

PRACTICE RESOURCE: RECONSTITUTING LYOPHILIZED VACCINES WITH CORRECT DILUENT

As a part of Ontario's Routine Immunization Schedule, measles, mumps, rubella, and varicella vaccines (MMR, MMRV, Var) are commonly used, especially among infants and children. The MMR, MMRV and Var vaccine products used in Ontario are manufactured by two pharmaceutical companies, GlaxoSmithKline (GSK) and Merck, and are considered equivalent to one another.

Manufacturer	MMR	MMRV	Var	Diluent
GSK	PRIORIX®	PRIORIX-TETRA®	VARILRIX®	0.5mL sterile water for injection (ampoule or pre-filled syringe)
Merck	M-M-R® II	ProQuad®	Varivax® III	0.7mL sterile water for injection (vial)

As per the [World Health Organization \(WHO\)](#), **vaccinators are to ensure the diluent used to reconstitute a vaccine is the correct one as assigned by the manufacturer.** Diluents are prepared by the manufacturer specifically for each vaccine. The quantity of diluent is exactly matched to the required volume to arrive at the proper concentration of the vaccine product after reconstitution.

MMR, MMRV and Var vaccines are supplied as lyophilized powder in a vial and must be reconstituted with a diluent prior to administration. The entire volume of the supplied diluent must be added to the lyophilized powder and shaken well until the powder is completely dissolved.

While both GSK and Merck diluents are labelled as "sterile water for injection", they contain **different volumes** and therefore **must not be used interchangeably.** GSK's diluent is supplied in 0.5mL ampoules or pre-filled syringes, while Merck's diluent is supplied in 0.7mL vials.

Using the incorrect diluent when reconstituting a vaccine may result in the vaccine being too dilute or too potent, which may alter the effectiveness of the vaccine administered.

The ratio of vaccines to corresponding diluents should be a 1:1 ratio. If a mismatch of quantities is found between vaccines and diluent, investigate the possible cause of the discrepancy. In some cases, it may reflect an error in using the wrong diluent for reconstitution.

Tip #1: Organize your vaccine refrigerator by product. Place vaccines of the same type together along with their corresponding diluents.

Tip #2: The name of the manufacturer is identified on each vaccine label and diluent label for easy reference. Before reconstitution, double check the labels to ensure that the manufacturer name of the vaccine and diluent match.

