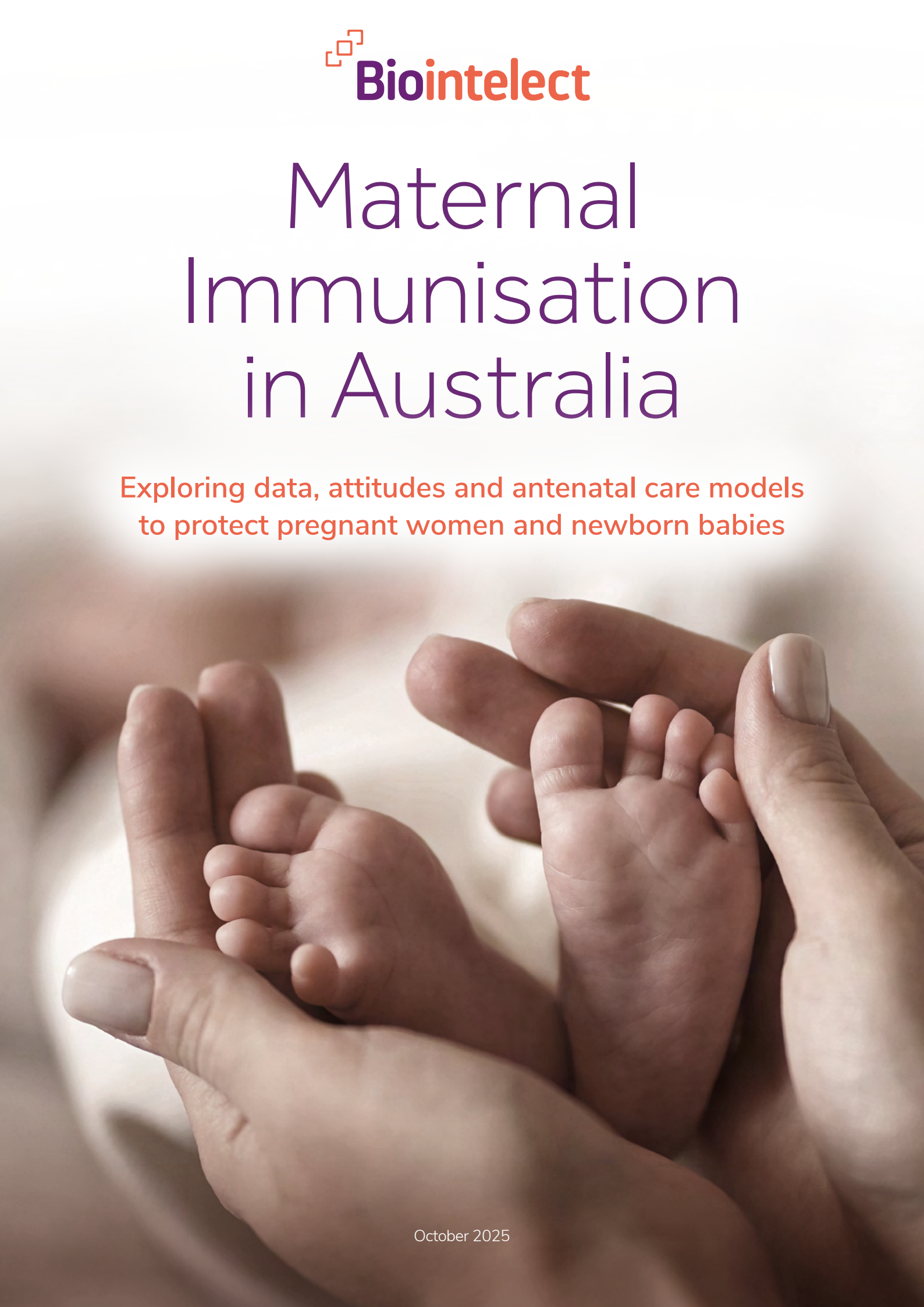
Biointelect

Maternal Immunisation in Australia

Exploring data, attitudes and antenatal care models to protect pregnant women and newborn babies



October 2025

Disclaimer

This report summarises the discussions and findings from a roundtable held in December 2024 on opportunities to enhance maternal immunisation in Australia. This report has been prepared at the request of Pfizer Australia and is not intended to be relied upon by any party.

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Acknowledgements

This paper is informed by the insights and expertise shared during a dedicated roundtable on maternal immunisation in Australia. Biointelect and Pfizer Australia wish to acknowledge the participants for their valuable contributions, which have been instrumental in shaping the findings and recommendations presented in this paper. This whitepaper aims to be a valuable resource that demonstrates the collective commitment to strengthening maternal immunisation practices in Australia to ensure the highest health outcomes for mothers and their newborns.

A full list of contributors and their affiliated organisations is provided below.

Table 1: List of contributors

Individual	Affiliation
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We extend our sincere thanks to our patient representatives Catherine Hughes and Katherine Kieran for sharing their children's stories.

Terminology

Table 2: **Terminology, acronyms, and abbreviations**

Term	Definition
ABS	Australian Bureau of Statistics
AIH	Australian Immunisation Handbook
AIHW	Australian Institute of Health and Welfare
AIR	Australian Immunisation Register
AOR	Adjusted Odds Ratio
ATAGI	Australian Technical Advisory Group on Immunisation
CI	Confidence Interval
GP	General Practitioner
HCP	Healthcare Professional
KPI	Key Performance Indicator
NCIRS	National Centre for Immunisation Research and Surveillance
NIP	National Immunisation Program
NPDC	National Perinatal Data Collection
NSW	New South Wales
NT	Northern Territory
PLIDA	Personal Level Integrated Data Asset
PR	Prevalence Ratio
OB	Obstetrician
QLD	Queensland
RCT	Randomised Control Trial
RSV	Respiratory Syncytial Virus
SA	South Australia
TGA	Therapeutic Goods Administration
VACCHO	Victorian Aboriginal Community Controlled Health Organisation
VIC	Victoria
VSHL	Vaccine Safety Health Link
WA	Western Australia

Executive Summary

Australia has a critical opportunity to strengthen maternal and newborn health by increasing maternal immunisation coverage. High uptake is essential to protect newborn babies, who are too young to receive some vaccines at birth, and pregnant women from vaccine-preventable diseases.

While Australia achieves strong immunisation rates by global standards, recent declines since 2021 signal the need for renewed focus and coordinated action. Reversing this trend is vital to ensuring ongoing protection for mothers and babies and reinforcing public confidence in maternal immunisation programs.

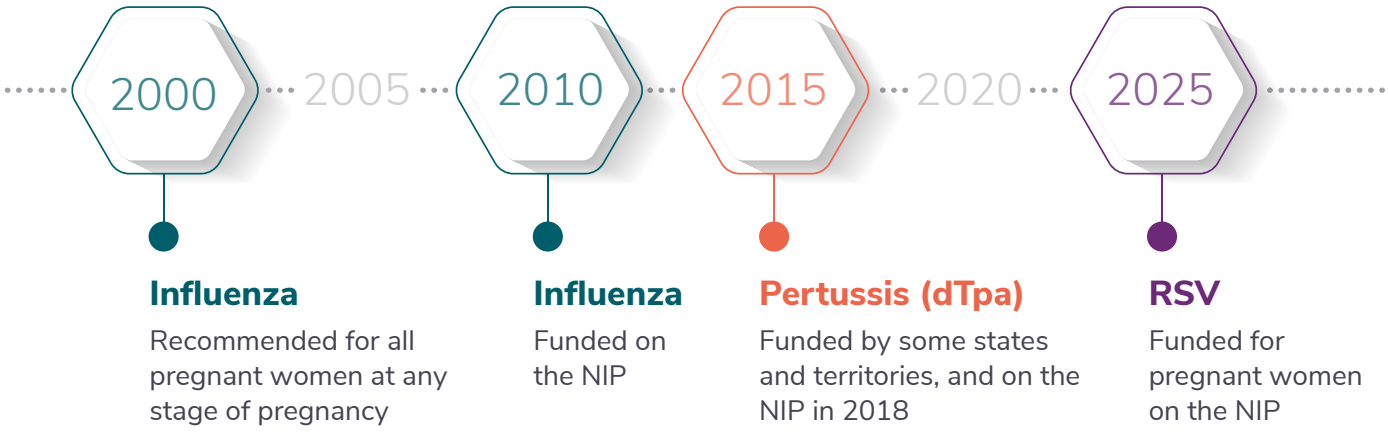
A roundtable in December 2024 explored opportunities to enhance maternal immunisation in Australia. The roundtable brought together experts in midwifery, infectious diseases, immunisation, research (epidemiology), policy and social science, and consumer advocacy to explore three critical themes: data-driven immunisation policy, awareness and attitudes toward vaccination and integration with antenatal care.

The introduction of the respiratory syncytial virus (RSV) vaccine for pregnant women provides an opportunity to align stakeholders on approaches to improve maternal immunisation rates, across all vaccines recommended during pregnancy, and to achieve best practices for implementing new vaccines in antenatal care. Roundtable participants emphasised this opportunity to engage with the community and build trust in immunisation, following the pandemic.

Maternal immunisation is a vital public health intervention that protects both mothers and their babies from vaccine-preventable diseases

Vaccines on the National Immunisation Program (NIP) protect mothers and newborn babies from whooping cough (pertussis), influenza and RSV when they are most vulnerable. Three vaccines have been funded on the NIP over the last 15 years (Figure 1).

Figure 1: Timeline of recommendations and funding for maternal vaccines in Australia



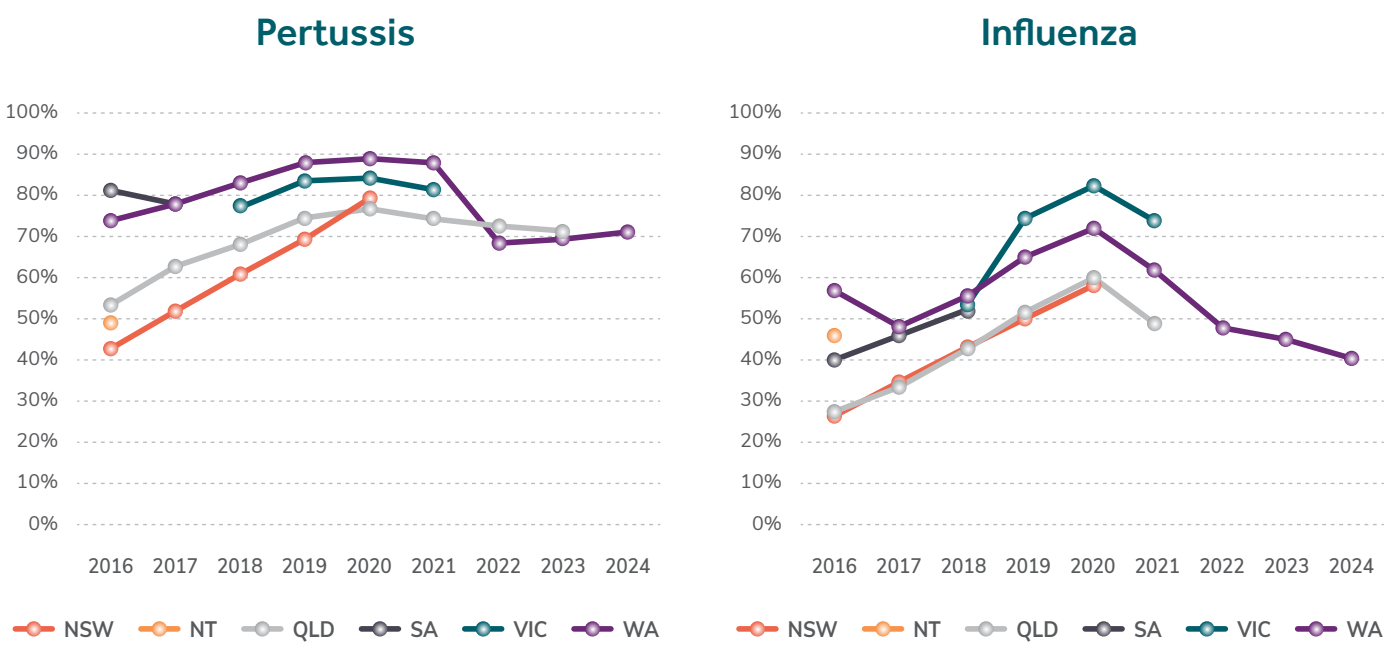
Source: Victoria State Government, Department of Health (2025). Vaccine History Timeline.

Australia has made substantial progress in maternal vaccine uptake, although coverage has fallen since the pandemic

While immunisation coverage of 90% or greater during pregnancy has been shown to be possible through targeted interventions,[1] Australian studies estimate that less than half of Australian women receive the full suite of recommended vaccines during pregnancy. Coverage is notably lower than the rates achieved in childhood immunisation programs, which routinely exceed 90%.[2] Immunisation rates are particularly low in some communities, including First Nations, younger mothers (<30 years) and lower socioeconomic status.[3] Such discrepancies leave these populations more vulnerable to vaccine-preventable diseases and potentially exacerbate health inequities.

Substantial progress has been made in coverage over the last 10-15 years since pertussis and influenza vaccines have been funded for pregnant women in Australia. Recent data suggests, however, that the steady climb observed in coverage rates for both vaccines during pregnancy prior to the pandemic has since been reversed (Figure 2). This decline, combined with overall lower maternal vaccine uptake relative to childhood immunisation, highlights the need for attention to maternal immunisation rates.

Figure 2: Estimated coverage rates for maternal immunisations by state and territory, 2016-2021
(latest available state data for VIC, QLD and WA; population-based studies for NSW, NT and SA)



Sources: NSW Homaira et al 2023;[3] NT Janagaraj et al. 2019a[4], 2019b[5]; QLD Queensland Health 2020, 2024[6,7]; SA Mohammed et al. 2020[8]; VIC Safer Care Victoria[9–12]; WA Dept of Health[13,14].

Data is essential for setting, monitoring and improving policy

Appropriate data collection and reporting of maternal immunisation in Australia has a range of benefits (Figure 3), which extend to patients, regulators, healthcare providers, and policy makers.

Figure 3: Benefits of enhanced maternal immunisation data collection and transparency

Historically, data collection relating to maternal immunisation in Australia has varied across states, territories and care settings. Studies of maternal immunisation have typically relied upon state-based datasets with variable lags in access and/or public reporting and requiring linkage across a number of datasets.

Following legislative changes, mandatory reporting of pregnancy status to the national Australian Immunisation Register (AIR) took effect on 1 March 2025. This is an important development that roundtable participants anticipated would improve the quality and consistency of national maternal immunisation data.[15]

Gaps remain, however, in the timeliness of data linkage, limiting the ability to conduct faster vaccine effectiveness, safety and other studies that will support better policy making. The COVID-19 pandemic, however, demonstrated that more timely and transparent reporting is possible. During the pandemic, the AIR served as a critical tool for recording and monitoring the administration of COVID-19 vaccinations, enabling timely and comprehensive data collection. This facilitated frequent public reporting throughout the pandemic. Since then, publicly available AIR reporting on immunisation, beyond influenza which is published annually by the National Centre for Immunisation Research and Surveillance (NCIRS), has been limited.

Decisions to vaccinate during pregnancy are shaped by perceptions of risk, as well as practical and behavioural factors

Decisions to be vaccinated are influenced by a woman's own perception of the risk associated with a disease, including both her likelihood of contracting it and the severity of potential outcomes, as well as her understanding of the safety and efficacy of the vaccine. These decisions are particularly pointed during pregnancy, when the woman must also consider the wellbeing of the unborn baby.[16]

Policy makers and advisors have highlighted the importance, but also the difficulty, of effectively communicating the benefits of vaccines to pregnant women and their families.[17] Clear recommendations at the national level should flow down to consistent communications delivered from healthcare professionals across antenatal care (Figure 4). Roundtable participants emphasised the role that healthcare professionals must play to understand potential concerns and provide timely, evidence-based advice. This is particularly important where women seek information through traditional media or social media channels.[18]

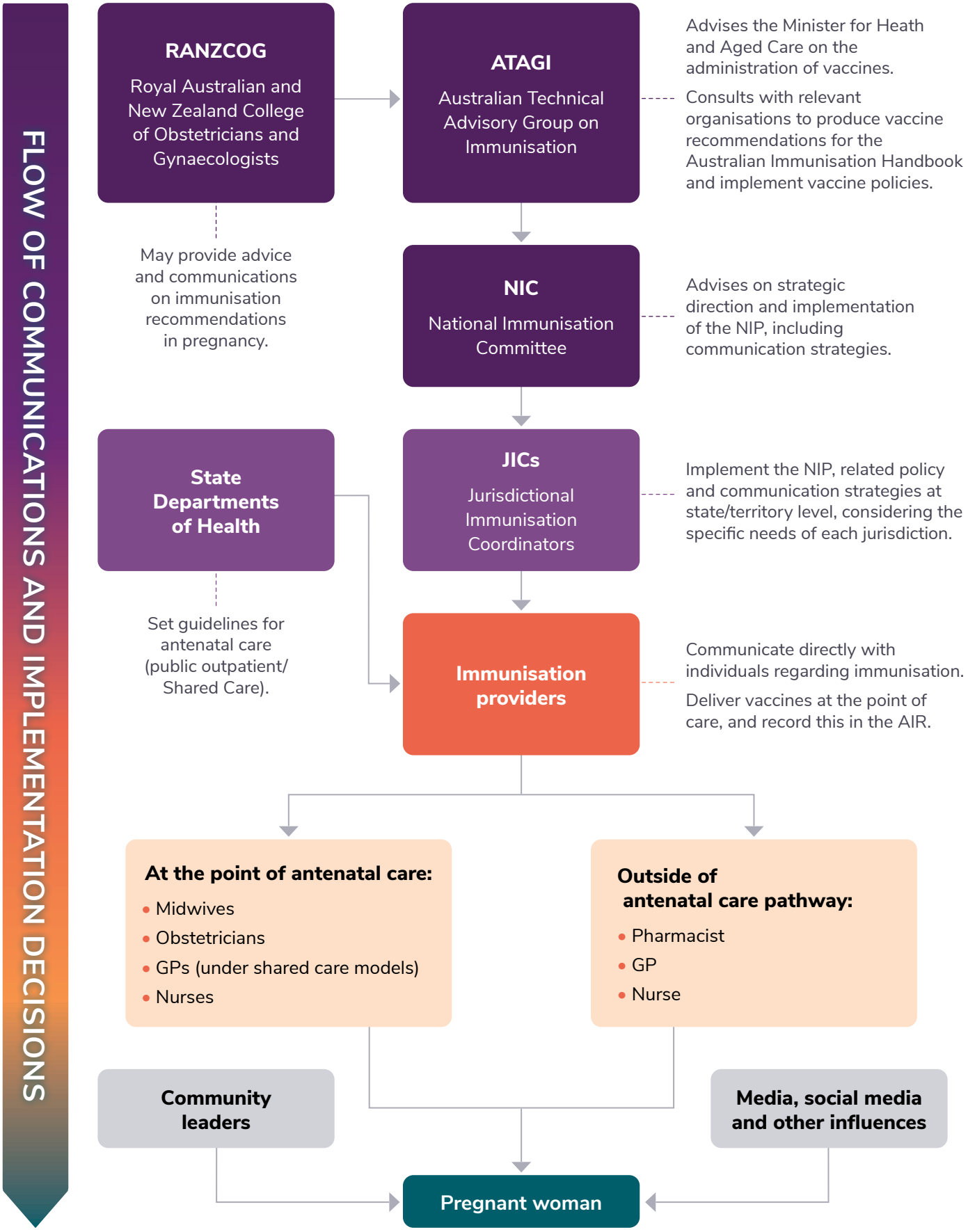
Practical factors are important. Pregnant women are typically in frequent contact with antenatal care services, which provides many opportunities to discuss and administer immunisations. Taking advantage of these opportunities to vaccinate, and removing practical barriers, is a demonstrated strategy for improving vaccine uptake that is recommended in many jurisdictions in Australia and internationally.[35,36] While antenatal care providers play a crucial role in recommending vaccines, not all providers administer immunisations.

As a result, pregnant women may be advised to receive a vaccine, but may need to schedule a separate appointment with another provider, which can reduce convenience, create logistical challenges and ultimately reduce uptake. Ensuring convenient access to vaccination services is particularly important in rural and remote areas where options may be limited. In these settings, access to vaccines via pharmacies or GP clinics is likely to be important to offer convenient services to pregnant women.

Elevating community voices was strongly recommended to reach all communities, but particularly those associated with lower immunisation coverage. Community leaders are trusted and familiar, and therefore well-placed to address potential concerns and misinformation regarding vaccines.

> "Babies are precious."
> Protecting the unborn baby is perhaps the strongest motivator for immunisation.

Figure 4: Flow of communications and implementation of maternal immunisation in Australia



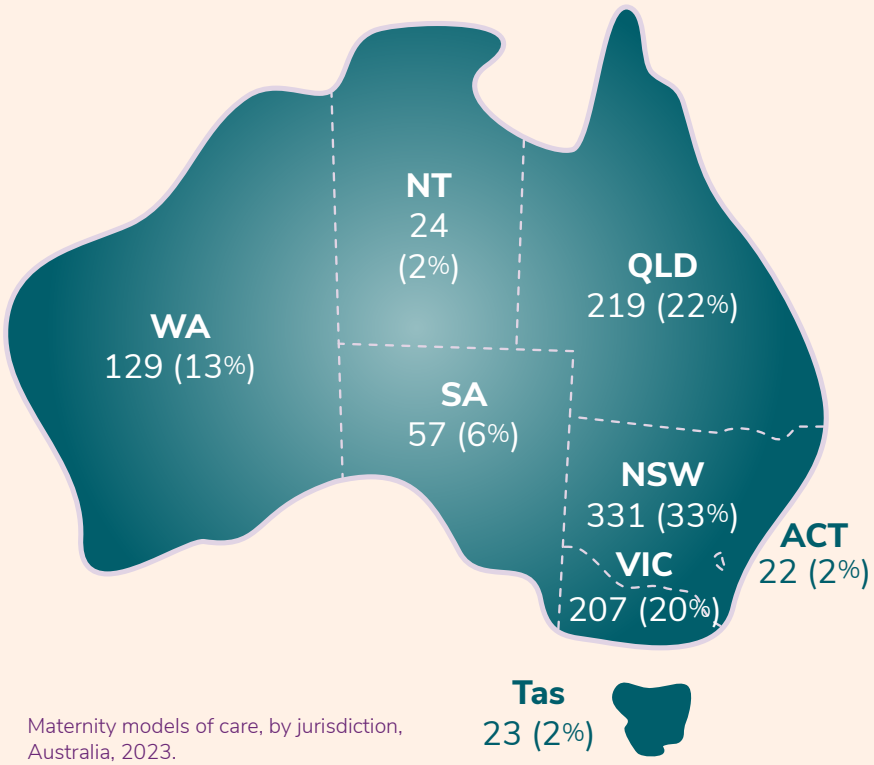
Integration with antenatal care using proven strategies and locally tailored, structured processes with clear accountabilities

Antenatal care models vary around Australia and across care settings, posing a number of challenges to achieving consistent quality of service delivery, including planning, discussing and offering vaccines to pregnant women.[19]

Roundtable participants highlighted the importance of a structured process for identifying eligible women, initiating conversations about vaccines during pregnancy and increasing opportunities to vaccinate, either at the place of antenatal care or another convenient location.

This is particularly important in: rural and remote areas, where shared care, GPs and pharmacies are likely to play a greater role in maternal immunisations; and for targeting services and immunisation strategies at specific communities, including First Nations communities, where a number of community-designed antenatal care models exist around Australia.[19]

> "It needs to be clear who is accountable for ensuring pregnant women are offered vaccines."



Maternity models of care, by jurisdiction, Australia, 2023.

There are over **1,000** maternity models of care in Australia, across **251 services**

29% of models have **continuity of carer** across the whole maternity period

Recommendations for enhancing maternal immunisation coverage

Australian researchers are among the world's best in designing, trialling and evaluating models of maternal immunisation. While Australia has experienced a decline in maternal immunisation rates since 2021, we are well positioned to reverse this trend and re-establish momentum. By scaling strategies proven to be effective in local settings, Australia has the opportunity to improve coverage and demonstrate international leadership in maternal immunisation.

A holistic, evidence-based and data-driven approach is essential. Nine recommendations under three main areas resulted from the roundtable discussion, summarised below.

Data-driven immunisation policy

1. Improve integration and access to AIR data

Improve data integration and accessibility by enabling timely access to immunisation data reported to the AIR. This should include establishing interoperable data linkages between the AIR and antenatal records across public hospitals and primary care services at both state/territory and national levels. This will support real-time information sharing on maternal immunisation status, facilitate coordinated care and inform vaccine policies.

2. Leverage digital tools to boost maternal vaccine uptake

Utilise digital solutions, such as electronic medical records to prompt healthcare providers at the point of care and implement targeted text message reminders to "nudge" pregnant women and encourage timely immunisation.

3. Establish maternal immunisation targets and KPIs

Introduce nationally harmonised maternal immunisation coverage targets and KPIs to support consistent monitoring, drive accountability and strengthen efforts to improve vaccine uptake among pregnant women. Drawing on the successful use of a 95% coverage benchmark for childhood immunisation, maternal immunisation targets could be embedded within the National Immunisation Strategy. National leadership, supported by state and territory implementation, will be critical to achieving equitable and sustained improvements.

Awareness and attitudes

4. Align national messaging on maternal immunisation

Establish clear national recommendations for maternal vaccines, with consistent communication of messages throughout state/territory based public health and antenatal services.

5. Equip antenatal care providers to deliver nationally consistent recommendations

Ensure antenatal care services are prepared (through the provision of training and educational materials) to provide timely advice and information to pregnant women regarding the safety and benefits of vaccines that is consistent with national recommendations.

6. Elevate community voices to close coverage gaps

Elevate the voices of trusted community leaders and organisations to address discrepancies in immunisation coverage, particularly among First Nations communities, culturally and linguistically diverse groups, younger mothers (<30) and lower socioeconomic communities. Empowering these voices is key to building trust, addressing barriers and ensuring culturally appropriate, community-informed approaches.

Antenatal care integration

7. Integrate immunisation into routine antenatal care

Increase opportunities to recommend and administer vaccines by integrating immunisation with antenatal care services, where possible, ensuring that appropriate resources are available to service providers and pregnant women (particularly in the second and third trimester when pertussis and RSV vaccines are recommended).

8. Implement and tailor proven models

Scale up and implement models of maternal immunisation that have demonstrated effectiveness in Australian settings, while considering the need to tailor implementation to local service environments and community needs.

9. Leverage primary care to expand access

Consider national roll-out of models that leverage additional resources including GPs and pharmacies to support antenatal care services in delivering maternal vaccines, particularly in rural and remote areas, while maintaining clear accountabilities for identifying eligible women, initiating conversations and administering vaccines during pregnancy.

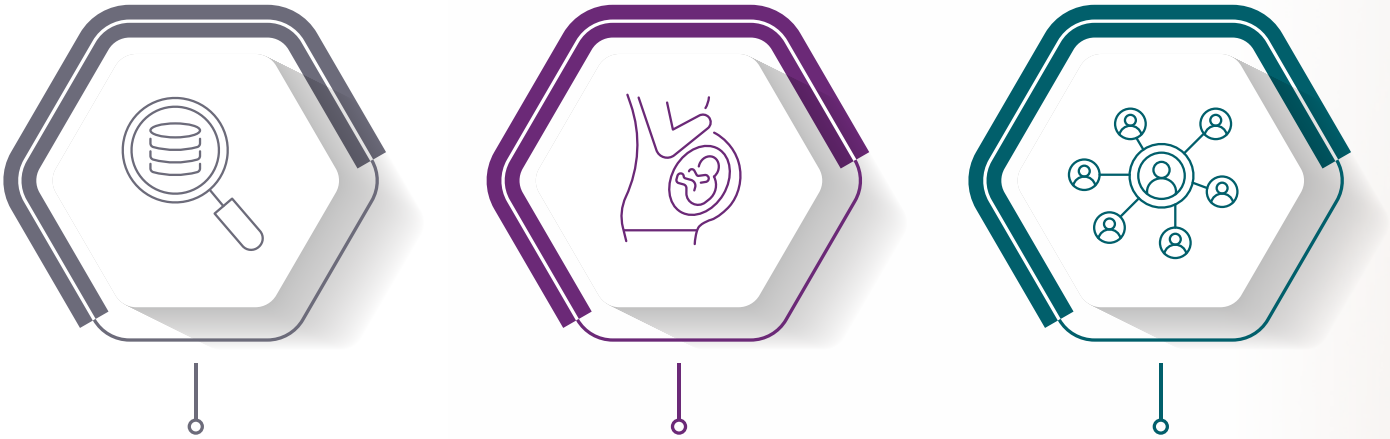
Maternal Immunisation Roundtable

A roundtable held in December 2024 explored opportunities to strengthen maternal immunisation coverage in Australia

Biointelect, together with Pfizer Australia, convened a roundtable to explore maternal immunisation in Australia. The roundtable brought together experts in midwifery, infectious diseases, immunisation, research (epidemiology), policy and social science, and consumer advocacy to explore three critical themes: awareness and attitudes towards maternal immunisation, integration with antenatal care models and data transparency, linkage and reporting.

Synthesising the insights from the roundtable, this paper provides an overview of these expert discussions, sharing the insights and highlighting key opportunities to further strengthen maternal immunisation coverage in Australia. Following an introduction to maternal immunisation in Australia, these themes, or drivers of coverage rates, are discussed in each section of this paper.

Figure 5: Key themes explored at the roundtable



Data transparency

Share AIR data regarding immunisation of pregnant women across the antenatal care system, link to antenatal care records and enable timely data linkage for vaccine effectiveness and safety studies in Australians.

Awareness and attitudes

Clear, evidence based recommendations with aligned and timely communications across the antenatal care pathway, elevating the voices of community leaders.

Antenatal care integration

Efficient integration of immunisations with Australia's structured, but variable and complex antenatal care pathways to ensure consistency and accountability.

Maternal immunisation in Australia

Vaccines are among the most important global health developments of the last century and play a vital role in protecting pregnant women and babies

Pregnant women are at an increased risk of certain vaccine-preventable diseases, which can lead to complications during pregnancy and poor health outcomes for newborn babies. Vaccines are recommended in pregnancy to protect not only the mother, but to generate antibodies that can cross the placenta, to protect the unborn baby and provide immunity.

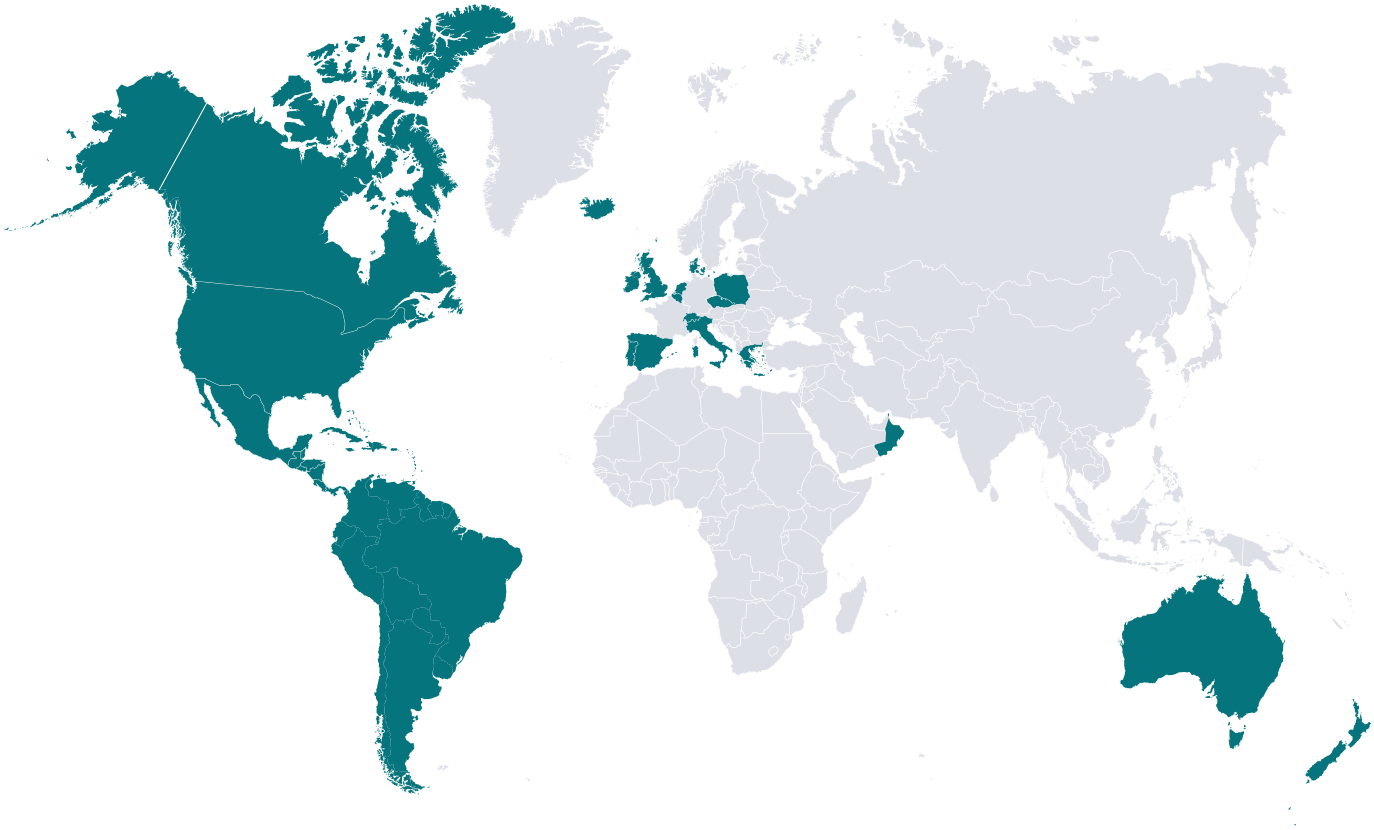
The antibodies transferred to babies can persist for several months after birth, with a recent Australian study finding that the protective effect of the maternal pertussis (whooping cough) vaccination is significant through to eight months of age.[20] Evidence also indicates that maternal RSV vaccination can provide babies with protection through their first six months of life.[21] This protection is particularly important while babies are most vulnerable and are too young to receive some vaccines from birth.

Over the past decade, an increasing number of countries have included vaccines for pregnant women in their national immunisation programs. Similar to Australia, pertussis, influenza and more recently RSV vaccines have been recommended in a broad range of comparable countries.[22] Figure 6 (following page) provides an overview of countries that recommend maternal immunisation against pertussis.

As illustrated in Figure 6, although numerous countries and professional organisations have issued guidelines recommending the pertussis vaccination for pregnant women, coverage remains variable. Common barriers include vaccine cost and reimbursement status, vaccine access and convenience, limited surveillance data on pertussis infection rates in infants (which may affect perceptions of disease prevalence and risk) and both healthcare provider and individual perceptions of vaccine safety and efficacy.

Several new vaccines and other prophylactic agents are in development for maternal immunisations targeting malaria, cytomegalovirus, group B streptococcus and herpes simplex virus.[23]

Figure 6: Overview of countries recommending pertussis (whooping cough) vaccination during pregnancy



Maternal Tdap vaccination program recommended by official authorities

Source: Olson-Chen et al. 2024[24]

Australia's maternal immunisation program spans two decades

In Australia, vaccines against influenza, pertussis and RSV are routinely recommended for women during pregnancy (see Table 3). Vaccination against COVID-19 is also recommended if the pregnant woman has not previously been vaccinated. Some other vaccines, including travel vaccines, may be recommended for pregnant women following consideration of:

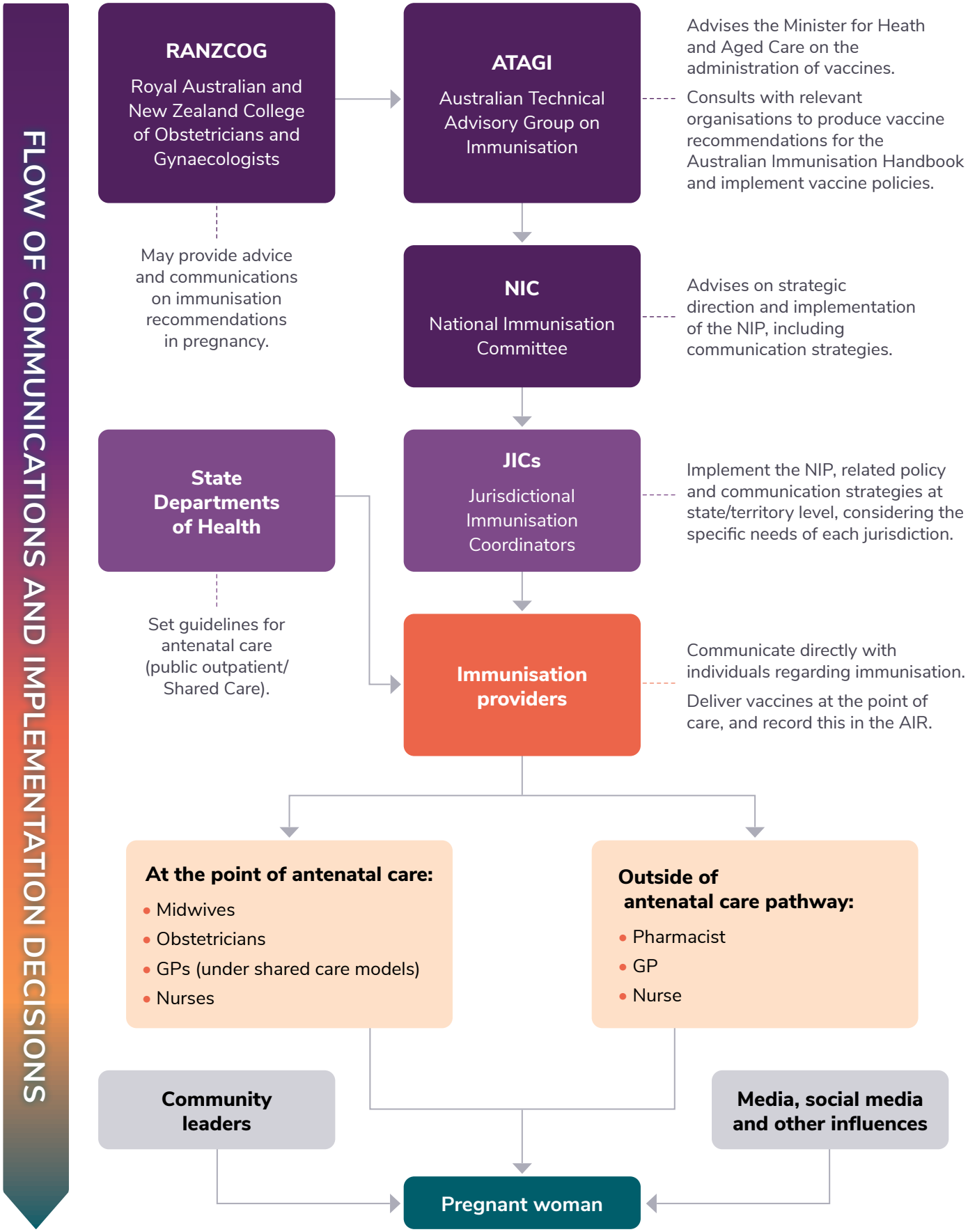
1. **Risk of exposure to the disease** (e.g. due to travel to an area where the disease is endemic);
2. **Risk from the disease**, according to the stage of pregnancy; and
3. **Safety and efficacy of the vaccine during pregnancy**, noting that this evidence may be limited for some vaccines.[25]

These recommendations for pregnant women are communicated and implemented via standard pathways for NIP vaccines in Australia, with additional consideration to specialist clinical recommendations for pregnancy (in some circumstances) and the antenatal care pathway (see Figure 7). It should be noted that while the COVID-19 vaccination is not included on the current NIP schedule, it continues to be recommended for specific population groups.[26]

Table 3: **Vaccines that are routinely recommended in pregnancy in Australia**

Vaccine	Recommendation	Year recommended	Funding source
Influenza	Recommended for all pregnant women at any stage of pregnancy, particularly those who will be in the second or third trimester during the influenza season.	Seasonal influenza vaccination during pregnancy has been recommended since 2000.	Funded for all pregnant women on the NIP since 2010.
Pertussis[2] (dTpa – diphtheria, tetanus and pertussis)	Recommended as a single dose between mid-second trimester and early third trimester of each pregnancy (ideally at 20-32 weeks of pregnancy).	The Australian Immunisation Handbook was updated in March 2015 to recommend pertussis vaccination during pregnancy.	Funding progressively introduced via all States and Territories between August 2014 and June 2015. Replaced with Australian Government NIP funding in July 2018.
RSV	Recommended as a single dose from 28 weeks of pregnancy.	Recommended for pregnant women in March 2024.	Funded on the NIP since February 2025.
COVID-19	Recommended at any stage of pregnancy if the pregnant woman has not previously been vaccinated; additional dose for previously vaccinated women may be recommended based on an individual risk-benefit assessment.	Recommended since 2021.	Funded by the Australian Government nationally since 2021, but not currently (2025) on the NIP.

Figure 7: Flow of communications and implementation of maternal immunisation in Australia



PATIENT STORY

Riley Hughes

Riley Hughes was born a gorgeous and healthy baby boy on February 13th, 2015.

He was our second child, and we were so delighted to have him in our family.

At three weeks of age, he started displaying mild cold-like symptoms and developed an occasional cough. We called out a doctor, who assured us he was fine.

However, instincts took over, and after a night where he slept a lot and barely woke for his usual two-hourly breastfeed, we knew something was wrong. We took him straight to our local children's hospital, Princess Margaret Hospital in Perth, Western Australia.

Riley was admitted that afternoon, and at first it was thought he had bronchiolitis. Pretty quickly, the doctors suspected pertussis (whooping cough) and began treating him for it.

On the 4th day of his hospital stay, he was taken to PICU with pneumonia, and swab tests confirmed he did indeed have whooping cough.

He grew steadily worse and worse, and despite all the best medical intervention, Riley passed away in our arms the next afternoon, at just 32 days old.

During his last few days with us, we discovered that women in the UK, USA, Belgium and New Zealand were being recommended a whooping cough vaccine in their third trimester. This vaccine, usually given between 20-32 weeks gestation, provides the unborn baby with the necessary antibodies to protect them from this terrible disease.

Two days after Riley's death, our state government announced the introduction of a program where these third trimester booster vaccines would be offered free of charge to pregnant women.

Other states soon followed, and now whooping cough vaccines are funded for all pregnant people on the National Immunisation Program.

Catherine Hughes

Mother of Riley, Director of the Immunisation Foundation of Australia

Studies indicate that less than half of Australian pregnant women receive both the recommended pertussis and influenza vaccines

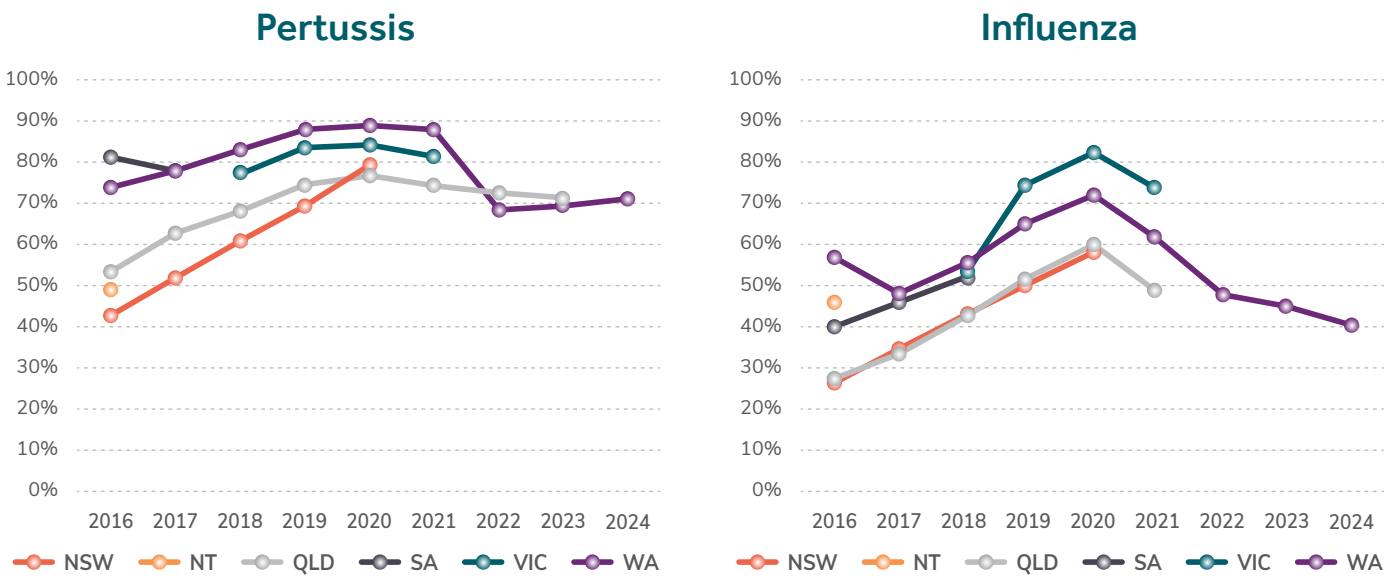
Maternal immunisation coverage in Australia is estimated to be between 32% and 75% for influenza vaccine coverage and between 49% and 89% for pertussis vaccine coverage.[28] There is no data regarding uptake of the RSV vaccine as yet. These figures stand in contrast to childhood immunisation rates in Australia, which consistently exceed 90%, highlighting a notable coverage gap in maternal vaccination that requires targeted attention. Data on current maternal immunisation coverage is drawn from state government data sources and studies, as national coverage data from the Australian Immunisation Register (AIR) has not consistently reported coverage in pregnant women (since 1 March 2025, legislation has required immunisation providers to report pregnancy status in the AIR, see section on *Data-driven immunisation policy*).[15]

Large, population-based studies provide insights into coverage rates across states and territories and discrepancies between population groups. Estimates derived from state-based data and population studies identified through systematic literature review (conducted by McRae et *al.* 2023) are shown in Figure 8. In general, pertussis immunisation rates have increased and remained persistently higher than for influenza. While more recent data is limited, both appear to have peaked in 2020 and subsequently declined.

In 2024, Australia reported 57,000 cases of pertussis, the highest number since disease surveillance began in 1991.[29] This, combined with falling maternal immunisation rates, places newborn babies at increased risk. A study of parents comparing attitudes to immunisation between 2017 and 2023 indicated that concerns regarding the COVID-19 vaccine and immunisation program, which arose during the pandemic, have also had implications for other vaccines that have lingered in the post-pandemic period.[30] This highlights the need for attention to immunisation rates across the entire population, but especially for maternal immunisation.

Discrepancies in coverage rates for maternal immunisations persist for some communities and demographic groups, leaving these populations more vulnerable to vaccine-preventable diseases and potentially exacerbating health inequities (Box 1).

Figure 8: Estimated coverage rates for maternal immunisations by state and territory, 2016-2021
(latest available state data for VIC, QLD and WA; population-based studies for NSW, NT and SA)



Sources: NSW Homaira et *al* 2023(3); NT Janagaraj et *al.* 2019a[4], 2019b[5]; QLD Queensland Health 2020, 2024[6,7]; SA Mohammed et *al.* 2020[8]; VIC Safer Care Victoria[9–12]; WA Dept of Health[13,14].

BOX 1

Studies of maternal immunisation coverage in NSW, Queensland, WA and the NT

Two recent studies highlight gaps in immunisation coverage across communities and demographic groups in Australia.

Homaira et al. (2023) found that 36.9% of 477,776 pregnant women in NSW, observed over 2016-2020 from the Perinatal Data Collection had received both pertussis and influenza vaccines. 66% had received a pertussis vaccine and 42% received an influenza vaccine. Characteristics associated with lower likelihood of receiving influenza and pertussis immunisations included: younger age (<30 years); being born in Australia/New Zealand; from lower socioeconomic strata; having previous pregnancies; later access to first antenatal care; utilising the public hospital care model; smoking; chronic hypertension and being overweight.[3]

In a study of 445,590 Australian pregnant women over 2012-2017,[31] a time when maternal immunisation was an emerging public health intervention in Australia, in Queensland, Western Australia (WA) and the Northern Territory (NT) (≥20 weeks gestation, based on linking Perinatal Data Collections with immunisation registers), **McHugh et al**. (2023) found that just 12% had received both pertussis and influenza vaccines. 27% had been vaccinated against pertussis and 15% against influenza. Compared with other Australian women (n=322,848):

- **First Nations women** were 31% less likely to have received both recommended antenatal vaccines (n=29,181; PR 0.69, 95% CI 0.67–0.71);
- **Women from culturally and linguistically diverse (CALD) backgrounds were 16% more likely** to have received both recommended antenatal vaccines (n=93,561; PR 1.16, 95% CI 1.10–1.13);
- **Women living in remote areas were 25% less likely** to have received both vaccines (PR 0.75, 95% CI 0.72–0.78); and
- **Women living in the highest areas of advantage were 44% more likely** to have received both vaccines (PR 1.44, 95% CI 1.40–1.48).

Abbreviations: CI = confidence interval; **NSW** = New South Wales; **NT** = Northern Territory; **WA** = Western Australia; **PR** = prevalence ratio.

PATIENT STORY

Baby Hazel

It started with the sniffles and resulted in an induced coma

Hazel was around two months old when I put her to bed, noticing she was a little congested. When she woke up, it was clear something was very wrong.

She was lethargic and unresponsive, floppy even. We immediately took her to hospital where she was rushed through to intensive care.

Hazel's heart rate dropped without warning; the monitoring machines sounding the alarm across the ward. We stood there, totally helpless and terrified, as the medical team swooped in to resuscitate her.

Facing a medical emergency, the doctors elected to place our baby girl into an induced coma. For the next eight days, Hazel breathed through a tube as her tiny body was ravaged by RSV.

This was the first time I'd heard of RSV and remember thinking:
Why didn't someone tell me about this before?

I now know it's a common virus. Many kids have a mild case, but for Hazel, RSV meant an induced coma, collapsed lung, blood transfusion, medication withdrawals and countless, invasive blood tests.

RSV was incredibly traumatic for her, and our entire family.

It's so important that parents know what RSV is and what to look out for, because it can take over so quickly. I simply don't believe Hazel would be with us today without the amazing care she received in the hospital.

Several years on from Hazel's experience with RSV, the RSV vaccination is now available to pregnant women from 28 weeks of pregnancy.

Katherine Kieran

Mother of Hazel

Data-driven immunisation policy

Data is essential for setting, monitoring and improving policy

Appropriate data collection and reporting of maternal immunisation in Australia has a range of benefits (Figure 9), which extend to patients, regulators, healthcare providers, and policy makers, who all play a role to improve health outcomes for pregnant women and babies.

Figure 9: Benefits of enhanced maternal immunisation data collection and transparency

The need for transparency and timely access to maternal immunisation data

Since December 2024, the national AIR has allowed immunisation providers to record whether a vaccine recipient was pregnant. Reporting pregnancy status in the AIR was mandated through legislation from 1 March 2025. This is an important development that roundtable participants anticipated would improve the quality and consistency of national maternal immunisation data (Box 2).

Historically, data collection relating to maternal immunisation in Australia, varied across states, territories and care settings. Studies of maternal immunisation typically relied on state-based datasets with variable lags in access and/or public reporting and requiring linkage across a number of datasets.

The Australian Institute of Health and Welfare (AIHW) consolidates population-based, cross-sectional data related to pregnancy and childbirth from the states and territories, to form the National Perinatal Data Collection (NPDC). This database is formed from a standard de-identified extract provided to the AIHW from the states and territories individual perinatal data collections.[32] Beyond this standard sample of data utilised for the NPDC data collected by the states and territories varies. For example, South Australia is the only state where date of vaccination is routinely collected. This lack of consistency makes it challenging to assess the acceptance, coverage and effectiveness of maternal immunisation in Australia.

BOX 2

The Australian Immunisation Register (AIR)

The AIR is a national register that records vaccines given to all people in Australia. This includes vaccines provided under the National Immunisation Program (NIP), school programs, and privately funded (e.g. for travel or based on individual decisions where vaccines are not funded on the NIP). Data can only be input into the AIR by a registered Immunisation Provider (i.e. a healthcare professional).

AIR data is used:

- For individuals (and their clinicians), to check which vaccines they have received; and
- In aggregate, to monitor immunisation coverage rates among Australians and for specific demographic groups (based on age, gender and First Nations status), and to inform policy.

Prior to 2021, recording vaccinations on the AIR was compulsory when the vaccine was given to a child, but not to an adult. Mandatory reporting of all adult vaccinations in the AIR was introduced in July 2021, and providers were also required to report pregnancy status from March 2025. Mandatory reporting improves the quality and completeness of data, which provides a more useful record for individuals (and their clinicians), and enables researchers and policy makers to draw better conclusions about immunisation coverage.

Timely data linkage for critical studies of vaccine effectiveness

Improving data linkage capabilities relating to immunisation in Australia is critical to help assess the effectiveness of public health and vaccination initiatives. In the short term, effective and efficient data linkage can identify immunisation coverage, to help inform policy and communication choices to drive vaccine uptake. Over the longer term, data linkage across the healthcare system and real-world outcomes can contribute to the evidence base supporting longer term policy and healthcare decision-making.

Several initiatives across Australia, including the Vaccine Safety Health Link (VSHL) and the Western Australia Health Data Linkage System have demonstrated the capability to conduct integrated data linkage analyses, enabling robust post-market vaccine safety surveillance and assessment of real-world vaccine effectiveness.[33]

Figure 10: Data Sources Supporting Assessment of Vaccines[34,35]

Current Data Sources Supporting Assessment of Vaccines

Personal Level Integrated Data Asset (PLIDA)

The Australian Government is currently working with the Australian Bureau of Statistics (ABS) to link the AIR with other datasets of the PLIDA, which include information regarding occupation, cultural diversity, disability, and chronic health conditions. This will help analysis of vaccination data by population characteristics.

Vaccine Safety Health Link (VSHL)

The VSHL is linking statewide datasets (currently limited to NSW and Victoria), including the AIR, hospitals, notifiable diseases, primary care, Births Deaths Marriages, and the Perinatal Data Collection to identify and interrogate adverse events relating to immunisation in near real-time. Its capabilities extend to the assessment of vaccine effectiveness.

Western Australia Health Data Linkage

The Western Australian (WA) Department of Health has capabilities which can link the AIR data with other health datasets, such as pathology and hospitalisations, which can be used to assess vaccine effectiveness and safety.

Bespoke AIHW Data Linkage Projects

The AIHW is capable of undertaking bespoke data linkage projects, however these are long and expensive undertakings, and therefore currently not appropriate for assessing short term vaccine uptake, effectiveness and safety.

Enabling targets and KPIs for adult and maternal immunisation coverage

Targets and key performance indicators (KPIs) for childhood immunisation coverage rates have driven regular achievement of full coverage rates above 90%. These are set by the Australian Government to be achieved by state and territory governments under the National Partnership on Essential Vaccines. There are no such targets for adult immunisation, or for pregnant women specifically.

Over the medium term, setting targets and KPIs and monitoring immunisation coverage will be possible, as more consistent national data is collected through the AIR.

With the advent of compulsory reporting of immunisations to the AIR (for adults from 2021 and for pregnancy from March 2025), it is possible to accurately monitor coverage rates. In turn, this data should be used to set targets and KPIs regarding immunisation coverage in adults and pregnant women.

Awareness and attitudes to maternal immunisation

Perceptions of vaccine benefits and risks are shaped by a range of factors

Evidence consistently shows that a healthcare provider's recommendation is a key driver and strong predictor of vaccine uptake among pregnant women. For example, a South Australian study found that women who received a provider recommendation were three times more likely to receive the influenza vaccine, compared to those who did not.[36] At the same time, decisions to be vaccinated are influenced by a woman's own perceptions, particularly her perception of the risk associated with a disease, including both her likelihood of contracting it and the severity of potential outcomes, as well as her understanding of the safety and efficacy of the vaccine. These decisions are particularly pointed during pregnancy, when the woman must also consider the wellbeing of the unborn baby. Protecting the baby from vaccine-preventable diseases may be the strongest motivator for a pregnant woman to receive a vaccine.[16]

Post-pandemic, there is greater awareness of vaccination within the community, with increased interest in the clinical trials and other evidence supporting vaccine recommendations. Community reactions to the pandemic also led to some mistrust and discomfort with the vaccination program, particularly regarding government mandates and the speed of introduction of COVID-19 vaccines.[37,30] A national online survey of 2,140 Australian pregnant women regarding the COVID-19 vaccine found that younger mothers (aged less than 30 years) and those without a university education were more likely to exhibit vaccine hesitancy.[3]

Given the importance of perceived risk, this may be shaped by a previous negative immunisation experience[38] and by information sources such as the media and social media. These influences may conflict with national recommendations and lead to negative attitudes to vaccination.[18] Roundtable participants emphasised the role that healthcare professionals must play to understand potential concerns and provide timely advice.

Clear recommendations and consistent advice from healthcare professionals across antenatal care

Healthcare professionals play a crucial role in recommending vaccination, offering evidence-based information and facilitating access to vaccines. It is critical that information provided is consistent across the healthcare system (notably the antenatal care pathway) and with national recommendations and public health campaigns, to avoid sending mixed messages to pregnant women. Considering that many women are motivated by protecting their unborn baby, stressing the benefits of vaccines may lead to increased uptake. In addition, advising pregnant women about local disease activity, such as increased cases of pertussis, influenza, or RSV can provide important context and urgency to support timely vaccination.

For consistent implementation nationally and across antenatal care pathways, evidence-based materials (such as information sheets, posters and brochures), along with training on how to discuss vaccines and infectious diseases with pregnant women, are required. Roundtable participants also highlighted the importance of considering the resourcing implications for antenatal care services and the need to efficiently incorporate additional requirements to administer vaccines into existing care pathways.

Clear public health messaging can achieve results. A study of 351 Australian pregnant women during the COVID-19 immunisation campaign found that 82% had received at least one dose of vaccine, compared with 15% approximately six months earlier. This was attributed to strong public health messaging regarding the beneficial effects of the vaccine.[39] The EPIC study is a randomised controlled trial (RCT) that is investigating the effectiveness of behavioural "nudges" in the form of text message reminders to pregnant women to vaccinate (see Box 3).

BOX 3

Randomised controlled trials of behavioural nudges delivered through text messages to increase immunisation coverage among pregnant women (the EPIC study)[40]

Enhancing Protection Against Influenza and COVID-19 for Pregnant Women and Medically at Risk Children (EPIC Study)

Australian researchers are investigating the effectiveness of behavioural "nudges" to encourage uptake of influenza and COVID-19 vaccines while receiving antenatal care at five tertiary hospitals in South Australia, Western Australia and Victoria.

The nudge intervention will comprise three SMS text message reminders with links to short educational videos from obstetricians, pregnant women and midwives and vaccine safety information. Nudges such as these have been recommended as strategies to influence behaviour across a range of policy areas, informed by the field of behavioural economics.

Vaccination status at all stages of the trial will be confirmed by the AIR. Women will be eligible if they have received two or less doses of a COVID-19 vaccine, or if they have not previously received the 2023 seasonal influenza vaccine. The primary outcome is at least one dose of a COVID-19 or influenza vaccine during pregnancy.

Increase opportunities to vaccinate

Pregnant women are typically in frequent contact with antenatal care services, which provides many opportunities for immunisation. Taking advantage of these opportunities to provide recommendations and vaccinate, and removing practical barriers, is a demonstrated strategy for improving vaccine uptake that is recommended in many jurisdictions in Australia and internationally.[41,42]

In rural and remote areas, access to vaccines via pharmacies or GP clinics is likely to be important to offer convenient services to pregnant women. 'Shared care' models of antenatal care (where care is provided by a GP along with hospital-based services; see next section) are more common in areas without local hospital services. Roundtable participants emphasised the need for discussion and recommendations to occur, flexibility in both the setting of immunisation as well as the time windows available for vaccinations during pregnancy (within appropriate limits for vaccine effectiveness, see further discussion in the section, Antenatal Care Integration).

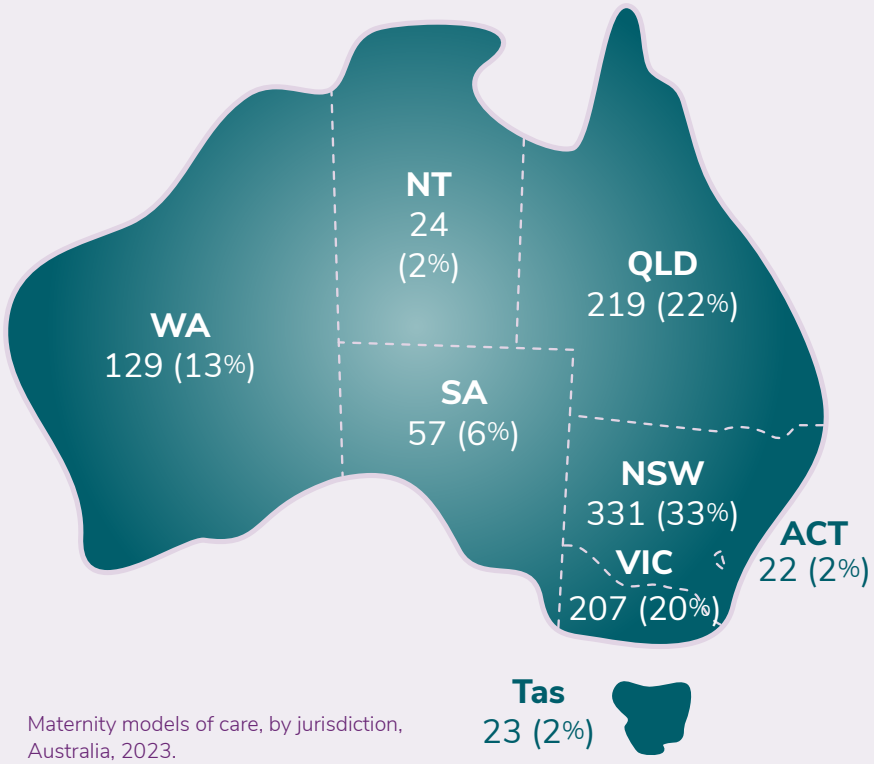
Elevate community voices to address discrepancies in immunisation coverage

Given the discrepancies in immunisation rates across some communities, including First Nations and other cultural groups, younger mothers (<30) and lower socioeconomic strata, targeted interventions are required to address the specific needs of women in these communities.

Roundtable participants emphasised the important role of community leaders and public health advocates in providing a familiar point of contact, raising awareness and enabling women to discuss immunisation-related issues in a trusted environment.

Antenatal care integration

Antenatal care models are structured, but complex, and vary across Australia



Maternity models of care, by jurisdiction, Australia, 2023.

There are over
1,000
maternity models of care in Australia, across **251 services**

29%
of models have **continuity of carer** across the whole maternity period

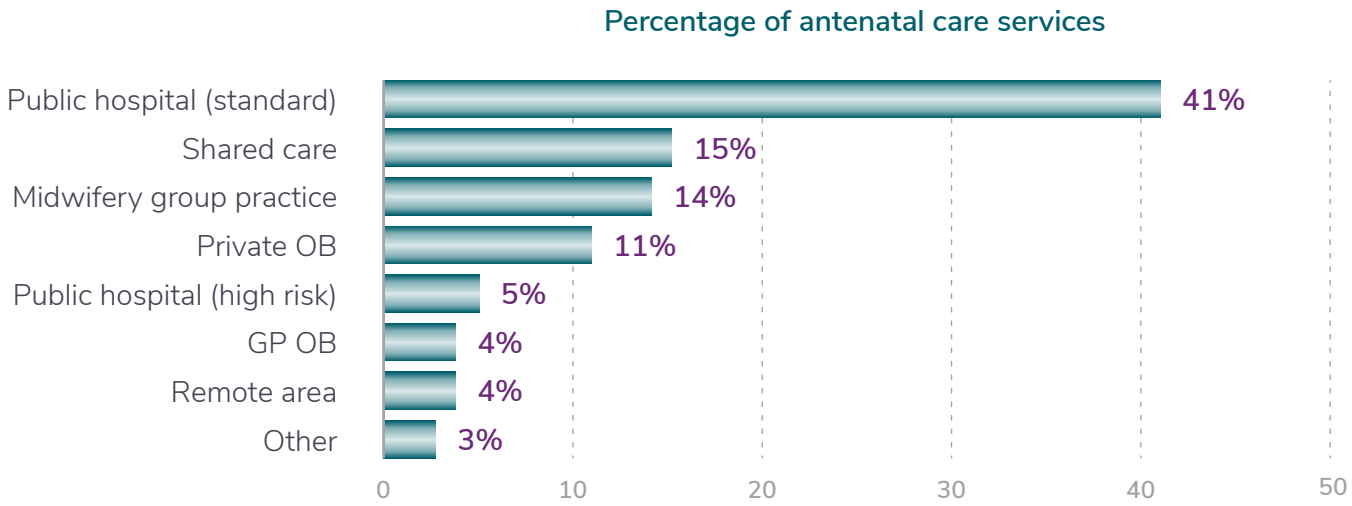
Eighty percent of antenatal care models fit into four categories, but less than one in five provide continuity of carer

Eleven different categories of antenatal care models are offered to Australian pregnant women,[19] accommodating diverse needs and preferences as well as local circumstances. Eighty-one percent of antenatal care services delivered fall into four main categories: public hospital care; shared care; midwifery group practice; and private obstetrician specialist care.

While models of care differ across the country, public hospital antenatal care models are dominant in most states and territories. Public hospital care models account for 41% of antenatal care services for Australian women (Figure 11).[19]

In the Northern Territory, shared care and remote area maternity care are more common. This reflects a need to tailor care models to meet local needs within available resources, which is also common in rural and remote regions in other parts of Australia. Flexibility around where vaccines may be provided, including by GPs and pharmacies, is often critical to meet local service needs.

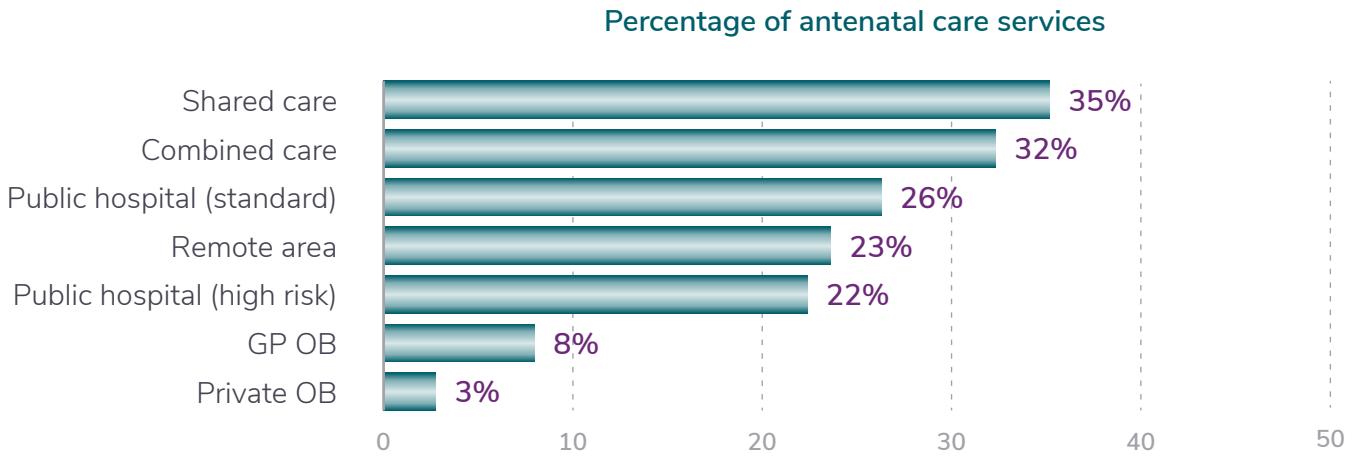
Figure 11: Proportion of antenatal care services by care model in Australia, 2023[19]



Continuity of carer during the antenatal period (i.e. care provided by the same named healthcare professional) is available in fewer than one in five antenatal models of care in Australia (Figure 12). This varies between states with only 13% of pregnant women in the Northern Territory receiving continuity of carer, compared to up to 38% in Queensland.[19]

Pregnant women accessing shared care or combined care models (where antenatal care is predominantly provided in the community, in collaboration with a hospital service; for example, by the pregnant woman's own GP or usual medical service) are more likely to receive continuity of carer. First Nations-designed models of care typically aim to offer continuity of midwifery care throughout the antenatal period with a trusted care team within their community,[19] although this is not necessarily provided by the same healthcare professional throughout the whole pregnancy journey (see Box 5).

Figure 12: Proportion of antenatal care services offering continuity of carer, 2023[19]



BOX 5

First Nations-designed models of antenatal care

Midwifery group care and similar models support First Nations women through pregnancy by offering continuity of care that is culturally appropriate. These are designed by First Nations peoples and established as community initiatives to build trusting relationships between pregnant women in the community, midwives and other healthcare professionals. Midwifery teams are typically linked to local hospital networks to offer appropriate care and may also connect with reproductive health services and child and family health services, to provide ongoing support from the prenatal to postnatal period.

Key examples of First Nations-designed models of care include:[19]

- **Baggarrook Yurrongi caseload midwifery**, a program developed through partnership between La Trobe University and the Victorian Aboriginal Community Controlled Health Organisation (VACCHO).
- **Birthing in our Community (BiOC)**, a model of care developed through a partnership between the Institute for Urban Indigenous Health, the Brisbane Aboriginal and Torres Strait Islander Community Health Service and the Mater Health Service in Brisbane.
- **Boordjari Yorgas Midwifery Group Practice (BYMGP)**, a model of care by Armadale Health Service in Western Australia.
- **Minga Gudjaga**, the child and maternal health program coordinated by Waminda, an Aboriginal Community Controlled Health Organisation in the South Coast region of NSW.
- **Tharawal Aboriginal Midwifery Group Practice** at Campbelltown Hospital, a model of care that practices birthing on country principles in the South-Western Sydney area.

Pharmacies, especially in regional and rural areas, play an increasing role in enhancing vaccine access, convenience and therefore improving coverage rates. With the recent addition of an RSV vaccine to the NIP for pregnant women, pharmacies in some states are already equipped to provide this vaccine, offering a valuable service model (See Box 6).[44]

There is an opportunity to expand and standardise this model, which is already in use in some states, to address challenges in implementing new vaccines for pregnant women. Expanding the role of pharmacists as immunisation providers and coordinators could enhance access to essential vaccines in pregnancy, particularly for those in remote and underserved communities.

To support this, a coordinated approach may be beneficial where detailed vaccine discussions take place within antenatal care settings, and pharmacies provide convenient and trusted access points for vaccinations. While pharmacists are well placed to deliver vaccines, their role may be most impactful when integrated with recommendations provided by antenatal care providers. This complementary model leverages the strengths of both care settings, ensuring women receive both the information and access they need to support informed decision-making and improve uptake.

BOX 6

A Pharmacist's Guide to RSV Vaccination for Pregnant Patients[44]

Since 1 December 2024, Queensland pharmacists have been able to administer the RSV vaccine to pregnant women, as part of the Queensland Paediatric RSV Prevention Program. This was initially funded by the Queensland Government prior to NIP funding from February 2025.

Opportunistic Vaccination: RSV vaccine is recommended for pregnant women from 28 weeks gestation, which overlaps with the pertussis vaccine schedule. Queensland community pharmacist, Anna Chang, noted that this overlap was used as an opportunity to offer the RSV vaccine to women at the same time as receiving a pertussis vaccine. This followed coordination with the patient's obstetrician, who ensured that patients were aware and informed about the vaccine prior.

Education and awareness: In the early days of introduction of RSV vaccine, many healthcare professionals remained unaware that it was available. Pharmacists reached out to local obstetricians and planned to inform GPs to ensure broader understanding and uptake.

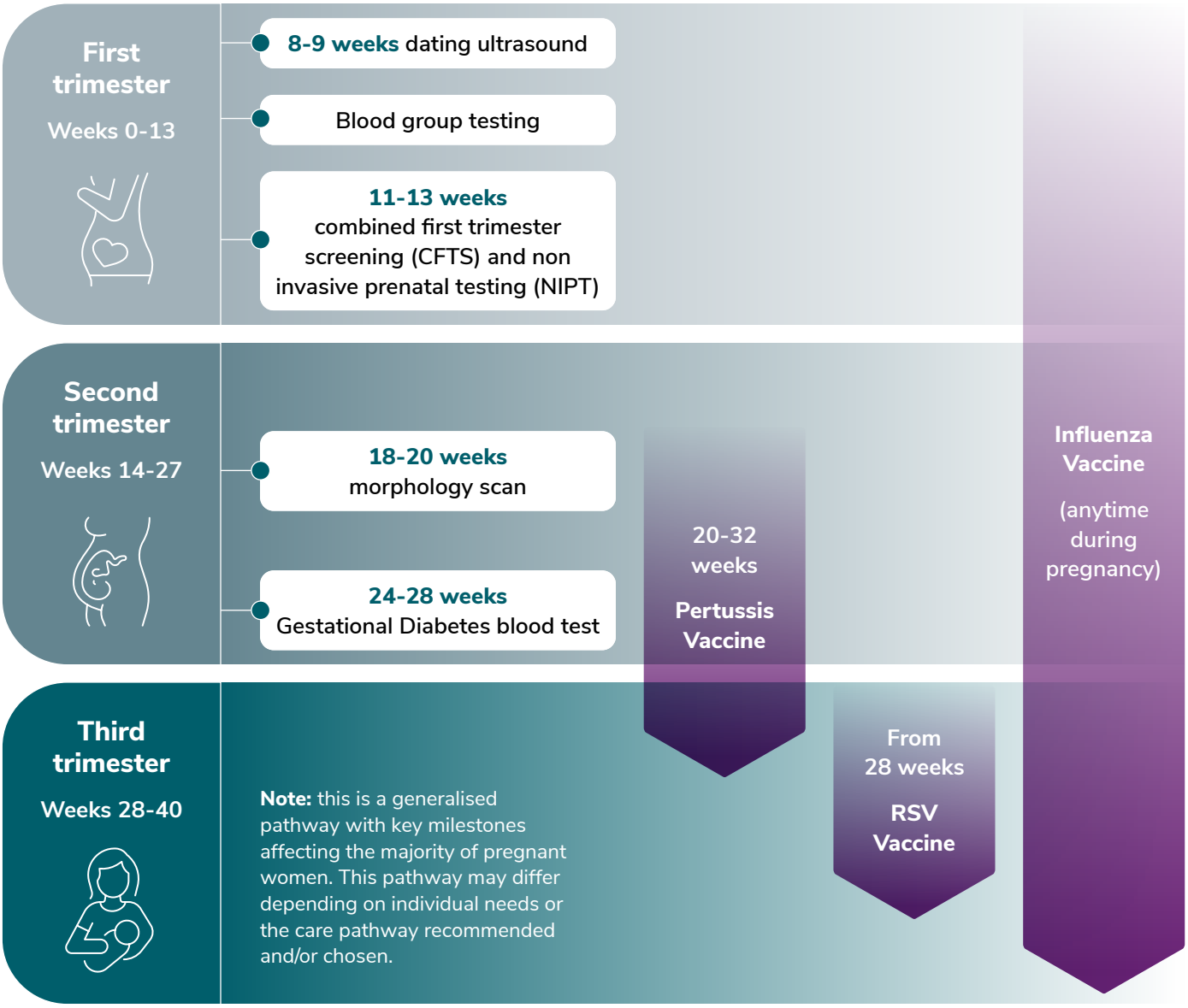
Integration: By effectively integrating the RSV vaccine into routine care, pharmacists play a crucial role in protecting both mothers and infants from RSV.

The pregnancy journey is structured with several routine appointments

Despite variation in care models, antenatal care is well-structured, with routine appointments and key milestones regarding pathology, ultrasounds, physician/midwifery care and immunisations, which are set out in state-based care guidelines. State and territory health department antenatal care guidelines vary in terms of their complexity. Guidelines may be challenging to alter (for example, when a new vaccine is implemented) and for healthcare professionals to fully understand and follow.

The timing of immunisations is guided by national recommendations (set out in the Australian Immunisation Handbook), which consider optimal timing to provide protection against disease provided to the baby at birth, leaving sufficient time for preterm babies to be protected. With the introduction of the maternal RSV vaccine, women may receive up to four separate vaccines in pregnancy, with additional vaccines such as group B streptococcus currently in the pipeline. To support timely uptake of each vaccine during the recommended timeframe, healthcare providers should initiate discussions about all recommended maternal vaccines early in pregnancy. Information provided should be consistent across antenatal care providers to ensure coordinated messaging and support informed decision-making.[45]

Figure 13: Routine appointments of the pregnancy journey in Australia



There is a need for tracking and accountability across complex care models involving multiple HCPs and care settings

Antenatal care models that are split across multiple settings, including hospitals, outpatient clinics, GPs, midwives and obstetricians, frequently do not share electronic medical records. This creates challenges in tracking care, including whether immunisations have been offered and provided. To help keep track of their care, pregnant women often carry a handheld record with them to appointments, though the consistency and accuracy of this information depends on how well this record has been updated.

While legislated updates to the AIR that have required reporting of pregnancy status since March 2025 are an important advance in monitoring vaccine uptake during pregnancy, unlike GP clinic records, antenatal clinic records are not currently linked to the AIR. The process for reporting immunisations varies between hospitals and clinics across Australia, imposing an additional burden on already constrained resourcing in antenatal care services.

Immunisation scheduling must align with both the recommended timing and antenatal care pathway

Roundtable participants emphasised the need for vaccine recommendations to provide sufficient flexibility for efficient implementation within antenatal care services. These issues centred around three key themes:

- **Coadministration** of vaccines offers the advantage of easier scheduling for patients but relies upon both consumer and healthcare professional confidence in its safety and effectiveness.
- **Immunisation windows** – there is a need for healthcare providers to use language that is permissive, yet clear and directive when discussing maternal immunisation with pregnant women. This is particularly important in the context of pregnancy, when the timing of vaccination is important. Recommendations regarding the timing of vaccinations must enable flexibility for antenatal care services to deliver vaccines within the overall care model, while still ensuring effective protection for both the mother and baby. It is important to initiate conversations and offer vaccines early, to optimise the opportunities for pregnant women to be immunised during pregnancy and protect preterm babies.
- **Vaccine availability** - particularly when managing seasonal vaccines, such as the influenza vaccine which is recommended for pregnant women year-round but may receive greater focus from healthcare professionals and antenatal care services during the typical immunisation period of April to September.

Clear communication to healthcare professionals regarding how these vaccine recommendations have been implemented in the antenatal care pathway is particularly critical where antenatal care guidelines are complex and where there is greater variation in care models.

New vaccines require consistent and coordinated implementation into antenatal care models

The successful implementation of new vaccines into the antenatal care pathway requires a consistent and coordinated approach across the healthcare system. Key strategies include:

- **Implementing standing orders for administration of vaccines** without the need for a physician review or prescription – associated with an increase in the maternal pertussis vaccination rate from 39% to 91% across three hospitals in Melbourne, Australia.[46]
- **Reminder systems embedded in electronic medical records** that ensure the accountable healthcare professional is prompted to discuss vaccines with the pregnant woman – associated with an increase in the maternal pertussis vaccination rate from 48% to 97% in a study conducted in Dallas, Texas (United States).[47]
- **Considering local needs** to implement an appropriate service model, such as pharmacy-led, midwife-led and primary care-led models (supported by provider education) – associated with 50% to 196% increase in maternal influenza vaccine coverage in a multi-site study in Victoria, Australia.[1] Roundtable participants emphasised the need to integrate immunisation programs with existing services, particularly where antenatal care models have been designed to meet community needs, such as the First Nations models described in Box 5.

Roundtable participants also highlighted the importance of:

- **Ensuring that antenatal care services are appropriately resourced** to deliver immunisation services, and utilising alternative immunisation providers, where possible, to alleviate burden.
- **Greater transparency of AIR data to healthcare professionals**, linkage of AIR data to antenatal medical records and other measures to ensure coordinated care, to effectively share information and ensure accountability for providing immunisations during pregnancy.

Concluding remarks: Enhancing maternal immunisation

Australia has the opportunity to demonstrate global leadership in the uptake of maternal immunisations.

Achieving alignment on strategies and approaches to further strengthen maternal immunisation rates is essential, particularly in light of the decline observed since the COVID-19 pandemic. The introduction of the RSV vaccine for pregnant women is an important opportunity to reinforce confidence in maternal immunisation and return to growing rates of uptake across Australia. This offers a tangible moment to improve the national approach, reinforce public trust and increase momentum in maternal vaccine coverage.

The roundtable brought together a diverse group of stakeholders from across the maternal health and immunisation sectors, all who together play an influential role in supporting pregnant women and shaping the future of maternal immunisation in Australia.

The roundtable identified three central themes and nine recommendations to further increase immunisation coverage among pregnant women across Australia. The recommendations aim to ensure that a consistent, proactive and data-driven approach is taken to support women to protect themselves and their babies during pregnancy and in the critical early months of life.

Australia is home to researchers who are among the world's best in designing, trialling and evaluating innovative models to enhance immunisation coverage. A number of strategies with demonstrated effectiveness have been developed in Australian antenatal care settings and should be considered alongside local needs for broader implementation across the country. Complementing this, in recent years, additional resources have been mobilised in community settings, including GPs and pharmacies, to support better access to immunisation.

Improving maternal immunisation is more than a clinical goal, it is a public health imperative for Australian women and babies. By ensuring women are supported to access recommended vaccines in pregnancy, we can improve health equity and outcomes from birth and establish all Australian babies on a healthy footing for life.

Summary of Recommendations

The nine evidence-based recommendations outlined in this paper provide a strategic framework to support Australia's preparedness for new maternal vaccines, promote equitable access across diverse populations, and bolster public confidence in immunisation, ultimately improving maternal immunisation uptake and giving babies a healthy start to life.

Data-driven immunisation policy

1. Improve integration and access to AIR data

Improve data integration and accessibility by enabling timely access to immunisation data reported to the AIR. This should include establishing interoperable data linkages between the AIR and antenatal records across public hospitals and primary care services at both state/territory and national levels. This will support real-time information sharing on maternal immunisation status, facilitate coordinated care and inform vaccine policies.

2. Leverage digital tools to boost maternal vaccine uptake

Utilise digital solutions, such as electronic medical records to prompt healthcare providers at the point of care and implement targeted text message reminders to "nudge" pregnant women and encourage timely immunisation.

3. Establish maternal immunisation targets and KPIs

Introduce nationally harmonised maternal immunisation coverage targets and KPIs to support consistent monitoring, drive accountability and strengthen efforts to improve vaccine uptake among pregnant women. Drawing on the successful use of a 95% coverage benchmark for childhood immunisation, maternal immunisation targets could be embedded within the National Immunisation Strategy. National leadership, supported by state and territory implementation will be critical to achieving equitable and sustained improvements.

Awareness and attitudes

4. Align national messaging on maternal immunisation

Establish clear national recommendations for maternal vaccines, with consistent communication of messages throughout state/territory based public health and antenatal services.

5. Equip antenatal care providers to deliver nationally consistent recommendations

Ensure antenatal care services are prepared (through the provision of training and educational materials) to provide timely advice and information to pregnant women regarding the safety and benefits of vaccines that is consistent with national recommendations.

6. Elevate community voices to close coverage gaps

Elevate the voices of trusted community leaders and organisations to address discrepancies in immunisation coverage, particularly among First Nations communities, culturally and linguistically diverse groups, younger mothers (<30) and lower socioeconomic communities. Empowering these voices is key to building trust, addressing barriers and ensuring culturally appropriate, community-informed approaches.

Antenatal care integration

7. Integrate immunisation into routine antenatal care

Increase opportunities to recommend and administer vaccines by integrating immunisation with antenatal care services, where possible, ensuring that appropriate resources are available to service providers and pregnant women (particularly in the second and third trimester when pertussis and RSV vaccines are recommended).

8. Implement and tailor proven models

Scale up and implement models of maternal immunisation that have demonstrated effectiveness in Australian settings, while considering the need to tailor implementation to local service environments and community needs.

9. Leverage primary care to expand access

Consider national roll-out of models that leverage additional resources including GPs and pharmacies to support antenatal care services in delivering maternal vaccines, particularly in rural and remote areas, while maintaining clear accountabilities for identifying eligible women, initiating conversations and administering vaccines during pregnancy.

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