

# Office Immunization

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## KEYWORDS

• Immunization • Vaccine • Diphtheria • Tetanus

Nothing has improved disease control as thoroughly as immunizations. In well-immunized populations, there is no flaccid paralysis (polio), almost no epiglottitis or postmeningitis deafness (*Haemophilus influenzae*), and little postviral male sterility (mumps). Immunizations are not perfect; they may cause side effects, some of which have led to the discontinuation of the vaccine when side effects have outweighed the vaccine's protective effects (eg, rotavirus vaccine and intussusception). However, immunization works best not by the protection it provides the individual but by the protection provided to the population at risk ("the herd effect"). *Haemophilus influenzae* type B (Hib) vaccine is a good example because it has no significant side effects that influence the final cost-effectiveness (cost-effectiveness considers all outcomes not just the monetary) of this immunization. A 2002 article in the United Kingdom cited a disease reduction of 97.4% when about 90% of children had received the full course of the vaccine. The immunogenicity of the conjugated Hib vaccines is close to 95%.<sup>1</sup> When about 40% of the population younger than 5 years was immunized in the United States with Hib vaccine, the disease rate had lowered by close to 75%, and, when 80% of the target population was immunized, the disease rate decreased by more than 90%. Thus, the herd effect protected a significant percentage of the unvaccinated susceptible population.<sup>2</sup>

Forces against vaccination have been vocal for well over 250 years. Many were against Jenner's smallpox vaccine, and it took 200 years to eliminate endemic smallpox from the earth. In the 1950s, there was great opposition to the oral polio vaccine in spite of the high frequency of death or disability from this endemic virus, including the visible disability of a president of the United States. Andrew Wakefield committed fraud in his study published in 1998 in the *Lancet* by creating false data linking measles-mumps-rubella (MMR) vaccine to autism and subsequently lost his license to practice medicine. Nonetheless, more than 20% of American parents believe that MMR vaccine and autism are directly connected, and a committed and vocal group of antivaccine activists has led to a high rate of MMR rejection by parents.

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According to a 2010 Centers for Disease Control and Prevention (CDC) report, 40% of American parents with young children have delayed or refused 1 or more vaccines for their child because of their fear of side effects. High rates of MMR rejection by parents has resulted in measles once again being endemic in England and Wales, killing children in Great Britain every year. What is clear is that there is no correlation between immunization and autism or other major developmental problems. However, any agent that may cause fever in young children, including viruses and bacteria, may cause seizures in susceptible individuals and, in rare incidents, result in developmental problems. Vaccination experts such as Offit<sup>3</sup> believe that the combination of relative rarity of serious infectious diseases in the developed world (because of immunizations) and the prevalence of minor fevers and illnesses in children, which may be temporally (and coincidentally) related to immunization, lead to high immunization rejection by parents. Parents do not realize the urgency of immunization for their children and fear that the immunizations themselves might hurt their children.

Several vaccine-related factors in the last 2 decades in the United States have improved the safety of children and compensated children with alleged adverse reactions to immunizations:

- The Vaccines for Children (VFC) program

The VFC became operational on October 1, 1994. Known as section 1928 of the Social Security Act, the VFC program is an entitlement program (a right granted by law) for eligible children, aged 18 years and less. The VFC program helps families of children who may not otherwise have access to vaccines by providing free vaccines to doctors who serve them. Providers are not allowed to charge for these vaccines but may charge a minimal fee for administration of vaccines. The VFC is administered at the national level by the CDC, which contracts with vaccine manufacturers to buy vaccines at reduced rates. States and eligible projects enroll physicians who serve eligible patients up to and including age 18 years and who provide routine immunizations. Vaccines available from the VFC at the time this article is written include diphtheria/tetanus/pertussis, Hib, hepatitis A, hepatitis B, human papillomavirus, influenza, MMR, meningococcal, pneumococcal 13, polio, rotavirus, and varicella vaccines of various combinations and strengths. Records of distribution of the VFC vaccines and eligibility of the recipients to receive VFC vaccines must be precisely kept by practitioners who distribute these immunizations. Lack of accurate records can result in the practitioner being removed from the program, or, in egregious examples, large fines and potential criminal prosecution.

- Vaccine Adverse Event Reporting System (VAERS)

The VAERS is a postmarketing safety surveillance program, collecting information about adverse events (possible side effects) that occur after the administration of vaccines licensed for use in the United States. This program is jointly sponsored by the CDC and the Food and Drug Administration. Providers are required to report adverse events of vaccines that come to their attention. If an unusual or serious reaction occurs, a form is available online (<https://vaers.hhs.gov/esub/step1>).

- National Vaccine Injury Compensation Program (VICP)

On October 1, 1988, the National Childhood Vaccine Injury Act of 1986 created VICP, which is a no-fault resolution program for parents who think a vaccine has injured their child. This effort involves multiple government agencies, including

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