VARICELLA ACTIVE SURVEILLANCE PROJECT AND EPIDEMIOLOGIC STUDIES—SUMMARY 2002

In September 1994, the LAC Department of Health Services entered into a cooperative agreement with the CDC to establish active surveillance for varicella in Antelope Valley, California. Baseline information on disease incidence and varicella vaccine coverage levels by age group, and the impact of increasing vaccine coverage have been collected. Surveillance for herpes zoster was added on January 1, 2000.

The current objectives of the Varicella Active Surveillance Project (VASP) in Antelope Valley are to: 1) maintain active surveillance for varicella disease, 2) maintain active surveillance for herpes zoster, 3) continue to monitor varicella vaccine coverage by age group, 4) measure the impact of varicella vaccine on varicella disease, and 5) conduct other applied epidemiological research related to varicella disease and varicella vaccine.

Nearly 100% of all identified reporting sites participate in this surveillance project, including public and private schools and day care centers with enrollments of 12 or more children; public health clinics, hospitals, private practice physicians and health maintenance organizations; employers with 500 or more employees; correctional facilities; and miscellaneous others likely to identify and report cases of varicella and zoster. All sites submit the varicella and zoster surveillance log to the VASP on a biweekly basis. A case of varicella is defined as illness with acute onset of a diffuse papulovesicular rash without other known cause; for herpes zoster, a case is defined as a macular-papular or vesicular rash that is diagnosed by a licensed healthcare provider, unilateral and involving at least one dermatome. A structured telephone interview is conducted with each case (under the age of 20 years for zoster) or their parent/guardian to collect detailed demographic, clinical, and health impact data and to determine if there are additional cases or susceptible contacts within the household. Susceptible household contacts are re-interviewed four to six weeks after the initial contact to identify additional cases. All providers currently administering the vaccine submit the Varivax Immunization Report on a monthly basis. From 1995 to 2002, varicella data were entered into a Turbo Pascal based database designed by project staff; however beginning in 2003, all data entry for varicella and zoster is via Access and data analysis is performed with SAS. Completeness of reporting is estimated using two-source capture-recapture methods.

The number and types of varicella reporting sites have remained stable since 1995. Varicella cases have decreased 86% over the project period, from 2,934 varicella cases in 1995 to 412 cases in 2002. Varicella incidence decreased by almost half, from 2.1/1,000 population in 2001 to 1.2/1,000 population in 2002. Peak incidence in 2002 occurred among children aged five to nine years (5.7/1,000 population), followed by preschoolers age one to four years (3.7/1,000 population) and children 10–14 years (2.8/1,000 population). Distribution of reported varicella cases by race/ethnicity has been relatively stable since 1995. The percentage of breakthrough cases (cases occurring >42 days after vaccination) has increased from 1% of verified cases in 1996 to 30.4% in 2002. The proportion of cases reporting fewer than 50 lesions has increased from 35.3% (1,305 of 2,934 cases) in 1995 to 49.5% (204 of 412 cases) in 2002. Of the 412 verified cases in 2002, 17 (3.4%) reported 21 complications. This compares to: 13% (in 1995), 8% (1996), 10% (1997), 11% (1998), 10% (1999), 6% (2000), and 5.5% (2001). The most common complication in 2002 was infected lesions (33.3%, 7 of 21 cases), whereas otitis media was the most common complication in 2001 (33.3%; 14 of 42 cases). There was one hospitalization due to varicella disease reported in 2002. Varicella completeness of reporting remained steady, estimated at 61.4% in 2002 for children aged 2–18 years of age.

Zoster cases among children <20 years old decreased by 23% from 73 cases in 2000 to 56 cases in 2002. The rate of zoster in children 1–9 years of age significantly decreased by more than half, from 74/100,000 population in 2000 to 34/100,000 population in 2002. Considering cumulative cases from 2000 to 2002, more cases reported a history of varicella disease (n = 153) than a history of receiving varicella vaccine (n = 15). In the vaccinated, the mean age of HZ was 4.77 years; whereas, in those with

previous varicella infection, the mean age of HZ was 11.2 years. When vaccinated and unvaccinated individuals between 1–4 years were compared, the mean ages were comparable, 2.39 and 1.92 years for natural and vaccinated cases respectively. There was one herpes zoster hospitalization in 2002.

Highlights of project activities have been summarized in two previous publications available on-line [1,2]. In addition, a workshop on "Varicella Susceptibility Among Adolescents in an Active Surveillance Site" was presented at the 2002 National Immunization Conference. The Antenatal Varicella Susceptibility Study started in March of 2002. It is anticipated that information from this project will continue to impact varicella surveillance and control strategies nationwide.

REFERENCES

1. Seward JF, Watson BM, Peterson CL, Mascola L, Pelosi JW, Zhang JX, et al. Varicella disease after introduction of varicella vaccine in the United States, 1995-2000. JAMA 2002;287:606-611. Available at: www. jama.ama-assn.org/cgi/content/full/287/5/606
2. Hall S, Maupin T, Seward J, Jumaan AO, Peterson CL, et al. Second varicella infections: Are they more common than previously thought? Pediatrics 2002;109: 1068-73. Available at: www.pediatrics.aappublications.org/cgi/reprint/109/6/1068.pdf