

Australian Immunisation Handbook, 8th Edition - Vaccine Stability at different temperatures (1) (2)

Vaccine (3) (4)	< 0°C	2°C to 8°C	22°C to 25°C	35°C to 37°C	over 37 °C
BCG (freeze-dried or lyophilised vaccine) (3) (4)	Can be stored at up to –20°C. Do not expose to light (ultraviolet and/or fluorescent).	Safe storage for 12 months. Do not expose to light (ultraviolet and/or fluorescent). Diluent – do not freeze (5) Store between 2°C and 8°C.	Stability varies. Some BCG vaccine may lose 25% to 40% of original potency after 2 months. Do not expose to light (ultraviolet and/or fluorescent).	Loses potency rapidly. Do not expose to light (ultraviolet and/or fluorescent)	Rapid loss of potency. Up to 73% loss of potency after 3 days. Do not expose to light (UV and/or fluorescent)
BCG (Reconstituted with diluent) (3) (4)	DO NOT FREEZE.	Very unstable. Protect from all forms of light (inactivates vaccine). Keep at between 2°C and 8°C when vial is not being used. Discard all unused vaccine at the end of the vaccination session (8 hours).	Very unstable. Protect from all forms of light (inactivates vaccine). Keep between 2°C and 8°C when vial is not being used.	Very unstable. Protect from all forms of light (inactivates vaccine). Keep between 2°C and 8°C when vial is not being used.	Very unstable. Protect from all forms of light (inactivates vaccine). Keep between 2°C and 8°C when vial is not being used.
Diphtheria, tetanus and/or acellular pertussis-containing vaccines Includes DTPa, DTPa- hepB, DTPa-Hib, DTPa-IPV, DTPa- hepB-IPV, DTPa-IPV-Hib, DTPa-IPV/Hib, DTPa-hepB-IPV-Hib, dTpa, DT (CDT), dT(ADT).	DO NOT FREEZE. Vaccines loses significant potency when stored at –5°C to –10°C. NB: Some vaccines may still remain as a liquid at 0°C. As little as 24 hours at 0°C or 25°C may cause antigens to fall from suspension and be very difficult to resuspend. Freezing point of tetanus is between –5°C to –10°C. The freezing point of pertussis is not known. Discard if exposed to temperatures of 0°C or below.	Safe to store at 2°C to 8°C for 24 months in spite of continuous slow decrease in potency of the pertussis component.	The DT components are stable for 4, possibly 6 months; the limiting factors are some of the other components. Some vaccines containing pertussis are stable for only 2 weeks at this temperature.	The DT components are stable for weeks but the stability of the other components vary with different vaccines. Some vaccines containing pertussis lose 50% of potency after one week.	DT components: stable for 2 weeks at 45°C but much less at higher temperatures. The other components are (where known) very unstable at high temperatures.
Freeze dried (lyophilised) monovalent PRP-T Hib vaccine	Freeze-dried or lyophilised vaccine PRP-T can be frozen.	Diluent – do not freeze (5) Store between 2°C and 8°C.	Not available.	Not available.	Not available.
Reconstituted monovalent PRP-T Hib vaccine	Reconstituted vaccine must NOT be frozen.	Store all components of the vaccine between 2°C and 8°C.	Not available.	Not available.	Not available.
Other Hib-containing vaccines (PRP-OMP, HbOC, Hib (PRP-OMP)-hep B	DO NOT FREEZE. The precise freezing point is not established. Manufacturers state freezing temperature of HbOC is – 1.0°C. Discard if exposed to temperature of 0°C or below.	Store between 2°C and 8°C.	Stable for at least 24 months when stored at 25°C.	Not available.	Not available.
Monovalent hepatitis A vaccine	DO NOT FREEZE. Discard if vaccine has been exposed to temperature of 0°C or below.	Store between 2°C to 8°C for many months (up to 36 months for some brands).	Stable for 15 months.	Stable for 15 months.	Not available.
Monovalent hepatitis B vaccine	DO NOT FREEZE. Freezing point of hepatitis B vaccine is – 0.5°C and vaccine is destroyed at this temperature. Discard if exposed to temperature of 0°C or below.	Retains satisfactory potency for 2 years.	Retains satisfactory potency for 30 days.	Stable for 1 week.	Stable for 3 days.
Inactivated poliomyelitis vaccine (IPV)	DO NOT FREEZE. Discard if exposed to temperature of 0°C or below.	Store for up to 2 years between 2°C to 8°C.	Loses significant potency after 20 days.	Destroyed after 20 days.	Not available.
Influenza vaccine	DO NOT FREEZE. Discard if exposed to temperatures of 0°C or below.	Store between 2°C to 8°C	Not available.	Not available.	Not available.
Measles-mumps-rubella (MMR) (freeze-dried or lyophilised vaccine) (4)	May be stored in freezer at 0°C or below. Protect from light, which may inactivate virus.	Safe storage for 2 years at 2°C to 8°C. Diluent – do not freeze. (5) Store between 2°C & 8°C.	Retains satisfactory potency for 1 month.	Retains satisfactory potency for at least 1 week.	50% loss of potency after 2 to 3 days at 41°C: 80% loss of potency after 1 day at 54°C.

Reconstituted measles-mumps-rubella (MMR) (3) (4)	DO NOT FREEZE. Protect from light.	Can be stored between 2°C to 8°C. Protect from light, which may inactivate the vaccine virus. Should be used in one vaccination session (8 hours) if kept cool and protected from sunlight. If not, discard after 1 hour.	Unstable: 50% loss of potency after 1 hour, 70% loss after 3 hours. Protect from light.	Very unstable: titre may be below acceptable level after 2 to 7 hours. Protect from light.	Inactivation within 1 hour.
Meningococcal C conjugate vaccine (MenCCV) NeisVac-C Meningitec (freeze-dried or lyophilised vaccine)	DO NOT FREEZE. Discard if exposed to temperatures of 0°C or below.	Store in refrigerator between 2 and 8°C. Shelf life 18 months at this temperature.	Not available.	Not available.	Not available.
Meningococcal C conjugate vaccine (MenCCV) Menjugate	DO NOT FREEZE. Discard if exposed to temperatures of 0°C or below.	Store between 2 and 8°C. Shelf life is 24 months at this temperature. Reconstituted vaccine must be used immediately. Diluent – do not freeze (5) Store between 2 to 8°C.	Not available.	Not available.	Not available.
Oral poliomyelitis vaccine (OPV) opened vials (3) (4)	May be stored for up to 2 years at around -20°C. The freeze-thaw-refreeze cycle can occur until the vial is empty.	Can be stored at 2°C to 8°C between use as long as the expiry date has not passed, and the vaccine has not been taken out of the health centre (eg outreach immunisation setting).	Stable for at least 1 week at 20°C to 25°C.	Not available.	Remains potent for 24 hours.
Pneumococcal conjugate vaccine (7vPCV)	DO NOT FREEZE. Discard if exposed to temperature of 0°C or below.	Store between 2°C and 8°C.	Not available.	Not available.	Not available.
Pneumococcal polysaccharide vaccine, 23-valent (23vPPV)	DO NOT FREEZE. Discard if exposed to temperature of 0°C or below.	Store between 2°C and 8°C.	Not available.	Not available.	Not available.
Varicella-zoster vaccine: Varivax Refrigerated, Varilrix (freeze-dried or lyophilised vaccine) (3) (4)	May be stored in frost-free freezer at an average temperature of -15°C or colder. Maintains potency for 24 months (Varilrix) or 18 months (Varivax Refrigerated). Protect from light.	Prior to reconstitution, varicella-zoster vaccine retains potency when stored between 2°C to 8°C for up to 2 years (Varilrix) or 18 months (Varivax Refrigerated). Diluent – do not freeze (5) Store between 2°C & 8°C.	Not available.	Not available.	Not available.
Reconstituted varicella-zoster vaccine: Varilrix and Varivax Refrigerated (3) (4)	DO NOT FREEZE. Protect from light.	Administer immediately after reconstitution to minimise loss of potency. Discard if reconstituted vaccine is not used within 90 minutes (Varilrix) or within 30 mins (Varivax Refrigerated). Diluent – do not freeze (5) Store between 2°C & 8°C.	Not available.	Not available.	Not available.

(1) For thermostability information on other vaccines not listed in this Table, refer to the specific chapter in this *Handbook*.

(2) The information in this Table is in many cases not consistent with the Australian product information documents. However, this Table provide guidelines based on the WHO (1998) Thermostability of Vaccines, WHO/GPV/98.07.

(3) The vaccines that are most unstable at room temperature are OPV and reconstituted MMR, varicella-zoster and BCG vaccines.

(4) OPV and reconstituted MMR, varicella-zoster and BCG vaccines must be protected from exposure to light.

(5) DO NOT FREEZE DILUENT AS THIS MAY CAUSE UNDETECTABLE CRACKS IN THE AMPOULE LEADING TO CONTAMINATION.