



# Maryland Suggested Immunization Schedule Using Combination Vaccines

	BIRTH	2 MONTHS	4 MONTHS	6 MONTHS	12 MONTHS	15 MONTHS	18 MONTHS	4-6 YEARS
Schedule Using PEDIARIX & KINRIX	HepB	PEDIARIX DTaP, IPV, HepB	PEDIARIX DTaP, IPV, HepB	PEDIARIX DTaP, IPV, HepB <sup>1</sup>	HepA MMR Varicella	DTaP HIB	HepA	KINRIX DTaP, IPV
		+	+	+				+
		PCV13	PCV13	PCV13	PCV13			MMR
		Rotavirus <sup>2</sup>	Rotavirus <sup>2</sup>	Rotavirus <sup>2</sup>				Varicella
		HIB	HIB	HIB <sup>3</sup>				

EVERY FALL: FLU VACCINE Children age 6 months through 18

Schedule Using PENTACEL & KINRIX

HepB	PENTACEL DTaP, IPV, Hib	PENTACEL DTaP, IPV, Hib	PENTACEL DTaP, IPV, Hib	HepA MMR Varicella	PENTACEL DTaP, IPV, Hib <sup>4</sup>	HepA	KINRIX DTaP, IPV
	+	+	+				+
	PCV13	PCV13	PCV13	PCV13			MMR
	Rotavirus <sup>2</sup>	Rotavirus <sup>2</sup>	Rotavirus <sup>2</sup>				Varicella
	HepB		HepB				

EVERY FALL: FLU VACCINE Children age 6 months through 18

The Advisory Committee on Immunization Practices (ACIP) states:  
The use of a combination vaccine is preferred over separate injections of its equivalent component vaccines.

**This is a suggested schedule for Maryland VFC providers utilizing combination vaccines.**

1. Use of Pediarix (DTaP-HepB-IPV) after single antigen HepB vaccine administered at birth will result in a 4-dose HepB vaccine series; this is considered acceptable by ACIP.
2. The rotavirus vaccines differ in number of doses and timing. Check the package insert.
3. This six month Hib dose is not indicated if Pedvax HIB and/or Comvax are used exclusively for the 2 and 4 month infant doses.
4. Pentacel (DTaP-IPV/Hib) can be used to complete the series of Hib vaccination, even if the child already received all the necessary doses of DTaP and IPV.

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**Additional guidance from the ACIP on the Use of Combination Vaccines for Childhood Immunization.**

(CDC MMWR 5/14/99 Combination Vaccines for Childhood Immunization)

- The use of combination vaccines is a practical way to overcome the constraints of multiple injections, especially for starting the immunization series for children behind schedule. The use of combination vaccines might improve timely vaccination coverage. Some immunization providers and parents object to administering more than two or three injectable vaccines during a single visit because of a child's fear of needles and pain and because of unsubstantiated concerns regarding safety.
- Advantages of combination vaccines include a) reducing the cost of stocking and administering separate vaccines, b) reducing the cost for extra health-care visits, and c) facilitating the addition of new vaccines into immunization programs. The price of a new combination vaccine can sometimes exceed the total price of separate vaccines for the same diseases. However, the combination vaccine might represent a better economic value if one considers the direct and indirect costs of extra injections, delayed or missed vaccinations, and additional handling and storage.
- Using combination vaccines containing some antigens not indicated at the time of administration to a patient might be justified when a) products that contain only the needed antigens are not readily available or would result in extra injections and b) potential benefits to the child outweigh the risk of adverse events associated with the extra antigen(s). An extra dose of many live-virus vaccines and Hib or Hepatitis B vaccines has not been found to be harmful. However, the risk of adverse reactions might increase when extra doses are administered earlier than the recommended interval for certain vaccines (e.g., tetanus toxoid vaccines and pneumococcal polysaccharide vaccine).
- Patients commonly receive extra doses of vaccines or vaccine antigens for diseases to which they are immune. For example, some children receiving recommended second or third doses of many vaccines in the routine immunization series will already have immunologic protection from previous dose(s). Because serologic testing for markers of immunity is usually impractical and costly, multiple doses for all children are justified for both clinical and public health reasons to decrease the number of susceptible persons, which ensures high overall rates of protection in the population.
- ACIP, AAP, and AAFP recommend that combination vaccines may be used whenever any components of the combination are indicated and its other components are not contraindicated. An immunization provider might not have vaccines available that contain only those antigens indicated by a child's immunization history. Alternatively, the indicated vaccines might be available, but the provider nevertheless might prefer to use a combination vaccine to reduce the required number of injections. In such cases, the benefits and risks of administering the combination vaccine with an unneeded antigen should be compared.