



Immunization Practices Advisory Council

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Combination Vaccines

The benefit of combination vaccines is that they reduce the number of injections that a child receives. This addresses concerns that many people have about the number of vaccines being given and the discomfort associated with vaccine delivery. Some vaccine combinations have existed so long that we don't even think of them as combinations: DTaP is the best example, combining protection against diphtheria, tetanus, and pertussis in a single package. MMR contains the antigens for measles, mumps, and rubella. The CDC defines combination vaccines as "a product whose components can be equally divided into independently available routine vaccines." What are some examples of CDC-defined combination vaccines? Pentacel® [DTaP-Hib-polio], Pediarix® [DTaP-hepatitis B-IPV], Kinrix® [DTaP-IPV], and Proquad® [MMRV] are among them. Use of some combination vaccines may result in extra doses of one or more components; thus Pediarix given at 2, 4, and 6 months may give an extra hepatitis B dose; use of Pentacel at 2,4, 6, and 15 months administers an extra dose of polio. These extra doses are considered acceptable by CDC.

CDC states that:

"To minimize the number of injections children receive, parenteral **combination vaccines should be used**, if licensed for the patient's age, **instead of their equivalent component vaccines.**"

"Provider assessment should include the number of injections, vaccine availability, likelihood of improved coverage, likelihood of patient return, and storage and cost consideration." *ACIP statement in MMWR 2006; 55(RR-15):3.*

While neither CDC nor any other group would say that one *must* use combination vaccines, CDC lists some of their advantages:

- 1) Combination vaccines are a practical way to overcome the constraints of multiple injections, especially for starting the immunization series for children behind schedule.
- 2) The use of combination vaccines improves timely vaccination coverage, according to several studies.
- 3) Some immunization providers and parents object to administering a large number of injectable vaccines during a single visit because of a child's fear of needles and pain and because of unsubstantiated concerns regarding safety.
- 4) Combination vaccines may reduce the cost of stocking and administering separate vaccines,
- 5) Combination vaccines may reduce the cost for extra health-care visits,
- 6) Combination vaccines may facilitate the addition of new vaccines into immunization programs.

There has only been one safety issue involving a combination (as compared with individual vaccines): Proquad, the MMRV vaccine, has been associated with a small increase in febrile seizures over MMR and varicella (VZV) separately when administered during the second year of life. Thus CDC expresses no preference for MMRV or MMR and VZV given separately at that age. In all other instances, combination vaccines are preferred, including a preference for MMRV at 4-6 years of age. Both individual vaccines and combination vaccines are available through the Vaccines for Children (VFC) program.

Guidance on the Use of Pediarix® and Pentacel® for infants

Pentacel (DTaP+Hib+IPV) —Use the following schedule

Birth	2 months	4 months	6 months	12-18 months
HBV	Pentacel HBV PCV Rotavirus	Pentacel PCV Rotavirus Note: HBV not needed at this age	Pentacel HBV PCV Rotavirus*	Pentacel <u>or</u> DTaP +Hib PCV MMR VZV HAV†

Pediarix (DTaP+HBV+IPV)—Use the following schedule using Pediarix

if you have Pediarix and Hib (either ActHib, Pedvax-Hib, Menhib-rix or Hiberix):

Birth	2 months	4 months	6 months	12-18 months
HBV	Pediarix Hib PCV Rotavirus	Pediarix Hib PCV Rotavirus	Pediarix Hib** PCV Rotavirus*	DTaP Hib PCV MMR VZV HAV†

If immunizing a **Native American child** and **Pedvax-Hib®** is available, its use is preferred. Use the following schedule:

Birth	2 months	4 months	6 months	12-18 months
HBV	Pediarix Pedvax-Hib PCV Rotavirus	Pediarix Pedvax-Hib PCV Rotavirus	Pediarix PCV Rotavirus*	DTaP Pedvax-Hib PCV MMR VZV HAV†

Notes

*3rd dose of rotavirus vaccine not needed if Rotarix® used for doses 1 and 2

† Second dose of hepatitis A vaccine needed 6 months or more after the first.

Influenza vaccine should be given each fall starting at 6 months of age; two doses needed in the first season.

**Infants who have received Pedvax-Hib® at 2 and 4 months do not need another at 6 months.

If Pediarix was used for the 1st and/or 2nd doses and only Pentacel is available at the time for the next dose (usually 4 and/or 6 months), give Pentacel, PCV, and Rotavirus for the 4 month visit and Pentacel, HBV, PCV, and Rotavirus (if Rotarix not given at both 2 and 4 months) at the 6 month visit.

(DTaP=diphtheria+tetanus+acellular pertussis, Hib=Haemophilus influenzae b, IPV=inactivated polio vaccine, HBV=Hepatitis B vaccine, MMR=measles+mumps+rubella, VZV=varicella zoster vaccine, HAV=hepatitis A vaccine)

Note: CDC recommends that combination vaccines can be given at any age at which they are licensed and when there is an indication for at least one of the components of the combination and there is no contraindication to any of the components (what this means, in effect, is there is no need to worry if an extra dose of one of the components is given).

For further information

New Mexico Department of Health <http://www.immunizenm.org>

Center for Disease Control www.cdc.gov/vaccines/

CDC Vaccination Information Statements <http://www.cdc.gov/vaccines/hcp/vis/index.html>