomatic 	<ul style="list-style-type: none"> -Generalized rash, more maculopapular than vesicular (usually <50 lesions) -Often afebrile -Minimally symptomatic 	<ul style="list-style-type: none"> -Generalized rash (typically 200-400 lesions with many vesicles) -Fever -Cough
Type of Disease	Wild-type chickenpox	<ul style="list-style-type: none"> -Vaccine-related chickenpox -Side effect of vaccine(occurs in 1-5% of vaccinees) 	“Breakthrough” chickenpox with wild-type chickenpox virus	Wild-type chickenpox (vaccine failure) (complete vaccine failures are very unusual)
Infectious?	Highly infectious	<ul style="list-style-type: none"> -Rarely infectious -If transmission occurs, infection may be asymptomatic or very mild 	<ul style="list-style-type: none"> -Infectious -Usually much less infectious than wild-type disease 	Highly infectious
Exclude?	Exclude from school until all lesions have dried and crusted over, or until no new lesions appear, <i>usually by the 5th day after rash onset</i>	<i>No need to exclude from school or day care.</i> The child may attend school or day care <i>if local policy permits</i>	Exclude as for wild-type chickenpox: with fewer lesions and more rapid clearing, <i>usually only 1-4 days.</i>	Exclude as for wild-type chickenpox