


# Vaccine provider views on the impact of COVID-19 on immunisation in general practice: a qualitative study

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## ABSTRACT

**Background.** General practitioners and general practice nurses are the most trusted and experienced sources of vaccine information for Australians and are the principal providers of routine immunisation in New South Wales, Australia. This study explored perceived barriers and challenges to the rollout of the COVID-19 immunisation program and continued provision of routine immunisation through general practice. **Methods.** Structured in-depth interviews were conducted between 29 April and 8 July 2021 with general practitioners and general practice nurses working in accredited general practices in the Greater Sydney area. Interviews were transcribed verbatim and analysed thematically. **Results.** Fifteen participants (12 general practitioners and three general practice nurses) were interviewed. Participants considered the COVID-19 vaccine rollout to significantly burden general practice at the cost of delivery of routine preventative care. Patient fear and anxiety and vaccine hesitancy were perceived as major challenges to the provision of all immunisations, exacerbated by media coverage of shifting recommendations related to COVID-19 vaccine adverse events. Inadequate communication from government bodies contributed to a perceived erosion of patient trust in general practice. Participants considered routine immunisation to be minimally disrupted owing to robust practice-based recall and reminder systems and legislated immunisation requirements for children. **Conclusion.** The role of general practitioners and general practice nurses in the COVID-19 vaccine rollout was seen to be one of great burden and complexity. As the primary providers of immunisation in New South Wales, continued communication with and support for general practice, both financially and informationally, is pivotal to the sustained successful provision of routine and COVID-19 immunisation.

**Keywords:** Australia, COVID-19, COVID-19 vaccines, general practice, government, primary care, qualitative research, vaccination.

## Introduction

The national COVID-19 vaccine rollout, coupled with public health orders, travel restrictions, and patient fear and anxiety, has significantly impacted primary care provision in Australian general practice (Kippen *et al.* 2020; Copp *et al.* 2021). General practice is the fulcrum of the national COVID-19 vaccine rollout, described by the (former) Hon. Greg Hunt, Minister for Health, as the ‘backbone of our national vaccination program’ (Woodley 2021). General practitioners (GPs) and general practice nurses (GPNs) are the most experienced and trusted sources for vaccine information, with recommendation from a GP or GPN being one of the strongest predictors of vaccine uptake among Australian adults (Clarke *et al.* 2015; Chow *et al.* 2017; Trent *et al.* 2021a). In New South Wales (NSW), general practices are key to the delivery of both childhood and adult routine immunisation, providing 89% of the State’s childhood National Immunisation Program (NIP) vaccines (Department of Health 2017) and an estimated two-thirds of adult influenza vaccines (Trent *et al.* 2021b).

In Australia, early data raised concerns that the COVID-19 pandemic may have disrupted NIP delivery (Kaufman and Attwell 2021) due to reduced access to general

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practice. Factors include a shift to telehealth consultations (Desborough *et al.* 2020; Royal Australian College of General Practitioners (RACGP) 2020) and patients postponing vaccination for themselves or their children to avoid exposure to COVID-19 in clinical settings (Kaufman and Attwell 2021). While more recent data established no significant impact on NIP coverage (Department of Health 2021a, 2021b; Harris *et al.* 2021; Hull *et al.* 2021), ongoing monitoring of barriers and facilitators to the provision of routine immunisation throughout the COVID-19 pandemic is warranted.

In 2021, general practices saw the combined impact of increased workload, short vaccine supply (Shields 2020), and uncertainty around vaccine safety stemming from changes in the Australian Technical Advisory Group on Immunisation (ATAGI) age-eligibility recommendations for the AstraZeneca vaccine to  $\geq 50$  years (ATAGI 2021a), then  $\geq 60$  years (ATAGI 2021b) following the establishment of a causal relationship between the AstraZeneca vaccine and cases of thrombosis with thrombocytopenia syndrome (TTS). Despite their complex role, which underpins the success of the COVID-19 vaccine rollout, there exists little research exploring Australian GP and GPN experiences with immunisation during COVID-19. Understanding their experiences and gaps in support is essential in maintaining high rates of both routine and COVID-19 immunisation. This qualitative study explored the experiences of GPs and GPNs, as the principal providers of immunisation in NSW, and their perception of barriers and challenges of the rollout of the COVID-19 immunisation program and to the continued provision of routine immunisation through general practice.

## Methods

### Study design

The study was a qualitative descriptive design, conducted and reported in accordance with the Consolidated Criteria for Reporting Qualitative Research (COREQ) (Supplementary Table S1). Structured in-depth interviews were conducted with GPs and GPNs working in accredited general practices in the Greater Sydney area, NSW, Australia. As the research focus was the whole of general practice, GPs and GPNs were grouped together given their shared experience in the public health system as the chief providers of immunisation in NSW. All participants voluntarily participated in the interviews. Individual written consent was sought prior to conducting interviews through distribution and signed return of study Participant Information Statement and Consent Forms (PISCF), which were stored digitally on a password protected University of New South Wales (UNSW) OneDrive. Ethics approval was obtained from the Human Research Ethics Advisory Panel (HREAP) at the UNSW (Ref: HC210179).

### Participant recruitment

Recruitment involved multiple approaches, including distribution of study information through contacts within the Central and Eastern Sydney Primary Health Network and purposive recruitment using contacts known to the researchers and their professional networks. A snowballing technique was also used in which interested participants were asked to forward study information to their colleagues. Eighteen vaccine providers expressed interest to the research team via email and were contacted by email to arrange a meeting.

### Data collection

Data were collected using structured interviews, either in-person in the participant's practice or using Zoom virtual meeting software. Interviews were carried out with consenting participants by an independent male medical student/medical receptionist (TM). TM had no professional relationship with any participant, and all were informed that TM was conducting this research as part of his medical degree, supervised by AH, MH and AM. Due to experience and prior knowledge of this topic (contribution to the COVID-19 vaccine rollout in an administrative role), TM may have made assumptions that inadvertently influenced data collection, interpretation of findings, and writing of the report. However, such bias was mitigated by debriefing interviews with supervisors post-interviews, researcher triangulation (TM and AM independently analysing transcripts), and all authors reaching consensus on themes and data saturation. An interview guide (Supplementary Appendix A1) was developed prior to interviews by all researchers using deductive reasoning, given what literature on the topic was available at the time of the research. The interview guide included key topics: GP/GPN/patient attitudes toward safety concerns of COVID-19 vaccines, issues/barriers to delivery of the COVID-19 vaccines (including logistic challenges, patient hesitancy and uptake, informational resources), and the impact of COVID-19 on practices (including service delivery). Interviews were audio-recorded digitally and transcribed verbatim by the study author TM, using coded names (e.g. GP#1) to maintain anonymity. Brief verbal summaries were used to check and clarify points raised by participants during interviews. Participants were provided A\$100 VISA gift cards as incentives. At the time of the interview, participants were asked to self-complete a short online survey developed in Qualtrics (Qualtrics, Provo, UT) to collect deidentified demographic and practice-related information from participants. No repeat interviews with participants were required. Data were collated and stored on a password protected UNSW OneDrive folder accessible only by the researchers.

### Data analysis

Thematic analysis was principally inductive but had aspects of deductive reasoning as informed by the interview guide.

The thematic analysis was informed by the elements of the access model (Levesque *et al.* 2013). Deductive reasoning, a theory-testing process that begins with established theories/generalisations as evidenced in the literature (Thorne 2000), informed the interview guide and subsequently guided data collection and the subsequent analysis of the transcripts. Transcripts of all interviews were independently coded and built into nodes/themes by two researchers (TM, AM) using NVivo 12 software. Codes were constantly compared within and across the sample in line with the interview questions, allowing for a mix of both inductive and deductive approaches in the analysis and the identification of themes. Any differences in analysis established by coders were resolved *via* discussions between all researchers. Thematic saturation was achieved during analysis with repetition of themes.

## Results

A total of 15 participants (12 GPs and three GPNs) responded to the invitation, provided consent, and were interviewed between 29 April and 8 July 2021. Of 14 GPs and GPNs for whom demographic information was collected, 12 were currently registered to provide COVID-19 vaccines at their practice. Five had been in practice for less than 5 years, three were overseas medical graduates, and six consulted in a language other than English. Demographic information is summarised in Table 1. Thirteen general practices were represented. Interviews averaged 30 min in length (range 17:21–34:24).

**Table 1.** Participant demographics.

Respondent number (GP or GPN)	Gender	Age (years)	Years practising	Registered to provide vaccine	Australian graduate	Consults in another language
GP1	Female	50–59	13	No	No	Chinese
GP2	Male	50–59	25	Yes	Yes	Vietnamese
GPN3	Female	30–39	3	Yes	Yes	Chinese (Mandarin)
GP4	Female	50–59	28	Yes	Yes	No
GP5	–	–	–	–	–	–
GP6	Female	30–39	4	Yes	Yes	No
GP7	Male	40–49	4	No	No	No
GPN8	Female	40–49	2	Yes	No	No
GPN9	Female	20–29	4	Yes	Yes	No
GP10	Male	60–69	45	Yes	Yes	No
GP11	Female	30–39	5	Yes	Yes	Chinese (Cantonese)
GP12	Female	30–39	5	Yes	Yes	No
GP13	Male	40–49	21	Yes	Yes	Arabic
GP14	Female	40–49	10	Yes	Yes	Serbian
GP15	Female	60–69	35	Yes	Yes	No

## Vaccine hesitancy

All participants described some degree of COVID-19 vaccine hesitancy among their patients. Patients' main reasons for concern were cited as the newness of the vaccines and adverse events:

Everybody is aware of the complications [of AstraZeneca] and some people just don't want to have it and are putting off having it in the hope that Pfizer will be available to everyone. (GP15)

Participants perceived hesitancy as a greater issue among patients aged 50–69 years due to their proximity to the age-eligibility cut-off for AstraZeneca. Recent migrants, or those with family abroad, were considered least hesitant due to their exposure to the impact of COVID-19 in other countries. Comparatively, patients from more established immigrant communities in Australia were considered more likely to be hesitant, attributed to patient cultural beliefs and exposure to non-mainstream information sources.

Several participants considered ATAGI's sudden changes to age-eligibility recommendations for the AstraZeneca vaccine to be rushed and poorly substantiated, contributing to vaccine hesitancy. Several participants reported a significant drop in demand and cancellation of up to half of appointments for AstraZeneca vaccines following these announcements. Further, lack of communication of these changes to GPs and GPNs was perceived to undermine patient trust in the credibility of general practice:

My patients are finding out about changes in the vaccination program in my waiting room from ABC

News before I find out, when I get home and read my official correspondence. The rollout has proceeded on, changes have been made, and GPs are looking less and less like reliable sources of information. (GP11)

A recovery in demand was observed in the months following, with GPs and GPNs citing sufficient patient demand to quickly fill cancelled appointments and avoid vaccine wastage:

Today wasn't a COVID clinic day, but I've done eight COVID injections. Because there's a vial open for 48 hours in the fridge. So when people call in I just say to the girls at reception, 'just book them in, it's a 10-minute appointment. It's fine, I'll fit them in'. (GPN9)

### **Coordination of COVID-19 rollout and impact on general practice**

Short or variable supply of COVID-19 vaccines to general practice was regarded as a major barrier to vaccine delivery and uptake, particularly early in the rollout. The organisation of the rollout at a system level was criticised by some practitioners, who described the program as a 'shit-storm', a 'circus', and a 'dog's breakfast'. Poor public perception of the safety of the AstraZeneca vaccine, lack of comparable reporting of Pfizer side-effects, ineffective leadership, inadequate promotion of the vaccine rollout, lack of regulation of misinformation in the media, unclear and mixed messaging from government, and reactive, poorly-thought-out policy changes without consultation with GPs and GPNs were all described by participants as systemic barriers they perceived as inhibiting the success of the rollout:

Role models and public figures are not taking up the recommendations as advised by the government, by government policy, and ATAGI... There's been no reporting at all about side effects from the Pfizer vaccine, which you know, we do know do exist as well. (GP11)

### **Lockdown policies/telehealth**

General practices responded to lockdown policies with a significant shift to telehealth consultations, which caused difficulties in some preventive care provision, including opportunistic routine immunisation:

Yeah, a lot of our regular sort of opportunistic [care], as well as checking in, things that we would do when they come in for repeat script, is kind of getting missed with telehealth. They're not coming in person, I can't just like be like, 'Oh, would you like a flu vaccine?' and then just jab them, you know...there's just so much focus on COVID. There hasn't been enough focus on general preventative care. (GP12)

Most practices reported a significant drop in clinical demand, which was ascribed to patients' fear of COVID-19 coupled with social distancing policies:

Lots of people were like, 'Oh, I just want to hold off until things get a bit better'... 'If we're just going to be home, should I not give my child their six months vaccinations?' That's where that paranoia came in. People were questioning everything about going to the doctor'. (GPN8)

Despite this, many GPs and GPNs saw little or no lasting impact on routine immunisation. Some participants even considered patient fear of COVID-19 to be a driver for an increase in routine adult immunisation, reflected in the higher influenza vaccine uptake they observed in 2020. Childhood immunisations were perceived to be only minimally delayed by lockdowns, attributed to the success of their practice recall and reminder systems and the federal Family Tax Benefit policy (a national incentive system financially rewarding parents for immunising their children).

### **Support for general practice**

Participants reported spending significant quantities of additional time managing COVID-19 vaccine provision (including reassuring patients about vaccine risk), increased financial costs, full waiting rooms and stress, including verbal abuse from patients:

The amount of effort, and conversation, discussion, checks, double checks, paperwork that we all do for this. It's like, yeah, part of me actually wishes we kind of didn't [take part in the rollout]. That's how bad it is. (GP12)

This work was seen by some GPs and GPNs to reduce their capacity to carry out routine care as they and their staff sacrificed their normal duties in service of the COVID-19 vaccine rollout:

It takes up a whole receptionist, a whole doctor, and a whole nurse for a whole day. So it does take away from the other routine stuff. They're all off doing other things today, they can't do anything else. It's all COVID. (GP5)

Many participants expressed dissatisfaction with their financial remuneration for the provision of the COVID-19 vaccine, considering the extent of the workload and responsibility:

The incentive is not sufficient to make disadvantage my patients by giving up time for this. (GP7)

No, we're sort of an afterthought, I think, from the government. You manage as best as you can. (GP6)

## Discussion

GPs and GPNs considered vaccine hesitancy and patient fear and anxiety as major challenges to the provision of COVID-19 vaccination, compounded by the media reporting of COVID-19 vaccine safety and rapid changes in AstraZeneca age-eligibility recommendations. Inadequate communication from government contributed to a perceived erosion of patient trust in general practice. Participants considered the role of GPs and GPNs in the COVID-19 vaccine rollout to be one of great burden and complexity.

### Vaccine hesitancy undermining trust in general practice

In this study, GPs and GPNs felt excluded from policy decision-making in any meaningful way and reported failings in clear, advanced communication from government to general practice. Vaccine hesitancy in Australia was observed to peak in May 2021, following reports of vaccine-related TTS and subsequent changes to ATAGI age-eligibility recommendations for AstraZeneca in April 2021 (Melbourne Institute: Applied Economic & Social Research 2021). Participants observed this first-hand, reporting substantially increased cancellations for booked AstraZeneca appointments following these announcements. Vaccine hesitancy remains an issue in a significant proportion of the population. Despite Australia's two-dose COVID-19 immunisation coverage reaching 90% of the eligible adult population by 16 December 2021 (Department of Health 2021c), ongoing vaccine sentiment surveys from 21 October 2021 report almost one in eight Australians remain vaccine hesitant (Vaccine Hesitancy Report Card 2021), with 5.6% unsure and 6.2% unwilling (Vaccine Hesitancy Report Card 2021) to be vaccinated.

Clinical consultations with vaccine hesitant patients are complex and time consuming, requiring skills in risk communication and motivational interviewing (Berry *et al.* 2017; Brewer *et al.* 2017; Leask *et al.* 2021). Combating hesitancy will necessitate continued support and resources for general practice through better avenues of communication from government (Desborough *et al.* 2020), improved communication between government bodies and the public, and better vaccine promotion.

With 55% of unvaccinated people reporting a preference to have their COVID-19 vaccines at a general practice (June 2021) (Australian Bureau of Statistics 2021), better financial remuneration of GPs and GPNs would not only reflect their vital role in the program, but may also facilitate longer consultations with unvaccinated, vaccine-hesitant members of the population, which is central to the continued increase in population-level uptake of COVID-19 vaccines. While some 'leakage' of patient hesitancy from COVID-19 vaccines to hesitancy toward immunisation in general was noted by some participants in our results, this was not commonly recognised by study participants.

### Maintenance of routine immunisation coverage through robust policy

Internationally, the World Health Organization (WHO) Pulse Surveys have identified immunisation delivery as one of the healthcare services most severely disrupted by COVID-19 (WHO 2020). The Australian government issued early advice to GPs and GPNs on the importance of maintaining routine immunisation uptake (ATAGI 2020). Australia comparatively fared very well (Harris *et al.* 2021), with minimal disturbance to childhood immunisation (Department of Health 2021a, 2021b; Hull *et al.* 2021). There was an increase in adult influenza immunisation uptake observed in 2020 (Beard *et al.* 2021; Harris *et al.* 2021) and 2021 (Department of Health 2021d). This maintenance of routine immunisation coverage was reiterated by most study participants and is indicative of effective promotion of influenza vaccines, more complete reporting of adult vaccines to the Australian Immunisation Register (AIR) (Beard *et al.* 2021), and the success of general practice reminder and recall systems, which have been recognised as valuable in improving immunisation uptake (Frew and Lutz 2017; Jacobson Vann *et al.* 2018). These findings reflect the resilience of current immunisation policy and exemplify the importance of general practice for the NIP.

### Better support for general practice

The COVID-19 vaccine rollout was seen by participants to impose a substantial workload on general practices. A General Practice Supervisors Australia (GPSA) survey conducted in April and May 2020 corroborated practices were burdened by significantly increased use of telehealth, implementation of COVID-19 signage, new cleaning protocols, segregation of patients with COVID-19 or influenza-like symptoms, and triage of patients by nurses and reception staff (Kippen *et al.* 2020), factors which prompted participant concerns around displacement of routine care. Data from June 2021 revealed a 5% decrease in all non-immunisation GP services, with COVID-19 immunisation taking up 10% of GPs' time (Pearce *et al.* 2021). This had implications for burnout (Northwood *et al.* 2021) and GPs raised concerns around suboptimal care of their patients (Copp *et al.* 2021). Further, many GPs and GPNs were disappointed in the financial remuneration for what they saw as a burdensome, expensive, and stressful contribution to the vaccine rollout.

### Implications for practice and future research

At a system level, improved communication between government and general practice will be important for maintaining patient trust and in vaccinating complex or hesitant patient populations. Inefficient avenues of communication to general practice from authorities resulted in patients being privy to information from the media before their doctors

received official correspondence. Consistency of information and receiving information when needed were recognised by GPSA as common issues for practitioners (Kippen *et al.* 2020). Our results suggest that untimely, inconsistent information from government may have contributed to a deterioration of GPs reliability as a trusted source of information by their patients. Communication of accessible, correct information to the public must be improved, which requires sufficient informational support for general practice. This is particularly pertinent given the central role of general practice in the continued provision of COVID-19 vaccines, including booster vaccines (Attwooll 2021).

### Strengths and limitations

A strength of this study was deep, focused exploration of themes facilitated by the qualitative study design. Structured in-depth interviews gave participants time to explain their perspectives in detail (Pope and Mays 1995). Further, these interviews were carried out over a particularly disruptive period with respect to vaccine hesitancy and implications of the rollout for general practice, capturing the impact of dramatically increased workload coupled with a patient population confused by short vaccine supply and unclear messaging around vaccine safety.

Limitations included the brief time period and small geographic area in which the study was conducted, which was insufficient to capture the complexity of the issues nationally and across the course of the rollout. This is also true for the population sampled, which included mostly GPs and only three GPNs, and did not capture other practice staff such as receptionists or practice managers, or vaccine consumers, who were also impacted by the COVID-19 vaccine rollout and will have valuable perspectives. Specifically, given the aim of the study to explore both GP and GPN perspectives, a sample size of only three GPNs was suboptimal for exploring the nuances of the experience of nurses and its distinction from that of GPs. The data collection was insufficient for subgroup analysis. Further exploration of the whole of practice and population challenges to immunisation delivery, including the role of GPNs, in the context of the COVID-19 pandemic, is warranted. The sample size dictated that differences within major themes by participant demographics were not identified. Further, these interviews were conducted at a time when most people under the age of 50 were not yet eligible for COVID-19 vaccines and the results do not reflect or explore GPs perceptions of vaccine hesitancy among younger adults.

### Conclusion

The role of GPs and GPNs in the COVID-19 vaccine rollout was fundamental but burdened by untimely communication, inconsistent policy and patient hesitancy. It was perceived by

general practices to displace routine care provision and impact their credibility as immunisers. As trusted immunisation providers, the GP and GPN experience is valuable in informing future policies to support general practice during mass vaccination programs, particularly in the ongoing COVID-19 pandemic. Further research exploring the burden of immunisation provision is warranted.

### Supplementary material

Supplementary material is available [online](#).

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**Data availability.** The data that support this study will be shared upon reasonable request to the corresponding author.

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