



**Indiana State
Department of Health**
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Mitchell E. Daniels, Jr.
Governor

Gregory N. Larkin, M.D., F.A.A.F.P.
State Health Commissioner

Date

Dear Public Health Representative,

Attached is a toolkit of information for use during an outbreak of varicella.

An outbreak of varicella is defined as either five or greater cases related in place in children less than 13 years of age within one incubation period (i.e. 21 days) and/or three or more cases related in place in persons 13 years or older within one incubation period.

We hope that you will find the information, letter templates and parent response forms in this toolkit useful during a varicella outbreak. The varicella outbreak toolkit contains the following:

1. Varicella background information, with current CDC vaccination recommendations
2. Letter to parents from local officials (2 options)
3. Letter to teachers from ISDH
4. Letters to parents from ISDH
5. Parent response form
6. Outbreak summary (with line listing) – to be filled out by school RN

These are merely suggestions and meant to provide you with useful information in controlling disease spread during a varicella outbreak. The Indiana State Department of Health strongly encourages you to promote additional varicella vaccination that may be needed during this outbreak, including additional immunization clinic hours at your local health department, if needed. Please feel free to contact us with questions, concerns or recommendations on how to improve upon this toolkit. We appreciate your help.

Updated October 2011

Varicella Background Information

General Background Information

Varicella outbreak is defined as either ≥ 5 cases related in place in children <13 years of age within one incubation period (21 days) and/or as ≥ 3 cases related in place in persons ≥ 13 years of age or older within one incubation period. Varicella (chickenpox) is a highly infectious systemic infection that is transmitted from person to person by direct contact, inhalation of aerosols from vesicular fluid, or infected respiratory secretions that may be aerosolized. Virus enters the host through the upper respiratory tract or conjunctiva. Time from exposure to rash is typically 14-16 days (range 10-21)¹. Disease in the unvaccinated population appears with characteristic skin lesions in varying stages of development and resolution. Cutaneous lesions begin as macules and rapidly progress to papules, vesicles, pustules and scabs. Fever and rash last approximately five days, with rash being more concentrated on the trunk and head than on the extremities. Children may develop anywhere between 250-500 skin lesions² and these lesions may occur in the mouth, conjunctivae, or other mucosal sites.

Breakthrough Varicella

Breakthrough varicella disease is defined as a case of infection with wild-type Varicella Zoster Virus (VZV) occurring less than 7 or more than 42 days after vaccination.¹ Varicella disease is typically more mild among vaccinated persons. In cases of breakthrough disease, the median number of skin lesions is commonly <50 , as opposed to hundreds of lesions seen in unvaccinated patients.³ Vaccine recipients were also found to have shorter duration of illness and lower incidence of fever. However, some (25-30%) cases of breakthrough varicella are not mild and features are more similar to varicella disease in unvaccinated patients.⁴ Children vaccinated >5 years previously were 2.6 times more likely to have moderate and severe breakthrough disease than those vaccinated <5 years previously.⁵ Several factors influence vaccine failure, leading to breakthrough disease. Studies have shown an increased risk for breakthrough disease with decreasing age at vaccination⁶ and an increased risk with increasing time since vaccination⁷. Since 1999, two deaths from breakthrough varicella have been reported to the CDC (Center for Disease Control); both patients were on steroid therapy for underlying medical conditions (CDC, unpublished data, 2006).

CDC Recommendations for Varicella Vaccination

CDC recommendations regarding vaccination for varicella have changed over the years. In 1996, the CDC recommended one-time routine vaccination of 12-18 month-old children, as well as catch-up vaccination for susceptible children 19 months -20 years and vaccination of susceptible persons who have close contact with persons at high risk for serious complications (e.g., health-care personnel and family contacts of immunocompromised persons). The CDC recommended one dose of vaccine for children 12 months-12 years and two doses (4-8 weeks apart) for patients ≥ 13 years. In 1999, the CDC updated recommendations to include child-care and school-entry requirements, use of vaccine following exposure and for outbreak control, use of vaccine for certain children with HIV and vaccination of adolescents and adults at high risk for exposure or transmission. The ACIP's current recommendations can be found in the CDC's Morbidity and Mortality Weekly Report for the Prevention of Varicella dated January 28, 2011 and are summarized below.¹

Routine Childhood Schedule

- Routine childhood vaccination should be 2 doses.
- Preschool-aged children should receive the first dose of varicella vaccine at age 12-15 months.
- School-aged children should receive the second dose at age 4-6 years (may be administered earlier provided ≥ 3 months have elapsed after the first dose).

Persons Aged ≥ 13 Years

- Persons aged ≥ 13 years should receive 2 doses of vaccine. The recommended minimum interval between doses is 3 months, however, if the second dose was administered 4 weeks after the first dose, it can be accepted as valid.
- All adolescents and adults without evidence of immunity should be vaccinated.
- Because of their increased risk for transmission to persons at high risk for severe disease or their increased risk of exposure, vaccination is especially important for persons without evidence of immunity in the following groups:
 - persons who have close contact with persons at high risk for serious complications (e.g., health-care personnel and household contacts of immunocompromised persons);
 - persons who live or work in environments in which transmission of varicella zoster virus is likely (e.g., teachers, child-care workers, and residents and staff in institutional settings);
 - persons who live and work in environments in which transmission has been reported (e.g., college students, inmates and staff members of correctional institutions, military personnel);
 - nonpregnant women of childbearing age;
 - adolescents and adults living in households with children; and
 - international travelers

Prenatal Assessment and Postpartum Vaccination

Prenatal assessment of women for evidence of varicella immunity is recommended. Upon completion or termination of pregnancy, women who do not have evidence of varicella immunity should be vaccinated.

Vaccination of HIV-Infected Persons

Vaccination should be considered for HIV-infected children with age-specific CD4 T cell percentage $\geq 15\%$ and may be considered for adolescents and adults with CD4 counts ≥ 200 cells/microL.

Outbreak Control

- Each person exposed to disease or in the vicinity of outbreak should follow the two-dose vaccination policy

Postexposure Prophylaxis

- A dose of varicella vaccine (1st or 2nd) is recommended within 3-5 days of exposure

Requirements for Entry to Child Care, School, College, and Other Postsecondary Educational Institutions

All states should require that students at all grade levels (including college) and those in child care centers receive varicella vaccine unless they have other evidence of immunity of varicella.

Evidence of Immunity to Varicella

Evidence of immunity to varicella includes any of the following:

- documentation of age-appropriate vaccination with varicella vaccine:
 - preschool-aged children (i.e., aged ≥ 12 months): 1 dose
 - school-aged children, adolescents, and adults: 2 doses
- laboratory evidence of immunity or laboratory confirmation of disease;
- birth in the United States before 1980
- diagnosis or verification of a history of varicella disease by a health-care provider; or
- diagnosis or verification of a history of herpes zoster by a health-care provider.

References

1. CDC. Prevention of varicella – recommendations of the ACIP. MMWR 2011 60(RR02);1-60
http://www.cdc.gov/mmwr/preview/mmwrhtml/rr6002a1.htm?s_cid=rr6002a1_e
2. AAP Committee on Infectious Diseases, Prevention of Varicella: Recommendation for a Routine 2-Dose Varicella Immunization Schedule. Pediatrics 2007;120-1:221-231.
3. White CJ, Kuter BJ, Ngai A, et al. Modified cases of chickenpox after varicella vaccination: correlation of protection with antibody response. Journal of Pediatric Infectious Disease 1992;11:19-23.
4. Chaves SS, Zhang J, Civen R, et al. Varicella disease in vaccinated persons: clinical and epidemiologic characteristics, 1997-2005. Journal of Infectious Disease (Supplement) In press 2007.
5. Chaves SS, Gargiullo P, Zhang JX, et al. Loss of vaccine-induced immunity to varicella over time. New England Journal of Medicine 2007;356:1121-1129.
6. Galil K, Fair E, Mountcastle N, Britz P, Seward J. Younger age at vaccination may increase risk of varicella vaccine failure. Journal of Infectious Disease 2002;186:102-105.
7. Galil K, Lee B, Strine T, et al. Outbreak of varicella at a day-care center despite vaccination. New England Journal of Medicine 2002;347:1909-1915.

School Name Here
School
Address Here
Phone
Fax

[Date]

Dear Parent or Guardian:

There is a confirmed case of Varicella (**chicken pox**) in your child's school. Students who have received one dose of Varicella Vaccine can still get chickenpox, which is usually a milder illness than chickenpox disease experienced by unvaccinated students. Vaccinated students who become ill with varicella have "breakthrough" chickenpox.

In order to assist with preventing the spread of chickenpox, our local **[doctors/pediatricians]** recommend that **your child receive a Varicella Vaccine booster (dose #2)** if your child has not had chicken pox. If you are unsure of whether your child has had Varicella Vaccine doses 1 & 2, you can contact your physician's office or your school nurse for immunization records. You should contact your physician for his/her recommendation for your child.

Contact your local health department regarding the availability of varicella vaccine **[local health department phone#]**.

Chicken pox causes a rash, itching, fever, and tiredness. This disease can be mild or severe. Chicken pox virus can be spread from person to person through the air, or contact with fluid from the chicken pox blisters.

The Center for Disease Control (CDC) recommends that children who have never had chicken pox get two doses of chicken pox vaccine. (1st dose at 12-15 months of age; 2nd dose 4-6 years of age – may be given earlier, if at least 3 months after the 1st dose) People 13 years of age or older (who have never had chickenpox or received chickenpox vaccine) should get two doses at least 28 days apart.

Please contact your physician or your school nurse if you have any questions or concerns.

Sincerely,

School Nurse Coordinator

[Date]

Dear Parents,

Some children attending [insert school name here] have contracted chickenpox and it continues to be transmitted to other students. Nearly all children becoming ill with chickenpox have already had one dose of varicella (chickenpox) vaccine, so they are experiencing “break-through” chickenpox, a milder form of chickenpox that manifests as a rash, itching, fever and tiredness. This virus can be spread from person to person through the air or direct contact with fluid from the chickenpox blisters.

Because of breakthrough chickenpox and continued spread of this infection, **it is recommended that all students receive two doses of varicella (chickenpox) vaccine.** It is also recommended that the brothers and sisters of infected students consider receiving two doses of varicella vaccine to prevent continuing spread of chickenpox into other schools or child care centers.

To receive a second dose of chickenpox vaccine for your children, please contact your child’s doctor. You may also contact your local health department [phone #] regarding availability of varicella vaccine.

We cannot emphasize too strongly that one dose of chickenpox vaccine **DOES NOT** provide enough protection from getting chickenpox - **2 doses of vaccine are needed.** Thank you for your cooperation in attempting to stop the spread of chickenpox in your community.

Sincerely,

Local Health Department Representative

School Nurse



Mitchell E. Daniels, Jr.
Governor

Gregory N. Larkin, M.D., F.A.A.F.P.
State Health Commissioner

[Date]

Dear Teachers,

We have had reports of some children attending [school name here] who have contracted chickenpox, which continues to be transmitted to other students. Nearly all of the children becoming ill with chickenpox have already had one dose of varicella (chickenpox) vaccine, so they are experiencing “break-through” chickenpox, which is a milder form of the disease that manifests as a rash, itching, fever and tiredness.

Due to breakthrough chickenpox and continued spread of this infection, **it is recommended that all students receive two doses of varicella (chickenpox) vaccine.** It is also recommended that the parents of infected students consider immunizing other children within the household with two doses of varicella vaccine. By immunizing additional children in the household, this will reduce the spread of chickenpox into other schools or child care centers.

Please help your local and state health departments by encouraging parents to get the second dose of varicella vaccine for their children. Parents may also contact the local health department [phone #] regarding availability of varicella vaccine.

We cannot emphasize too strongly that one dose of chickenpox vaccine does not provide enough protection from getting chickenpox – two doses of vaccine are needed. Thank you for your cooperation in attempting to stop the spread of chickenpox in your community.

Ryan Ly, MPH
Assessment Epidemiologist, Immunization Division

Joan Duwve, MD
Medical Director, Indiana State Department of Health

James Howell, DVM, MPH
Interim Immunization Division Director



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[Date]

Dear Parents/Caregivers,

We have had reports of some children attending [school name here] who have contracted chickenpox, which continues to be transmitted to other students. Nearly all of the children becoming ill with chickenpox have already had one dose of varicella (chickenpox) vaccine, so they are experiencing “break-through” chickenpox, which is a milder form of the disease that manifests as a rash, itching, fever and tiredness.

Due to breakthrough chickenpox and continued spread of this infection, **it is recommended that all students receive two doses of varicella (chickenpox) vaccine.** It is also recommended that the parents of infected students consider immunizing other children within the household with two doses of varicella vaccine. By immunizing additional children in the household, this will reduce the spread of chickenpox into other schools or child care centers.

To receive a second dose of chickenpox vaccine for your children, please contact your their doctor. You may also contact your local health department [phone # here] regarding the availability of varicella vaccine.

We cannot emphasize too strongly that one dose of chickenpox vaccine does not provide enough protection from getting chickenpox – two doses of vaccine are needed. Thank you for your cooperation in attempting to stop the spread of chickenpox in your community.

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Assessment Epidemiologist, Immunization Division

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The Indiana State Department of Health supports Indiana's economic prosperity and quality of life by promoting, protecting and providing for the health of Hoosiers in their communities.

Chickenpox Outbreak Parent Response Form

Student's Name: _____ Date: _____

Please circle the answer to the statements below that relate to your child's situation and return the information as soon as possible to your school nurse:

I wish to have my child vaccinated with the second dose of varicella vaccine. Yes No

If I had access to an after-school clinic, I would have my child immunized with the second dose of varicella vaccine. Yes No

My child will receive the second dose of varicella vaccine from his/her doctor. Yes No

My child has received the second dose of varicella vaccine to protect him/her from breakthrough chickenpox infection. Yes No

(Date of 1st dose _____)

(Date of 2nd dose _____)

I have provided a copy of my student's immunization records for the school nurse Yes No

Parent's Signature: _____

Varicella Outbreak* Summary – School Based
(For School RN use – instructions attached)

Name of School: _____
 Contact Person (School Nurse): _____
 Phone Number of Contact Person: _____
 Grade Levels in School: _____
 Number of Students in School: _____
 Number of Students **Vaccinated Twice** Prior to Onset of First Case: _____
 Number of Students **Vaccinated Once** Prior to Onset of First Case: _____
 Number of Students **Not Vaccinated** Prior to Onset of First Case: _____
 Number of **Unknown Vaccine History** Prior to Onset of First Case: _____
 Number of **Student** Cases _____ as of _____ (Date)
 Number of **Staff** Cases _____ as of _____ (Date)
 Onset Date of First Case _____ Onset Date of Last Case _____

Grade Level Summary of Number of Students, Cases and Vaccinated Students
(Enter grade level for each grade in school along top row)

Grade Level								Total
Number of Students per Grade								
Number of Cases per Grade								
Number of Cases in Vaccinated per Grade								
Number of Students Vaccinated Once per Grade**								
Number of Students Vaccinated Twice per Grade**								

** Include all students vaccinated, including cases

*Varicella outbreak definition: 1) 5 or greater cases related in place in children <13 years of age within one incubation period (i.e. 21 days) and 2) 3 or greater cases related in place in persons 13 or greater years of age within one incubation period.

Varicella Outbreak Instructions for Completing Forms

Line Listing of Cases (spreadsheet form)

1. First complete the line list (spreadsheet) for each case of chickenpox in the school/child care center, including students and staff. Put each case on a separate line. Names are considered confidential information and will not be shared outside the health department. If the school prefers, it can assign a personal identifier that will identify the case only to them. Continue adding to line list as long as cases occur. The outbreak is deemed over when one incubation period (21 days) has passed without a case occurring.
2. **Name or identifier, parent or care-giver name, telephone number:** this information is for the person making contact with the case/parent to obtain additional information.
3. **DOB:** Date of birth for each case.
4. **Class and grade-level:** the more specific information (class) is the most helpful for determining transmission patterns and spread of disease.
5. **Staff in charge of class:** list the name of the teacher who may be able to provide useful information about cases, etc
6. **Onset Date of Lesions:** indicate the first day that lesions were observed by parents or nurse.
7. **Severity of Disease:** use the codes I, II, III to indicate the severity of disease for each case. I – mild disease (<50 spots can easily be counted in 30 seconds); II – Moderate disease (50-500 spots – many lesions but not clumping); III – Severe disease (500+ spots or spots clumped so closely together that little skin is visible).
8. **Varicella Vaccine:** if vaccine was given, answer yes and if not indicate reason if known.
9. **Date of Varicella Vaccination or Previous Disease:** if vaccine was given provide date(s) of administration or date of previous disease.

Varicella Outbreak Summary

1. **Indicate Name of School, Contact Person, Phone Number, and Grade Levels in School** on the first four lines of the Summary.
2. **Number of Students in School:** Enter the total student population – include all grade levels in the total.
3. **Number of Students Vaccinated, Number not Vaccinated, and Number with Unknown Vaccination History:** Enter the total number of students vaccinated in all grade levels and the total number of all students who have not been vaccinated or whose varicella vaccination history is unknown on the appropriate line.
4. **Number of Student Cases:** Enter the total number of varicella cases (all grades) in students. Include date of onset of last student case.
5. **Number of Staff Cases:** Enter the total number of cases occurring in staff, with date of onset of last staff case.
6. **Onset Dates:** Indicate onset dates of first and last cases in appropriate place. The last case could be either student or staff and should be used to determine when the outbreak is over. The outbreak can be considered over after one incubation period (21 days) has passed without a case occurring.
7. **Grade Level Summary Table:** Place a letter or number across the first row (grayed area) indicating each grade level represented in the school (i.e. K, 1, 2). On the second row (Number of Students per Grade) enter the total population for each grade level. The total of the numbers across this row should equal the number of students in the school (item 2 above). On the third row across, enter the number of cases per grade level. The numbers across row 3 should equal the number of student cases (item 4 above). On the fourth row across, enter the number of cases who were vaccinated prior to their onset of illness. On row five, enter the total number of students in each grade level who were vaccinated once prior to the onset of the first case (include all students

who were vaccinated – cases and non-cases). The numbers across row 5 should equal the total placed in Number of Students Vaccinated Once. Across row 6 enter the number of students per grade who were vaccinated twice. This total should correlate with the number entered for Number of Students Vaccinated Twice above.