

Vaccine Vial Monitoring

What is a vaccine vial monitor?

A vaccine vial monitor (VVM) is a label containing a heat-sensitive material which is placed on a vaccine vial to register cumulative heat exposure over time.

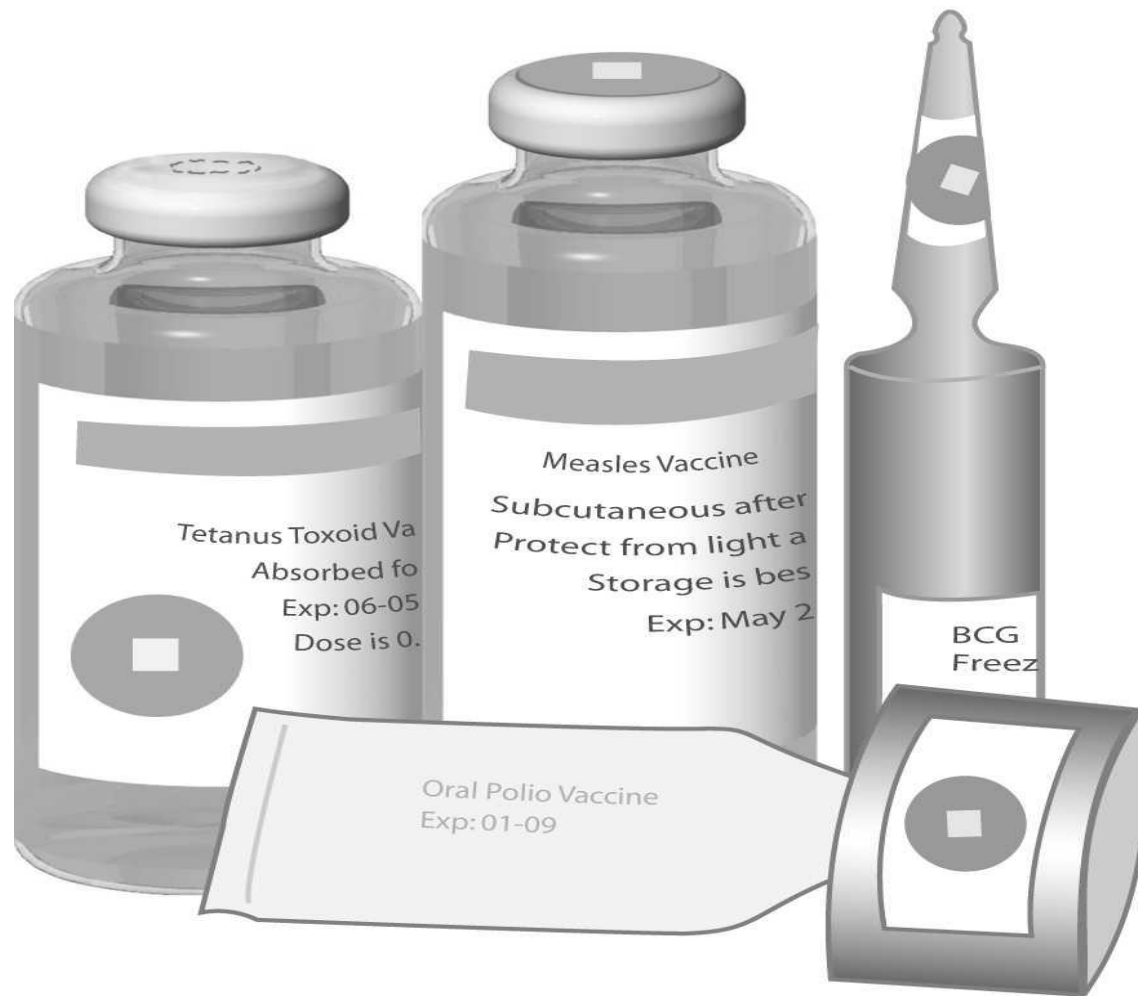
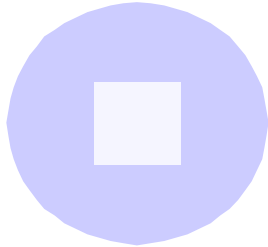
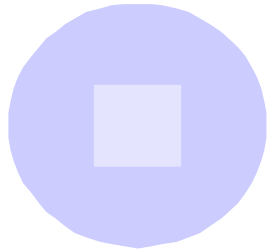


Fig. 2: VVM locations

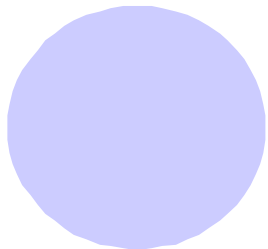
The vaccine vial monitor says...



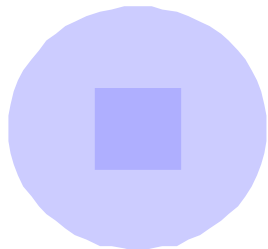
The inner square is lighter than the outer circle. If the expiry date has not passed, **USE** the vaccine.



At a later time the inner square is still lighter than the outer circle. If the expiry date has not passed, **USE** the vaccine.



Discard point: the colour of the inner square matches that of the outer circle. **DO NOT** use the vaccine.



Beyond the discard point: the inner square is darker than the outer circle. **DO NOT** use the vaccine.

VVM reaction rates by category of heat stability

Category: (Vaccines)	No. days to end point at +37°C	No. days to end point at +25°C	Time to end point at +5°C
VVM30 HIGH STABILITY <small>(Hep B, BCG & TT)</small>	30	193	> 4 years
VVM14 MEDIUM STABILITY <small>(Measles, MMR)</small>	14	90	> 3 years
VVM7 MODERATE STABILITY <small>(DPT)</small>	7	45	> 2 years
VVM2 LEAST STABLE <small>(OPV)</small>	2	NA*	225 days

*VVM (Arrhenius) reaction rates determined at two temperature points

Sample times recorded for VVMs to vials of OPV and Hepatitis B

Constant temperature, day and night	Time for VVM on a vial of OPV to reach “discard point”	Time for VVM on a vial of Hepatitis B vaccine to reach “discard point”
In a refrigerator: 4°C	240 days	5670 days
Room temperature: 20°C	20 days	385 days
Room temperature: 25°C	10 days	176 days