Vaccines with Diluents: How to Use Them

Be sure to reconstitute (mix) the following vaccines correctly before administering them! Reconstitution means that the lyophilized (freeze-dried) vaccine powder in one vial must be mixed with the diluent (liquid) in another.

- Only use the diluent provided by the manufacturer for that vaccine as indicated on the chart.
- ALWAYS check the expiration date on the diluent and vaccine. NEVER use expired diluent or vaccine.
- Never freeze diluents.

Vaccine product name	Manufacturer	Lyophilized (powder) vaccine	Liquid diluent (may contain vaccine)	Time allowed between mixing and use[a]	Diluent storage environment
Abrysvo	Pfizer	RSV	Sterile water	4 hrs	Refrigerator or room temp
ActHIB (Hib)	Sanofi	Hib	Sodium chloride 0.4%	24 hrs	Refrigerator
Arexvy	GSK	RSV	AS01E adjuvant suspension	4 hrs	Refrigerator
Hiberix (Hib)	GSK	Hib	Sodium chloride 0.9%	Immediately[b]	Refrigerator or room temp
Imovax (RAB$_{HDCV}$)	Sanofi	Rabies	Sterile water	Immediately[b]	Refrigerator
M-M-R II (MMR)	Merck	MMR	Sterile water	8 hrs	Refrigerator or room temp
Menveo[c] (MenACWY)	GSK	MenA	MenCWY component	8 hrs	Refrigerator
Penbraya (MenABCWY)	Pfizer	MenACWY	MenB component	4 hrs	Refrigerator
Penmenvy (MenABCWY)	GSK	MenACWY	MenB component	Immediately[b]	Refrigerator
Pentacel (DTaP-IPV/Hib)	Sanofi	Hib	DTaP-IPV component	Immediately[b]	Refrigerator
Priorix (MMR)	GSK	MMR	Sterile water	8 hrs	Refrigerator or room temp
ProQuad (MMRV)	Merck	MMRV	Sterile water	30 min	Refrigerator or room temp
RabAvert (RAB$_{PCECV}$)	GSK	Rabies	Sterile water	Immediately[b]	Refrigerator
Shingrix (RZV)	GSK	RZV	AS01B adjuvant suspension	6 hrs	Refrigerator
Varivax (VAR)	Merck	VAR	Sterile water	30 min	Refrigerator or room temp
Vaxchora (CVD 103-HgR)	Bavarian Nordic	Cholera	Buffer solution plus bottled water	see footnote[d]	Refrigerator
YF-VAX (YF)	Sanofi	YF	Sodium chloride 0.9%	60 min	Refrigerator or room temp

Always refer to package inserts for detailed instructions on reconstituting specific vaccines. In general, follow the steps below.

1 For single-dose vaccine products (exception: Vaxchora), select a syringe and needle of proper length to be used for both reconstitution and administration of the vaccine. For Vaxchora, see the package insert.

2 Before reconstituting, check labels on both the lyophilized vaccine vial and the diluent to verify that
- they are the correct two products to mix together,
- the diluent is the correct volume, and
- neither the vaccine nor the diluent has expired.

3 Reconstitute (i.e., mix) vaccine ***before use*** by:
- removing the protective caps and wiping each stopper with an alcohol swab,
- inserting needle of syringe into diluent vial and withdrawing contents, and
- injecting diluent into lyophilized vaccine vial and rotating or inverting to thoroughly dissolve the lyophilized powder.

4 Check the appearance of the reconstituted vaccine.
- Reconstituted vaccine may be used if the color and appearance match the description on the package insert.
- If there is discoloration, particulate matter, obvious lack of resuspension, or the vaccine cannot be thoroughly mixed, mark the vial as "DO NOT USE," return it to proper storage conditions, and contact your state or local health department immunization program or the vaccine manufacturer.

5 If reconstituted vaccine is not used immediately or comes in a multidose vial, be sure to
- clearly mark the vial with the date and time the vaccine was reconstituted,
- maintain the product at 2°–8°C (36°–46°F); do not freeze, and
- use only within the time indicated on chart above.

a. If the reconstituted vaccine is not used within this time period, it must be discarded.

b. For purposes of this guidance, Immunize.org defines "immediately" as within 30 minutes or less.

c. Menveo vaccine is available as either a liquid formulation that does not require dilution or as a lyophilized vaccine that requires reconstitution.

d. Vaxchora dilution: 30 minutes if sucrose or unflavored stevia added; 4 hours if sucrose or unflavored stevia have ***not*** been added.

Vaccine abbreviations in column 3:
Hib =*Haemophilus influenzae* type b
MenA = Meningococcal serogroup A
MenACWY = Meningococcal serogroups A, C, W, Y
MMR = Measles, mumps, & rubella
MMRV = MMR + varicella
RSV = Respiratory syncytial virus
RZV = Zoster vaccine, recombinant
YF = Yellow fever