Academy monitoring PCV7 shortage

by Jon Abramson, M.D., FAAP

Due to the continuing problems with inadequate supplies of the pneumococcal conjugate vaccine, the Academy now recommends no child receive a fourth dose of the vaccine until adequate supplies are restored. At press time, all other recommendations in the Sept. 14, 2001, Morbidity and Mortality Weekly Report (MMWR) statement remained the same.

The Academy will monitor the continuing supply of this vaccine and may issue additional recommendations if shortages worsen. The statement reads:

In February 2000, Prevnar, the new 7-valent pneumococcal conjugate vaccine (PCV7) marketed by Wyeth Lederle Vaccines (Pearl River, New York) was licensed for use among infants and young children. The U.S. Centers for Disease Control and Prevention (CDC) recommends this vaccine for all children younger than 2 years and for children 2 to 5 years old who are at increased risk for pneumococcal disease (e.g., children with sickle cell disease or anatomic asplenia, chronic illness, or who are immunosuppressed, including those with human immunodeficiency virus infection). In August 2001, deliveries of Prevnar were delayed resulting in shortages for some health-care providers and health departments. Although the manufacturer projects shipping sufficient vaccine to meet needs throughout the remainder of 2001 and has sufficient manufacturing capacity to meet U.S. demand, health-care providers may continue to experience temporary shortages as supplies are replenished. In the meantime, CDC recommends that all providers defer the vaccination of children older than 2 years except those 2 to 5 years old who are at increased risk for pneumococcal disease (U.S. Centers for Disease Control and Prevention. “Preventing Pneumococcal Disease Among Infants and Young Children.” MMWR, 2000;49:1-38).

Providers should give highest priority to vaccinating all infants younger than 12 months and children 1 to 5 years old who are at increased risk. Catch-up vaccinations for healthy children 1 to 2 years old and booster doses for healthy children who have completed the primary series may be deferred. Records should be kept so that the deferred vaccinations can be given when vaccine becomes available.


Dr. Abramson chairs the AAP Committee on Infectious Diseases.

Pediatricians advised on how to assess refer children troubled by the Sept. 11 terrorist attacks

by Alyson Sulaski Wyckoff

Staff Writer

Pediatricians play a key role in identifying and helping children with emotional and psychological responses to the Sept. 11 attacks, said David Schonfeld, M.D., FAAP in his Oct. 22 plenary address at the AAP National Conference & Exhibition.

While advising pediatricians on how to talk with children about the recent crisis, he urged them to use their position as "first responders" in identifying patients who might benefit from counseling.

"We need to maintain a heightened awareness for trauma-related symptoms, such as somatization, and help these families understand and begin to address the underlying psychological issues," said Dr. Schonfeld, a developmental-behavioral pediatrician who is coordinator of the School Crisis Response Initiative of the National Center for Children Exposed to Violence (NCCEV). A member of the AAP Committee on Pediatric Research, Dr. Schonfeld also serves as associate professor of pediatrics and child study, Yale University School of Medicine.

Pediatricians should provide triage along with timely and appropriate referrals to mental health services, said Dr. Schonfeld, though he lamented the barriers that exist in this country: the lack of quality mental health services for most children and the stigma attached to seeking therapy.

Children may need help dealing with prior unresolved crises, said David Schonfeld, M.D., FAAP.

"The rapidity with which smallpox could spread in the U.S. population has led to concern that this agent would present a particularly potent threat if it were used as an agent of bioterrorism."

Q. What is smallpox?

A. Smallpox is a highly contagious infectious disease caused by the DNA virus Variola major. It is a member of the orthopoxvirus family. As recently as 1967, millions of cases per year were reported in Asia and Africa. The last known nonlaboratory case of smallpox occurred in 1977 in Somalia. It is one of the few diseases that can be eradicated. The World Health Organization has recommended that smallpox be eliminated as soon as possible.

Q. What are the signs and symptoms of smallpox?

A. After an incubation period of about 12 days, the infected patient typically develops high fever, malaise, headache and backache, which progress during the first 48 hours. Infected children may suffer from vomiting and seizures during this prodromal period. In severe cases, the patient may become delirious or stuporous. The patient may experience transient improvement in symptoms and reduction in fever during the third day of illness, but sore throat, cough and rash soon follow. Painful ulcerative lesions form first erupt in the mouth and throat and cause sore throat and hoarseness. The rash then appears on the face and forearms and spreads to the upper arms and trunk. This distribution is unlike that of the rash of varicella, which typically begins on the trunk and spreads later to the face and extremities.

The cutaneous lesions are macular initially, but they become papular within hours of their initial appearance.

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appearance. Over the next one to two days, the papules become vesicular and then pustular. The lesions evolve at the same rate, unlike varicella lesions, which erupt and evolve in crops and appear at different stages during the illness. The pustules become tense and shoddy and extremely painful. They begin to rupture by about the 10th day of illness, eventually drying and forming crusts. Crusting and desquamation are accompanied by pruritus.

Case fatality rates of 30% or higher were observed during epidemics of smallpox. Death, when it occurs, is likely a result of viral toxemia associated with circulating immune complexes. Encephalitis is sometimes a complication. Two forms of smallpox, hemorrhagic (characterized by frank hemorrhage into skin lesions and disseminated intravascular coagulation) and malignant (in which the skin lesions do not progress to the pustular stage but remain flat and soft) are associated with a 90% to 100% mortality rate. Variola minor, or alastrim, is associated with a longer incubation period, a milder prodromal period, fewer skin lesions and a lower mortality rate than variola major, or typical smallpox.

Q. How is smallpox spread?
A. Smallpox is spread in droplets or aerosol from the oropharynx of infected individuals. It also can be spread by direct contact with infected lesions or from clothing or bed linens contaminated with the virus. The period of infectivity begins as the enanthem and rash develop; patients remain contagious until the scabs have been shed. Most patients are sick enough during the prodromal period to be confined to bed by the time the rash develops. For this reason, household contacts, hospital workers and other health care providers are the most likely individuals to be secondary cases.

Q. How is smallpox treated?
A. There is no known effective antiviral therapy available to treat smallpox. Infected patients should receive supportive care aimed, particularly, at maintaining hydration and treating any secondary bacterial infections that develop. Contacts of infected patients should be vaccinated against smallpox within three to four days following exposure. Postexposure vaccination provides some protection against disease and significant protection against a fatal outcome.

Q. What are the complications?
A. Secondary bacterial infections of the skin, eyes and respiratory tract may develop and can lead to septicemia and distant, localized bacterial disease. Laryngeal lesions can lead to edema and airway obstruction. Encephalitis also occurs.

Pregnant women are particularly susceptible to the severe, hemorrhagic form of smallpox.

Q. What is the best way to make a laboratory diagnosis?
A. Variola can be detected in vesicular or pustular fluid by culture, polymerase chain reaction or electron microscopy. Samples should be collected by someone who has been recently vaccinated and should be enclosed in a nonbreakable, water-tight container. State and local health department officials should be notified immediately of a suspected case of smallpox, and they should be involved in decisions about shipping of specimens.

Q. What is the prognosis?
A. In the absence of pre-existing immunity, a favorable prognosis is less likely for infants, the elderly and pregnant women. The role of immunodeficiency, whether from immunosuppressive therapy or from HIV, in determining outcome is unknown. The more discrete and sparse the lesions, the better the prognosis. Hemorrhagic and malignant smallpox are associated with a near 100% mortality rate, while variola major, or classic smallpox, resulted in the past in an overall mortality rate of about 30%. The potential for modern supportive therapy to improve that outcome is not known.

Q. What type of vaccine is smallpox vaccine?
A. Smallpox vaccine is associated with the early history of vaccination. In 1798 Edward Jenner reported that inoculation with cowpox (vaccinia) protected people from smallpox. The only vaccine available is a live vaccinia virus vaccine. That virus is very similar to the smallpox virus (variola). The current vaccine is inoculated into the dermal area using a bifurcated needle with a series of jabs which forces a drop of the material beneath the epidermis. Successful vaccination is evident by the development of a pustular lesion at the site. Infection with the vaccinia virus stimulates the vaccinee to develop antibodies that cross-react with variola and protects the vaccinee.

Q. When was it last used? Why is it no longer used?
A. The vaccine was last used routinely in the United States in 1972. At that time, routine use was deemed unnecessary, as the chances of serious side effects appeared more likely to occur than would exposure to smallpox which had mostly disappeared. By 1977, the last naturally occurring case of smallpox was observed in Africa, and in 1980 smallpox was certified by the World Health Organization as absent in the world.

Q. Is vaccine available? To whom? Can more be made easily?
A. In 1983, the vaccine was withdrawn from general availability and is no longer produced. Since 1990 when vaccination of military personnel ended, it has been recommended only for laboratory workers who have a chance of exposure to orthopoxvirus and for researchers using vaccinia virus in clinical studies. It has recently been reported that teams of physicians from the U.S. Centers for Disease Control and Prevention (CDC), with special expertise in smallpox management, have been vaccinated.

Currently the vaccine is stocked in a lyophilized frozen state by the CDC. There are 15 million doses available for the military and for controlling a possible outbreak but not a sufficient amount for the whole U.S. population. Research is currently going on to determine if the stored vaccine can be diluted and still be effective in inducing immunity. If so, the stocks can be diluted before use resulting in the ability to vaccinate a large proportion of the U.S. population, if necessary. If there is a known bioterrorist release of smallpox virus, the vaccine can be used for exposed individuals as a postexposure vaccination. If the vaccine is given within three to four days of exposure, immunity can develop before the disease occurs and either prevent or reduce the severity of disease. Such a plan is recommended for persons who have had face-to-face, household or close-proximity with a
smallpox patient who has active skin lesions, or who has been involved in the care of such an individual, or exposed in any way to laboratory specimens or bedding from an infected person. Such a plan would allow most effective use of limited stocks of vaccine.

There is interest in producing vaccine again because of the threat of bioterrorism, and the CDC has contracted for 40 million additional doses. However, using current manufacturing standards for vaccine production, it will take years before new vaccine is available. In addition, the U.S. government has ordered the production and purchase of 54 million more doses of vaccine.

Q. What are the effects and risks of vaccination to prevent smallpox?

A. Vaccination causes a local infection that is itchy and uncomfortable. About a week after vaccination, there are a few days of fever, malaise, and there may be regional lymphadenitis. The site of vaccination develops a papule that matures into a pustule and then a scab that falls off by about the third week after vaccination. Revaccination causes a milder and faster-developing lesion. Occasionally, satellite pustules develop when the vaccinee scratches the pustule and autoinoculates the virus.

The major reason not to begin vaccination in the absence of actual cases of smallpox, besides the limited availability of vaccine, are the complications of vaccination. It has been known for decades that this vaccine, which produces a local infection in the skin, can occasionally produce a life-threatening progressive lesion or spread throughout the body, especially in immunocompromised individuals but occasionally even in those who are immunocompetent. In those with chronic skin conditions, it can cause a severe, sometimes fatal dermatologic spread termed eczema vaccinatum.

Even unvaccinated susceptible individuals may have such reactions if virus spreads from those who have been vaccinated to them. Estimates of these severe complications are: two per million vaccinated develop progressive vaccinia or vaccinia gangrenosa, four per million develop encephalitis. In the past, vaccinia immune globulin (VIG) was used to treat and reduce the severity of any of these complications, but little currently is available. While there was a network of experts associated with the CDC who dispensed VIG, this group was disbanded. Until 1998, at least 40 individuals per million vaccinated developed significant and possibly life-threatening complications for which VIG would be used.

The vaccine is not recommended for those with immunodeficiencies, whether hereditary, due to medication or acquired underlying diseases; those with eczema or other exfoliative skin disorders; or pregnant women.

Q. What is the vaccine schedule and how often does it need to be given?

A. Prior to its discontinuation, the smallpox vaccination was given universally in the United States at 1 to 2 years of age, although in endemic areas it could be given as young as 3 months of age. Revaccination was recommended every five years and for those working in endemic areas, annually. The current recommendation for those individuals at high risk due to possible occupational exposure is every three years. However, those with multiple vaccinations during childhood probably have longer-lasting immunity, but the degree of protection for those vaccinated before 1972 is unknown. It is likely that individuals who were last vaccinated more than 10 years ago are no longer fully protected.

Answers to additional bioterrorism questions frequently asked by parents are available at www.aap.org/advocacy/releases/anthraxqa.htm.

Drs. Baltimore and McMillan are members of the AAP Committee on Infectious Diseases.

Clinical anthrax information online


On both sites, pediatricians can find technical information about inhaled, cutaneous and gastrointestinal anthrax in children. Guidance about history and physical examination, diagnosis and antibiotic prophylaxis of children is available, along with photos of cutaneous and inhaled anthrax. Also online is advice for pediatricians on how to talk to parents who are concerned about bioterrorism and disasters. Parents can be directed to visit the public section of the Academy’s site, www.aap.org.

The Academy’s sites are updated regularly, as information becomes available.