CITY OF PHILADELPHIA
DEPARTMENT OF PUBLIC HEALTH
DIVISION OF DISEASE CONTROL
IMMUNIZATION PROGRAM

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The Newsletter of the West Philadelphia Varicella Active Surveillance Project

Number 22 June 2008

Remember: Report all chickenpox and shingles cases to VASP. Cases can be reported by:

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Update on Varivax® Vaccine Availability

Shipments of Merck's varicella vaccine, Varivax®, returned to a normal delivery schedule (15 business days) in January 2008 after months of production delays. Vaccine for Children (VFC) Providers are advised to place their orders for Varivax when supplies reach a minimum 1-month supply on hand.

Provisional New School Immunization Requirements for 2008-2009

In accordance with current ACIP recommendations, students entering the 6th grade this fall will need two vaccinations against varicella or proof of varicella disease. Official approval of this additional requirement for middle school entry is expected from The Philadelphia Board of Health during Summer 2008. Providers are advised to have adequate vaccine supplies on hand this summer to ensure their patients are in compliance with the new requirement.

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VASP Findings Featured In *The Journal of Infectious Disease*!

Findings from the Philadelphia Department of Public Health's (PDPH) West Philadelphia Varicella Active Surveillance Project (VASP) were featured in the *Journal of Infectious Disease's* (JID) March 2008 supplement issue entitled "Varicella Vaccine in the United States: A Decade of Prevention and the Way Forward" (Vol.197, No. S2). In this issue of the VASP newsletter, we highlight articles from the supplement that demonstrate how the information VASP collects from community-based sites, like you, are utilized to address current topics related to varicella.

Since October 1994, VASP has monitored and collected data on varicella (chickenpox) cases in West Philadelphia to assess the impact of the varicella vaccine on disease following its licensure in 1995. Twice a month, participating surveillance sites in West Philadelphia report varicella cases or inform us that no cases have occurred at their site.

Every suspected varicella case reported to us by our active surveillance sites or other community partners is investigated with more extensive interviews conducted among West Philadelphia residents. During investigations with suspected varicella cases from West Philadelphia, VASP staff collect detailed information on rash characteristics, other symptoms/complications, links to other persons with varicella or herpes zoster (shingles), as well as the case's varicella vaccination status and disease history. Currently, West Philadelphia is 1 of 2 sites nationally participating in this project sponsored by the Centers for Disease Control and Prevention (CDC), along with Antelope Valley, CA.

*****VASP would like to thank our surveillance sites and other community partners for their ongoing support. Your contributions to VASP help further our understanding of the varicella vaccination program's impact on disease.*****

Impact of the Varicella Vaccination Program on Disease and Hospitalizations

Changing Varicella Epidemiology in Active Surveillance Sites – U.S, 1995-2005

By the end of the 1st decade of the varicella vaccination program in the U.S (2005), varicella vaccination coverage rates among children aged 19-35 months had reached 92% and 94% in Antelope Valley, California (AV), and West Philadelphia, Pennsylvania (WP), respectively. The annual incidence of varicella declined 90% in both areas during this time. While rates of varicella declined in all age groups from 1995-2005, the greatest declines (92%-95%) in incidence were found among children 1-9 years of age from both AV and WP. In WP, varicella incidence also declined 93% among 10-14 year olds, which was likely due to early implementation of kindergarten and 6th grade school entry requirements for varicella immunity in Philadelphia. As use of the varicella vaccine increased among young children and disease declined during the first decade of the varicella vaccination program, the median age for vaccinated and unvaccinated varicella cases also increased in both AV and WP. In 2006, the Advisory Committee on Immunization Practices (ACIP) recommended a 2nd dose of varicella vaccine for persons ≥ 4 years of age who previously received 1 dose. Monitoring varicella incidence in the future will be necessary to gauge the impact of this new recommendation.

Epidemiology of Varicella Hospitalizations in the U.S, 1995-2005

In the 3 initial VASP Areas (Antelope Valley, CA, Travis County, TX, and West Philadelphia, PA), varicella-related hospitalization rates and complication rates related to those hospitalizations decreased significantly (69%-76%) from the early varicella vaccination program period (1995-1998) to the combined middle/late vaccination period (1999-2005). Among all reported varicella cases, younger children (≤ 4 years), adolescents and adults (≥ 15 years), unvaccinated persons, and those with compromised immune systems (e.g. cancer, organ transplant, HIV/AIDS, etc) were most likely to be hospitalized for their illness. Two-thirds of the unvaccinated persons hospitalized were eligible for varicella vaccination, and 44% of the hospitalizations among infants age <1 year and immunocompromised persons were exposed to varicella through household members. Increased use of the varicella vaccine among persons lacking immunity and those living with an infant or immunocompromised person could have prevented the majority of hospitalizations for varicella.

Want More?
The March 2008 JID supplement also contains articles on varicella outbreaks, laboratory diagnosis of varicella, etc. To request articles or the complete supplement's Table of Contents, please contact VASP at (215) 685-6869.

Utilizing Active Surveillance Data to Assess Varicella Trends by Age

Varicella Disease Among Vaccinated Persons: Clinical and Epidemiological Characteristics, 1997-2005

From 1997 through 2005, 22% of the varicella cases aged 1-14 years reported in Antelope Valley, CA and West Philadelphia, PA were breakthrough varicella or infections occurring >42 after varicella vaccination. Consistent with findings from clinical trials and small varicella outbreak investigations, these breakthrough varicella cases occurring in the active surveillance areas were extremely mild compared to cases among unvaccinated children. Significantly lower proportions of breakthrough varicella cases reported a rash duration >5 days, fever, and moderate/severe illness. Serious complications (pneumonia, encephalitis, etc.) were rare among both unvaccinated and breakthrough cases aged 1 to 14 years. Due to its atypical clinical presentation, breakthrough varicella presents a strong diagnostic challenge. Continued surveillance will be needed to assess the impact of the new second dose recommendation on the occurrence of breakthrough varicella.

Varicella among Adults: Data from an Active Surveillance Project, 1995-2005

Adults ≥ 20 years of age represented 6% of the varicella cases reported to the Antelope Valley and West Philadelphia VASP areas from 1995 through 2005. Adult cases were more likely to report a prior history of varicella disease (21%) and exposures to household members with varicella (68%) compared to cases among children (≤ 14 years). Only 3% of the adult cases were vaccinated against varicella prior to their illness. Unvaccinated adults experienced more severe varicella illness than unvaccinated children, and were twice as likely to develop a severe rash and complications. Although recommended for all adult with varicella, only 25% received antiviral treatment. Healthcare providers need to ensure that adult patients without evidence of varicella immunity are offered varicella vaccination, and those with varicella infections are treated with antiviral therapy to reduce illness severity.

What You Need to Know About Interpreting VZV Lab Results for Breakthrough Cases

The diagnosis of breakthrough varicella, defined as a varicella infection occurring more than 42 days after receipt of the varicella vaccine, is often challenging because of its atypical presentation. VASP encourages clinicians to utilize laboratory services to confirm disease and determine varicella zoster virus (VZV) susceptibility.

The Centers for Disease Control and Prevention's National VZV Laboratory provides both serologic testing to determine immunity and PCR testing to confirm VZV infection. Providers can use these results to determine whether a patient meets new ACIP (Advisory Committee on Immunization Practices) guidelines for VZV immunity. VASP has developed a guide (Table 1) to help providers interpret CDC lab results, determine a patient's susceptibility to VZV, and address the need for additional vaccination against varicella.

For free CDC VZV Specimen Collection Kits or a complete Laboratory Interpretation Guide, please contact VASP at (215) 685-6869/6838. VASP recommends providers submit two separate lesion specimens for testing in addition to a serological specimen in order to ensure the collection of at least one adequate specimen for PCR Testing.

Table 1. Interpretation of CDC Lab Results for Atypical Breakthrough Cases

1. Positive PCR Result (VZV DNA Positive; VZV Genotype Wild-type):
   - ⇒ **Interpretation:** Confirmed Case of VZV (Patient is Immune)
   - ⇒ **Action:** No Further Vaccination Necessary.

2. Negative PCR Result (VZV DNA Negative; Actin Positive)
   OR
   Inadequate Specimen (VZV DNA Negative; Actin Negative)
   AND
   One IgG test (either IgG Result or gpELISA IgG Result) is Positive:
   - ⇒ **Interpretation:** Not a Confirmed Case of Varicella
   - ⇒ **Action:** Complete 2 Dose Series:
     - One Dose Recipients Should Receive 2nd Dose

3. Negative PCR Result (VZV DNA Negative; Actin Positive)
   OR
   Inadequate Specimen (VZV DNA Negative; Actin Negative)
   AND
   IgG is Negative/EQ and gpELISA IgG is Negative/EQ:
   - ⇒ **Interpretation:** Not a Confirmed Case of Varicella; Insufficient Immunity Despite Previous Vaccination.
   - ⇒ **Action:**
     - Re-vaccination is necessary for previously vaccinated individuals. **Two additional doses** of vaccine should be administered to previous 1-dose recipients.

**EQ = Equivocal*
Note: All scenarios are not listed. Contact VASP for further assistance.

VZV Resources on the Web

Varicella Vaccine Information Statement (VIS)
CDC released its updated Vaccine Information Statement for the varicella vaccine in March 2008. Printable statements are available on the Web at: http://www.immunize.org/vis

ACIP Recommendations on the Prevention of Herpes Zoster in *MMWR*
ACIP recommendations for the use of the herpes zoster vaccine for the Prevention of Herpes Zoster were recently published in CDC's *Morbidity and Mortality Weekly Review (MMWR)*. Healthcare providers can receive continuing education credits for reviewing these recommendations. Details regarding continuing education will be available in the June 6, 2008 *MMWR* report. An Early Release Version is available online at: http://www.cdc.gov/mmwr/pdf/rr/rr57e0515.pdf

VASP Study Notes

The Implementation of Adult Herpes Zoster Surveillance in West Philadelphia
VASP presented findings from its 1st year of active adult herpes zoster surveillance at the 42nd Annual National Immunization Conference during a session entitled Disease Surveillance, Coverage Assessment, Implementation: Three Aspects of Adult Immunization. View the presentation online at: http://cdc.confex.com/cdc/nic2008/techprogram/S8831.HTM

Historical Comparisons of Morbidity and Mortality for Vaccine Preventable Diseases
Findings summarizing disease incidence and mortality before and after the implementation of national vaccine recommendations for 13 vaccine-preventable diseases including varicella were released in November 2007's *Journal of the American Medical Association*. Contact VASP for a copy.