Family Practice Forum

Adult Polio Immunity

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A dramatically successful immunization program against polio has reduced the number of paralytic cases from 20,000 in 1952 to the current level of fewer than 20 cases annually.[1] With wild poliovirus essentially eliminated from circulation in this country, immunity depends upon an adequate immunization program. But success has generated apathy toward this devastating disease, and significant numbers of children under five years of age have not received the primary immunization series of three doses of trivalent oral polio vaccine (TOPV).[2] For this reason, an additional dose of TOPV has been recommended for all children before school entry.

The need for an additional TOPV booster at 11 or 12 years of age remains an unsettled issue. Although a booster probably is not necessary if the recommended primary immunization series has been administered, the initial vaccinations either have not been done or cannot be documented. In adults, documentation of previous immunizations can be even more difficult because of frequent moving, lost records, and retired physicians. However, the history of immunizations alone can provide valuable information. When 100 nulliparous women, aged 21 to 29 years, in a suburban private practice were surveyed, five reported no previous polio immunizations. When these same 100 women were tested for immunity to the three serotypes of poliovirus, six lacked antibodies to individual serotypes.[3] Although attempts to secure prior immunization records on these six were unsuccessful, two of the six were among the group that had reported no previous polio immunizations. Thus, 40 percent of the group lacking a history of prior polio immunization had polio susceptibility, while only 4 percent of the group with a history of previous polio immunization was susceptible, indicating that history alone provides a useful screen for polio immunity.

Not only are these susceptible adults at risk when exposed to the wild poliovirus, but they are also at risk for developing paralytic polio when exposed to the vaccine strain of poliovirus. This

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exposure can come either directly from immunization with TOPV or indirectly from contact with individuals recently fed TOPV and shedding live, attenuated poliovirus in their stools. Between 1969 and 1979, 50 cases of vaccine-associated paralytic polio were reported in contacts of vaccinated children, with many being parents aged 20 to 40 years.[1] With the increasing number of inadequately immunized children, this susceptible "parent group" will grow in future generations and sustain exposure when their own children are immunized. So, although the risk of paralytic polio from exposure to TOPV is small, it may be increasing and thus poses a very real risk, which Jonas Salk has called "the principal cause of polio in the United States."[4]

The family physician is ideally situated to intervene in several areas. Obviously, the importance of the primary immunization series for all children is essential. Equally important, however, is supplying parents with documentation of these immunizations that is separate from the medical records which may be unobtainable 20 years in the future. Routine examinations required through the school system at ages 5, 12, and 15 years provide the opportunity to re-evaluate the status of polio immunity and complete the immunization series of those inadequately protected. Past the age of 18 years there are several opportunities for evaluation, but these are often overlooked.

The pre-employment examination, college physical examination, and routine pelvic examination bring young adults into the office at a time prior to having children, when previous immunization records are possibly still available. The Advisory Committee on Immunization Practices of the Public Health Service has made recommendations for adult polio immunization.[5] To summarize, most adults have completed the primary immunization series of three doses of TOPV or four immunizations with inactivated polio vaccine (IPV, the earlier Salk poliomyelitis vaccine) and have adequate immunity. If not, the primary series should be completed with the respective vaccine. IPV is available through the Public Health Department. If an adult is adequately immunized, but at increased risk of exposure (by traveling to areas endemic for polio, working with poliovirus, or

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having contact with individuals possibly excreting poliovirus), a TOPV booster should be given. If an adult is unvaccinated for polio, then the primary immunization series should be administered with IPV rather than TOPV because of the risk of vaccine-associated paralytic polio. The series consists of three doses of IPV 4 to 8 weeks apart, with a fourth dose 6 to 12 months after the third.

A special effort must be made to protect the parents of children to whom TOPV is administered. A useful screening method questions parents at the initial well-baby visit, around two or three weeks of age, as to their polio immunity. If either or both are unaware of prior polio immunization there is adequate time for two doses of IPV to be administered, one month apart, prior to the first dose of TOPV for their child. The remainder of the primary IPV series can be completed as previously described.

The parents' history of polio immunization could be elicited during the prenatal period, but polio immunization is not recommended for pregnant women unless they are at increased risk of exposure as discussed above. One further precaution is to avoid TOPV administration to either immune-deficient individuals or their household contacts.

Although polio does not cause much concern at present, its future potential necessitates adequately protecting not only children but their parents and other adults as well. The family physician is well situated to implement all the present recommendations for polio immunization of both children and adults.

References

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