Summary of RSV immunisation product efficacy and safety as at 11 September 2024

Since 2023, multiple RSV immunisation products have either been approved or reached the final stages of development and/or approval globally. The data on the efficacy and safety of these products have come from clinical trials, and post-licensure data are becoming available. The following tables summarise the main findings to date:

- Table 1: Efficacy and effectiveness of RSV prevention products in infants and young children
- Table 2: Efficacy and effectiveness of RSV vaccines in adults aged 60 years and over
- Table 3: Safety of RSV prevention products.

Note that these are not direct comparisons for each product.

Formal recommendations regarding the use of RSV immunisation products in Australia can be found in the Australian Immunisation Handbook RSV chapter.

Table 1: Efficacy and effectiveness of RSV immunisation products in infants and young children

This table summarises how well RSV immunisation products for infants and young children performed against severe disease in clinical trials and real-world effectiveness studies. It includes products that are either approved or in the final stages of development or approval globally and indicates the current status of these products in Australia. It includes data for both monoclonal antibodies (for use in infants only) and the Abrysvo vaccine (for use in pregnant women only).

Note that these are not direct comparisons for each product.

RSV product (company)	Study trial population	Schedule and dose	Main vaccine efficacy (VE) or effectiveness findings	Current status in Australia
Abrysvo (Pfizer)	Vaccination of women with singleton pregnancies at 24–36 weeks gestation for the protection of infants	1 dose	VE against hospitalisation of infants from birth to 180 days = **56.8%** (99.17% CI: 10.1, 80.7) VE against severe LRTI in infants from birth to 180 days = **69.4%** (97.58%: 44.3, 84.1)	Approved by the TGA Recommended in pregnant women at 28–36 weeks gestation
Beyfortus (nirsevimab); (Sanofi & AstraZeneca)	Monoclonal RSV antibody administered to infants aged ≤1 year who had been born ≥35 weeks gestation (healthy term/ex late pre-terms)	1 dose	Efficacy against hospitalisation for RSV-associated LRTI in infants through 150 days after injection: **76.8%** (95% CI 49.4, 89.4) Efficacy against very severe medical attended RSV-associated LRTI through 150 days after injection:† **78.6%** (95% CI 48.8, 91.0)	Approved by the TGA Recommended in certain infants and children; currently available in NSW, ACT, Qld, NT, Tas and WA

RSV product (company)	Study trial population	Schedule and dose	Main vaccine efficacy (VE) or effectiveness findings	Current status in Australia
Beyfortus (nirsevimab); (AstraZeneca)	Monoclonal RSV antibody administered to infants aged <9 months	1 dose	Effectiveness against RSV-LRTI hospitalisation up to 4 months across the RSV season ranged from **69.3%** (95% CI 36.4, 86.2) to **97.0 %** (95% CI 87.7, 99.6)	Approved by the TGA Recommended in certain infants and children; currently available in NSW, ACT, Qld, NT, Tas and WA
Synagis (palivizumab); (Sobi)	Monoclonal RSV antibody administered to infants or toddlers with conditions that increase the risk of severe RSV disease, including: • infants born preterm and aged <6 months • infants aged <2 years with bronchopulmonary dysplasia • infants aged ≤2 years with haemodynamically significant congenital heart disease	5 doses (once monthly for 5 months)	Relative risk reduction in RSV-associated hospitalisations compared with placebo: **51%** (3 trials, RR 0.49 [95% CI 0.37,0.64]) Relative risk reduction in ICU admissions compared with placebo: **50%** (2 trials, RR 0.50 [95% CI 0.30,0.81])	Approved by the TGA and used in certain medically at-risk infants since 1999

RSV product (company)	Study trial population	Schedule and dose	Main vaccine efficacy (VE) or effectiveness findings	Current status in Australia
Clesrovimab (MK-1654); (MSD)	Monoclonal RSV antibody administered to infants up to 12 months, including: • early or moderate pre-term infants without medical risk conditions for severe RSV disease (≥29 to 34 weeks and 6 days gestational age) and late pre-term or full-term infants without medical risk conditions for severe RSV disease (≥35 weeks gestational age) entering their first RSV season • infants at risk for severe RSV disease who have been recommended to receive palivizumab	1 dose	RSV-associated MALRI incidence 1–150 days post-vaccination compared to placebo: • currently no results (2 trials: NCT04767373, NCT04938830) • participants with RSV-associated hospitalisation in their first RSV season; currently no results (2 trials: NCT04767373, NCT04938830)	Clinical trials ongoing

CI=confidence interval; LRTI/LRTD=lower respiratory tract infection/disease; MALRI=medically attended lower respiratory infection; RSV=respiratory syncytial virus; VE=vaccine efficacy

† Very severe, medically attended, RSV-associated LRTI was defined as infection for which hospitalisation and supplemental oxygen or intravenous fluids were warranted.

Table 2: Efficacy and effectiveness of RSV vaccines in adults aged 60 years and over

This table summarises how well RSV vaccines performed against severe outcomes in clinical trials in adults aged 60 years and over and real-world effectiveness studies. It only includes those vaccines in the final stages of development or approval globally; it also indicates their current status in Australia.

Note that these are not direct comparisons for each product.

RSV vaccine (company)	Study trial population	Schedule and dose	Main vaccine efficacy (VE) or effectiveness findings	Current status in Australia
Arexvy (GSK)	Vaccination of adults aged ≥60 years without risk conditions for severe RSV disease*	1 dose	VE against severe^ LRTD (season 1: median follow up of 6.7 months) = **94.1%** (95% CI 62.4, 99.9) VE against severe^ LRTD (season 2: median follow up of 6.3 months) = **64.2%** (95% CI 6.2, 89.2) Effectiveness against hospitalisation (from 14 days following vaccination) = **83%** (95% CI 73, 89)	Approved by the TGA for adults aged 60 years and over Recommended in all adults aged ≥75 years, First Nations adults and adults with risk conditions aged ≥60 years

RSV vaccine (company)	Study trial population	Schedule and dose	Main vaccine efficacy (VE) or effectiveness findings	Current status in Australia
Abrysvo (Pfizer)	Vaccination of healthy adults aged ≥60 years without risk conditions for severe RSV disease*	1 dose	VE against MA† LRTD (season 1; median follow up not reported) = **84.6%** (95% CI 32.0, 98.3) VE against LRTD with 3 or more symptoms (season 1: median follow up not reported) = **88.9%** (95% CI 53.6, 98.7) VE against LRTD with 3 or more symptoms (season 2: median follow up not reported) = **77.8%** (95% CI 51.4, 91.1) Effectiveness against hospitalisation (from 14 days following vaccination) = **73%** (95% CI 52, 85)	Approved by the TGA Recommended in all adults aged ≥75 years, First Nations adults and adults with risk conditions aged ≥60 years

RSV vaccine (company)	Study trial population	Schedule and dose	Main vaccine efficacy (VE) or effectiveness findings	Current status in Australia
mRESVIA(Moderna)	Vaccination of adults aged ≥60 years without risk conditions for severe RSV disease*	1 dose	Currently under review	Under evaluation by the TGA

CI=confidence interval; LRTI/LRTD=lower respiratory tract infection/disease; MA=medically attended; MALRI=medically attended lower respiratory infection; RSV=respiratory syncytial virus; VE=vaccine efficacy

* May have one or more clinically stable chronic medical conditions

^ Severe disease was determined in accordance with either of two case definitions: (1) on the basis of clinical signs or investigator assessment; or (2) on the basis of receipt of supportive therapy.

† Medically attended, RSV-associated LRTD was defined as LRTD prompting any healthcare visit such as hospitalisation, emergency department visit, home health care services, general practitioner visit, specialist visit, other visit or telehealth consultation.

Table 3: Safety of RSV prevention products

Clinical trials of RSV vaccines and RSV monoclonal antibodies have demonstrated them to be safe.

Across all RSV vaccines, in older adults and pregnant women, local adverse events were more common after the vaccine when compared to placebo. There was more variability in the systemic responses to the vaccine. Australian post-market surveillance data from AusVaxSafety show most adverse events experienced following RSV vaccination in older adults who have completed an AusVaxSafety survey to date have been local adverse events.

Clinical trials for the RSV monoclonal antibodies have shown them to be safe, and Synagis (palivizumab) has been used in infants in Australia since 1999.

Across clinical trials, most side effects were mild to moderate in severity and lasted a few days.

There is ongoing global monitoring of the safety of RSV prevention products, including monitoring for rare adverse events. Early post-market surveillance data from the US suggest a very rare higher than expected rate of GBS in adults aged 60 years and over following Abrysvo or Arexvy (e.g. one analysis estimates an excess 2 cases of GBS per million doses given may be seen). However, a causal link has not been verified and the data are only preliminary. A range of analyses are being undertaken to continue to monitor and understand this signal; NCIRS will publish updates as they become available.

RSV product (company)	Population	Schedule and dose	Main safety findings from clinical trials
For protection of older adults			
Arexvy (GSK)	Vaccination of healthy adults aged ≥60 years	1 dose	Serious adverse events: any up to 6 months following vaccination (median follow-up time not reported) Vaccine: **4.2%** (95% CI 3.8, 4.6) Placebo: **4.0%** (95% CI 3.7, 4.4) Systemic adverse events: up to 4 days following vaccination Vaccine: **49%** (no CI provided) Placebo: **23%** (no CI provided) *Fatigue, headache, muscle pain and joint pain most common* Local adverse events: up to 4 days following vaccination Vaccine: **62%** (no CI provided) Placebo: **10%** (no CI provided) *Injection site pain most common*

RSV product (company)	Population	Schedule and dose	Main safety findings from clinical trials
For protection of older adults			
Abrysvo (Pfizer)	Vaccination of healthy adults aged ≥60 years	1 dose	Serious adverse events: any up to 10.2 months following vaccination (median follow-up time not reported) Vaccine: **2.3%** (95% CI 2.1,2.5) Placebo: **2.3%** (95% CI 2.0, 2.5) Systemic adverse events: up to 7 days following vaccination Vaccine: **27.4%** (no CI provided) Placebo: **25.7%** (no CI provided) Fatigue, headache, and muscle pain most common Local adverse events: up to 7 days following vaccination Vaccine: **12.1%** (no CI provided) Placebo: **6.6%** (no CI provided) *Injection site pain most common*

RSV product (company)	Population	Schedule and dose	Main safety findings from clinical trials
For protection of older adults			
mRESVIA (Moderna)	Vaccination of healthy adults aged ≥60 years	1 dose	Serious adverse events: any (median follow-up time 3.7 months) Vaccine: **2.8%** (no CI provided) Placebo: **2.8%** (no CI provided) Systemic adverse events: up to 7 days following vaccination Vaccine: **47.7%** (no CI provided) Placebo: **32.9%** (no CI provided) *Fatigue, headache, muscle pain and joint pain most common* Local adverse events: up to 7 days following vaccination Vaccine: **58.7%** (no CIs provided) Placebo: **16.2%** (no CIs provided) *Injection site pain most common*

RSV product (company)	Population	Schedule and dose	Main safety findings from clinical trials
For protection of infants and children			
Abrysvo (Pfizer)	Vaccination of healthy women with singleton pregnancies at 24–36 weeks gestation for the protection of infants	1 dose	Serious adverse events: any (maternal) up to 6 months following vaccination (median follow-up time not reported) Vaccine: **6.1–16.2%** Placebo: **12.0–15.2%** Serious adverse events: any (infants) up to 24 months from birth (median follow-up time not reported) Vaccine: **17.5–36.0%** Placebo: **17.5–32.8%** Adverse event of special Interest (AESI): preterm (<37 weeks) birth Vaccine: **5.3%–5.7%** Placebo: **2.6%–4.7%** *Note that there is no statistically significant difference between vaccine and placebo, but the clinical trials were not powered to detect rare events.*

RSV product (company)	Population	Schedule and dose	Main safety findings from clinical trials
For protection of infants and children			
Abrysvo (Pfizer) (cont.)			*Preliminary findings from post-market surveillance in the US found that the incidence of pre-term births was 4.1% among pregnant women who received Abrysvo during the 2023–2024 respiratory season. This was within the expected range of the incidence of pre-term births at 32–36 weeks' gestation (3.1–6.1%) prior to introduction of this vaccine*
Abrysvo (Pfizer) (cont.)			Systemic adverse events (maternal) up to 7 days following vaccination Vaccine: **62.2–63.2%** Placebo: **59.2–62.4%** *Fatigue most common* Local adverse events (maternal) up to 7 days following vaccination Vaccine: **31.6–42.5%** Placebo: **13.7–10.4%** *Injection site pain most common*

RSV product (company)	Population	Schedule and dose	Main safety findings from clinical trials
For protection of infants and children			
Beyfortus (nirsevimab); (Sanofi & AstraZeneca)	Monoclonal RSV antibody administered to infants aged ≤1 year who were born ≥35 weeks gestation (healthy term/ex late pre-terms)	1 dose	Serious adverse events: any through to 360 days following immunisation (median follow-up time not reported) Nirsevimab: **6.3%** (125/1998); no CI provided Placebo: **7.4%** (74/996); no CIs provided
Beyfortus (nirsevimab); (Sanofi & AstraZeneca) (cont.)			AESI:†* through to 360 days following immunisation (median follow-up time not reported) Nirsevimab: **0.2%** (4/1998); no CI provided Placebo: **0%** (0/996); no CI provided
Synagis (palivizumab); (Sobi)	Monoclonal RSV antibody administered to infants aged ≤2 years with haemodynamically significant congenital heart disease	5 once-monthly doses	Serious adverse events: any through 150 days (30 days after last scheduled study injection); (median follow-up time not reported) Palivizumab: **55.4%** (354/639); no CI provided Placebo: **63.1%** (409/648); no CI provided (p=0.005)

RSV product (company)	Population	Schedule and dose	Main safety findings from clinical trials
For protection of infants and children			
Synagis (palivizumab); (Sobi) (cont.)			Palivizumab recipients had 12% relative risk reduction in any SAE compared with placebo (RR 0.88 [95% CI, 0.80, 0.96]) Serious adverse events: related through 150 days (30 days after last scheduled study injection); (median follow-up time not reported) Palivizumab: **0%** (0/639); no CI provided Placebo: **0.5%** (3/648) (p=0.249); no CI provided Palivizumab recipients had statistically non-significant **86%** relative risk reduction in related serious adverse events compared with placebo (RR 0.14 [95% CI, 0.01, 2.80])
Clesrovimab (MK-1654); (MSD)	Monoclonal RSV antibody administered to infants aged up to 12 months, including: • healthy infants who are an early or moderate	1 dose	*Serious adverse events: any:* Currently no results (2 trials: NCT04767373 and NCT04938830) *AESI:* Currently no results (2 trials: NCT04767373 and NCT04938830)

RSV product (company)	Population	Schedule and dose	Main safety findings from clinical trials
For protection of infants and children			
	pre-term infant (≥29 to 34 weeks and 6 days gestational age) or a late pre-term or full-term infant (≥35 weeks gestational age) entering their first RSV season • infants at risk for severe RSV disease who have been recommended to receive palivizumab		*Systemic AE:* Currently no results (2 trials: NCT04767373 and NCT04938830) *Local AE:* Currently no results (2 trials: NCT04767373 and NCT04938830)

[†]Adverse events of special interest (AESI) were hypersensitivity, immune complex disease and thrombocytopenia.

[*]All four AESI were assessed by the study investigator as related hypersensitivity events and were limited to cutaneous findings. No other anaphylaxis or other serious hypersensitivity were reported.