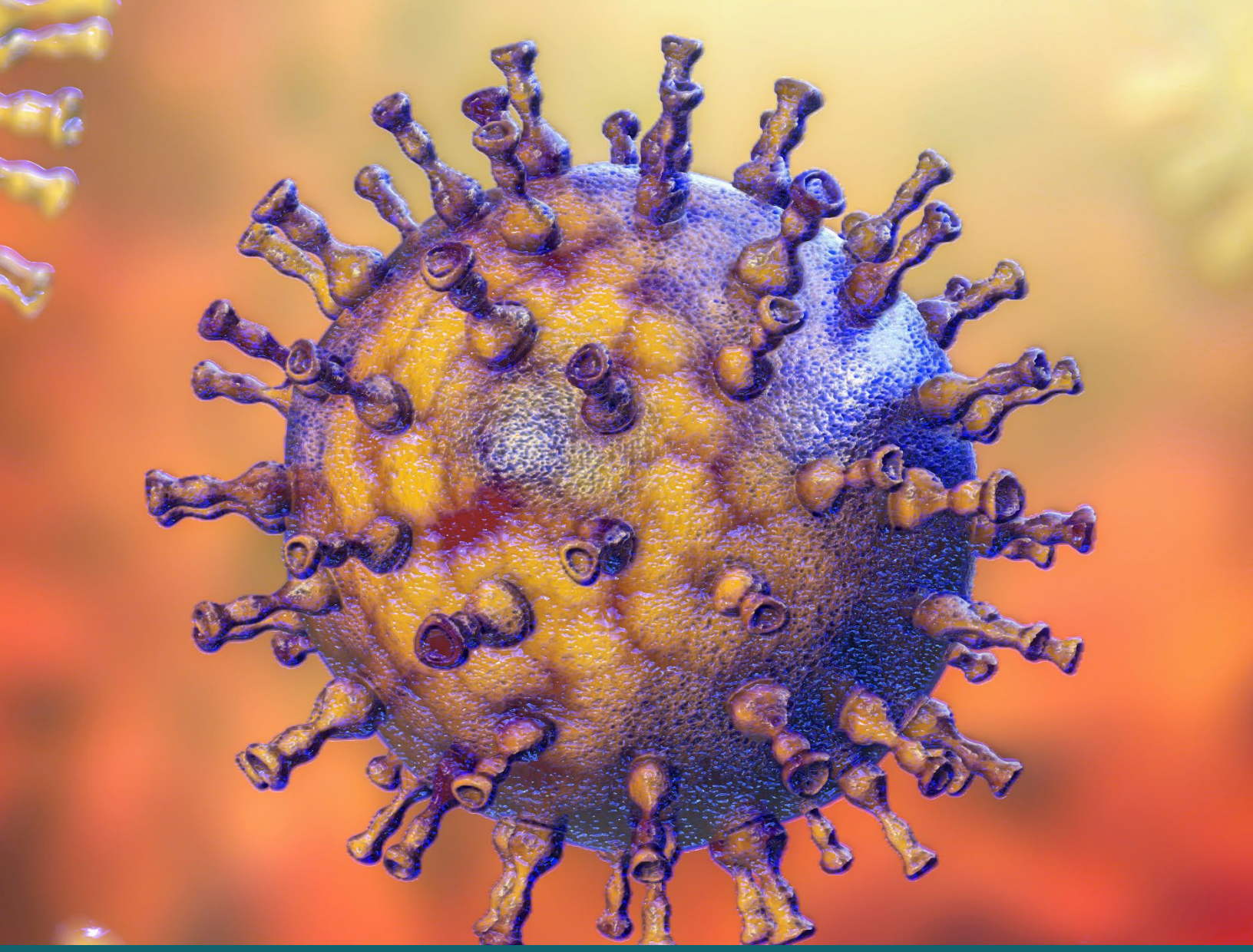

Varicella Guidelines

Wisconsin Immunization Program

P-00610 (02/2026)

WISCONSIN DEPARTMENT of HEALTH SERVICES

Contents

1. About the disease

Etiologic agent

Varicella infection is caused by the varicella-zoster virus (VZV). VZV infection can have two clinical presentations: primary infection, or chickenpox, and reactivation of latent infection, known as shingles or herpes zoster.

This guidance will address the reportable disease, chickenpox. See the Shingles Factsheet for more information about VZV reactivation (shingles).

Clinical description

Chickenpox is an acute infectious disease characterized by rash, fever, and malaise. The course of infection is as follows:

Prodrome (1–2 days before rash onset): Mild symptoms including fever and/or malaise.
Rash (4–7 days): Generalized, pruritic rash usually begins on trunk and face and rapidly becomes generalized. The rash progresses from macular to papular to vesicular. All stages of development are usually present at the same time.
Recovery (within 7–10 days): Most people fully recover without complications.

Breakthrough chickenpox is an infection with wild-type varicella zoster virus (VZV) occurring in a vaccinated person more than 42 days after varicella vaccination. Breakthrough infection is usually a shorter and milder illness with fewer (less than 50) lesions. The rash is likely to be predominately maculopapular rather than vesicular.

CDC Breakthrough Chickenpox Factsheet

Complications

The risk of complications from chickenpox varies with age. They occur much more frequently in people older than 15 years of age and infants younger than 1 year of age. The most common complications of chickenpox are secondary bacterial skin or soft tissue infections and pneumonia. Severe complications are rare and include encephalitis, bleeding problems, and sepsis.

Reservoirs

Humans are the only host for chickenpox.

Modes of transmission

Primary VZV is spread via the respiratory route by inhalation of aerosols from respiratory secretions or fluid from vesicular skin lesions. Contact with skin lesions is considered the major source of transmission.

A susceptible individual can contract primary varicella infection (chickenpox) from a person with shingles. Exposure to a person with chickenpox does not cause shingles directly – shingles represents re-activation of latent VZV infection that follows recovery from chickenpox.

Incubation period

The incubation period is 14–16 days (range 10–21 days).

Infectious period

Individuals with chickenpox are infectious from 1–2 days before rash onset and continuing until all lesions are crusted over (usually about 5 days after rash onset). Individuals with breakthrough infections are infectious until no new lesions have appeared for 24 hours.

Epidemiology

Chickenpox occurs worldwide. It is primarily a childhood disease, but in some parts of the world chickenpox occurs at older ages; therefore, a higher proportion of young adults remain susceptible in those populations.

Treatment

For most healthy individuals, treatment is supportive and focuses on managing symptoms. For individuals who are at high-risk for severe disease, treatment such as antiviral medications may be considered by their provider. Antiviral treatment for chickenpox does not change public health control measures.

2. Case definitions

Varicella case definitions

The Council of State and Territorial Epidemiologists (CSTE) provides standardized case definitions for varicella to ensure consistent public health surveillance across the United States. These definitions categorize cases based on clinical presentation, laboratory evidence, and epidemiologic linkage.

3. Terms and definitions

VZV infection: Varicella zoster virus infection

Primary/wildtype infection: The initial infection with VZV, commonly called chickenpox.

Reactivation/zoster: Reactivation of VZV, herpes zoster, commonly called shingles.

Breakthrough infection: Disease due to infection with wild-type VZV occurring more than 42 days after varicella vaccination. Breakthrough infection can occur in individuals with 1 or 2 doses of vaccine. It is less severe than chickenpox.

Laboratory evidence of immunity (titer): Documentation of positive or detectible IgG antibodies.

Quarantine: Restriction of an exposed person from all public settings, regardless of setting-specific risk (for example, stay at home).

Exclusion: Restriction of an exposed person from specific settings where there is increased risk of transmission to high-risk individuals.

High-risk individuals: Individuals who are at high-risk for severe disease include:

- Infants.
- Pregnant people.
- People who are immunocompromised without evidence of immunity.

Evidence of immunity: Evidence of immunity includes any of the following:

- Age-appropriate vaccination.
- Laboratory evidence of immunity.
- Laboratory confirmation of disease.
- Born in the United States before 1980 (for health care workers, pregnant people, and immunocompromised individuals, birth before 1980 should not be considered evidence of immunity).
- A health care provider diagnosis of herpes zoster or verification of history of herpes zoster.
- A health care provider diagnosis of varicella or verification of history of varicella disease.

4. Laboratory testing

Laboratory diagnosis of chickenpox is strongly recommended whenever disease is suspected. Because widespread vaccination has made chickenpox uncommon, diagnosis based on history and physical examination may be difficult. Laboratory confirmation of disease is important to inform clinical and public health management. The preferred test is PCR of skin lesions and is most commonly performed at commercial labs.

For acute disease testing (confirmation of disease)

- **Test:** PCR
- **Specimen:** Material from vesicles, scabs, or scrapings of maculopapular lesions.
- **Timing:** During acute illness when the rash is present. If rash has resolved, scabs from crusted lesions are also excellent samples for PCR detection of VZV DNA.
- **Notes:** A positive VZV PCR alone cannot distinguish between chickenpox and shingles as both are caused by VZV. Public health must verify the clinical diagnosis with the provider.

For immunity testing

- **Test:** IgG
- **Specimen:** Serum
- **Timing:** After acute illness (3 or more weeks after rash onset).
- **Notes:** A single serologic IgG test can be used to determine if a person has antibodies to VZV from past infection or vaccination but cannot be used to confirm acute disease. Routine testing for chickenpox immunity following vaccination is not recommended, as documentation of receipt of two doses of varicella vaccine supersedes the results of subsequent serologic testing.

Other diagnostic techniques are available commercially to confirm cases of chickenpox; however, they are not recommended because they have substantial limitations compared with PCR.

- Viral culture is a valid way to confirm cases of chickenpox; however, it is not recommended because it is less sensitive than PCR and takes longer to obtain results.
- A significant rise (at least a 4-fold rise in IgG titer or seroconversion) of acute and convalescent phase serum specimens (separated by at least 2 weeks) could also confirm cases of chickenpox but it is not recommended since it is not practical for immediate management and in people who are vaccinated.

Post-vaccination rash and testing

Some individuals who receive a varicella-containing vaccine will develop a fever and/or rash. About 4–6% of individuals develop a few pox within 3 weeks of vaccination. A vaccine reaction is not a case of chickenpox per

the case classification criteria. Individuals are not considered infectious for public health purposes and do not need to be excluded.

If laboratory testing is performed, the PCR results will be positive. Further testing will be needed to determine whether it is vaccine-strain or wild-type virus. The Wisconsin State Laboratory of Hygiene (WSLH) can perform this test. If a recently vaccinated individual has a rash but no risk factors for chickenpox, testing is usually unnecessary.

For more information: CDC Pink Book Chapter 22: Varicella, Vaccine Safety

5. Reporting responsibilities

Purpose of surveillance and reporting:

- To monitor the impact of vaccination on age-specific incidence and on severity of chickenpox.
- To evaluate vaccine effectiveness under conditions of routine use and to track instances of vaccine failure.
- To identify groups and areas in which risk of disease is highest so prevention and control efforts can be focused.
- To track and minimize the occurrence of complications, such as an invasive secondary infection.

Laboratory and health care provider reporting requirements

VZV is a Category II Reportable Disease according to WDPH regulations (DHS 145.04). This disease must be reported to the patient's local or Tribal health department (LTHD) within 72 hours of recognition of a case or suspected case, per Wis. Admin. Code § DHS 145.04 (3) (b). Report electronically through the Wisconsin Electronic Disease Surveillance System (WEDSS), or by mail or fax using an Acute and Communicable Disease Case Report F44151.

Requirements for the timing of reporting, once the disease or condition is recognized or suspected, vary by disease. In addition to the information listed below, general reporting requirements are described in Wis. Stat. ch. 252 Communicable Diseases. The specific reporting requirements are described in Wis. Admin Code. ch. DHS 145 Control of Communicable Diseases. A list of reportable conditions is provided in Wis. Admin Code. ch. DHS 145 - Appendix A.

6. Case investigation

Step 1: Notification of a suspect case

Notification of a suspected case of chickenpox may come from a variety of sources, including medical providers, school staff, parents, or self-report. When the LTHD is notified of an individual who is suspected to have chickenpox, gather the following information:

- Prodrome symptoms
- Rash onset date
- Description of rash

- Possible exposure source
- Vaccination history

See Appendix A: Chickenpox Intake Form

If the only notification is a positive VZV lab report, public health must verify whether the clinical diagnosis is chickenpox or shingles.

Step 2: Ensure chickenpox case classification

An essential first step in a chickenpox case investigation is to obtain necessary clinical and epidemiologic information to determine whether a reported case is compatible with chickenpox.

Diagnosing chickenpox without laboratory confirmation has become increasingly challenging. Therefore, testing is strongly encouraged. Ensuring accurate diagnosis helps public health implement proper control measures.

If the LTHD cannot gather enough evidence or based on the information gathered the individual does not meet the probable or confirmed case classification, this would not be considered a case, and no further follow-up would be needed in most instances. Education should be provided to the reporter of the case. It is recommended to continue surveillance for additional cases of rash illnesses. If cases are identified, testing is strongly encouraged.

How to Classify Confirmed and Probable Varicella Cases During Investigations

The remainder of the guidance in this document assumes that the case has been classified as either probable or confirmed.

Step 3: Local and Tribal health department (LTHD) reporting responsibilities

Reporting in WEDSS is acceptable notification to the state immunization program.

Step 4: Complete case investigation

- **Gather information:** Interview the case and gather the following information:
    - Symptoms
    - Dates of onset for each symptom
    - Exposure and/or travel history
    - Occupation, place of employment, school/childcare
    - Dates of attendance at work, school
- **Implement control measures**: Isolate the case until all lesions have scabbed over or in vaccinated people who do not develop vesicles, isolate until no new lesions occur within a 24-hour period.
- **Education**: Educate the family on chickenpox disease, complications and how and when to seek care.
- **Finish documentation:** Complete the WEDSS case report form and set the process status to “Sent to State” when documentation is complete.

7. Contact investigation

The rigor of control measures for chickenpox depends on the epidemiology of the case.

Step 1: Define the dates during which the case was infectious

The infectious period for chickenpox is 2 days before rash onset (counting the day of rash onset as day 0) and until all the lesions are crusted, usually 5–7 days.

Step 2: Identify exposures to the case during their infectious period

Considerations:

- Individuals:
  - Household members
  - Close contacts identified by case
- Groups or setting:
  - Childcare, school, and related activities
  - Workplace
  - Social group or organizations
  - Health care setting

Step 3: For each identified contact gather information.

Follow-up efforts should start with the household and other close contacts. When interviewing each contact, gather the following information:

- First and last date of exposure to the case.
- Chickenpox immunity status (as described above).
- Whether they are at high risk for severe disease.

When working with groups or settings consider:

- Verify that an exposure occurred by ensuring the case was in attendance during their infectious period.
- Who else was present during dates of exposure.
- Potential for further transmission within that setting.

Step 4: Management of contacts

Individualized follow-up should be done with household and other close contacts as well as high-risk individuals. Based on the information gathered in step 3, public health can make recommendations specific to each contact.

Contacts who have evidence of immunity:

- Notify the individual of the exposure.
- Provide education as needed.
- Instruct contacts to self-monitor for symptoms.

Contacts without evidence of immunity:

All contacts should be notified of their exposure, provided education about chickenpox, and managed according to the steps below.

Step 1: Offer single-antigen varicella vaccine to all susceptible contacts

Considerations:

- Varicella vaccine administered within 5 days of first exposure is considered PEP. Varicella vaccine is 70% to 100% effective at preventing illness or modifying the severity of illness if administered within 3 days of exposure but may provide some protection through day 5.
- Recommend that all persons without evidence of immunity to varicella be offered vaccine even if more than 5 days have passed since first exposure to the disease. Vaccine administered more than 5 days since first exposure is not considered PEP.
- If an individual cannot receive varicella vaccine due to a contraindication, they may be eligible for varicella-zoster immune globulin in some instances. See Appendix B for detailed information.

Step 2: Quarantine and exclusion

In this guidance, quarantine refers to restriction from all public settings for exposed individuals with no evidence of immunity. DHS does not recommend quarantine for chickenpox exposures. Instead, DHS recommends setting specific exclusion from environments with high-risk individuals in certain situations.

Quarantine: No public health recommendation.

Exclusion of household contacts: Due to the high likelihood of VZV transmission in household settings, household contacts without evidence of immunity should be excluded from childcare, school, and other group activities. Exclusion should begin on day 8 after first exposure through day 21 after the last day of exposure to an infectious person. If PEP is received within 5 days of first exposure, exclusion is not needed.

If there is a probable case of chickenpox in the household, the exclusion of non-immune household contacts is strongly encouraged. Exclusion should begin on day 8 after first exposure through day 21 after the last day of exposure to an infectious person. If PEP is received within 5 days of first exposure, exclusion is not needed.

If a household is unwilling to exclude exposed, non-immune family members from group settings, they should be instructed in careful self-monitoring for symptoms and should self-exclude if any symptoms develop. Testing of any household contact who develops a rash illness is encouraged.

Exclusion of other contacts: Consult with DPH to determine whether exclusion from a given setting is necessary. See Appendix D to review general guidance for exclusion.

Step 3: Refer high-risk contacts to their health care provider.

Step 5: Management of groups

If an exposure occurred, all contacts within the group should be notified. A general notification of exposure is acceptable in most situations. The notification should include:

- Potential dates of exposure
- Symptoms of chickenpox

- Vaccination information
- Instructions for high-risk individuals

8. Management in childcare, school, and health care settings

Considerations in school settings

Exposure: Casual, brief contact would not be considered an exposure. In most situations the entire school is not considered exposed. The following are examples where exposure would be considered actionable:

- Sharing the same classroom.
- Sitting at the same table in the lunchroom.
- Riding the same bus or carpooling.
- Participating in the same sports team.
- Attending a regular after-school care group or a play group.

Exclusion: If there is documented transmission of laboratory confirmed chickenpox, the exclusion of non-immune students or staff may be considered. See Appendix D for general exclusion recommendations. Before implementing exclusion, consult with DPH to determine appropriate control measures for the situation.

In general, excluded people may be re-admitted immediately upon getting vaccinated or providing other acceptable documentation of immunity; however, public health may modify such a re-admittance policy in certain circumstances.

Surveillance: Conduct surveillance of the school community through day 42 following the date of rash onset in the last case.

Considerations in childcare settings

Exclusion: If there is documented transmission of laboratory confirmed chickenpox, the exclusion of non-immune children or staff may be considered. The general exclusion recommendations are below. Before implementing exclusion, consult with DPH to determine appropriate control measures for the situation.

Children aged less than1 year: These children cannot be vaccinated and should be either:

- Excluded through 21 days after rash onset of the last identified case.
- If the childcare facility has the ability to cohort susceptible infants, this may be considered as an alternative to exclusion. Infants should be cohorted through 21 days after rash onset of the last identified case. Staff assigned to the cohorted room should have documented evidence of immunity.
- For management of infants under 3 months of age, see Appendix D.

All-other aged children: Managed as indicated in Appendix D. In general, excluded persons may be re-admitted immediately upon getting vaccinated or providing other acceptable documentation of immunity; however, public health may modify such a re-admittance policy in certain circumstances.

Surveillance: Conduct surveillance of the childcare community through day 42 following the date of rash onset in the last case.

Importance of education and surveillance in the childcare setting: The varicella vaccine, especially after two doses, is highly effective at preventing disease. Due to the age of children in a childcare setting, most attendees will have only one dose, which could increase the likelihood of breakthrough infection and transmission. While breakthrough infection is mild form of chickenpox, these individuals can still spread the disease.

Exclusion for attendees with one dose of varicella vaccine is not recommended. Instead, public health should:

- Provide education on chickenpox including identification of breakthrough infection.
- Implement active surveillance to detect early signs and symptoms of chickenpox.
- Recommend testing if breakthrough infection is suspected to confirm disease.
- Recommend a second dose of varicella vaccine for children between 1 and 4 years old if transmission occurs for an extended period of time.

Considerations in health care settings

In general, health care facilities will implement control measures through their infection prevention team.

Evidence of immunity to chickenpox for health care personnel (HCP):

- Written documentation with 2 doses of vaccine.
- Laboratory evidence of immunity or laboratory confirmation of disease.
- Diagnosis of history of chicken disease by health care provider, or diagnosis of history of shingles by health care provider.

Recommendations for asymptomatic HCP who were exposed to chickenpox

For HCP with evidence of immunity:

- Postexposure prophylaxis is not necessary.
- Work restrictions are not necessary.
- Implement daily monitoring for signs and symptoms of varicella from the 8th day after the first exposure through the 21st day after the last exposure.

For HCP without evidence of immunity:

- Administer postexposure prophylaxis in accordance with CDC and ACIP recommendations.
- Exclude from work from the 8th day after the first exposure through the 21st day after the last exposure.
    - Work restrictions are not necessary for health care personnel who have 1 dose pre-exposure and receive the second dose within 5 days after exposure.
    - If varicella-zoster immune globulin is administered as postexposure prophylaxis, exclude from work from the 8th day after the first exposure through the 28th day after the last exposure.

Recommendations for HCP with chickenpox: exclude from work until all lesions have dried and crusted; or, for those who only have non-vesicular lesions that do not crust, exclude from work until no new lesions appear within a 24-hour period

Additional Resource: Varicella-Zoster Virus from the Infection Control in Healthcare Personnel: Epidemiology and Control of Selected Infections Transmitted Among Healthcare Personnel and Patients (2024) guideline

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Appendix A: Chickenpox Intake Form

Last name	First name	DOB
Address		
Phone		

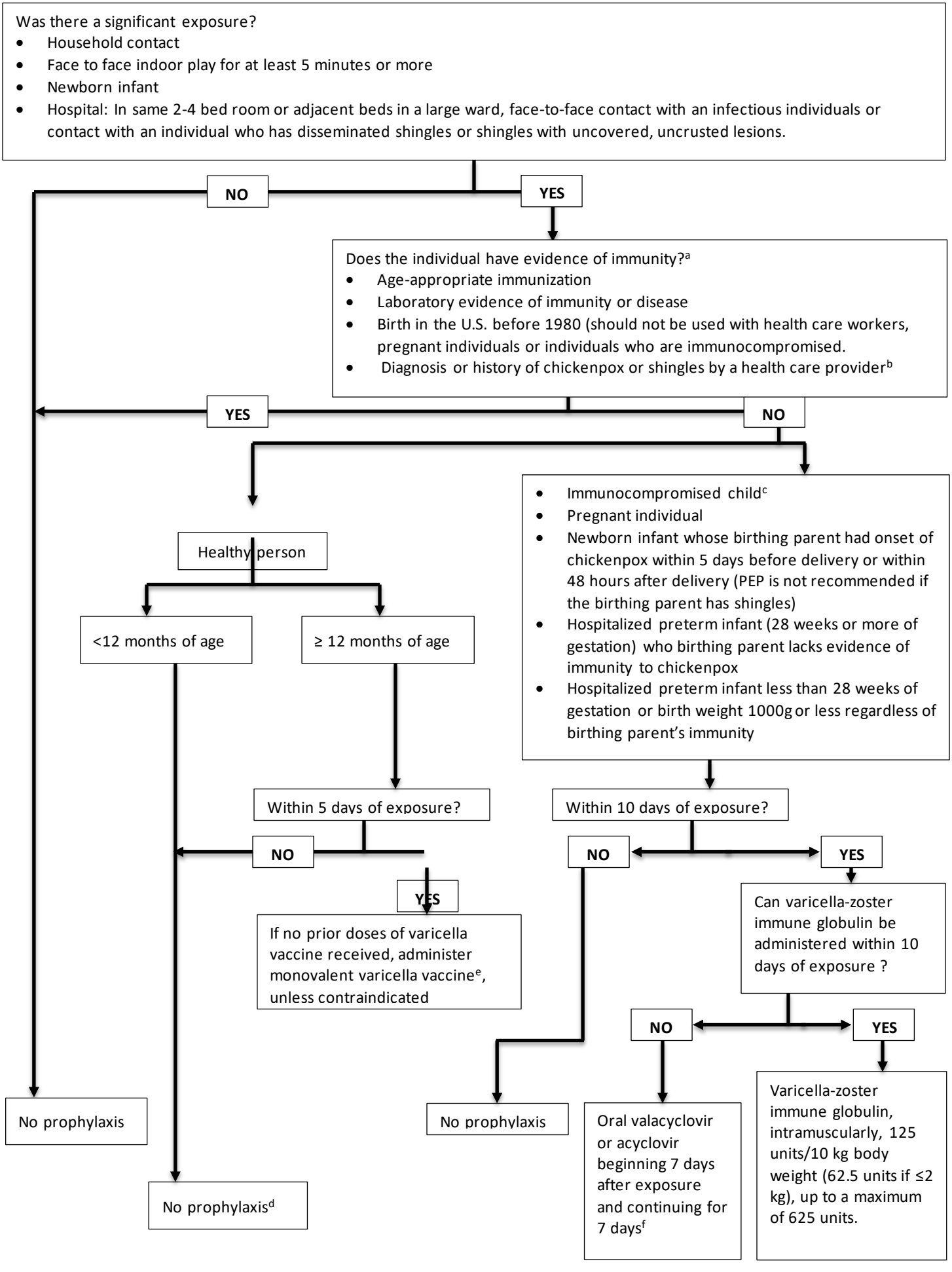
Clinical Information	Yes / No	Other details
Fever and/or prodromal symptoms		
Rash		Description: pruritic, vesicular, lesions in various stages of development, number and distribution of lesions, etc. **Date of rash onset:** **Infectious period** (use date of rash onset as day zero, infectious period begins on day -2 and continues until all lesions are crusted):
Differential diagnosis		

Laboratory confirmation is strongly encouraged any time chickenpox is suspected

Lab info	Yes/No	Additional details
Chickenpox lab testing		
Other testing done		

Epi info	Yes/No	Additional details
Exposure - similar symptoms		
Exposure - lab-confirmed chicken pox or shingles case		
Vaccination history		Dose 1: Dose 2:
School/Childcare		Name of location: Date(s) of attendance:

Appendix B: Management of Exposures to Varicella-Zoster Virus



[a]People who receive hematopoietic cell transplants should be considered nonimmune regardless of previous history of varicella disease or varicella vaccination in themselves or in their donors.

[b]To verify a history of varicella in an immunocompromised child, health care providers should inquire about an epidemiologic link to another typical varicella case or to a laboratory confirmed case, or evidence of laboratory confirmation. Immunocompromised children who have neither an epidemiologic link nor laboratory confirmation of varicella should not be considered as having a valid history of disease.

[c]Immunocompromised children include those with congenital or acquired T-lymphocyte immunodeficiency, including leukemia, lymphoma, and other malignant neoplasms affecting the bone marrow or lymphatic system; children receiving immunosuppressive therapy, including ≥2 mg/kg/day of systemic prednisone (or its equivalent) for ≥14 days, and certain biologic response modifiers; all children with human immunodeficiency virus (HIV) infection regardless of CD4+ T-lymphocyte percentage; and all hematopoietic cell transplant patients regardless of pretransplant immunity status.

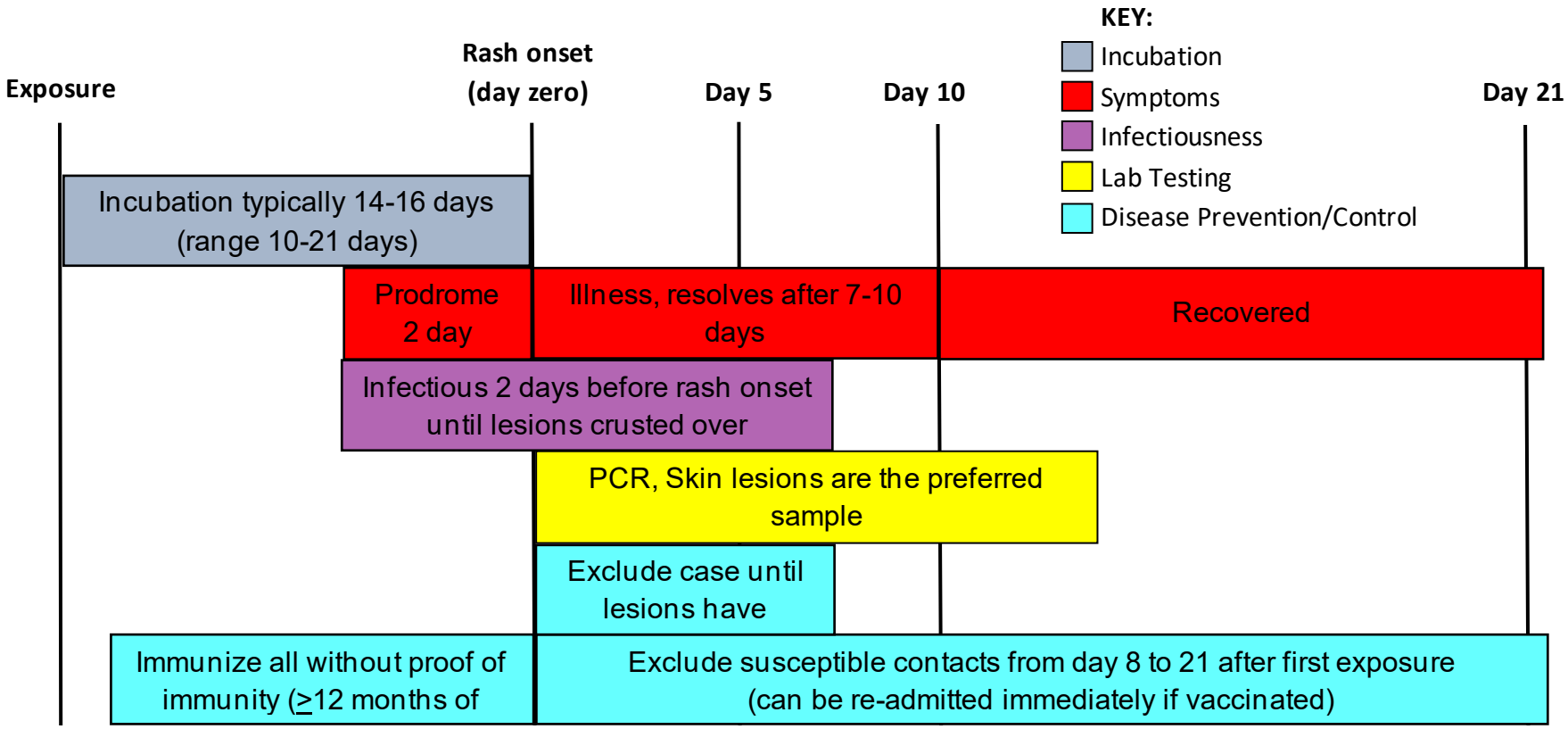
[d]If the exposed person is an adolescent or adult, has chronic illness, or there are other compelling reasons to try to avert varicella, some experts recommend preemptive therapy with oral valacyclovir or acyclovir (see Chemoprophylaxis, below, for dosing). For exposed people ≥12 months of age, vaccination is recommended for protection against subsequent exposures.

[e]If 1 prior dose of varicella vaccine has been received, a second dose should be administered at ≥4 years of age. If the exposure occurred during an outbreak, a second dose is recommended for preschool-aged children younger than 4 years for outbreak control if at least 3 months have passed after the first dose.

[f]See Chemoprophylaxis, below, for dosing. If varicella-zoster immune globulin and either valacyclovir or acyclovir are not available, IGIV may be administered (400 mg/kg).

See the Varicella Chapter in the 2024-2027 AAP Red Book for more information.

Appendix C: Chickenpox Disease Timeline



Footnotes:

a. For mild cases, exclude ill until all lesions are fading.

b. Proof of immunity: DOB prior to 1980 (not for healthcare worker), serologic proof, 1-2 doses of Varicella vaccine, diagnosis of varicella or verification of varicella or herpes zoster disease. May prevent illness if given with 3-5 days of exposure.

c. For high-risk individuals, VariZIG maybe recommended, see guidance for details

Appendix D: General Exclusion Guidance for Chickenpox

Age	Pre-exposure Vaccination Status	Exclusion Considerations (consult with DPH before implementation)
Age less than3 months	0 doses	• No exclusion if mother has documented immunity per CDC criteria. • If mother is not immune, exclude from childcare settings day 8-21 from exposure. • Cohorting may be an option—See childcare setting section.
3 months to less than 12 months	0 doses	Exclude from childcare settings days 8–21 from exposure. (cohorting may be an option—See childcare setting section.)
12 months to less than 3 years	0 dose	Exclusion from school/childcare setting but may return to school/childcare when a dose is received.
12 months to less than 3 years	1 dose	No exclusion from childcare/school settings.
3 to 18 years	0 doses	Exclusion from school/childcare setting but may return to school/childcare when a dose is received.
3 to 18 years	1 dose	No exclusion from childcare/school settings but 2nd dose recommended.
Adult born after 1980, general public	0 dose	No exclusion but recommended to ensure immune (2 doses of vaccine or positive titer).
	1 dose	No exclusion but recommend 2nd dose for full protection.
Adult- health care worker (HCW), regardless of age	0 doses	• Exclude from HCW duties on days 8–21 from exposure if first dose not given within 5 days of exposure. • Individuals should check with their institution regarding infection control policies. • Recommend vaccine series.
	1 dose	• Exclude from HCW duties on days 8–21 from exposure if second dose not given within 5 days of exposure. • Individuals should check with their institution regarding infection control policies. • Recommend 2nd dose for full protection.

Shingles (Herpes Zoster) Factsheet

About the disease:

Etiologic agent: Herpes zoster, also known as shingles, is caused by reactivation of varicella-zoster virus (VZV). Unlike primary VZV infection (chickenpox), shingles is not a reportable condition in Wisconsin.

Clinical Description: People with shingles most commonly have a rash that may be painful, itchy, or tingly in one or two adjacent dermatomes. The rash most commonly appears on the trunk along a thoracic dermatome or on the face. It usually does not cross the body's midline. The rash develops into clusters of vesicles. New vesicles continue to form over 3 to 5 days, and the rash progressively dries and scabs over. The rash usually heals in 2 to 4 weeks. A person can experience a headache, photophobia, or malaise several days before the rash appears.

Disseminated zoster can include generalized skin eruptions where the lesions occur outside of the primary or adjacent dermatomes. It can be difficult to distinguish from chickenpox. Disseminated zoster generally occurs in people with compromised or suppressed immune systems.

Complications: Shingles complications can include postherpetic neuralgia, hearing or vision loss, encephalitis, and pneumonia.

Mode of transmission: People with shingles lesions can spread VZV, which can cause chicken pox in susceptible individuals. Transmission of VZV from someone with shingles is through direct contact with vesicular fluid or through breathing in virus particles from the lesions.

Infectious Period: The infectious period for shingles lasts until all lesions have crusted over.

Prevention: The single best prevention against shingles is vaccination.

Laboratory testing: VZV laboratory testing information applies to testing and diagnosis of chickenpox and shingles. PCR is the most helpful laboratory test for confirming cases of herpes zoster. PCR can detect VZV but it is not possible to determine whether an individual has shingles or chickenpox based on a positive lab result.

Reporting responsibilities: Shingles is not a reportable condition in Wisconsin. A positive VZV PCR alone cannot distinguish between varicella and herpes zoster as both are caused by VZV. Public health must verify the clinical diagnosis with the provider.

Control measures: People with shingles should cover their lesions and avoid contact with susceptible people in their household and in occupational settings until their lesions are dry and crusted. Those who have disseminated shingles can transmit VZV via the airborne route and should stay home, or if in the hospital be placed in airborne isolation for the duration of the illness.

- **Childcare and school settings**: Individuals in the school or childcare setting with shingles should stay home until lesions are dry and crusted over, unless the rash can be completely covered and the person with shingles is compliant with hand hygiene.
- **Health care settings (Including acute and long-term care facilities):** Staff with shingles should cover lesions with a taped dressing and should be removed from direct care of patients who are at high risk

for chickenpox until their lesions have become dry and crusted. Staff with disseminated shingles be excluded from work for the duration of their illness.