

06-ID-13

Committee: Infectious Disease

Title: Varicella Vaccine Policy and Varicella Surveillance

Statement of the Problem:

Varicella vaccine was licensed in March 1995. By mid-1996, routine vaccination of infants at 12 – 18 months of age was recommended by the ACIP and shortly thereafter, vaccine became widely available through the Vaccines for Children Program. Since then, among children 19 to 35 months, estimated national vaccine coverage gradually rose to 88% by 2004 and continues to increase.

The introduction of varicella vaccine has had a dramatic effect on disease burden: there has been a decrease in the reported number of varicella cases, an 88% decline in hospitalizations, a 59% decline in ambulatory visits, and a 92% decline in deaths in 1-4 year olds when comparing the pre- and post-vaccine eras. Estimated annual herpes zoster incidence in vaccinated children (22/100,000) has also been less than in unvaccinated children (68/100,000). However, studies have shown that vaccine effectiveness for prevention of disease of any severity has been 80-85%. As a result, there continues to be a large number of individual breakthrough varicella cases and multiple outbreak reports among highly vaccinated school children (coverage 96% - 100 %). These breakthrough cases are generally milder with fewer lesions and hospitalizations.

The peak incidence for cases in active surveillance sites has shifted from 3-6 years of age in pre-vaccine era to 9-11 years of age in post-vaccine era. Reduced incidence and exposure to varicella zoster virus are leading to an accumulation of susceptibles who will be at risk for disease and outbreaks later in life when disease can be more severe.

A 2004 survey of state immunization programs with a 93% response rate, indicated that 87% had responded to outbreaks in the past year. States with active varicella surveillance such as Connecticut, have documented large numbers of cases in schools per year (e.g. >400 cases, 5% > 10 cases, mean age 9 years, 93% elementary, duration 15-93 days [median 32 days]). Average outbreak related costs to public health among seven grantees was \$3000 for a “typical” response, \$6000 for an “active” response and \$7,700 for a hospital outbreak.

Because of continuing outbreaks, in June 2005 ACIP recommended that “During a varicella outbreak, persons who have received 1 dose of varicella vaccine should, resources permitting, receive a 2nd dose, provided the appropriate

vaccination interval has elapsed since the first dose (3 months for persons aged 12 months to 12 years and at least 4 weeks for persons aged ≥ 13 years).” However, states that have implemented this recommendation have found attempted active outbreak control measures unsuccessful, in part due to low rates of public and physician acceptance of practices such as exclusion of susceptibles and mandatory 2-dose immunization in the absence of routine 2-dose vaccination. Other problems have included difficulty in laboratory confirmation of cases, and delayed detection and implementation of 2-dose vaccination, due to milder presentation of cases.

AAP’s Committee on Infectious Diseases has recommended universal administration of a second dose of varicella-containing vaccine.

Statement of the desired action(s) to be taken:

CSTE recommends that:

- 1) Despite substantial decrease in varicella morbidity and mortality after introduction of varicella vaccination, in light of the endemic occurrence of varicella and continued outbreaks of chickenpox in well immunized children receiving a single dose of varicella vaccine, ACIP should consider the need for a universal 2-dose vaccine policy.
- 2) In the absence of such a 2-dose recommendation, CDC and CSTE need to reconsider the value of encouraging routine surveillance of chickenpox cases in all states and active detection and aggressive control of outbreaks, as follow-up and control measures have been futile.

Public Health Impact:

As occurred with measles, use of a one-dose policy for varicella immunization has been insufficient to control cases and outbreaks of disease. Attempts to control outbreaks have also been ineffective, costly, and are undercutting the public’s faith in such immunizations. In addition, a large number of susceptibles is accumulating over time who will be at risk for disease which is usually more severe in later life.

Data from a number of studies have shown high safety and immunogenicity of a second dose of varicella with antibody levels approaching those seen with natural infections. Vaccine efficacy trials have shown that the attack rate among 2-dose recipients was 3.3 times lower compared to those with 1 dose. Thus, a 2-dose varicella vaccine policy could greatly reduce breakthrough cases/outbreaks, making continued surveillance and outbreak control more feasible.

Coordination

Agencies for Response: (List only one name per agency, preferably an individual in a senior management position; complete contact information must be provided for acceptance to review.)

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