The Changing Approach to Immunization Against Polio

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Use of the Salk inactivated polio vaccine (IPV, 1955) led to a prompt and dramatic decline in poliomyeilits in the United States. By the time the Sabin oral vaccine (OPV) was introduced in 1961, the incidence of poliomyelitis had declined by more than 90%. With routine use of OPV, the transmission of wild poliovirus ceased in the United States, and the last indigenous case of paralytic wild poliomyelitis in the United States occurred in 1979. The last indigenous case of wild poliomyelitis in the Western Hemisphere occurred in 1991, and the Americas have since been free of wild poliovirus transmission. Nonetheless, paralytic poliomyelitis still occurs in the Americas; for example, since eradication of wild poliovirus, there have been more than 140 cases of paralytic polio in the United States. These cases have all been attributable to oral poliovirus vaccine, which on rare occasion can cause the very ayndrome it is intended to prevent.

By 1987, improvements in cell culture technology permitted the development of new, enhanced IPVs that equal or exceed the immunogenicity of OPV. In those areas of the world where wild poliovirus transmission has been eradicated, it has become increasingly difficult to justify exposing healthy children, to the risk of iatrogenic paralysis, and a use of IPV is being considered or implemented. The first step in implementing this transition in the United States was taken in 1996, when the CDC's Advisory Committee on Immunization Practices (ACIP) recommended a sequential schedule of IPV at 2 snd 4 months followed by OPV at 12 months and 5 years with the approval of three alternate polio immunization regimens. In 1998, in light of the sccess of the IPV program and the continued worldwide reduction in wild polio, the ACIP, the American Academy of Pediatrics, and the American Academy of Family Practice jointly stated that the use of OPV in infancy was no longer acceptable; either the sequential schedule and an all-IPV schedule could be used. The next step was taken in mid-1999, with the release of updated recommendations that called for use only of IPV (with OPV reserved for certain rare situations) beginning in January 2000.

The transition from OPV to IPV poses two practical problems : the greater cost of IPV, compared to OPV, and the need for another injection. Both issues are addressed by the new combination vaccines that incorporate IPV along with such other moieties as hepatitis B, conjugate *Haemophilus influenzae*, or acellular pertussis vaccine. Versions of these vaccines that contain IPV often can be purchased for nearly the same price as versions that do not contain IPV, and multiple antigens can be provided with a single injection.