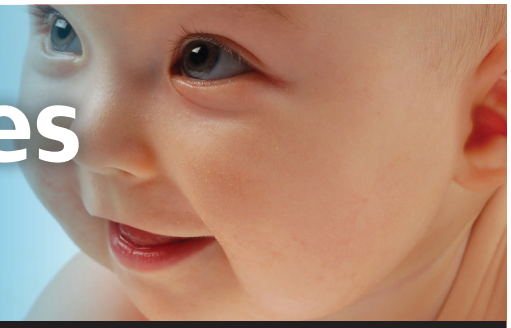
Paediatric Vaccines
RESEARCH REVIEW™



Making Education Easy

Issue 63 – 2025

In this issue:

Abbreviations used in this issue

CDC = Centers for Disease Control and Prevention
COVID-19 = coronavirus disease 2019
DTPa = diphtheria, tetanus, and acellular pertussis
FDA = Food and Drug Administration
HPV = human papillomavirus
LAIV = live attenuated influenza vaccine
RSV = respiratory syncytial virus
WHO = World Health Organization

Welcome to the latest issue of Paediatric Vaccines Research Review.

This issue covers a range of topics, including the loss of confidence in vaccination programmes after the COVID-19 pandemic, the acceptability of a combined influenza/COVID-19 vaccine among adults, whether or not aluminium-adsorbed vaccines are associated with chronic diseases in childhood, and the impact of a No Jab, No Pay policy on vaccination uptake in Australia. Additional comments for this issue have been provided by members of the IMAC Clinical Team (Dr Mamaeroa David and Dr Joan Ingram).

We hope you find the issue informative and look forward to any feedback you may have..

Kind regards,

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Considering the impact of vaccine communication in the COVID-19 pandemic among adults in Canada: A qualitative study of lessons learned for future vaccine campaigns

Authors: Parsons Leigh J et al.

Summary: This qualitative Canadian study explored the impact of vaccine-related and communication challenges during the COVID-19 pandemic on future vaccine-related behaviours among adults. Semi-structured interviews were conducted with 62 adults selected to represent a diverse sample of the population (median age 43.5 years, 51.6% female, 58.1% Ontario residents). Participants had various concerns about vaccines, such as their potential adverse effects and the long-term effects of novel vaccines. There was a general lack of trust in the information provided by pharmaceutical companies and government agencies, mainly due to suspicions about their underlying motives. Concerns about COVID-19 vaccine effectiveness and safety had a negative impact on future vaccine attitudes and behaviours.

Comment (NT): The COVID-19 pandemic has left a polarised impact on current vaccination programmes and is likely to affect future vaccines and pandemics. This Canadian research certainly resonates for much of our local experience. The loss of confidence in vaccination programmes is a sad ironic outcome when COVID vaccines have been so impressive! But certainly the pandemic generally was a complex and dynamic situation, rapidly evolving and changing, and a huge challenge for communicators. Contextually we are within an "infodemic" era where we are deluged with information of variable quality, alongside expectations that individuals need to make their own decisions, despite often low health information literacy. Many people preferentially tend to use click-bait low-quality websites when searching for health information – often more engaging than higher quality information. How on earth do we rebuild a sense of community belief and support for public health messages? To the core, perceptions and experiences are grounded in trust or lack of. The boring bread and butter is to focus on building trust – effective relationships with individual health providers which require loads of effort, time, patience and resourcing, particularly working with those communities who are not feeling heard. Alongside this, getting authoritative sources through multiple media – engaging, timely, accurate, appropriate, and approachable. We need to build health literacy in a different way – every individual cannot become an expert in every topic, so the starting points we need are more critical appraisal skills, not just being bombarded with information.

Reference: Hum Vaccin Immunother. 2025;21(1):2448052

Abstract

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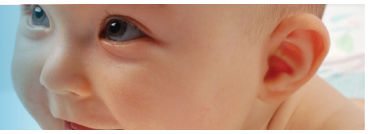


Willingness among adults in the United States to receive a combination influenza and COVID-19 vaccine

Authors: Summers RJ et al.

Summary: This study examined the willingness of US adults to receive a combined influenza and COVID-19 vaccine. A total of 1043 adults aged 45–80 years were surveyed online in Sep 2024. Overall, 48.3% of them said they would be willing to have a combined influenza and COVID-19 vaccine. Multivariable logistic regression analysis showed that participants were more willing to get a combination vaccine if they had received an influenza vaccination (odds ratio [OR] 2.72, 95% CI 1.61–4.62) or a COVID-19 vaccination (OR 4.00, 95% CI 2.40–6.65) in the past year but were less willing if they had higher general vaccine hesitancy (OR 0.83, 95% CI 0.79–0.87).

Comment (NT): The three biggies of respiratory viruses are flu, COVID and RSV. While they differ in a range of ways there is a lot of similarity in those who are at highest risk for severe disease across all these three. It is clear that older adults and those with important comorbidities are at highest risk for all of them. Both flu and RSV have winter seasonal peaks, and while COVID has yet to fall into a seasonal pattern it is beginning to look like a biannual winter/summer peak. Hence, the concept of 'winter preparedness' for all three viruses to me seems a strong strategy. RSV vaccines are yet to get onto the NZ schedule, but while we await them, we do need to be a lot more effective at offering both flu and COVID vaccines to high-risk groups. It is disappointing to see how much lower the COVID vaccination uptake in the pre-winter period for older people is than for flu this year. And even then, the flu vaccine uptake is well under target. Combo vaccines are well established in our childhood schedule, but a relatively new concept for adults. How much greater benefit would a combo vaccine offer? I suggest as part of a pre-winter respiratory illness reduction package for those identified at ongoing high risk this may get better leverage, particularly for COVID vaccination which has lost a lot of momentum. Ultimately a 3-in-1 will be great, but in the meantime combining strategic focus is a good start. As we get more combo vaccines, reducing the amount of needles will be a big positive.

Reference: Hum Vaccin Immunother. 2025;21(1):2532272
Abstract

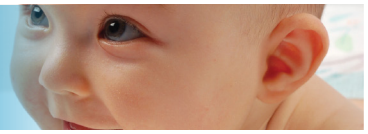
Increasing the uptake of live attenuated influenza vaccine through a new school-based vaccination programme in Ireland

Authors: Gilroy J et al.

Summary: This cross-sectional study examined the uptake of LAIV after its introduction into a school-based vaccination programme in Ireland in the 2023/24 influenza season. LAIV was offered to children in target school-year groups in 1537 schools in Ireland. Mean vaccine uptake was 49.3% in these children, compared with 16.2% of children in the general community aged 2–17 years. Larger schools and those with higher proportions of children at risk of educational disadvantage had lower vaccine uptake.

Comment (NT): We have been hoping and waiting for the nasally-delivered LAIV to get to our part of the world for many years now. The delay has been because this requires a Pharma company to be willing to produce a product containing the recommended strains for the Southern Hemisphere each year. Finally hope is on the horizon. Our understanding is that a LAIV is expected to be available in Australia next year, paving the way for access into NZ soon after that …YAY! The big winner I believe for delivery in the programme for children is NO needles! The UK has for many years now been running a successful schools-based programme, showing a reduction in disease for the age groups vaccinated and also broader community reductions due to reduction in spread to others. A school-based programme for this age group consistently shows higher uptake than community-based vaccination efforts and has a better chance of reducing traditional equity gaps created by differential access to services. If and when we do get access to an LAIV, how could we most usefully use this in NZ? A school-based programme, particularly in primary schools seems a viable option. Potentially not just individual protection, but with herd immunity gains as well it could also be a sensible strategy to support less disease in larger and multigenerational households.

Reference: Vaccine 2025;62:127467
Abstract



Bivalent prefusion F vaccination in pregnancy and respiratory syncytial virus hospitalisation in infants in the UK

Authors: Williams TC et al., for the PERUKI & BronchStart Collaboration

Summary: This multicentre case-control study determined the vaccine effectiveness of maternal RSV prefusion F (RSVpreF) vaccination in a real-world setting. Infants hospitalised with acute lower respiratory infections in Scotland and England between 30 Sep 2024 and 20 Jan 2025, whose mothers had been eligible for maternal vaccination, were tested for RSV and followed up until hospital discharge or inpatient death. A total of 537 mother-infant pairs were included, among whom there were 391 RSV-positive infant cases (median age 1.63 months) and 146 RSV-negative infant controls (median age 1.41 months). Overall, the mothers of 19% of the RSV-positive cases and 41% of RSV-negative controls had received the RSVpreF vaccine before delivery. The adjusted effectiveness of maternal RSVpreF vaccination for preventing infant hospitalisation was 58% if the mothers were vaccinated at any time before delivery and 72% if the mothers were vaccinated >14 days before delivery.

Comment (JI): Many countries now protect their infants from RSV using either maternal vaccination or long-acting monoclonal antibodies and WHO has recommended that all countries should introduce either of these interventions. In the last issue of Paediatric Vaccines Research Review I commented on a cost-benefit analysis of maternal RSV vaccination from Australia (which started a maternal vaccination programme earlier this year). This is a study examining the real-world effectiveness from another place with an RSV maternal vaccination programme – the UK. They introduced the programme in late summer 2024 and had a catch-up programme initially offering the vaccine to all pregnant individuals at a gestation of at least 28 weeks. Adjusted effectiveness of maternal vaccination for preventing infant RSV hospitalisation was 58% but for those whose mothers received the vaccine more than 14 days before delivery it was 72%. The initial catch-up period meant significant numbers of mothers received the vaccine too close to delivery to allow optimal development and transfer of antibodies. The real-world effectiveness found in this study is similar to that found in the Matisse trial (vaccine efficacy 68% for RSV-associated hospitalisation within 90 days of birth) and experience reported from Argentina since they introduced maternal vaccinations in Mar 2024. Interestingly the vaccine did not alter the clinical outcomes of those who did require admission despite maternal vaccination although larger studies are needed to explore this more fully. It is frustrating that our infants continue to suffer from RSV. An application for nirsevimab has been presented to Medsafe but there is not one yet for a maternal vaccine. Our small market and tight budget make us an unattractive option.

Reference: Lancet Child Adolesc Health 2025;9(9): 655–62
Abstract

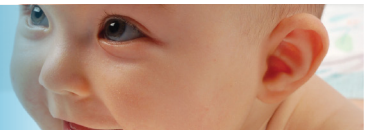
Adverse events following 9-valent human papillomavirus vaccine (Gardasil® 9) reported to the Vaccine Adverse Event Reporting System (VAERS), 2015-2024

Authors: Liu Q et al.

Summary: This analysis of data from the Vaccine Adverse Event Reporting System (VAERS) investigated adverse events reported after administration of the 9-valent HPV vaccine Gardasil® 9 in 2015–2024. Most of the reported events were non-serious and consistent with known reactogenicity patterns (e.g. syncope, headache, and injection site reactions). However, signals were also detected for some events not mentioned in product labelling (postural orthostatic tachycardia syndrome, autoimmune thyroiditis, and eye movement disorder). No positive signals were detected among pregnancy-associated reports.

Comment (MD): Gardasil® 9 was approved in 2014 and has had a pivotal impact on prevention of HPV-related malignancies. The safety profile was good in clinical trials, now more than a decade on postmarketing surveillance remains vigilant to detect any rare or delayed-onset adverse events. This study used retrospective pharmacovigilance analysis of VAERS from 1 Jan 2015 to 31 Dec 2024. As many countries move toward a one-dose HPV vaccine programme, further increasing the appeal of HPV vaccination, continuing to ensure that it is safe is paramount. Prior to licensure, Gardasil® 9 underwent large-scale randomised controlled trials with more than 15,000 participants across diverse demographics. Severe reactions were rare and no unexpected issues arose. VAERS is a national passive reporting system co-managed by CDC and FDA. Early concerns were raised about potential association with Guillain-Barré syndrome, but causality could not be established. However, these signals reinforce the importance of real-world pharmacovigilance. VAERS is broad in coverage, but has significant limitations such as under reporting, variability in report quality, lack of clear denominator, and absence of an internal unvaccinated group. Therefore estimation of incidence rates or causal interference is skewed. Complementary analytical methods and external data validation are needed to improve signal assessment and ensure high level of safety for HPV and other immunisation programmes.

Reference: Hum Vaccin Immunother. 2025;21(1):2530831
Abstract



Aluminum-adsorbed vaccines and chronic diseases in childhood

Authors: Andersson NW et al.

Summary: This nationwide cohort study in Denmark investigated the association between cumulative aluminium exposure from early childhood vaccinations and risk of various chronic diseases in childhood. A total of 1,224,176 children born in Denmark in 1997–2018 who were still living in the country at age 2 years were included. Cumulative aluminium exposure from vaccination in the first 2 years of life was estimated, and incident events of 50 chronic disorders (autoimmune, atopic or allergic, and neurodevelopmental) were assessed. Cumulative aluminium exposure from vaccination in the first 2 years of life was not found to be associated with increased rates of any of the disorders assessed.

Comment (HPH): Vaccine hesitancy is often less about the science than the story. And when it comes to ingredients like aluminium, the story can be a potent one. For some, the mere presence of a chemical-sounding name in a childhood vaccine – aluminium hydroxide, thimerosal, formaldehyde – is enough to provoke concern. These fears have been amplified by decades of misinformation, misrepresented toxicology, and the persistent conflation of trace exposure with harm. It is the dose that makes the poison. Yet questions about possible long-term effects (particularly neurodevelopmental and immune outcomes) continue to circulate, often unsupported by robust data. This large cohort study from the highly regarded Danish registers found no compelling evidence of increased risk associated with aluminium exposure by age two. That said, the study does not close the book on this issue. As with all observational research, limitations remain: residual confounding is possible, and follow-up may not be long enough for some conditions. But in the context of long-standing public concern, this is welcome reassurance. For those working in immunisation programmes here in Aotearoa, the findings provide another brick in the wall of evidence supporting vaccine safety. They also offer a useful touchpoint when discussing ingredients and addressing anxieties driven more by chemistry-laden language than by toxicology. The challenge remains: how do we engage constructively with these concerns, rather than dismiss them? Studies like this help by grounding the conversation in evidence.

Reference: Ann Intern Med. 2025; published online Jul 15
Abstract

INDEPENDENT COMMENTARY BY
Associate Professor Helen Petousis-Harris

Dr Helen Petousis-Harris is an Associate Professor in vaccinology in the Department of General Practice and Primary Health Care at the University of Auckland. She leads international collaborative research on vaccine safety and effectiveness and is a co-director of the Global Vaccine Data Network. Her work focuses on protecting populations through evidence-based immunisation policies, science communication, and combating vaccine misinformation.

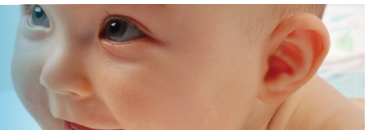
Safety of pertussis vaccination in pregnancy and effectiveness in infants: A Danish national cohort study 2019-2023

Authors: Kildegaard H et al.

Summary: This Danish cohort study investigated the safety and effectiveness of maternal pertussis vaccination. A search of Danish nationwide registers was undertaken to establish a matched cohort of 50,851 women who received pertussis vaccination during pregnancy in 2019–2023 and 50,851 women who did not. After adjusting for influenza and COVID-19 vaccination during pregnancy, pertussis vaccination was not associated with an increased risk of any maternal safety outcomes, including hypertension, preeclampsia, and HELLP (haemolysis, elevated liver enzymes, and low platelet count) syndrome. Vaccine effectiveness was 72% against laboratory-confirmed pertussis in infants, and no adverse infant outcomes were reported.

Comment (HPH): Maternal pertussis immunisation is a cornerstone of infant protection in the first weeks of life, before babies are old enough to begin their own primary vaccine series. Numerous studies across high-income settings (including NZ) have demonstrated strong evidence of effectiveness, with protection against infant hospitalisation and death. The policy rationale is solid: maternal vaccination boosts maternal antibody levels, which are transferred via the placenta, reducing the risk of severe disease in the most vulnerable. However, evaluating the safety and effectiveness of maternal immunisation programmes in real-world settings comes with important limitations. Many studies are observational, and residual confounding remains a challenge, particularly around differences in healthcare access, maternal behaviours, and comorbidities between vaccinated and unvaccinated groups. Some studies have relied on administrative data that may not capture timing, gestation, or clinical nuances accurately. Safety assessments, while generally reassuring, often lack the statistical power to detect very rare events, especially when based on single-country datasets. Against this backdrop, large-scale registry studies (particularly those that can link across pregnancy, vaccination, and child health outcomes) are increasingly valuable. This new Danish study contributes meaningfully to this evidence base, offering population-level insights with robust linkage methods and extended follow-up. While no single study can answer every question, high-quality registry data play a crucial role in strengthening confidence in both the safety and impact of maternal pertussis vaccination. Unlike NZ, Denmark has a high-quality, comprehensive pertussis reporting surveillance, which means they are likely to capture more mild disease than we do here. Regardless, this is a very safe and highly effective intervention that less than half of the pregnant people in NZ are receiving.

Reference: Clin Microbiol Infect. 2025;31(6):995–1002
Abstract



Immunogenicity and safety of a 2+1 DTPa priming schedule in Australian infants and the impact of maternally derived antibodies on pertussis antibody responses up to four years of age

Authors: McAlister SM et al.

Summary: This Australian study evaluated the effects of maternally-derived pertussis antibodies on infant responses to a 2+1 DTPa priming vaccine schedule (6 weeks, 12 weeks, and 12 months). Infants with antibodies at baseline had lower immunoglobulin G responses to pertussis after the primary vaccination series, but this did not affect booster responses at age 4 years.

Comment (HPH): Maternal pertussis vaccination is a critical strategy for protecting newborns, but it raises ongoing questions about potential "blunting" – where maternal antibodies may reduce the infant's immune response to later vaccines. This small Australian study found that infants with maternal antibodies had lower antibody responses to a 2+1 DTPa schedule, though their responses to the preschool booster appeared unaffected. However, it's important to note that mothers in this study had not received pertussis vaccination during pregnancy, meaning infant antibody levels were likely lower than would be seen in real-world programmes. That limits what we can infer about current maternal immunisation policies. We still lack clarity on whether blunting leads to a meaningful reduction in protection during early childhood. Without a correlate of protection for pertussis, lower antibody levels remain difficult to interpret. Larger, real-world studies are needed to determine whether transient immune interference has any impact on clinical outcomes, but suffice to say, it is likely minor given what the real-world effectiveness data tell us.

Reference: J Pediatric Infect Dis Soc. 2025; published online Aug 7
Abstract

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KINDLY SUPPORTED BY:
IMMUNISATION ADVISORY CENTRE THE UNIVERSITY OF AUCKLAND Te Whare Wānanga o Tāmaki Makaurau
Hauora Taiwhenua Rural Health Network

Impact of Australia's No Jab, No Pay policy on vaccination uptake – a before-after study in two national birth cohorts

Authors: Beard F et al.

Summary: This study investigated the impact of Australia's No Jab, No Pay (NJNP) policy on vaccination uptake in children. Two cohorts of infants aged 1 to <3 years were assembled using Australian Immunisation Register data: a pre-NJNP birth cohort and a post-NJNP birth cohort. The cohorts were stratified by registered objection (yes/no) and vaccination status (zero-dosed, partially vaccinated or fully vaccinated). Of 562,316 children in the pre-NJNP cohort, 92.1% were fully vaccinated, 4.9% were partially vaccinated and 3.0% were zero-dosed; objection was registered for 1.1% of them. Of 615,607 children in the post-NJNP cohort, 92.7% were fully vaccinated, 4.7% were partially vaccinated, and 2.6% were zero-dosed; objection was registered for 1.5% of them. At age 5 to <7 years, full vaccination rates were significantly higher in the post-NJNP cohort than the pre-NJNP cohort in children with or without registered objection.

Comment (HPH): Immunisation coverage in Aotearoa remains worryingly static, with childhood and maternal vaccine uptake falling way short of national targets and entrenched equity gaps growing. Despite free access and years of system-level attention and improvements, we have spent 8 years or so in free fall. Australia's No Jab, No Pay policy offers a striking counterpoint. It has resulted in improved full vaccination rates by linking eligibility for financial assistance to immunisation status. Such a policy could drive uptake in NZ, particularly where passive engagement fails. But it comes with trade-offs. Financial penalties risk disproportionately affecting low-income whānau and may deepen mistrust if not paired with strong equity-focused support. For NZ, the core question is not only whether such policies work, but whether they align with our values and context, and whether better-designed, community-led approaches could achieve similar gains without coercion. While the latter comes with greater commitment and resources, it is more likely to result in better trust and relationships.

Reference: Lancet Reg Health West Pac. 2025;54:101259
Abstract

Modelling the mitigation of anti-vaccine opinion propagation to suppress epidemic spread: A computational approach

Authors: Alahmadi S et al.

Summary: This modelling study compared two different types of strategies used to mitigate anti-vaccine social contagion: a static campaign (fixed set of targets) and a dynamic campaign (targets can be updated over time). It found that the primary advantage of static campaigns was their capacity to act as an obstacle to prevent the clustering of emerging anti-vaccine communities. However, dynamic campaigns were able to adapt to the evolution of anti-vaccine diffusion and reach a broader segment of the population.

Comment (HPH): Despite strong scientific consensus on vaccine safety and effectiveness, persistent and expanding anti-vaccine sentiment in the form of disinformation and misinformation continues to threaten public health, particularly through its amplification across social networks. These belief systems, often impervious to conventional information campaigns, reduce vaccine uptake and drive the resurgence of vaccine-preventable diseases. This is a serious challenge in the digital age we now live in. This study takes an innovative modelling approach to this problem. By simulating how anti-vaccine views spread alongside disease in a coupled agent-based model, they test various communication strategies to dampen both sentiment and epidemic size. Importantly, they find that targeted, dynamic campaigns (those that adapt to social network shifts and focus on persuadable individuals) are significantly more effective than random or static outreach. While theoretical, this work underscores the potential of network-aware, adaptive messaging in mitigating misinformation-driven outbreaks. It calls for public health strategies that are not only evidence-based, but also strategically embedded within the social fabric of the communities they aim to protect. While the science of combating vaccine misinformation is advancing, translation into practice remains limited. Implementing network-aware, adaptive communication strategies would require:

- Data access and analytics (real-time monitoring of vaccine discourse across social networks to identify sentiment trends and key influencers);
- Dedicated personnel and capability (a specialised, multidisciplinary team trained in behavioural science, digital communication, and public health strategy);
- Mandated response frameworks (public health agencies need protocols and funding to act quickly, akin to outbreak response, when misinformation spreads);
- Cross-sector collaboration (coordinated efforts between government, academia, social media platforms, and trusted community voices are essential).

Without these, even the best models remain academic. Turning theory into practice means treating misinformation as a public health risk and resourcing it accordingly.

Reference: PLoS One 2025;20(3):e0318544
Abstract