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The Live Attenuated Influenza Vaccine in Australia: An Additional Tool for Influenza Prevention

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ABSTRACT

Seasonal influenza causes significant morbidity and mortality in Australia. Despite long-standing recommendations for influenza vaccination and nationally funded programs for higher risk age or population groups, coverage remains suboptimal, especially among children. Introduction of the intranasal live attenuated influenza vaccine (LAIV) in 2026 offers an additional safe and effective needle-free vaccine option. Easier administration may improve access by making delivery by a range of health care providers possible. This perspective article outlines the evidence supporting the use of the LAIV and its potential to improve vaccination uptake among children in Australia.

JEL Classification: Influenza, Paediatric medicine, Vaccination, Live attenuated influenza vaccine

1 | Introduction

From 2026, the live attenuated influenza vaccine (LAIV) is available in Australia for the first time for children aged 2–17 years. This vaccine, available under the brand name FluMist (AstraZeneca) in Australia (known as Fluenz [AstraZeneca] in Europe), has been available in Northern Hemisphere countries for more than two decades, including the United States (since 2003), Canada (since 2010) and Europe (since 2011). It has also been used in the United Kingdom's free school-based universal influenza vaccination program for children since 2013. Although the LAIV has been registered in Australia for several years, 2026 is the first year a Southern Hemisphere formulation of the LAIV is produced and supplied, noting that influenza vaccine composition often differs between hemispheres each season. The availability of the LAIV provides a substantial opportunity to strengthen influenza prevention in Australia. Here, we provide an overview of the vaccine's efficacy, effectiveness and safety, and summarise its potential for improving influenza vaccination coverage among children.

2 | Efficacy, Effectiveness and Safety of the LAIV in Children Aged 2–17 Years

Randomised controlled trials (RCTs) in children have demonstrated that the LAIV prevents influenza disease. Estimates of vaccine efficacy against laboratory-confirmed influenza infections in children aged <18 years range between 36% and 86%, varying by age, year and characteristics of the influenza season such as how well matched the vaccine is to the circulating strain [1–5]. A systematic review of eight RCTs showed that the LAIV is at least as efficacious as inactivated influenza vaccines (IIVs; odds ratio, 0.81; 95% confidence interval, 0.49–1.34), which are currently used under the National Immunisation Program (NIP) [6]. Data from real-world population use of the LAIV support this conclusion. In

the United Kingdom, which uses an annual single-dose regimen of the LAIV in their childhood program, estimates of vaccine effectiveness against laboratory-confirmed influenza among children aged 2–17 years ranged between 26.9% and 65.8% in the five seasons from 2014–2015 to 2018–2019 [7]. More recently, in the 2023–2024 season, the LAIV was 65% effective in preventing primary care presentations for laboratory-confirmed influenza [8]. Year-to-year variations in influenza vaccine effectiveness are expected due to variability in the match between vaccine and circulating strains, and these estimates generally align with estimates of IIV effectiveness for similar age groups.

However, there have been exceptions; for example, reduced vaccine effectiveness was observed for the LAIV relative to the IIV in the United States in the 2013–2016 seasons, particularly for the A(H1N1)pdm09 strain, but in the same seasons, vaccine effectiveness was comparable for the LAIV and the IIV in the United Kingdom, Canada and Finland [9]. Reasons for the reduced effectiveness observed in the United States are not completely clear, but poor replicative fitness of the A(H1N1)pdm09 LAIV strain and its thermostability were proposed as likely explanations [9, 10]. This led to the US's Advisory Committee on Immunisation Practices recommending against using the LAIV for two seasons, but reinstated its use in the 2018–2019 season following changes to the A(H1N1)pdm09 strain included in the vaccine that improved its replicative fitness [11]. No issues related to vaccine effectiveness have since been observed, and the LAIV has been continually recommended since then.

The LAIV has also been shown to be effective in preventing more serious influenza-related illness. In the 2015–2016 season, vaccine effectiveness against influenza hospitalisations was 63% in Scotland and 55% in England [7]. Data from Denmark in 2021–2022 showed that the LAIV was 36.9% effective in reducing influenza hospitalisations among vaccinated children aged 2–6 years [12].

Extensive data from two decades of use have demonstrated that, generally, the LAIV has a similar safety profile to the IIV [6]. Because the LAIV is administered intranasally, nasal symptoms including rhinitis and rhinorrhoea or congestion are more common [6, 13, 14]. Otherwise, the frequency of systemic reactions, like fever and headache, are similar for the LAIV and the IIV [6]. Serious adverse events following vaccination are extremely rare and no more common than after administration of the IIV [6, 13]. Early clinical trials raised concerns about the potential for exacerbation of asthma or wheeze in very young children aged < 3 years [15]. However, multiple subsequent studies involving several thousand children with asthma, including those with severe asthma, have demonstrated that the LAIV does not exacerbate symptoms in children with asthma, nor does it cause asthma or wheezing in healthy children aged 2–17 years [14, 16–18]. Asthma or a history of wheezing is therefore not considered a contraindication to LAIV use in this age group.

3 | Influenza Vaccination for Children in the 2026 Season

The LAIV is expected to be available by private prescription in Australia during the 2026 influenza vaccination season [19]. At the time of writing, four states, namely New South Wales, Queensland, South Australia and Western Australia, will have state-funded LAIV programs for children (Table 1). As a live attenuated vaccine, the LAIV should not be used for people with moderate and severe immunocompromise, due to the theoretical risk of vaccine-related disseminated disease, although no such cases have been documented to date. Pregnant individuals aged < 18 years should not receive the LAIV as a precaution, although studies of people who have inadvertently received the LAIV while pregnant show no safety concerns [20]. Intramuscularly administered IIV will continue to be available, by private prescription or through the NIP if eligible (Table 1), for those whom the LAIV is not registered for use or contraindicated, and for anyone who prefers to receive the IIV.

4 | Potential for Improving Vaccination Uptake

Influenza is the most common vaccine-preventable disease in Australia, with rates of both influenza notifications and hospitalisations highest among children [21]. In 2016–2018, notification rates of influenza were highest among children aged 1–4 years at 924.2 per 100,000 population, representing more than 35,000 notifications [22]. Hospitalisations were highest among older adults aged ≥ 65 years ($n = 47{,}043$; rate = 413.5 per 100,000 population), followed by infants aged < 1 year ($n = 4711$; rate = 283.5 per 100,000 population) and children aged 1–4 years ($n = 3653$; rate = 124.1 per 100,000 population) [22]. Influenza also causes more deaths among all children compared to any other vaccine-preventable disease [23].

Despite the high burden of influenza in children, vaccination coverage has historically been, and still remains, low and inadequate to control disease at a population level. Coverage among children aged < 5 years remains low even though influenza vaccine has been funded for them under the NIP since 2020. In 2025, coverage was 25.7% among children aged 6 months to 4 years and 14.5% in children aged 5–14 years [24]. The highest coverage ever achieved in these age groups was 44.6% in < 5-year-olds and 27.1% in 5–14-year-olds, respectively, in 2020, during the early months of the coronavirus disease 2019 (COVID-19) pandemic before availability of COVID-19 vaccines [24]. Australian studies highlight that many parents do not consider influenza to be a serious disease and believe that it is less serious than other vaccine-preventable diseases, prioritising other vaccinations over influenza vaccination [25]. A survey of 1987 parents found that 27% of children aged ≥ 4 years have an intense needle phobia [26]. As an intranasal vaccine, the LAIV can help to overcome barriers related to needle phobia. Other barriers preventing convenient and timely access to vaccination also adversely affect vaccination uptake [27, 28]. Due to the relative ease of administration, additional provider types may be able to be authorised to administer the LAIV, potentially easing some access barriers.

Other countries have demonstrated substantial success in achieving high influenza vaccination coverage using the LAIV. The United Kingdom, in particular, has achieved higher influenza vaccination coverage through its school-based LAIV vaccination programs, with 55.1% of primary school children and 42.8% of secondary school children in England vaccinated in 2023–2024 [29]. Data from previous years show coverage estimates vary by age between 30% and 60%, with higher levels of coverage (i.e., > 50%)

TABLE 1 | Availability of influenza vaccines for children aged < 18 years in Australia for 2026.

Registration and funding status	LAIV	IIV
Registered age indication	Registered for use in children aged 2–17 years who are not contraindicated to receive the LAIV[a]	Registered for use in individuals aged ≥ 6 months
Availability through private prescription	Private supply in all jurisdictions expected	Private supply in all jurisdictions
Eligibility to receive a funded dose (NIP or state-based program)[b]	Available through state-funded programs in: • New South Wales and South Australia for children aged 2 to < 5 years • Queensland for children aged 2–5 years (inclusive) • Western Australia for children aged 2 to < 12 years • Funded programs not available to children in the Australian Capital Territory, the Northern Territory, Tasmania and Victoria	Available through NIP for: • Children aged 6 months to < 5 years • Aboriginal and Torres Strait Islander children • Those with medical risk conditions

Abbreviations: IIV, inactivated influenza vaccine; LAIV, live attenuated influenza vaccine; NIP, National Immunisation Program.
[a]Contraindications to LAIV include having a moderately or severely immunocompromising condition (see the Australian Immunisation Handbook for details on what constitutes these conditions; https://immunisationhandbook.health.gov.au/), people receiving oral salicylate therapy (e.g., aspirin) and those with a history of anaphylaxis to any previous dose of an influenza vaccine or component of an influenza vaccine.
[b]Information is accurate as of 16 April 2026.

consistently achieved through school-based delivery, particularly in primary school-aged children [7]. Higher coverage was achieved in Northern Ireland and Scotland, ranging from 45% to 60% when delivered through primary care programs, to up to 60%–80% uptake when delivered through school-based programs [7].

Improved coverage reduces influenza disease both by direct protection in vaccinated children and indirect effects to the broader population, particularly as children are key drivers of influenza transmission in the community. Reductions in all general practice influenza-like infections (94%), emergency department respiratory attendances (74%) and influenza hospitalisations (93%) have been observed among children aged 5–10 years, with high estimates of impact suggesting both direct and indirect protection effects to vaccinated and unvaccinated children targeted for vaccination [7]. Reductions in influenza disease have been observed in populations that were not targeted for vaccination as well. Pooled estimates from RCTs found that influenza vaccination can confer some modest protection to non-target contacts and community members, with indirect vaccine effectiveness estimated at 13.7% [30]. Real-world comparison among the UK-based countries and the Republic of Ireland found that influenza-like illness general practice consultations and influenza-attributable mortality decreased for the entire population in Scotland and Northern Ireland, where all primary school-age children were eligible for vaccination, relative to countries incrementally vaccinating (England and Wales) or not vaccinating primary school-age children (Republic of Ireland) [31]. In addition, reductions in respiratory-related general practice consultations among older age groups were observed in regions that achieved > 70% coverage in primary school-aged children [7, 31]. In the 2014–2015 season, influenza-like illness general practice consultations among adults were 59% lower in areas where the vaccination program was piloted compared with non-pilot areas [32].

5 | Looking Forward

At this initial stage of LAIV introduction, delivery through primary care will likely remain the key mode of LAIV use. The availability of the LAIV in Australia increases the feasibility of mass vaccination campaigns, including school-based programs, in the future. Even in their absence, intranasal administration makes mass vaccination clinics more practical, and some providers may elect to provide these for efficiency. As with other vaccines, the most consistent predictor of childhood influenza vaccination is a recommendation from a trusted healthcare provider [33], so providers are encouraged to continue recommending influenza vaccination for children.

In the first year of LAIV introduction, monitoring the uptake of the LAIV, overall influenza vaccination coverage, vaccine effectiveness and impact on influenza disease burden in children is crucial. The varying program configurations across states and territories provide an opportunity to identify factors associated with higher coverage, which can then inform a national approach. In addition, prompt and accurate documentation of influenza vaccination in the Australian Immunisation Register is critical, both to monitor coverage and to facilitate assessing vaccine effectiveness. Timely assessment of vaccine effectiveness and documenting benefits such as improved coverage in

traditionally hard-to-vaccinate populations (such as in disability care settings) and reductions in disease burden inequities that might be achieved through indirect effects may strengthen the case to expand government-funded influenza vaccination programs to all children aged <18 years. Evaluation should also include an examination of parental and provider acceptance of the vaccine, ongoing or unexpected barriers to vaccination and unintended consequences, with a view towards optimising influenza vaccination delivery for all children.

Author Contributions

Cyra Patel: conceptualisation, data curation, investigation, writing (original draft), writing (review and editing). **Alexis Pillsbury:** data curation, investigation, writing (original draft), writing (review and editing). **Tran Nguyen:** investigation, writing (review and editing). **Xia Wang:** investigation, writing (review and editing). **Helen E. Quinn:** conceptualisation, investigation, supervision, writing (review and editing). **Clayton K. Chiu:** investigation, writing (review and editing). **Allen C. Cheng:** investigation, writing (review and editing). **Katie L. Flanagan:** investigation, writing (review and editing). **Zhicheng Wang:** conceptualisation, investigation, supervision, writing (review and editing).

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Conflicts of Interest

Katie L. Flanagan is the current chair and Allen C. Cheng is the former co-chair of the Australian Technical Advisory Group on Immunisation (ATAGI). Cyra Patel, Alexis Pillsbury, Tran Nguyen, Xia Wang, Helen E. Quinn, Clayton K. Chiu and Zhicheng Wang are employees at the National Centre for Immunisation Research and Surveillance, which receives funding from the Australian Government Department of Health, Disability and Ageing and the Australian Centre for Disease Control for undertaking scientific research and technical work that informs immunisation policies and programs. This work represents the views of the authors only and does not necessarily represent the views of the Australian Government or ATAGI.

Data Availability Statement

This article includes no original data. Evidence included in this article was obtained from the published peer-reviewed literature and is cited in the references.

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