GRADE tables: Comparison of 2 doses of purified Vero cell rabies vaccine (PVRV; Verorab) to 3 doses of human diploid cell vaccine (HDCV) or purified chick embryo cell vaccine (PCECV) in people who are indicated to receive rabies pre-exposure prophylaxis (PrEP) vaccination

NCIRS is conducting GRADE assessments in support of the Australian Technical Advisory Group on Immunisation (ATAGI) and making pilot results available on the Centre's website. Please read this material as a supplement to the Australian Immunisation Handbook rabies and other lyssaviruses chapter.

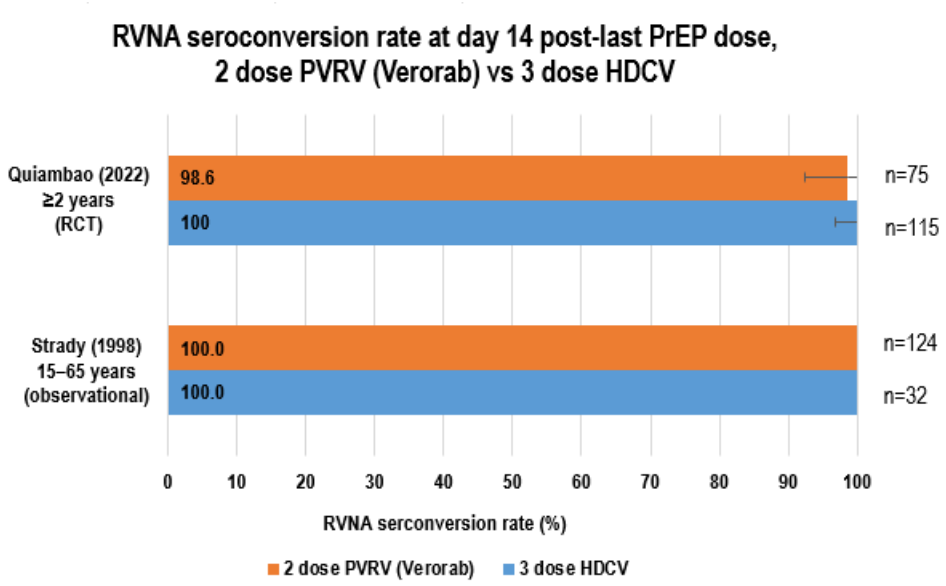
2 doses of PVRV (Verorab) compared to 3 doses HDCV or PCECV for people who are indicated to receive rabies pre-exposure prophylaxis (PrEP) vaccination

Patient or population: People who are indicated to receive rabies pre-exposure prophylaxis (PrEP) vaccination
Intervention: 2 doses PVRV (Verorab)
Comparison: 3 doses HDCV or PCECV

Outcomes	Impact	№ of participants (studies)	Certainty of the evidence (GRADE)	Interpretation
CRITICAL OUTCOMES				
Vaccine-related serious adverse events (SAE) Assessed with: any vaccine-related adverse event/adverse reaction that resulted in death, was life-threatening, required hospitalisation or prolongation of existing hospitalisation, or resulted in persistent or significant disability or incapacity Follow-up: 180 days	There were no SAE or vaccine-related SAE in either the 2 dose PVRV (Verorab) arm (0.0%; 95% CI: 0.0–4.8) or the 3 dose HDCV arm (0.0%; 95% CI: 0.0–3.2).	190 (1 RCT)[1]	⊕⊕⊕◯ Moderate[a,b]	2-dose PVRV (Verorab) PrEP likely results in little to no difference in vaccine-related SAE compared to 3-dose HDCV/PCECV PrEP.

2 doses of PVRV (Verorab) compared to 3 doses HDCV or PCECV for people who are indicated to receive rabies pre-exposure prophylaxis (PrEP) vaccination

Patient or population: People who are indicated to receive rabies pre-exposure prophylaxis (PrEP) vaccination
Intervention: 2 doses PVRV (Verorab)
Comparison: 3 doses HDCV or PCECV

Outcomes	Impact	№ of participants (studies)	Certainty of the evidence (GRADE)	Interpretation
IMPORTANT OUTCOMES				
Rabies virus neutralising antibody (RVNA) seroconversion rate (SCR) (%) [RCT] Assessed with: WHO-recommended threshold of RVNA titre ≥0.5 IU/mL Follow-up: 14 days post-last PrEP dose		190 (1 RCT)[1]	⨁⨁⨁◯ Moderate[a,b]	2-dose PVRV (Verorab) PrEP likely results in little to no difference in RVNA seroconversion 14 days post-last PrEP dose compared to 3-dose HDCV/PCECV PrEP.

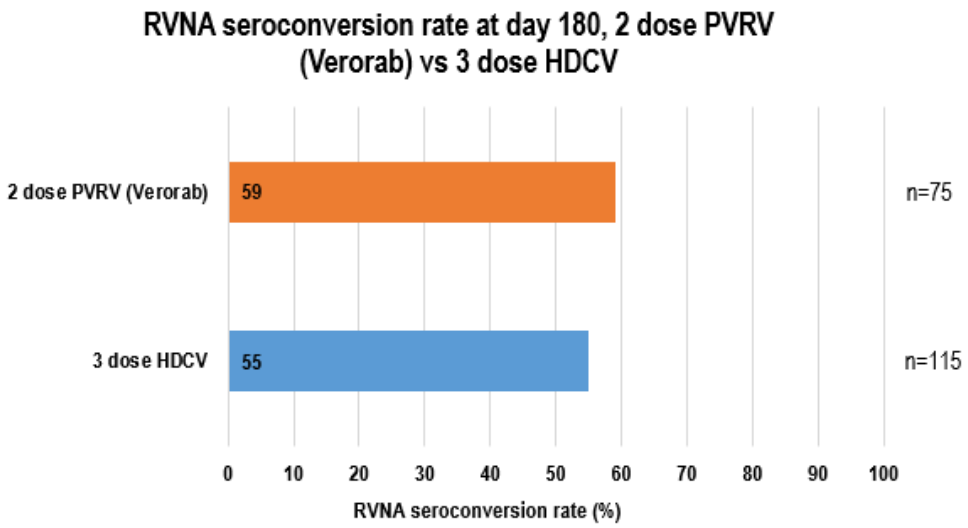
2 doses of PVRV (Verorab) compared to 3 doses HDCV or PCECV for people who are indicated to receive rabies pre-exposure prophylaxis (PrEP) vaccination

Patient or population: People who are indicated to receive rabies pre-exposure prophylaxis (PrEP) vaccination
Intervention: 2 doses PVRV (Verorab)
Comparison: 3 doses HDCV or PCECV

Outcomes	Impact	№ of participants (studies)	Certainty of the evidence (GRADE)	Interpretation
RVNA SCR (%) [observational] Assessed with: WHO-recommended threshold of RVNA titre ≥0.5 IU/mL Follow-up: 14 days post-last PrEP dose		156 (1 observational study)[2]	⨁⨁◯◯ Low[a,b,c]	2-dose PVRV (Verorab) PrEP may result in little to no difference in RVNA seroconversion 14 days post-last PrEP dose compared to 3-dose HDCV/PCECV PrEP.

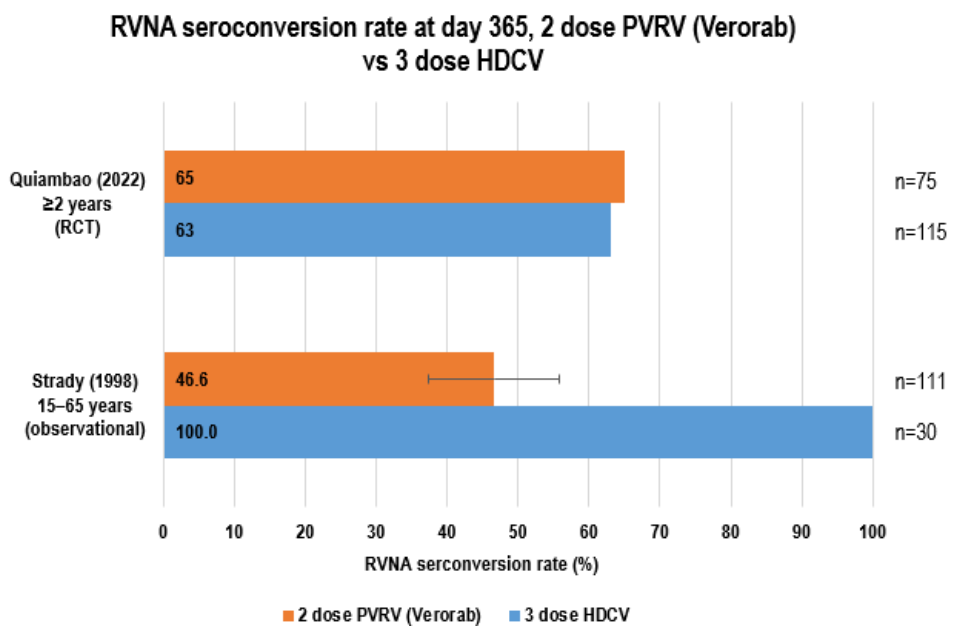
2 doses of PVRV (Verorab) compared to 3 doses HDCV or PCECV for people who are indicated to receive rabies pre-exposure prophylaxis (PrEP) vaccination

Patient or population: People who are indicated to receive rabies pre-exposure prophylaxis (PrEP) vaccination
Intervention: 2 doses PVRV (Verorab)
Comparison: 3 doses HDCV or PCECV

Outcomes	Impact	№ of participants (studies)	Certainty of the evidence (GRADE)	Interpretation
RVNA SCR (%) [RCT] Assessed with: WHO-recommended threshold of RVNA titre ≥0.5 IU/mL Follow-up: 180 days		190 (1 RCT)[1]	⨁⨁⨁◯ Moderate[a,b]	2-dose PVRV (Verorab) PrEP likely results in little to no difference in RVNA seroconversion at 180 days compared to 3-dose HDCV/PCECV PrEP.

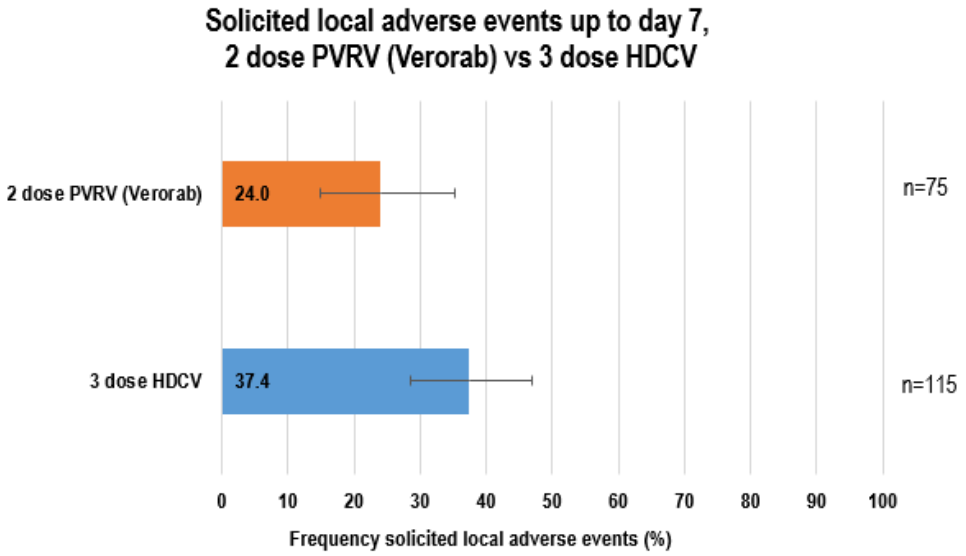
2 doses of PVRV (Verorab) compared to 3 doses HDCV or PCECV for people who are indicated to receive rabies pre-exposure prophylaxis (PrEP) vaccination

Patient or population: People who are indicated to receive rabies pre-exposure prophylaxis (PrEP) vaccination
Intervention: 2 doses PVRV (Verorab)
Comparison: 3 doses HDCV or PCECV

Outcomes	Impact	№ of participants (studies)	Certainty of the evidence (GRADE)	Interpretation
RVNA SCR (%) [RCT] Assessed with: WHO-recommended threshold of RVNA titre ≥0.5 IU/mL Follow-up: 365 days		190 (1 RCT)[1]	⨁⨁⨁◯ Moderate[a,b]	2-dose PVRV (Verorab) PrEP likely results in little to no difference in RVNA seroconversion at 365 days compared to 3-dose HDCV/PCECV PrEP.
RVNA SCR (%) [observational] Assessed with: WHO-recommended threshold of RVNA titre ≥0.5 IU/mL Follow-up: 365 days		141 (1 observational study)[2]	⨁◯◯◯ Very low[a,b,c]	2-dose PVRV (Verorab) PrEP may reduce RVNA seroconversion at 365 days compared to 3-dose HDCV/PCECV PrEP, but the evidence is very uncertain.

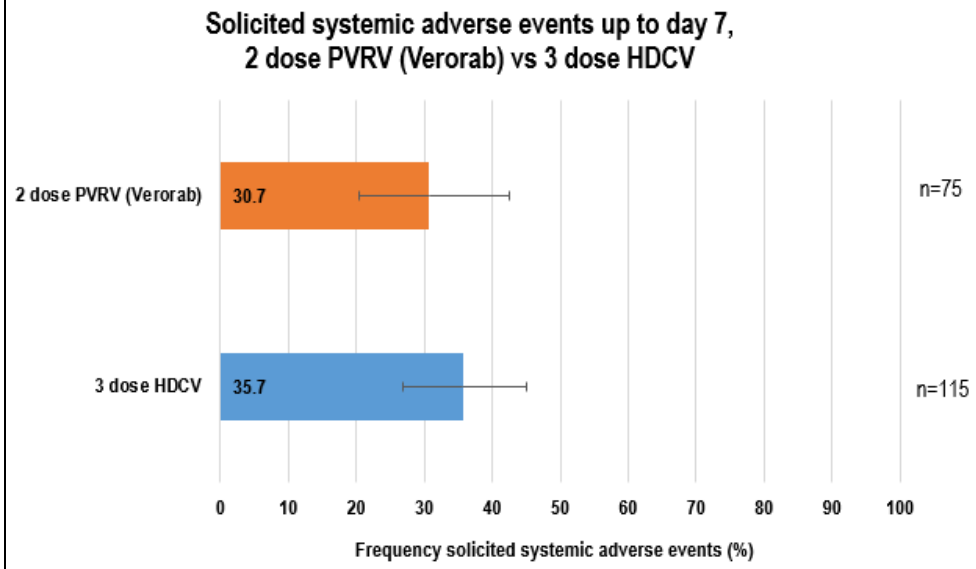
2 doses of PVRV (Verorab) compared to 3 doses HDCV or PCECV for people who are indicated to receive rabies pre-exposure prophylaxis (PrEP) vaccination

Patient or population: People who are indicated to receive rabies pre-exposure prophylaxis (PrEP) vaccination
Intervention: 2 doses PVRV (Verorab)
Comparison: 3 doses HDCV or PCECV

Outcomes	Impact	№ of participants (studies)	Certainty of the evidence (GRADE)	Interpretation
Solicited local adverse events (AEs) Assessed with: frequency of solicited reactogenicity for any injection site event Follow-up: range 1 day to 7 days		190 (1 RCT)[1]	⨁⨁⨁◯ Moderate[a,b]	2-dose PVRV (Verorab) PrEP likely reduces solicited local adverse events slightly compared to 3-dose HDCV/PCECV PrEP.

2 doses of PVRV (Verorab) compared to 3 doses HDCV or PCECV for people who are indicated to receive rabies pre-exposure prophylaxis (PrEP) vaccination

Patient or population: People who are indicated to receive rabies pre-exposure prophylaxis (PrEP) vaccination
Intervention: 2 doses PVRV (Verorab)
Comparison: 3 doses HDCV or PCECV

Outcomes	Impact	№ of participants (studies)	Certainty of the evidence (GRADE)	Interpretation
Solicited systemic AEs Assessed with: frequency of solicited reactogenicity for any systemic event Follow-up: range 1 day to 7 days		190 (1 RCT)[1]	⨁⨁⨁◯ Moderate[a,b]	2-dose PVRV (Verorab) PrEP likely results in little to no difference in solicited systemic AE compared to 3-dose HDCV/PCECV PrEP.

Explanations
a. Only one study of this study design assessed this outcome
b. Small sample size (<400); study may not be powered to detect a difference between groups
c. Study had serious risk of bias overall due to serious risk of bias in the cofounding domain, and moderate risk of bias in the missing data domain

Abbreviations: AE=adverse events; HDCV=human diploid cell vaccine; ID=intradermal; IM=intramuscular; PCECV=purified chick embryo cell vaccine; PrEP=pre-exposure prophylaxis; PVCV=purified Vero cell vaccine (Verorab); PVRV=purified Vero cell rabies vaccine (Verorab); RCT=randomised controlled trial; RVNA=rabies virus neutralising antibody; SAE=serious adverse events; SCR=seroconversion rate

GRADE Working Group grades of evidence

High certainty: We are very confident that the true effect lies close to that of the estimate of the effect.
Moderate certainty: We are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.
Low certainty: Our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect.
Very low certainty: We have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of the effect.

GRADE evidence profile

Evidence profile: 2 doses PVRV (Verorab) compared to 3 doses HDCV or PCECV for people who are indicated to receive rabies pre-exposure prophylaxis (PrEP) vaccination

c							Impact	Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations			
Vaccine-related serious adverse events (SAE) (follow-up: 180 days; assessed with: any vaccine-related adverse event/adverse reaction that resulted in death, was life-threatening, required hospitalisation or prolongation of existing hospitalisation, or resulted in persistent or significant disability or incapacity)									
1	Randomised trials	Not serious	N/A[a]	Not serious	Serious[b]	None	There were no vaccine-related SAE in either the 2-dose PVRV (Verorab) arm (0.0%; 95% CI: 0.0–4.8) or the 3-dose HDCV arm (0.0%; 95% CI: 0.0–3.2).[1]	⨁⨁⨁◯ Moderate	CRITICAL
Rabies virus neutralising antibody (RVNA) seroconversion rate (SCR) (%) [RCT] (follow-up: 14 days; assessed with: WHO-recommended threshold of RVNA titre ≥0.5 IU/mL)									
1	Randomised trials	Not serious	N/A[a]	Not serious	Serious[b]	None	The RVNA SCR 14 days following the second dose of PVRV (Verorab) was 98.6% (95% CI: 92.3–100) compared to 100% (95% CI: 96.8–100) for 3 doses of HDCV.[1]	⨁⨁⨁◯ Moderate	IMPORTANT
Rabies virus neutralising antibody (RVNA) seroconversion rate (SCR) (%) [observational] (follow-up: 14 days; assessed with: WHO-recommended threshold of RVNA titre ≥0.5 IU/mL)									
1	Observational studies	Serious[c]	N/A[a]	Not serious	Serious[b]	None	The RVNA SCR 14 days following vaccination was 100% (95% CI: NR) after both 2 doses of PVRV (Verorab) and 3 doses of HDCV.[2]	⨁⨁◯◯ Low	IMPORTANT
Rabies virus neutralising antibody (RVNA) seroconversion rate (SCR) (%) [RCT] (follow-up: 180 days; assessed with: WHO-recommended threshold of RVNA titre ≥0.5 IU/mL)									
1	Randomised trials	Not serious	N/A[a]	Not serious	Serious[b]	None	The RVNA SCR 180 days following the second dose of PVRV (Verorab) was 59% (95% CI: NR) compared to 55% (95% CI: NR) for 3 doses of HDCV.[1]	⨁⨁⨁◯ Moderate	IMPORTANT

c							Impact	Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations			
Rabies virus neutralising antibody (RVNA) seroconversion rate (SCR) (%) [RCT] (follow-up: 365 days; assessed with: WHO-recommended threshold of RVNA titre ≥0.5 IU/mL)									
1	Randomised trials	Not serious	N/A[a]	Not serious	Serious[b]	None	The RVNA SCR 365 days following the second dose of PVRV (Verorab) was 65% (95% CI: NR) compared to 63% (95% CI: NR) for 3 doses of HDCV.[1]	⊕⊕⊕◯ Moderate	IMPORTANT
Rabies virus neutralising antibody (RVNA) seroconversion rate (SCR) (%) [observational] (follow-up: 365 days; assessed with: WHO-recommended threshold of RVNA titre ≥0.5 IU/mL)									
1	Observational studies	Very serious[c]	N/A[a]	Not serious	Serious[b]	None	The RVNA SCR 365 days following the second dose of PVRV (Verorab) was 46.6% (95% CI: 37.3–55.9) compared to 100% (95% CI: NR) for 3 doses of HDCV.[2]	⊕◯◯◯ Very low	IMPORTANT
Solicited local adverse events (AEs) (follow-up: range 1 day to 7 days; assessed with: frequency of solicited reactogenicity for any injection site event)									
1	Randomised trials	Not serious	N/A[a]	Not serious	Serious[b]	None	The rate of solicited local adverse events was 24.0% (95% CI: 14.9–35.3) for 2 doses of PVRV (Verorab) and 37.4% (95% CI: 28.5–46.9) for 3 doses of HDCV.[1]	⊕⊕⊕◯ Moderate	IMPORTANT
Solicited systemic adverse events (AEs) (follow-up: range 1 day to 7 days; assessed with: frequency of solicited reactogenicity for any systemic event)									
1	Randomised trials	Not serious	N/A[a]	Not serious	Serious[b]	None	The rate of solicited systemic adverse events was 30.7% (95% CI: 20.5–42.4) for 2 doses of PVRV (Verorab) and 35.7% (95% CI: 26.9–45.1) for 3 doses of HDCV.[1]	⊕⊕⊕◯ Moderate	IMPORTANT

Explanations

a. Only one study of this study design assessed this outcome
b. Small sample size (<400); study may not be powered to detect a difference between groups
c. Study had serious risk of bias overall due to serious risk of bias in the cofounding domain, and moderate risk of bias in the missing data domain

Abbreviations: AE=adverse events; HDCV=human diploid cell vaccine; ID=intradermal; IM=intramuscular; NR=not reported; PCECV=purified chick embryo cell vaccine; PrEP=pre-exposure prophylaxis; PVCV=purified Vero cell vaccine; PVRV=purified Vero cell rabies vaccine (Verorab); RCT=randomised controlled trial; RVNA=rabies virus neutralising antibody; SAE=serious adverse events; SCR=seroconversion rate

Evidence to Decision (EtD) framework: 2 doses PVRV (Verorab) compared to 3 doses HDCV or PCECV for people who are indicated to receive rabies pre-exposure prophylaxis (PrEP) vaccination

SHOULD PEOPLE WHO ARE INDICATED TO RECEIVE RABIES PRE-EXPOSURE PROPHYLAXIS (PrEP) VACCINATION RECEIVE 2 DOSES PVRV (VERORAB) FOR PrEP AGAINST RABIES?	
Population	People indicated to receive rabies PrEP vaccination
Intervention	2 doses PVRV (Verorab) PrEP [IM]*
Comparison	3 doses human diploid cell vaccine (HDCV) or purified chick embryo cell vaccine (PCECV) PrEP [IM]
Main outcomes	• Vaccine-related serious adverse events (SAE) (up to day 180) • Rabies virus neutralising antibody (RVNA) seroconversion rate (SCR)** ≥14 days after final PrEP dose • RVNA SCR (%) persistence of immune response (day 180 and day 365) • Solicited local adverse events (AE) (up to day 7) • Solicited systemic AE (up to day 7) *Intramuscular [IM] administration only **Seroconversion defined as the WHO-recommended antibody titre threshold of ≥0.5 IU/mL
Setting	Philippines and France
Perspective	Individual

ASSESSMENT

Problem

Is the problem a priority?

Don't know	Varies	No	Probably no	Probably yes	Yes

- Australia is not a rabies-enzootic country.[3] However, are a potential source of lyssaviruses and a potential risk for acquiring rabies, and exposure to classical rabies virus can occur from terrestrial animals and other mammals in rabies-enzootic countries. Rabies is nearly always fatal once symptoms begin.[4]
- People who work with bats, laboratory workers who work with live lyssaviruses, and some people who travel to rabies-enzootic areas are recommended to receive rabies vaccine as PrEP.
- People with ongoing occupational exposure to lyssaviruses are recommended to receive booster doses of rabies vaccine.
- There are currently two available rabies vaccines (Mèrieux [inactivated, HDCV] and Rabipur [inactivated, PCECV]) as options for rabies PrEP in Australia. Both currently have a 3-dose PrEP schedule.

Desirable effects

How substantial are the desirable anticipated effects? (compared to 3 doses HDCV/PCECV)

Don't know	Varies	Trivial	Small	Moderate	Large

- RVNA seroconversion rates ≥14 days after the last-PrEP dose were 98.6–100% for 2 doses PVRV (Verorab) compared to 100% for 3 doses of HDCV.[1,2] There is likely little to no difference in seroconversion rates 14 days post-last PrEP dose for 2 doses PVRV (Verorab) compared to 3 doses HDCV/PCECV.
- There is likely little to no difference in RVNA seroconversion at 180 days post-last PrEP dose between 2-dose PVRV (Verorab) PrEP (59%) compared to 3-dose HDCV/PCECV PrEP (55%).[1]
- There is differing evidence regarding the RVNA seroconversion rate at ≥365 days post-last PrEP dose:
    - *From the RCT:* There is likely little to no difference in RVNA seroconversion at 365 days post-last PrEP dose between 2-dose PVRV (Verorab) PrEP (65%) compared to 3-dose HDCV/PCECV PrEP (63%).[1]
    - *From the observational study:* RVNA seroconversion at 365 days post-last dose may be reduced in 2-dose PVRV (Verorab) PrEP (46.6%) compared to 3-dose HDCV/PCECV PrEP (100%), but the evidence is very uncertain.[2]
    - More weighting was put on the evidence from the RCT.

Undesirable effects

How substantial are the undesirable anticipated effects? (compared to 3 doses HDCV/PCECV)

Don't know	Varies	Large	Moderate	Small	Trivial

- There is likely to be less AE overall with 2 doses of PVRV (Verorab) compared to 3 doses of HDCV/PCECV, as there are fewer vaccine doses being administered.
- Undesirable effects of serious adverse events (SAE), solicited local adverse events (AE) and solicited systemic AE were only assessed in one RCT included in the GRADE:[1]
    - No unexpected AE or SAE were reported during the study period. No vaccine-related SAE occurred with either 2-dose PVRV (Verorab) or 3-dose HDCV/PCECV.
    - Solicited local AE are likely slightly reduced with 2-dose PVRV (Verorab) PrEP (24.0%) compared to 3-dose HDCV/PCECV PrEP (37.4%).
    - There is likely little to no difference in solicited systemic AE between 2-dose PVRV (Verorab) PrEP (30.7%) compared to 3-dose HDCV/PCECV PrEP (35.7%).
- The RCT also found no immediate AE (first 30 minutes after vaccination) reported following either 2 doses of PVRV (Verorab) PrEP or 3 doses of HDCV/PCECV PrEP.[1]

Certainty of evidence

What is the overall certainty of the evidence of effects?

No included studies	Very low	Low	Moderate	High

- The certainty of evidence is moderate overall. Of the eight outcomes evaluated, the certainty of evidence was moderate for six, low for one and very low for one.
- The certainty of evidence is moderate due to imprecision, as most studies had small (<400) sample sizes and may not be powered to detect a difference between 2 doses PVRV (Verorab) and 3 doses HDCV/PCECV.
- The outcome that had low certainty of evidence was downgraded due to imprecision (see previous point) and for risk of bias in the confounding domain.
- The outcome that had very low certainty of evidence was downgraded due to imprecision (see previous point) and for very serious risk of bias in the confounding and missing data domains.

- There were no data comparing the vaccine schedules in 'healthy' populations with those in immunocompromised populations.
- RCTs that measure efficacy of rabies vaccine are not possible, and much of the evidence is therefore reliant on immunogenicity outcomes. There may be an extent to which immunologic 'correlates of protection' may not fully predict protection.

Values

Is there important uncertainty about or variability in how much people value the main outcomes?

Important uncertainty	Possibly important uncertainty or variability	Probably no important uncertainty or variability	No important uncertainty or variability

- There is unlikely to be important uncertainty in how people value protection against rabies.
- No research was identified in the search that addresses this specifically.
- Rabies PrEP vaccination is only routinely recommended for people at high occupational risk or for some travellers to rabies-enzootic regions.
- These populations may appreciate a shorter series of 2 doses PVRV (Verorab) that requires fewer vaccines, is less expensive/has fewer out-pf-pocket costs, and likely has the same safety profile and provides the same immune response as the currently recommended 3-dose PrEP schedule of HDCV/PCECV.
- There were no data comparing the vaccine schedules in 'healthy' populations with those in immunocompromised populations.

Balance of effects

Does the balance between desirable and undesirable effects favour the intervention or the comparison?

Don't know	Varies	Favours the comparison	Probably favours the comparison	Does not favour either the intervention or the comparison	Probably favours the intervention	Favours the intervention

- There is likely little to no difference in RVNA seroconversion rates 14 days post-last PrEP dose for 2 doses PVRV (Verorab) (98.6–100%) compared to 3 doses HDCV/PCECV (100%).[1,2]
- There is likely little to no difference in RVNA seroconversion at 180 days post-last PrEP dose between 2-dose PVRV (Verorab) PrEP (59%) compared to 3-dose HDCV/PCECV PrEP (55%).[1]
- There is differing evidence regarding the RVNA seroconversion rate at ≥365 days post-last PrEP dose. The RCT showed likely little to no difference in RVNA seroconversion at 365 days post-last PrEP dose between 2-dose PVRV (Verorab) PrEP (65%) compared to 3-dose HDCV/PCECV PrEP (63%).[1] The observational study showed seroconversion may be reduced in 2-dose PVRV (Verorab) PrEP (46.6%) compared to 3-dose HDCV/PCECV PrEP (100%), but the evidence is very uncertain.[2] More weighting was put on the evidence from the RCT.
- No vaccine-related SAE occurred with either 2-dose PVRV (Verorab) or 3-dose HDCV/PCECV.[1]
- Other undesirable effects, such as solicited local and systemic AE, are minor and 2 doses PVRV (Verorab) likely slightly reduces or results in little to no difference in undesirable effects compared to 3 doses HDCV/PCECV.[1]
- There is likely to be less AE overall with 2 doses of PVRV (Verorab) compared to 3 doses of HDCV/PCECV, as there are fewer vaccine doses being administered.

Acceptability

Is the intervention acceptable to key stakeholders?

Don't know	Varies	No	Probably no	Probably yes	Yes

- No direct evidence was identified for this issue.
- Employers and employees at workplaces of high occupational risk, some travellers to rabies-enzootic regions, and travel medicine providers and medical associations are likely the main stakeholders impacted. No direct evidence on the acceptability of 2 doses PVRV (Verorab) to these stakeholders was identified.
- However, the populations remain the same and a shorter 2-dose series may be appreciated by the populations, clinical providers and public health officials. There is likely to be minimal impact from incorporating 2 doses PVRV (Verorab) into the current rabies PrEP schedule.
- The simpler and less expensive 2-dose vaccine schedule may be more acceptable to populations recommended for rabies PrEP vaccination and to clinical providers. It is easier to schedule appointments for 2 doses than for 3 doses before travel and before the start of high-risk activities.[4]
- PVRV (Verorab) has previously been approved by the Therapeutic Goods Administration (TGA) under Section 19A due to other rabies vaccines being in short supply [5]. Familiarity of providers with PVRV (Verorab) as a rabies PrEP vaccine may make this vaccine acceptable.
- There were no data comparing the vaccine schedules in 'healthy' populations with those in immunocompromised populations.

Feasibility

Is the intervention feasible to implement?

Don't know	Varies	No	Probably no	Probably yes	Yes

- No direct evidence was identified for this issue.
- Rabies PrEP vaccination is only routinely recommended for people at high occupational risk or for some travellers to rabies-enzootic regions.
- No barriers are expected in implementing a 2-dose PVRV (Verorab) PrEP schedule compared to the current 3-dose HDCV/PCECV PrEP schedule. In cases where it is difficult to ensure 3 doses are administered before travel or work, implementing a shorter 2-dose series will be easier to implement and is feasible.[4]
- A 2-dose PrEP schedule is likely more feasible – it is simpler and less expensive, and less time is needed to implement and administer.[4]
- PVRV (Verorab) was previously approved by the TGA under Section 19A due to other rabies vaccines being in short supply.[5] Vaccination providers may already be familiar with the vaccine and have stock of the vaccine, making it feasible to implement it into the current rabies PrEP schedule.
- Additional guidance will need to be provided for rabies PrEP vaccination in immunocompromised populations, as there were no data comparing these vaccine schedules in 'healthy' populations with those in immunocompromised populations.

References

1. Quiambao BP, Lim JG, Bosch Castells V, et al. One-week intramuscular or intradermal pre-exposure prophylaxis with human diploid cell vaccine or Vero cell rabies vaccine, followed by simulated post-exposure prophylaxis at one year: A phase III, open-label, randomized, controlled trial to assess immunogenicity and safety. *Vaccine* 2022;40:5347-55
2. Strady A, Lang J, Lienard M, et al. Antibody persistence following preexposure regimens of cell-culture rabies vaccines: 10-year follow-up and proposal for a new booster policy. *Journal of Infectious Diseases* 1998;177:1290-5
3. Australian Technical Advisory Group on Immunisation. *Australian Immunisation Handbook*. Canberra: Australian Government Department of Health and Aged Care; 2024. Available from: https://immunisationhandbook.health.gov.au/
4. Advisory Committee on Immunization Practices (ACIP). ACIP Evidence to Recommendations for rabies pre-exposure prophylaxis with a 2-dose schedule. Centers for Disease Control and Prevention; 2022. Available from: https://www.cdc.gov/vaccines/acip/recs/grade/rabies-2-dose-etr.html (Accessed 27 April 2023).
5. Therapeutic Goods Administration (TGA). VERORAB (Rabies vaccine 2.5 IU) powder and solvent for suspension for injection in prefilled syringe. Canberra: Australian Government Department of Health and Aged Care; 2022. Available from: https://www.tga.gov.au/resources/section-19a-approvals/verorab-rabies-vaccine-25iu-powder-and-solvent-suspension-injection-prefilled-syringe (Accessed 19 April 2023).