



Government of **Western Australia**
Department of **Health**

Evaluation of the Western Australia Pharmacist Influenza Vaccination Trial 2018-2020

Final Report

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This report was prepared by:

Communicable Disease Control Directorate (CDCD)

Public and Aboriginal Health Division (PAHD)

Department of Health, Western Australia

189 Royal Street East Perth WA 6008

PO Box 8172 Perth Business Centre WA 6849

Tel: (08) 9222 2486

Email: immunisation@health.wa.gov.au

Web: www.health.wa.gov.au

Project managers

- Prof. Paul Effler, Senior Medical Advisor, CDCD
- Robyn Gibbs, Manager, Immunisation Program, CDCD
- Neil Keen, Director, Office of the Chief Health Officer, PAHD

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Executive summary

This report outlines the evaluation findings of the 2018 to 2020 WA Pharmacist Influenza Vaccination Trial. The trial piloted distribution of National Immunisation Program (NIP) influenza vaccine to community pharmacies for persons aged 65 years and older. The trial was undertaken by the Communicable Disease Control Directorate (CDCD) and the evaluation was conducted jointly by the CDCD and the Office of the Chief Health Officer (OCHO) at Department of Health. It aimed to determine the effectiveness of the trial to assess the suitability of the program for continued participation in the WA DoH Immunisation Program.

Aims of the WA Pharmacist Influenza Vaccination Trial

The trial aimed to:

- increase influenza vaccination rates for persons aged ≥ 65 years in WA (the target group) by enabling community pharmacies to access NIP vaccines for this cohort only;
- trial a distribution model for the supply of NIP vaccines to community pharmacies, and;
- assess the feasibility of pharmacy participation in the WA Immunisation Program more broadly.

Objectives of the evaluation of the WA Pharmacist Influenza Vaccination Trial

The evaluation of the trial aimed to assess the following:

- Pharmacy participation in the trial
- Uptake in the target group (persons aged ≥ 65 years)
- Safety and quality of the service provision
- Consumer satisfaction within the target group
- Barriers to service provision as identified by immunising pharmacists at participating pharmacies
- Appropriateness of the distribution model utilised during the trial

Evaluation methodology

The evaluation was of mixed-method design; quantitative data were mainly derived from existing databases, whilst qualitative data were obtained from surveys of pharmacies and vaccinees (i.e. a vaccinated individual). Methods included exploration of the distribution model, vaccine uptake and vaccine administration data derived from records of patient immunisation, vaccine distribution and safety monitoring systems, and survey of participating pharmacies and vaccine recipients.

Results of the evaluation

Pharmacy participation in the trial

- Participation in the trial increased annually, from 264 pharmacies in 2018 to 373 pharmacies in 2020. Participating pharmacies were geographically distributed across the state with the majority located in the Perth metropolitan region.
- Demand for vaccine also increased annually. Allocation of NIP-funded influenza vaccines to pharmacies increased 400% from 8,200 doses in 2018 to 41,000 doses in 2020. In all years, more than 90% of allocated vaccine were distributed.

Uptake of service and coverage in the target group

- A total of 29,916 NIP-funded influenza vaccines were recorded in the AIR as being administered to the target group at a pharmacy between May 2018 and August 2020.
- Pharmacist-administered NIP-funded influenza vaccines accounted for 1.2% of total influenza vaccines administered to the target group in 2018, 4.0% in 2019, and 6.6% in 2020.
- 11.8% of survey respondents reported that they were first time vaccinees; whilst 72.1% of survey respondents indicated that they always/usually receive the influenza vaccine.
- Respondents were likely to have received an influenza vaccination before, with almost half stating they had received the last vaccination at a community pharmacy

Safety and quality of service provision

- Vaccine safety was monitored through existing vaccine safety surveillance systems. The rates of adverse event following immunisation (AEFIs) reported by individuals receiving NIP-funded vaccines at pharmacies were within historically observed ranges for this age group and the vaccine type.
- Post-vaccination observation and compliance with provision of appropriate services is indicated as high.
- Investigation of the AIR data for this evaluation revealed that there were some instances where individuals received multiple doses of NIP-funded vaccine at community pharmacies in the same season.

Vaccine reporting

- Participating pharmacies are required under the 'Administration of Vaccines' Structured Administration and Supply Arrangement (SASA) to report all vaccine encounters to the AIR. Under the terms and conditions of registering for the trial they are required to report all wasted NIP funded doses to CDCD.
- Administration of distributed vaccines was examined by comparing vaccine encounters reported to the AIR with wastage reported to CDCD. During the trial more than 50% of distributed vaccines doses were considered unaccounted for. That is, they were not recorded as administered (in the AIR) or reported as wasted. The proportion unaccounted for decreased each year but remained high. Reasons for this should be examined and addressed.

Consumer satisfaction within the target group

- Consumers from within the target group were satisfied with their experience of receiving vaccination at the pharmacy. A total of 90.4% of survey respondents within the target group indicated they would receive an influenza vaccine again at a pharmacy.
- Of those who paid an out-of-pocket expense, nearly 90% indicated they were happy with the cost charged for their vaccination service, of which participants recalled paying between \$10-\$15.

Barriers to immunisation service provision

- Pharmacies reported lack of funding/reimbursement (for staff time, vaccine consumables, and administrative duties) was the greatest barrier/challenge associated with participating in the trial.
- The fact that patients can be immunised free-of-charge at other locations (e.g. General Practice) was reported as challenging by some pharmacies.
- As reflected in the analysis of adherence to vaccine reporting, some pharmacies that were surveyed or audited indicated that utilising the AIR was challenging for them, due to difficulty logging in to the AIR or the time required to enter vaccination encounters into the AIR.

Assessment of the distribution model used in the trial

- To reduce vaccine distribution costs during the trial, CDCD utilised the commercial pharmaceutical wholesaler network to distribute the vaccines, rather than the WA Health contracted warehousing and distribution service used for delivering government-funded vaccines to other immunisation providers.
- Consultation with the program administrators indicated that utilising three wholesalers made it difficult to manage vaccine supply at the individual pharmacy level, as is standard practice by CDCD. Inability to manage supply led to rapid depletion of stock in 2019 and 2020. In both years, WA Health was unable to meet demand in the pharmacy sector, which left participating pharmacies confused and frustrated.
- Due to these significant issues, managing supply from three wholesalers was identified as problematic, and not suitable for the Program in the future.

Recommendations

- The Program moves out of the trial status and becomes an ongoing program within the broader WA Influenza Immunisation Program¹.
- CDCD continue to distribute NIP-funded influenza vaccines to community pharmacies through one wholesaler, allowing WA Health to manage supply of vaccines at the pharmacy level, which is standard practice for other immunisation programs.
- Assessment of individual pharmacies' ability to meet reporting requirements should be undertaken at the end of the vaccine distribution season in 2021.
- Partnership with Western Australia Primary Health Alliance (WAPHA)² to ensure support for immunising pharmacists similar to what is currently provided to General Practice.
- Development of pharmacist-administered vaccination guidelines and other vaccination resources to improve compliance with the Structured Administration and Supply Arrangements for pharmacists.
- Strengthen stakeholder relationships by inviting pharmacy representation on immunisation associated steering committees.

¹ 'Influenza Immunisation Program', Government of Western Australia – Department of Health, 2021, https://ww2.health.wa.gov.au/Articles/F_1/Influenza-immunisation-program

² WA Primary Health Alliance. *WA Primary Health Alliance*. Available from: <https://www.wapha.org.au/>

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List of acronyms used in this document

AEFI	Adverse event following immunisation
AHCWA	Aboriginal Health Council of Western Australia
AIR	Australian Immunisation Register
ATAGI	Australian Technical Advisory Group on Immunisation
AMA	The Australian Medical Association (WA)
CATI	Computer Assisted Telephone Interview
CDCD	Communicable Disease Control Directorate
dTpa	diphtheria-tetanus-pertussis vaccine
DoH	Department of Health
GP	General practitioner
M&PRB	Medicines and Poisons Regulation Branch of the WA DoH
NIP	National Immunisation Program
OCHO	Office of the Chief Health Officer
PGA	The Pharmacy Guild of Australia (WA Branch)
PSA	The Pharmaceutical Society of Australia (WA Branch)
RACGP	The Royal Australian College of General Practitioners (WA Faculty)
SASA	Structured Administration and Supply Agreement
'the trial'	WA Pharmacist Influenza Vaccination Trial
UWA	The University of Western Australia
WA	Western Australia
WAISISC	Western Australia Immunisation Strategy Implementation Steering Committee
WAPHA	Western Australia Primary Health Alliance
WAVSAC	Western Australia Vaccine Safety Advisory Committee
WAVSS	Western Australian Vaccine Safety Surveillance (System)

1 Introduction

In 2018, the Western Australia Department of Health (WA DoH) undertook the WA Pharmacist Influenza Vaccination Trial³ ('the trial') of distribution of National Immunisation Program⁴ (NIP) influenza vaccine for persons aged 65 years and older to community pharmacies.

This report outlines the findings of an evaluation of this three-year trial (2018-2020) and provides recommendations for the ongoing role of pharmacists as part of the WA DoH Immunisation Program.

1.1 Overview of the trial

1.1.1 Background

In Australia, vaccines provided under the NIP are funded by the Australian Government and are managed by each jurisdiction. In WA, the Communicable Disease Control Directorate (CDCD)(DoH) manages the procurement, distribution, usage, and administration of NIP vaccines. These vaccines are provided at no cost to eligible persons.

Since 2014 in WA, registered pharmacists that have completed approved immunisation training are authorised to administer influenza vaccines to persons aged 18 years and older, in accordance with the Administration of Immunisations by Pharmacists, Structured Administration and Supply Agreement⁵ (SASA), issued by the Chief Executive Officer of Health under Part 6 of the *Medicines and Poisons Regulations 2016*. As such, community pharmacists have privately vaccinated persons for influenza, with the cost of the service covered by the vaccinee (the person receiving the vaccine) as an out-of-pocket expense or through their private health insurance.

In early 2018, the WA DoH announced the commencement of the Pharmacist Influenza Vaccination Trial which would allow community pharmacies to access NIP-funded influenza vaccines ('NIP vaccines') for persons aged 65 years and older. The seasonal influenza vaccine reduces hospitalisations from influenza and pneumonia, and all-cause mortality in the elderly, and it is strongly recommended that adults aged 65 years and older receive an annual dose of influenza vaccine⁶.

This trial was initiated in response to increasing notifications of influenza among persons aged 65 years and older, relatively low uptake of the seasonal influenza vaccine in this age group, and the introduction of pharmacist-administered vaccination programs in Victoria⁷ and Queensland⁹.

³ 'Pharmacist Influenza Vaccination Trial', Western Australian Government, Department of Health, 2021, https://ww2.health.wa.gov.au/Articles/N_R/Pharmacist-influenza-vaccination-trial

⁴ 'National Immunisation Program', Australian Government. <https://www.health.gov.au/initiatives-and-programs/national-immunisation-program>

⁵ 'Structured Administration and Supply Arrangements', Western Australian Government, Department of Health. https://ww2.health.wa.gov.au/Articles/S_T/Structured-Administration-and-Supply-Arrangements

⁶ 'Adults Aged ≥65 Years are Strongly Recommended to Receive Influenza Vaccine Every Year', Australian Government, Department of Health, 2020. <https://immunisationhandbook.health.gov.au/recommendations/adults-aged-65-years-are-strongly-recommended-to-receive-influenza-vaccine-every>

⁷ 'Pharmacist Immunisers', Victoria Department of Health & Human Services. <https://www2.health.vic.gov.au/public-health/immunisation/immunisers-in-victoria/pharmacist-immunisers>

⁸ 'Pharmacist-administered vaccination services', Victoria Department of Health & Human Services. <https://www2.health.vic.gov.au/public-health/immunisation/immunisers-in-victoria/pharmacist-immunisers/vaccination-services>

⁹ 'Health (Drugs and Poisons) Regulation 1996. Drug Therapy Protocol – Pharmacist Vaccination Program Queensland Health', Queensland Government, 2020. https://www.health.qld.gov.au/_data/assets/pdf_file/0031/443983/dtp-pharmacist-vaccination.pdf

1.1.2 Objectives of the trial

The key objectives of the trial were to:

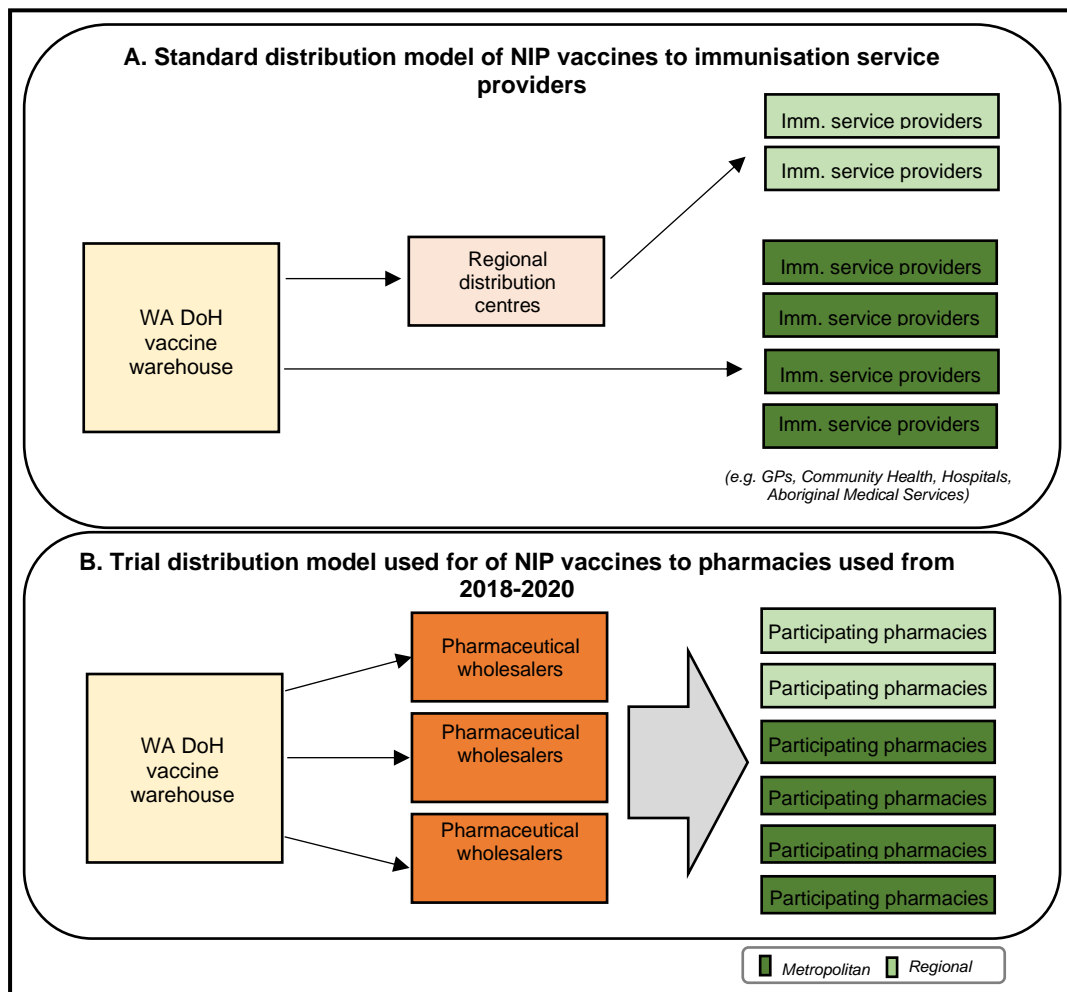
- increase influenza vaccination rates for persons aged ≥ 65 years in WA (the target group) by enabling community pharmacies to access NIP vaccines for this cohort only;
- trial a distribution model for the supply of NIP vaccines to community pharmacies, and
- assess the feasibility of pharmacy participation in the WA Immunisation Program more broadly.

1.1.3 Scope of the trial

The scope of the trial included distribution of NIP-funded influenza vaccines ('NIP vaccines') for persons aged 65 years and over.

In WA, NIP vaccines are distributed to immunisation service providers across the state by a third-party logistics service, under a contractual agreement with the WA DoH. As outlined in Figure 1, in the standard distribution model, vaccines are delivered to providers directly from the WA Health vaccine warehouse to metropolitan providers, and via regional distribution centres outside of the metropolitan area. For the trial, NIP vaccines were distributed via selected major pharmaceutical wholesalers, rather than adding individual participating pharmacies to the standard distribution model. As such, participating pharmacies place orders with pharmaceutical wholesalers, rather than through WA Health's third-party distributor.

Figure 1 Standard and trial distribution models used for the supply of NIP vaccines to immunisation service providers in Western Australia



Any WA pharmacy offering immunisation services at the time was eligible to register for the trial. WA DoH partnered with The Pharmacy Guild of Australia (WA Branch) to promote the trial. Registration for the trial required pharmacists to agree to the terms and conditions specified by CDCD and to provide business contact details. These terms and conditions were aligned with those required by all other immunisation service providers that access NIP and state-funded vaccines from CDCD, and include:

- Provide an immunisation service in accordance with the Administration of Influenza Vaccines by Pharmacists, Structured Administration and Supply Arrangement (SASA)
- Recording all immunisations in the Australian Immunisation Register
- Compliance with the National Vaccine Storage Guidelines
- Compliance with WA Cold Chain protocol
- Report all vaccine wastage (including vaccines discarded due to expiry date to CDCD)

NIP vaccines were supplied at no cost to the immunisation service providers, and therefore provided at no cost to the vaccinee (i.e. a vaccinated individual). The individual pharmacy was responsible for the amount and levy for any service costs to administer the vaccine, and/or to provide any related professional care. More information on the scope of the trial is presented in Appendix 1.

Table 1 Pharmacy Trial logic model (simple)

Context	Inputs	Activities	Outputs	Outcomes
Low vaccination rates in persons aged 65 years and over High susceptibility to influenza	Administration of Immunisations by Pharmacists, Structured Administration and Supply Agreement	Registration of pharmacies for the trial	Administration of seasonal NIP influenza vaccine for persons aged 65 years and over	Increase access to NIP influenza vaccines for persons aged 65 years and over
Pharmacy able to access vaccine through existing mechanism	CDCD allocation of NIP influenza vaccines to registered pharmacies	Distribution of vaccines to registered pharmacies		Improve influenza vaccination coverage in persons aged 65 years and over
Other states have distributed NIP-funded seasonal influenza vaccines to community pharmacies		Administration vaccines by pharmacists to the target group Reporting of vaccines administration to the AIR Recording of vaccine wastage		Reduce influenza rates in persons aged 65 years and over

1.2 Evaluation of the trial

The evaluation of the trial was conducted jointly by the CDCD and the Office of the Chief Health Officer (OCHO). It aimed to determine the effectiveness of the trial and determine the suitability of the program for continued participation in the WA DoH Immunisation Program.

1.2.1 Scope

The scope of the evaluation included:

- Investigating consumer and pharmacy participation in the program during the trial period
- Investigating the safety and quality of service provision during the trial period
- Assess the suitability of the distribution model used during the trial period for ongoing distribution
- Provide recommendations for consideration by the program managers

Cost-benefit analysis, physical auditing of pharmacies, investigating data flow issues with the AIR, and broader consumer research in the target group were out of scope for this evaluation.

1.2.2 Milestones and governance structure

The Pharmacist Influenza Vaccination Trial commenced in May 2018 for a two-year period and was extended for a further 12-month period to allow for implementation of a revised distribution model (described in section 3.6).

As part of the trial, WA DoH committed to evaluate the program during the trial period as a quality assurance exercise, and to inform immunisation related strategic activities within the Public and Aboriginal Health Division. To support the evaluation, WA DoH stood up an Advisory Group for Evaluation of WA Pharmacist Influenza Vaccination Trial to provide advice to WA Health. The advisory group was comprised of membership from the PGA, PSA, AMA, RACGP, Western Australia Branch, South Metropolitan Health Service, the Medicines and Poisons Regulation Branch, the Communicable Disease Control Directorate, and the program administrators.

The evaluation scope and framework were established and approved by the advisory group for in May 2019. Following this, the data collection instruments were created, and data collection commenced late in 2019 following research and governance approval from the WA DoH. In early 2020 interim findings from the evaluation were disseminated to the program managers to provide guidance on the program administration in 2020.

Following the completion of the third distribution season, the evaluation was completed in 2020, and the report was finalised in early 2021.

Figure 2 outlines the key milestones for the program and the evaluation over the duration of the trial period.

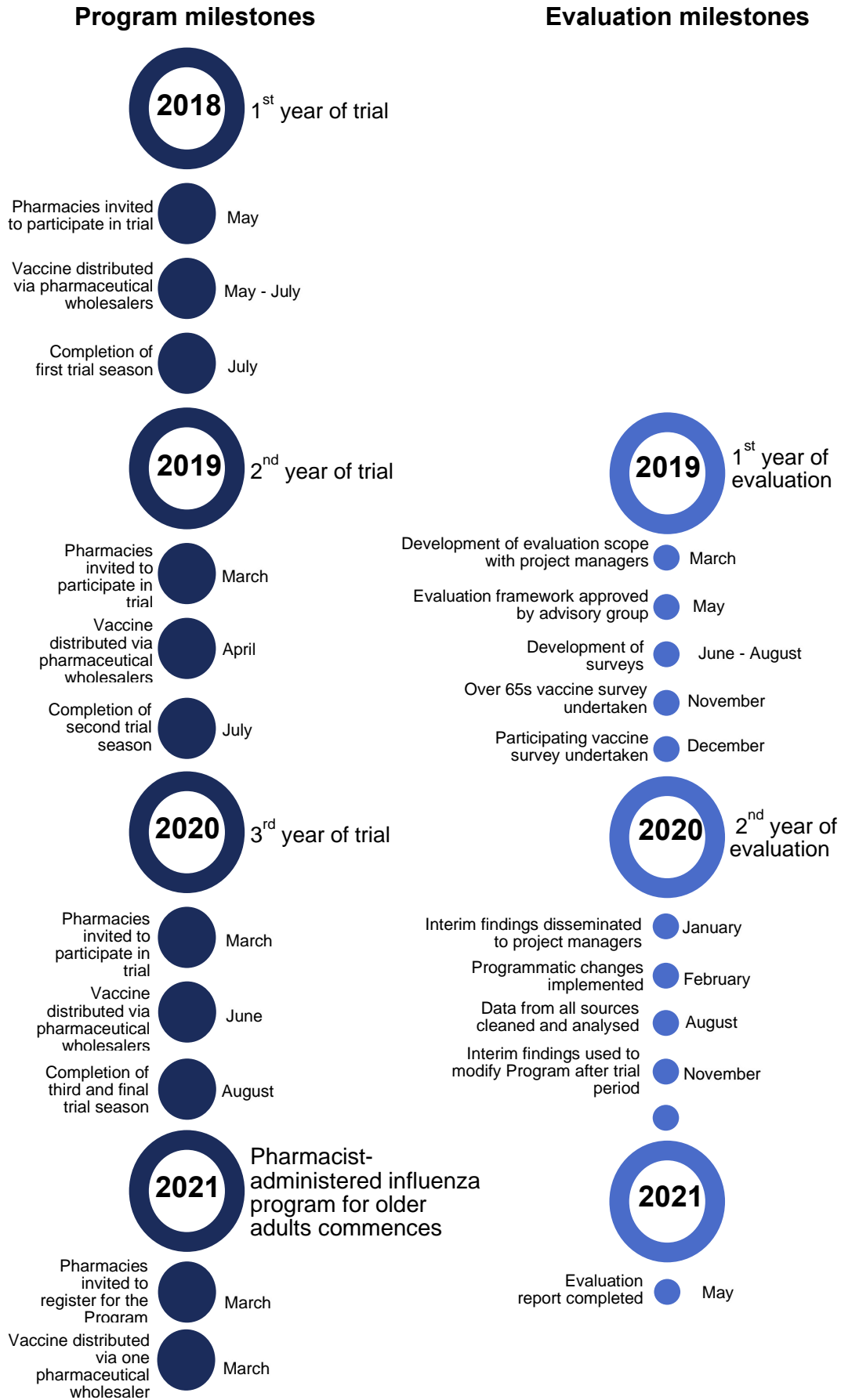
1.2.3 Evaluation findings

The key audience for the evaluation findings were the program managers, and the directors of CDCD, OCHO and Assistant Director General of the Public and Aboriginal Health Division.

The purpose of presenting the evaluation findings to this audience was to provide a summary of activities during the trial period, inform immunisation related strategic activities within the Public and Aboriginal Health Division and to provide evidence-based recommendations for the program following the trial period to the program administrators.

Figure 2

Outline of program and evaluation milestones during the Pharmacist Influenza Vaccination Trial (2018-2020)



2 Methods

The evaluation was of mixed-method design. It was based on a comprehensive evaluation framework constructed with reference to current Australian and international literature¹⁰¹¹¹²¹³¹⁴¹⁵¹⁶, and in consultation with key stakeholders including the Pharmaceutical Guild of Australia (WA Branch)¹⁷, the Medicines and Poisons Regulation Branch of the WA DoH¹⁸, and the Pharmaceutical Society of Australia¹⁹ (WA Branch).

Descriptive statistics were utilised to report most of the data collected for this evaluation. Thematic analysis²⁰ were utilised for qualitative data collected in the 'Over 65s Vaccinee Survey', the 'Participating Pharmacy Survey', and the 'Audit of Participating Pharmacies'.

¹⁰ H. Laetitia Hattingh, et al. 'Evaluation of the First Pharmacist-Administered Vaccinations in Western Australia: A Mixed-Methods Study'. *BMJ Open*. 6, no. 9 (Sep 2016). DOI: 10.1136/bmjopen-2016-011948

¹¹ HealthConsult, 'Evaluation of Victorian Pharmacist-Administered Vaccination Program'. Melbourne (AU): Health Consult, Department of Health and Human Services; 2018. <http://www.healthconsult.com.au/wp-content/uploads/pharmacist-administered-vaccination-program-evaluation.pdf>

¹² C.L. Kirkdale et al., 'Benefits of Pharmacist-led Flu Vaccination Services in Community Pharmacy'. *Annales Pharmaceutiques Francaises*. 75, no. 1 (2017) 3-8.

¹³ Randall C. Burson, et al. 'Community Pharmacies as Sites of Adult Vaccination: A Systematic Review'. *Human Vaccines & Immunotherapeutics*. 12, no. 12 (2016): 3146-3159. DOI:10.1080/21645515.2016.1215393.

¹⁴ Lori Uscher-Pines, et al. 'The Relationship Between Influenza Vaccination Habits and Location of Vaccination.' *PLoS ONE*. 9, no.12 (2014) e114863. DOI:10.1371/journal.pone.0114863.

¹⁵ Jennifer Isenor, Amy Wagg and Susan Bowles. 'Patient Experiences with Influenza Immunisations Administered by Pharmacists'. *Human Vaccines & Immunotherapeutics*. 14, no. 3 (2018):706-711. DOI:10.1080/21645515.2018.1423930.

¹⁶ Salisa Westrick, et al. 'National Survey of Pharmacy-Based Immunization Services'. *Vaccine*. 36, no. 37 (Sep 2018): 5657-5664. DOI: 10.1016/j.vaccine.2018.07.027.

¹⁷ 'The Pharmacy Guild of Australia. WA'. 2021. <https://www.guild.org.au/guild-branches/wa>

¹⁸ 'Medicines and Poisons Regulation Branch.' Western Australian Department of Health. https://ww2.health.wa.gov.au/Articles/J_M/Medicines-and-Poisons-Regulation-Branch

¹⁹ 'Pharmaceutical Society of Australia'. <https://www.psa.org.au/>

²⁰ Virginia Braun and Victoria Clarke. 'Using Thematic Analysis in Psychology'. *Qualitative Research in Psychology*, 2006; 3(2): 77-101. e114863.

2.1 Evaluation objectives

The key evaluation questions, indicators and data sources are listed in the framework below.

Table 2 Summary evaluation framework

Program Objective	Evaluation Question	Indicator	Data Source
Increase vaccination rates for persons aged 65 years and over in WA by enabling community pharmacies to access NIP vaccines for this cohort	Did community pharmacies participate in the program?	Uptake of service by pharmacies	CDCD trial registration data
		Number of pharmacies registered	CDCD vaccine management data
	Did the program increase vaccination rates in the cohort?	Number of vaccines distributed to pharmacies	CDCD vaccine management data
		Uptake of service by target group – vaccine encounters	The Australian Immunisation Register (AIR)
		Number of administrations in pharmacies	Over 65s Vaccinee Survey
		Number of participants who wouldn't have been vaccinated without the program	Over 65s Vaccinee Survey
Consumer satisfaction within the target group	Over 65s Vaccinee Survey		
Influenza coverage rates in over 65s	AIR		
Trial a distribution model for the supply of NIP vaccines to community pharmacies	Is the program model safe?	Safety profile - Number of adverse events following immunisation	WAVSS
		Quality assessment	AIR Participating Pharmacy Survey
		Standard of care	AIR Over 65s Vaccinee Survey Audit of Participating Pharmacies Participating Pharmacy Survey
	Is the program model efficient?	Usage - Proportion of distributed vaccines that were administered	CDCD vaccine management system AIR
		Timeliness of vaccinations	AIR
	Is the program model appropriate?	Pharmacist barriers to administering vaccines	Participating Pharmacy Survey Audit of Participating Pharmacies
		Participant perceived barriers to accessing vaccines	Over 65s Vaccinee Survey

2.2 Data sources

Quantitative and qualitative data informed the evaluation. The data sources are described in Table 1. Quantitative data were mainly derived from existing sources (as listed below), whilst qualitative data were obtained from surveys of pharmacies and vaccinees specifically designed for the evaluation. Detailed descriptions of the data sources are provided in Appendix 2.

Table 3 Sources of data for evaluation

Data collection	Description	Collection timing
The Australian Immunisation Register (AIR) ²¹	National Register that records vaccination encounters for individuals. For this evaluation, a vaccination encounter was defined as an instance of patient immunisation with a NIP Influenza vaccine at a community pharmacy recorded in the AIR. Vaccine providers are required to report all vaccination encounters to the AIR	Continuous
CDCD vaccine management data	Distribution, wastage, and cold chain breach data collated by CDCD	Annually
CDCD trial registration data	Registration details of participating pharmacies collected via REDCap ²²	Annually
WAVSS	Reported adverse events following immunisation (AEFI) data from the Western Australian Vaccine Safety Surveillance (WAVSS) System ²³	Continuous
Over 65s Vaccinee Survey	A CATI survey of persons aged ≥ 65 years old who received an influenza vaccine at a pharmacist (response: 415/600 from a sampling frame of 9,308 within the target group (9,528) in 2019)	Nov 2019
Participating Pharmacy Survey	An online survey (REDCap) of pharmacies registered with CDCD to participate in the trial. (response rate = 42.4%, 158/373)	Dec 2019
Audit of Participating Pharmacies	CATI audit of participating pharmacies that did not participate in the 'Participating Pharmacy Survey' (n=196)	Feb 2020

2.2.1 Limitations of data collected

Vaccination encounters

Reporting of vaccination encounters was reliant on records from the AIR. Vaccination providers are required to report vaccination encounters to the AIR. The number of vaccine encounters reported in this evaluation is likely to be an underestimate. Incomplete reporting to the AIR may be due to issues with providers record management software not correctly sending reports to the AIR, or due to providers misunderstanding the requirements when reporting. Specifically, if the report is entered as a history form or if the encounter does not contain the vaccination provider

²¹ 'Australian Immunisation Register', Australian Government, Services Australia.

<https://www.servicesaustralia.gov.au/individuals/services/medicare/australian-immunisation-register>

²² Paul Harris et al. 'Research Electronic Data Capture (REDCap)—A Metadata-Driven Methodology and Workflow Process for Providing Translational Research Informatics Support'. *Journal of Biomedical Informatics*. 42, no. 2 (2009): 377-381.

²³ 'Western Australia Vaccine Safety Surveillance (WAVSS) System', SAFEVAC Reporting. <https://www.safevac.org.au/>

number, the encounter is not attributed to the vaccination provider. Consequently, these incomplete records are not attributed to pharmacies in the AIR.

Survey data

Survey data from participants and pharmacies were collected during the 2019 period. As such, they may not accurately reflect experiences associated with the trial in other years. It is also important to recognise that those who were surveyed for the *'Over 65s Vaccinee Survey'* are a self-selecting group, and therefore the sample may not accurately represent the target group more broadly.

Cost

Data on cost and program expenses were not included in the scope of this evaluation.

The exact cost to the participating pharmacies was not adequately ascertained in this evaluation. Indeed, there would be the costs associated with vaccination-related consumables, time spent on vaccination and administration, and training that have not been captured here.

3 Results

The key evaluation findings are outlined in the following section. The accompanying Appendix document contains more detailed results.

3.1 Pharmacy participation

Key points

- The number of pharmacies participating increased annually from 264 in 2018 to 373 2020. In total, 420 community pharmacies participated in the trial from 2018-2020.
- Allocation of NIP vaccines to pharmacies increased 400% from 8,200 doses in 2018 to 41,000 doses in 2020.
- Participating pharmacies were geographically distributed across the state with the majority located in the metropolitan region.

3.1.1 Registration and engagement in the trial

In total, 420 community pharmacies registered for the trial. The number of pharmacies that participated in the trial increased annually, with 373 ordering NIP vaccines in 2020.

Between 70% and 80% of participating pharmacies were located in the metropolitan region, which is generally representative of population distribution in WA. In 2019 and 2020 the North metropolitan and East metropolitan regions had relatively similar percentage of participating pharmacies, whilst the South metropolitan region had the fewest participating pharmacies. In the regions, the South West had the most participating pharmacies across all three years of the trial. The number of participating pharmacies increased annually in North and South metropolitan, South West, Wheatbelt and Midwest regions (Table 4). A detailed profile of pharmacies engaged in the trial can be found in Appendix 3.

Table 4 Participating pharmacy profile

Participating pharmacy details	2018 n (%)	2019 n (%)	2020 n (%)
Participating pharmacy locality¹			
Total participating pharmacies ²	264	353	373
<i>Metro</i>			
East Metro	65 (24.6)	96 (27.2)	97 (26.0)
North Metro	80 (30.3)	95 (26.9)	101 (27.1)
South Metro	61 (23.1)	78 (22.1)	91 (24.4)
<i>Regional</i>			
Goldfields	7 (2.7)	8 (2.3)	8 (2.1)
Great Southern	10 (3.8)	13 (3.7)	11 (2.9)
Kimberley	-	3 (0.8)	2 (0.5)
Midwest	10 (3.8)	18 (5.1)	17 (4.6)
Pilbara	6 (2.3)	5 (1.4)	4 (1.1)
South West	17 (6.4)	23 (6.5)	27 (7.2)
Wheatbelt	8 (3.0)	14 (4.0)	15 (4.0)

¹ Locality is defined by Public Health Unit postcode range

² Participation in the trial is defined as ordering NIP vaccines

Source: CDCD vaccine distribution data and registration details of participating pharmacies (data as at 17 August 2020), the Australian Immunisation Register (data as at 9 August 2020)

3.1.2 Allocation and distribution of NIP vaccines to pharmacies

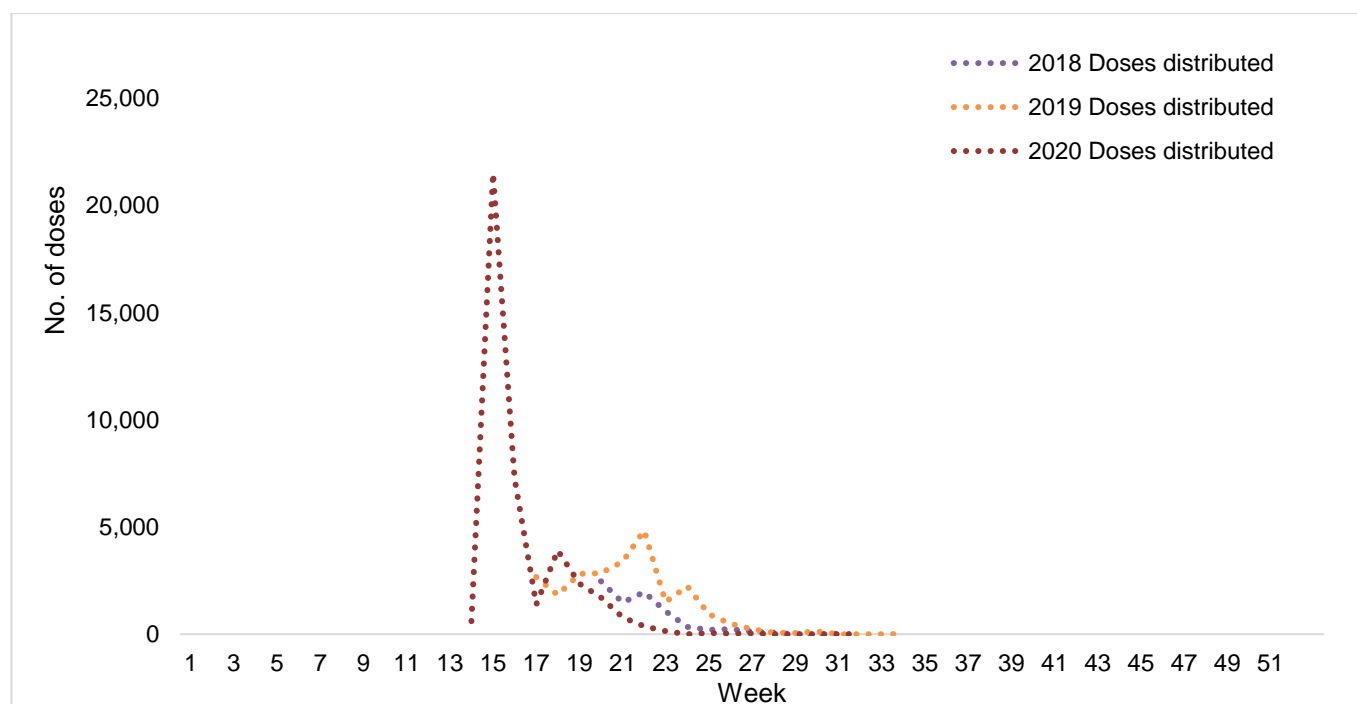
Allocation and distribution of NIP vaccines to pharmacies increased markedly from 2018 to 2020. Allocation of NIP vaccines to pharmacies increased 400% from 8,200 doses in 2018 to 41,000 doses in 2020 (Table 5). Across all years of the trial more than 90% of the allocation was distributed to participating pharmacies. Most of the distribution occurred within the first four to six weeks of the vaccines being made available (Figure 3).

Table 5 Distribution of doses to participating pharmacies

NIP vaccines distributed during the trial	2018 n (%)	2019 n (%)	2020 n (%)
Total doses allocated to the trial	8,200	26,500	41,000
Total doses distributed to pharmacies participating in the trial	8,010 (97.7)	24,068 (90.8)	40,200 (98.0)
Australian Pharmaceutical Industries	895 (11.1)	4,805 (20.0)	12,000 (29.9)
Sigma Healthcare	2,270 (28.3)	5,645 (23.5)	13,230 (32.9)
Symbion Pharmacy Services	4,845 (60.5)	13,618 (56.5)	14,970 (37.2)
Median no. of doses distributed to participating pharmacies	20	9	100
Range of doses distributed to participating pharmacies	5-200	1-1090	10-300

Source: CDCD vaccine distribution data (data as at 17 August 2020)

Figure 3 Doses of NIP vaccine distributed to pharmacies during the trial period



Source: CDCD vaccine distribution data (data as at 17 August 2020)

3.2 Uptake of services in the target group

Key points

- A total of 29,916 NIP influenza vaccines were recorded in the AIR as being administered to the target group at a pharmacy between May 2018 and August 2020.
- NIP-funded influenza vaccines administered at pharmacies in WA accounted for between 1.2% and 6.6% of total influenza vaccines administered to the target group each year of the trial.
- Persons aged 65-69 years received approximately half of the NIP-funded seasonal influenza vaccines administered to the target group each year.
- Many of participants indicated they always/usually receive the annual influenza vaccine.
- Respondents were likely to have received an influenza vaccination before, with almost half stating they had received the last vaccination at a community pharmacy.

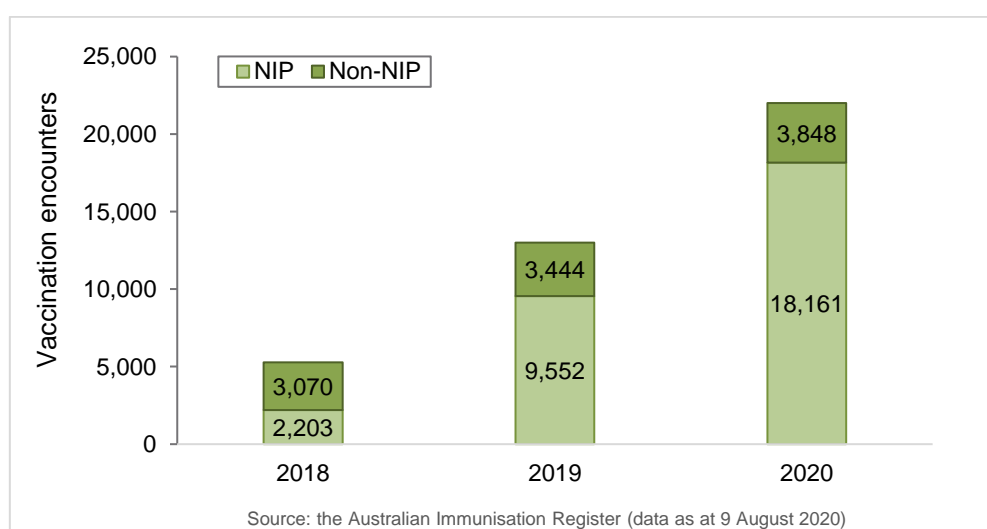
3.2.1 Encounters recorded in the AIR

Vaccination encounters recorded in the AIR for persons aged 65 years and older administered at a pharmacy were used to monitor vaccine usage and to measure vaccine uptake in the target group.

There were discrepancies between the number of vaccines distributed to pharmacies and number of encounters recorded in the AIR. This is addressed in more detail in Appendix 8.

A total of 29,916 NIP influenza vaccines were recorded in the AIR as being administered to the target group at a pharmacy between May 2018 and August 2020 (data accurate as at 9 August 2020). In 2020, NIP vaccines represent 82.5% of influenza vaccines administered to persons aged 65 years and over, compared with 41.8% in 2018 (Figure 4). Further details of vaccination encounters of NIP vaccines administered during the trial, as recorded in the AIR are provided in Appendix 4.

Figure 4 *Number of influenza vaccination encounters of persons aged 65 years and older at pharmacies in Western Australia 2018-2020, by NIP-funding status.*



Over the course of the trial, the proportion of NIP-funded influenza vaccines for persons aged 65 years and over provided by pharmacies increased from 1.3% of vaccines administered to the target group in 2018 to 13.0% in 2020 (Table 6).

It should be noted that there were a large amount of vaccines in 2020 that were recorded as generic influenza, and therefore cannot be counted as an NIP-funded influenza vaccine. However, in 2020, 90.7% of influenza vaccines for persons aged 65 years and over were provided by General Practice, while 8% were provided by community pharmacies.

Table 6 Vaccine encounters in the target group (persons aged 65 years and over), by provider type

Provider	2018			2019			2020		
	<i>NIP-funded vaccine brand</i>	<i>Other brands</i>	<i>Total</i>	<i>NIP-funded vaccine brand</i>	<i>Other brands</i>	<i>Total</i>	<i>NIP-funded vaccine brand</i>	<i>Other brands</i>	<i>Total</i>
	n (%), col)	n (%), col)	n (%), col)	n (%), col)	n (%), col)	n (%), col)	n (%), col)	n (%), col)	n (%), col)
Community Health	1,351 (0.8%)	1,821 (0.9%)	3172 (0.9%)	1,974 (0.9%)	2,374 (0.9%)	4,348 (0.9%)	2,998 (2.1%)	3422 (0.8%)	6,420 (0.2%)
General Practice	164,500 (97.7%)	191,402 (94.8%)	355,902 (96.1%)	216,393 (94.8%)	236,367 (92.4%)	452,760 (93.5%)	118,060 (84.5%)	383,180 (92.8%)	501,240 (90.7%)
Hospital	204 (0.1%)	290 (0.1%)	494 (0.1%)	349 (0.2%)	497 (0.2%)	846 (0.2%)	426 (0.3%)	462 (0.1%)	888 (0.2%)
Other	31 (0.1%)	45 (0.1%)	76 (0.1%)	29 (0.1%)	39 (0.1%)	68 (0.1%)	24 (0.1%)	32 (0.1%)	56 (0.1%)
Pharmacy	2,203 (1.3%)	8,343 (4.1%)	10,546 (2.8%)	9,552 (4.2%)	16,440 (6.4%)	25,992 (5.4%)	18,161 (13%)	25,857 (6.3%)	44,018 (8%)
Total	168,289	201,901	370,190	228,297	255,717	48,4014	139,669	412,953	552,622

¹These vaccines were entered with a brand that correlated to an NIP-funded vaccine brand in the AIR

²These vaccines were NOT entered with a brand that correlated to an NIP-funded vaccine brand in the AIR

³These were the total number of vaccines administered to the target group in the AIR

Source: the Australian Immunisation Register (as at 9 August 2020)

3.2.2 Demographic characteristics of vaccinees

Demographic characteristics of persons receiving the NIP-funded influenza vaccine at pharmacies was examined using AIR data. Other characteristics of trial participants were collected via the 2019 participant survey.

The age profile of trial participants remained quite consistent over time, with most participants aged between 65-69. In 2020 the age profile shifted compared with previous years with an increase in the proportion of recipients aged 80+ years and a drop the share of youngest participants (Table 7). The gender ratio close to 1:1 and was relatively similar across all years of the trial. Few Aboriginal persons participated, 0.3% of participants each year (Appendix 5)

Table 7 Age of persons who received NIP-funded seasonal influenza vaccine at a pharmacy

Total encounters ¹	Total n	Age group			
		65-69 %	70-74 %	75-79 %	80+ %
2018	2,203	53.2	24.5	12.4	9.9
2019	9,552	52.0	24.7	12.4	10.9
2020	18,161	44.1	26.0	14.1	15.8

¹An individual may have more than one vaccination encounter.

Source: the Australian Immunisation Register (as at 9 August 2020)

3.2.3 Vaccinee immunisation habits

Among the 415 survey respondents in 2019, 11.8% reported that they were first time influenza vaccinees; whilst 72.1% of survey respondents indicated that they always/usually receive the influenza vaccine. The likelihood that survey participants always/usually receive the influenza vaccine increased with age (see Table 8 and Appendix 6).

Forty-eight percent of survey participants reported receiving their last influenza vaccine at a community pharmacy, while 33.0% received it at their regular GP (Table 8). Persons aged 75+ were more likely to have received their last influenza vaccine at their GP than those aged less than 75 (Appendix 6).

Table 8 Vaccination habits of survey respondents

Vaccination habits	Total n=415 %
Is this the first time you received your flu vaccine at a community pharmacy?	
Yes	47.0
No	53.0
Do you normally receive the flu vaccine?	
This is the first time	11.8
Rarely	4.3
Sometimes	11.8
Always/usually	72.1
Where did you receive your last known flu vaccine?	
GP	33.0

Community pharmacy	48.0
Workplace clinic	4.8
Other	12.5
Unsure/Don't know	1.7
<hr/>	
Why did you receive your flu vaccine at a pharmacy?¹	
Convenience	88.9
GP booked out	6.7
Cheaper than GP	7.5
Free with health insurance	51.8
Other (please specify)	12.5
Unsure/Don't know	0.0
Refused	0.2
<hr/>	

¹Respondents were able to provide more than one answer to this question, therefore the total of per cent responses may equal greater than 100%

Source: 'Over 65s Vaccinee Survey' (Nov. 2019)

3.2.4 Reasons for uptake of service

Convenience was the most common reason (88.9%) selected for receiving a flu vaccine at a pharmacy, followed by it being offered for free with their health insurance (51.8%) (Table 8). Advertising at the pharmacy was the most common way survey respondents recalled finding out about the program (50.1%). The second most common way was through contact by their health insurance (HBF) via email or letter notifying them about the service provision. Further information is provided in Appendix 6.

3.2.5 Awareness of the program

Respondents were most likely to say they became aware of the program through advertising at the pharmacy within which they received their influenza vaccination. Others were notified of the program by their private health insurer (HBF) or by word of mouth. Refer to Appendix 11 for more detail.

3.2.6 Influenza vaccination coverage in the target group

An overall aim of the pharmacy influenza vaccination trial was to increase vaccination coverage for persons aged 65 years and above. During the trial period, influenza coverage amongst persons aged 65 years and older increased from 49.1% in 2018, to 61.9% in 2019, and was 67.3% in 2020. Public health advice and various media campaigns encouraging influenza vaccination in the target group are likely to have driven uptake of vaccination services in 2019 and 2020.

3.3 Safety and quality of service provision

Assessment of safety and quality of service provision are important considerations for determining the suitability of pharmacy participation in NIP-funded influenza program. Safety was assessed by monitoring the program safety profile through analysis of reported AEFIs. Quality of service provision was measured through assessment of standards of care and vaccination timeliness.

Key points

- Safety profile of vaccinations administered at pharmacies was within expected ranges.
- Post-vaccination observation and compliance with provision of required setting requirements prescribed in the SASA is indicated as high.
- There were some instances where vaccinees received more than one dose of NIP-funded influenza vaccine at a community pharmacy in the same season. More than one dose of influenza vaccine in the same season is generally not recommended as it may reduce the immunogenicity of the vaccine and/or lead to unwanted AEFIs.

3.3.1 Adverse events following immunisation (AEFIs)

An adverse event following immunisation (AEFI) is 'an unwanted or unexpected event following the administration of a vaccine(s)'²⁴. An AEFI may be due to a person's response to a vaccine, may include conditions that occur following the incorrect handling or administration of a vaccine, or could be a coincidence, i.e., it would have occurred regardless of vaccination.

In WA, there is a statutory requirement for health professionals to report an AEFI to the WA DoH, per the requirements of the *Public Health Act 2016* and the *Public Health Regulations 2019*. It is also a condition of the SASA that immunising pharmacists are required to report AEFIs to the Western Australian Vaccine Safety Surveillance (WAVSS) System. AEFIs may be reported to WAVSS passively from medical professionals and members of the public, or through active surveillance data gathered by SmartVax²⁵.

²⁴ 'Government of Western Australia, Department of Health, *Western Australia Vaccine Safety Surveillance*. https://ww2.health.wa.gov.au/Articles/U_Z/Western-Australian-Vaccine-Safety-Surveillance-WAVSS

²⁵ 'SmartVax', Home - SmartVax. <https://www.smartvax.com.au>

During the trial, five individuals reported an adverse event following immunisation (AEFI) via passive surveillance systems (Table 9). Of those, two were considered to be significant/serious.

Table 9 Adverse events reported to the WAVSS System associated with the trial

Reaction	n	Vaccination Year
Lymphadenopathy*	1	2019
Lethargy	1	2020
Injection site reaction - minor/common/expected	1	2020
Rash	1	2020
Influenza-like-illness*	1	2020

*Denotes serious/significant reactions

Source: Western Australia Vaccine Safety Surveillance (WAVSS) System (data as at 9 August 2020)

This translates to the rate of 1.05 AEFIs per 10,000 doses in 2019 and 2.2 AEFIs per 10,000 doses in 2020. This is within the range reported for this age group and for this vaccine type, as indicated by data reported in the Western Australia Vaccine Safety Surveillance – Annual Report 2019²⁶ and 2018²⁷. Overall, in 2018, there were 1.01 AEFIs per 10,000 doses for persons aged 65 years and over who received an influenza vaccine. In 2019, there were 0.48 AEFIs per 10,000 doses for persons aged 65 years and over who received an influenza vaccine.

3.3.2 Standard of care

Pharmacists are required to comply with approved setting requirements under the SASA. These requirements include having a screened area or private room for administering vaccines, up to date written vaccination administration procedures, at least two pharmacists available on-site during any immunisation period, and an in-date anaphylaxis response kit. Participating pharmacies in 2019 self-reported high compliance with the required setting requirements outlined in the SASA (Appendix Table 7).

Of the survey respondents, 94.9% (150/158) said there were extra staff on the premises. Over half (57%), (90/158) of pharmacies reported that there were two pharmacists on site during immunisation periods. Two pharmacies indicated they did not have additional staff during the immunisation periods, while six were unsure. 29.1% (46/158) indicated that there was only one pharmacist on site during these periods, 10.1% (16/158) indicated that there were three pharmacists on site, while 3.8% (6/158) indicated that there were four pharmacists on site during immunisation periods. All the survey respondents (158/158) indicated that they had in-date anaphylaxis response kits.

Almost 90% (89.6%) of the 2019 survey respondents were asked to wait for 15 minutes following vaccination to be observed indicating the majority of providers were adhering to the requirement of post vaccination observation.

²⁶ Government of Western Australia, Department of Health, *Western Australia Vaccine Safety Surveillance – Annual Report 2019*, 2019. <https://ww2.health.wa.gov.au/-/media/Corp/Documents/Health-for/Immunisation/Western-Australia-Vaccine-Safety-Surveillance-Annual-Report-2019.pdf>

²⁷ Government of Western Australia, Department of Health, *Western Australia Vaccine Safety Surveillance – Annual Report 2018*, 2018. <https://ww2.health.wa.gov.au/-/media/Corp/Documents/Health-for/Immunisation/Western-Australian-Vaccine-Safety-Surveillance-Annual-Report-2018.pdf>

Based on data from 2019 and 2020, it appears that vaccines were administered in line with the seasonal advice from ATAGI²⁸²⁹. In 2019 ATAGI recommended that vaccinations should be provided in May, and majority of the immunisations (62.3%, 5,955/9,552), were administered in the latter half of May. As at 9 August 2020, 64.6% (11,730/18,161) were administered in the first three weeks on April, which was in line with the advice for 2020, which was to vaccinate as soon as vaccines became available.

3.3.3 Repeated doses administered to individuals in the same season

Investigation of the AIR data for this evaluation revealed that there were some instances where individuals received multiple doses of NIP-funded vaccine at community pharmacies in the same season. Repeated doses of influenza vaccines are not recommended for this age group, as this may reduce the immunogenicity of the vaccine and/or may increase the risk of the vaccinee experiencing an AEFI.

During the trial period 152 instances where individuals received more than one dose were identified at community pharmacies; this translated to 5 instances per 1,000 vaccinations. In 2020, there were 120 people in the AIR recorded as receiving two doses of NIP vaccine at a pharmacy, and six people receiving three doses. None of these individuals reported an AEFI to WAVSS.

It was beyond the scope of this evaluation to investigate the reasons why individuals were administered multiple doses of NIP-funded vaccine at community pharmacies in the same season. However, strategies to support pre-screening of individuals prior to vaccination may support improvement in this area and should be addressed in educational material developed for immunising pharmacists.

²⁸ The Australian Government, Department of Health, *ATAGI advice on seasonal influenza vaccines in 2019*, 2019. <https://www.health.gov.au/resources/publications/atagi-advice-on-seasonal-influenza-vaccines-in-2019>

²⁹ The Australian Government, Department of Health, *ATAGI advice on seasonal influenza vaccines in 2020*, 2020. <https://www.health.gov.au/resources/publications/atagi-advice-on-seasonal-influenza-vaccines-in-2020>

3.4 Vaccine reporting

An important part of vaccination service provision is the reporting of vaccine usage. As outlined in the SASA, vaccine encounters are required to be reported to the AIR, and participation in the trial is conditional on the reporting of cold chain breaches and vaccine wastage to CDCD. CDCD has a standard process for reporting vaccine wastage that all providers are required to adhere to, as outlined on the WA Health Cold chain management website³⁰. Generally, vaccination encounters are transferred from the vaccine provider to the AIR via a file transfer process set up in service management software. The evaluation compared vaccination distribution data to vaccine administration data and wastage reports to monitor the performance and compliance of pharmacies that participated in the trial.

Key points

- Over the duration of the trial, more than 50% of distributed vaccine doses were considered unaccounted for. That is, they were not recorded as administered (in the AIR) or reported as wasted. The proportion unaccounted for decreased each year but remained high.
- Overall, there has been poor accountability for NIP vaccines that have been distributed to pharmacies. Reasons for this should be examined and addressed.

3.4.1 Number of NIP vaccines administered to consumers

According to the AIR, the proportion of NIP vaccines distributed to pharmacies that were administered to consumers was less than 50% during the trial period. In 2018 27.5% (2,203/8,010) were recorded in the AIR, 39.7% (9,552/24,068) in 2019, and 45.2% (18,161/40,200, as at 9 August 2020) in 2020.

Approximately three quarters of pharmacies that participated in the trial reported vaccine encounters in the AIR during the trial period. As presented in Table 2, in 2018 75.4% (199/264) reported vaccine encounters to the AIR, in 2019 that dropped to 60.3% (213/353) and rose again in 2020 to 76.1% (284/373).

For some providers in 2020, there were more doses reported to the AIR compared with the number of doses distributed to the pharmacy. This suggests that there may have been transferring of vaccine stock between pharmacies.

Findings from the survey and audit of the participating pharmacies suggests utilising the AIR presented challenges. Accessing the AIR was reportedly a problem at least some of the time for 74.3% (116/156) of survey respondents. Audits of pharmacies also indicated the AIR as a problem for them, for example: *'the Immunising pharmacist no longer works at the pharmacy and they are having trouble finding the AIR number'* and *'upload[ed] on AIR through GuildCare and it sent a message saying busy'*. Further details regarding how pharmacies perceived utilising the AIR during the trial period are provided in Appendix 12.

3.4.2 Reporting of wastage

A standardised reporting framework exists for monitoring wastage of government-procured vaccines. This is important for understanding reasons for wastage (e.g. user error, vaccine expiry,

³⁰ 'Cold Chain Management', Government of Western Australia. https://ww2.health.wa.gov.au/Articles/A_E/Cold-chain-management

cold chain breaches), monitoring vaccine usage at the provider level (and adjusting distribution where necessary), and minimising vaccine wastage in future seasons. Vaccine wastage due to vaccine expiry is reported via an online form, whilst vaccine wastage due to cold chain breaches or user error is reported via a paper-based form (available online). Vaccine wastage is measured as a proportion of the vaccine distributed, the report also included the dollar value of vaccines wasted, and total doses reported as wasted to CDCD.

In 2018 of the pharmacies that participated in the trial, 4.7% of doses distributed were reported to CDCD as wasted. This increased to 9.0% of distributed vaccines in 2019 and 8.3% in 2020 (Table 10). Majority of participating pharmacies did not report any vaccine wastage during the trial. Compliance with wastage reporting has been low over the duration of the trial. In 2018, 6.8% (18/373) of pharmacies reported wastage, in 2019 27.2% (96/353) reported wastage, and in 2020 24.4% submitted wastage reports (91/373).

3.4.3 Unaccounted for doses

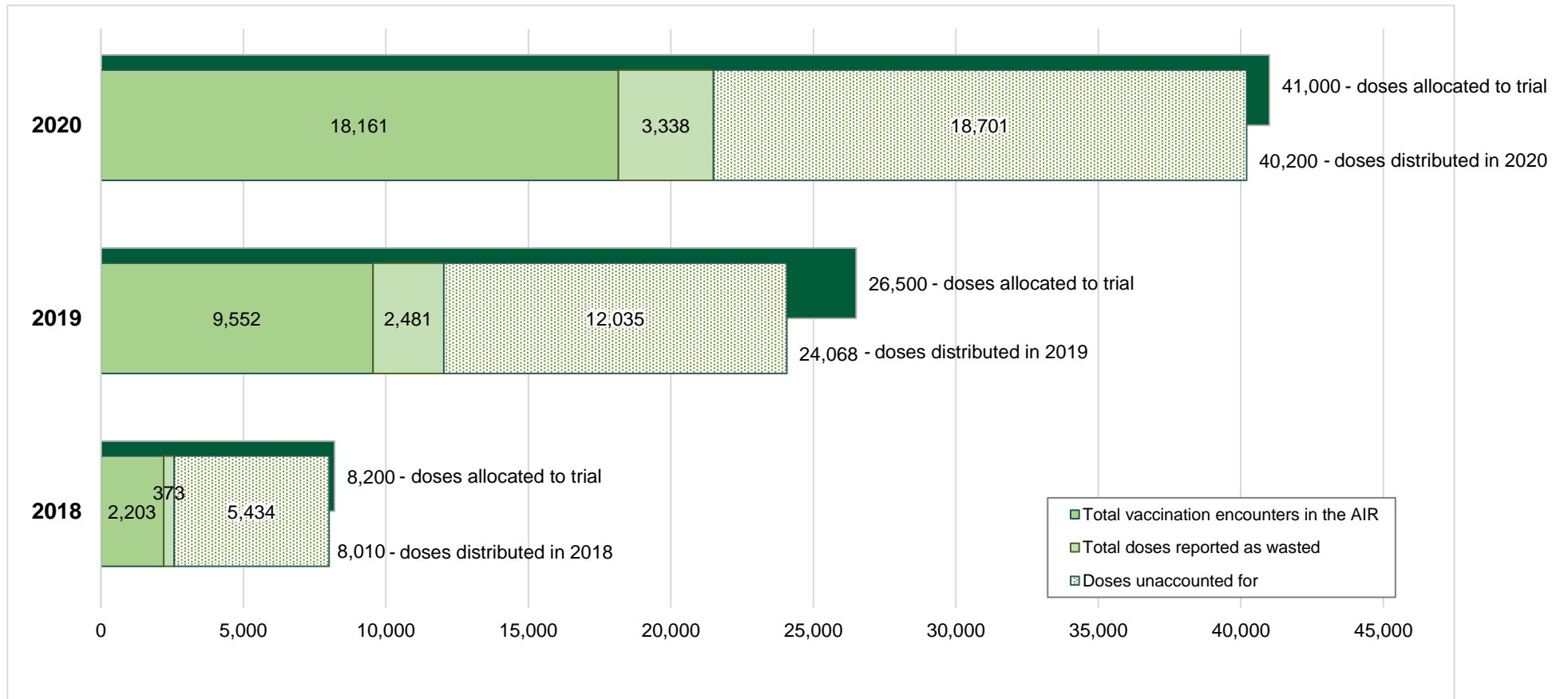
Review of distribution data, vaccine encounters and wastage reports indicated there is underreporting of both vaccine wastage, and vaccines administered to patients. Over the duration of the trial, not all vaccines that were distributed to pharmacies were accounted for (Figure 5). In 2018 two in three doses (67.8%) were unaccounted for, while in 2019 and 2020 where one in two (50.8%) doses were unaccounted for (Table 10).

Table 10 Vaccine usage by pharmacies that participated in the trial

Vaccine distribution and usage	2018 n (%)	2019 n (%)	2020 n (%)
Distribution of doses to participating pharmacies			
Total doses distributed to community pharmacies	8,010	24,068	40,200
Median no. of doses distributed to pharmacies	20	9	100
Range of doses distributed to pharmacies	5-200	1-1090	10-300
Total pharmacies that ordered (participating)	264	353	373
Vaccination encounters recorded in the AIR			
Total doses recorded in AIR	2,203 (27.5)	9,552 (39.7)	18,161 (45.2)
Number of pharmacies that reported to AIR	199	213	284
Median encounters reported	6	21	47
Range of encounters reported	1-114	1-390	1-356
Vaccine doses reported as wasted			
Total doses reported as wasted	373 (4.7)	2,177 (9.0)	3,338 (8.3)
Median number of doses reported as wasted	11	13	26
Range of doses reported as wasted	4-90	1-200	1-121
Number of sites that reported wastage	18 (6.8)	96 (27.2)	91 (24.4)
Vaccine doses unaccounted for			
Total doses unaccounted for	5,434 (67.8)	12,339 (51.3)	20,405 (50.8)
Median doses unaccounted for	-	20	45

Source: CDCD vaccine distribution data (as at 15 March 2021) and the Australian Immunisation Register (AIR; data as at 9 August 2020)

Figure 5 Distribution and usage of NIP vaccines to pharmacies in WA during the trial period 2018-2020



Source: Vaccination encounters in the Australian Immunisation Register (AIR; data as at 9 August 2020) and CDCD distribution (data as at 14 August 2020)

3.5 Appropriateness

The appropriateness of the program and distribution model was assessed by investigating participants perceptions of the experience, including intention to access the service again, cost and provider feedback regarding barriers.

Key points

- Consumers were satisfied with their experience receiving their vaccination at the pharmacy.
- Almost all survey respondents indicated that they would receive an influenza vaccine again at a pharmacy.
- Of those who paid an out-of-pocket expense, nearly 90% indicated that they were happy with the cost charged for their vaccination service.
- Funding/reimbursement was identified as a major barrier to service provision for almost half of the pharmacies that participated in the survey.
- The fact that patients can be immunised free-of-charge at other locations was reported as challenging by some pharmacists.
- Analysis of survey responses and audit data indicates that record management and utilising the AIR may be a barrier for some pharmacies that participated in the trial.
- Patient-related factors were not identified as barriers to service provision by survey respondents.

3.5.1 Participant overall experience

Consumers from within the target group were satisfied with their experience of receiving vaccination at the pharmacy (Table 11, and Appendix 9).

Table 11 Consumer experience reported by survey respondents

Consumer experience	Total n (%)
Total responses	n=415
Did you feel safe receiving your influenza vaccine at the pharmacy?	
Yes	99.3
No	0.2
Unsure/Don't know	0.2
Refused	0.2
Overall, were you satisfied with your vaccination experience at the pharmacy?	
Yes	98.3
No	1.0
Unsure/Don't know	0.7

Source: 'Over 65s Vaccine Survey' (Nov. 2019)

3.5.2 Intention to access service in the future

Ninety percent (90.4%) of vaccinee survey respondents indicated they would receive an influenza vaccine again at a pharmacy. The leading reasons for accessing the service were convenience (55.1%), and because it was free with health insurance membership (28.8%). Other reasons provided by survey respondents included that they would return to a pharmacy due to vaccine

availability, because it was cheaper than the GP, because they had a good relationship with the pharmacy staff, that they prefer not to take up the doctor’s time for receiving a vaccination, and because the vaccine was no longer provided for free at work. Almost three quarters (72.5%) of the respondents indicated that their preferred location for receiving the seasonal influenza vaccine was at the community pharmacy. Additionally, most (84.6%) would recommend family and friends receive an influenza vaccine at a pharmacy (Appendix 9).

3.5.3 Perception of cost

Nearly 44% (43.9%) of consumers who were surveyed reported paying an out-of-pocket expense for the immunisation service; of these, 87.4% indicated they were happy with the cost charged for their vaccination service, and 40.6% of which recalled paying between \$10-\$15 (Table 12). Most recipients reported paying less than \$20 out of pocket. Of the pharmacies that participated in the survey, only two reported the fees charged for the service; this was \$9.95 and \$10.

Table 12 Cost associated with vaccination service reported by consumers who responded to the survey

Cost reported by consumers	Total %
Total responses	n=415
Did you pay an out-of-pocket expense for the influenza vaccine that you received at the pharmacy this year?	
Yes	43.9
No	50.8
Unsure/Don't know	5.1
Refused	0.2
Of those who paid out-of-pocket:	
How much did you pay for your influenza vaccination at the pharmacy this year?	n=182
Less than \$5	0
\$5-\$10	25.6
\$10-\$15	40.6
\$15-\$20	22.4
\$20-\$25	6.3
\$25-\$30	1.7
More than \$30	0
Unsure/Don't know	4.6
Refused	0
Were you happy to pay this amount for your influenza vaccine?	
Yes	87.4
No	6.6
Unsure/Don't know	6.0
Refused	0

Source: 'Over 65s Vaccine Survey' (Nov. 2019)

3.5.4 Barriers to immunisation service provision

Participating pharmacies were consulted on barriers they faced in implementing the program during the 2019 influenza vaccination season. Key barriers are discussed below and highlighted further in Appendix 12 and Appendix 13.

Organisational/environmental factors

The major barrier to providing immunisation services was associated with the lack of funding for service provision. When asked which aspects of providing immunisation services were challenging, almost half (44.4%) of pharmacy survey respondents reported that lack of reimbursement challenged them 'a great deal' (Table 19 in Appendix 12). Furthermore, when asked '*Were there any other challenges you faced when providing immunisation services to patients aged 65 years and over?*', responses most frequently referred to funding issues. Within this, the cost to customer (having to charge them an administration fee), and cost to pharmacy (for staff time and consumables) were reported.

Supply was not an issue for majority of pharmacies that participated in the survey, with 96.2% reporting that they had sufficient supply of vaccine in 2019.

Patient-related factors

Generally, patient-related factors were not reported as barriers by pharmacies. However, some respondents (35.2%) indicated that the fact that patients can be immunised free-of-charge at other locations was challenging. Additionally, lack of awareness of service provision amongst persons aged 65 years and older was indicated as a challenge by nine of the 39 responses of pharmacy survey respondents. The time it takes to talk to patients about being immunised and the time it takes to administer vaccinations were not considered to be barriers to vaccination. Further details on barriers to service provision identified as patient-related factors are provided in Table 19 in Appendix 12.

Perceived integration into the program

Seventy-six percent of survey participants (76.0%; 120/158) indicated that they felt integrated into the WA DoH influenza immunisation program. Of those that did not feel integrated (10.1%), the main reason was the lack of funding/renumeration for service provision. Furthermore, respondents indicated that there was a lack of support from other health care providers. Respondents suggested that they would feel better integrated if there was promotion of pharmacist immunisation services (n=23) and reimbursement for services (n=21). Ninety percent (89.9%; 142/158) of respondents indicated that communications from WA DoH during 2019 were adequate. An analysis of respondents' perceptions of integration into the WA DoH influenza immunisation program is presented in Appendix 13.

3.6 Program delivery during the trial period

During the trial, CDCD utilised an alternative model for distributing NIP vaccines to participating pharmacies. This alternative model used the existing pharmaceutical wholesaler network to distribute the vaccines, due to the low distribution costs and that pharmacies could access NIP vaccines through the same mechanism as they access privately purchased vaccines. A detailed description of the distribution model utilised in the trial is provided in Appendix 1.

A major point-of-difference between the standard distribution model and that utilised during the trial is that WA DoH manages stock in only one location in the standard model (the WA Health vaccine warehouse), whereas in the trial model, stock is supplied from three locations (i.e. the pharmaceutical wholesalers).

Consultation with the program administrators provided the following insights into the issues faced during the trial period.

Key points

- To reduce vaccine distribution costs during the trial, CDCD utilised the commercial pharmaceutical wholesaler network to distribute the vaccines, rather than the standard WA Health contracted warehousing and distribution service used for delivering government-funded vaccines to other immunisation providers.
- Utilising the pharmaceutical wholesaler network to distribute vaccines, CDCD was unable to directly manage supply and distribution of vaccine to individual pharmacies, as is standard practice.
- Inability to manage supply led to rapid depletion of stock in 2019 and 2020. In both years, WA Health was unable to meet demand in the pharmacy sector, which left participating pharmacies confused and frustrated.
- Due to these significant issues, managing supply from three wholesalers was identified as problematic, and not suitable for the Program in the future.

3.6.1 Program administration in 2018-2019

In 2018 and 2019 participating pharmacists were able to order NIP vaccines from any of the selected wholesalers. In 2018 and 2019, the wholesalers were not provided with lists of registered pharmacies that agreed to participate in the trial. This resulted in pharmacies that had not registered for the trial being able to access NIP vaccines.

Two-thousand and nineteen saw increased demand for NIP influenza vaccine for the target group; driven by high inter-seasonal influenza notification, strong Public Health messaging encouraging vaccination, and increased media coverage associated with influenza cases in the State. In turn, this resulted in record volumes of vaccines being ordered by WA immunisation service providers.

Surge demand for vaccine led to some instances where WA Health was unable to meet the supply requirements. This led to pharmacies feeling frustrated and confused about the lack of access to NIP vaccines. The major difficulty faced by CDCD during these instances was the need to restock all three wholesalers without the ability to manage supply to pharmacies thereafter to ensure that vaccines were equitably distributed.

An interim evaluation report following the 2019 distribution season indicated that demand for vaccines was compounded by pharmacies ordering in excess of their needs. A review of the program administration in 2019 indicated that supply restrictions were required for the 2020 period.

3.6.2 Program administration in 2020

In 2020, to support equitable distribution of vaccines to participating pharmacies, the following programmatic modifications were made:

- Only pharmacies registered to participate in the trial were able to order the vaccine from wholesalers.
- Pharmacies had to register their interest before vaccine distribution commenced.

- Participating pharmacies could only order NIP vaccine from their preferred wholesaler, as nominated by them in the registration form.
- Orders were restricted to 20 doses a week per pharmacy.

However, due to the unprecedented demand for the vaccine in the wake of the COVID-19 pandemic, and public health advice to vaccinate older adults as soon as possible, these restrictions were lifted. Without the ability to manage supply, stock was depleted more rapidly than had occurred in 2019. For example, at one of the wholesalers, the entire allocation (14,970 doses) was distributed over the first ten days of the Program. Shortly thereafter, a second wholesaler also depleted their supply. Lack of State supply at the time meant that CDCD were unable to replenish stock at these wholesalers. This, coupled with the Programmatic change to have pharmacies nominate their preferred wholesaler, meant that there were significant delays to vaccine access for some participating pharmacies. Once again, participating pharmacies were left frustrated by the lack of CDCD's ability to meet demand. Consequently, program administrators were inundated with queries regarding vaccine supply which increased workload significantly. Because of the events at the commencement of the Program, supply was a major issue reported by participating pharmacies in 2020. This highlighted the need to distribute via one wholesaler if the Program was to be continued.

4 Discussion

The Pharmacist Influenza Vaccination Trial enabled pharmacies with pharmacists trained in immunisation to access NIP-funded influenza vaccines for administration to persons aged 65 years and over from 2018-2020. The trial period saw a new (decentralised) model of distribution utilised by CDCD to distribute vaccines to pharmacies, new reporting requirements for pharmacies, and a new point of access for this service for the target group. The evaluation findings are therefore important for understanding the impact of the program during the trial period, and to identify areas for reform and improvement.

Pharmacy and consumer participation in the program increased over time, which is reflective of a new program. In 2020, 373 pharmacies ordered NIP vaccines, compared with the 264 in 2018. This resulted in the administration of at least 29,000 NIP-funded seasonal influenza vaccines between May 2018 and August 2020. Consumers are happy with the service and appreciate the convenience, intentions to continue to seek vaccination services at a community pharmacy in the future were indicated as strong. The demand for the program may continue to grow as awareness of the program increases amongst the public.

Pharmacies seemed to consider the program worthwhile. There were some challenges with costs of providing the immunisation service. Pharmacies generally reported they were able to comply with the conditions of the SASA. However, there were some significant issues with the safety and quality of services, and, reporting and accountability identified throughout the evaluation.

The discrepancy between the number of doses distributed to pharmacies and those administered to consumers suggests underreporting to the AIR. It is unclear whether this is due to poor compliance with reporting requirements, and/or due to data flow/system issues, such as those outlined by pharmacies that participated in the survey.

Non-compliance with the requirement to record patient immunisations into the AIR compromises the safety and quality of the program. It is essential that records of patient immunisation are entered correctly and promptly into the AIR, as individuals may not recall the receipt of the vaccination and may seek an additional vaccination at another provider. Repeated doses of influenza vaccines are not recommended for this age group, as it may reduce the immunogenicity of the vaccine and/or may increase the risk of an AEFI. Instances of repeated doses increased over the duration of the trial from 0.09% in 2018, to 0.25% in 2019, and to 0.69% in 2020. It was also identified that apart from the active surveillance pilot there is little mechanism for pharmacies to provide follow-up care of vaccinees after they leave the pharmacy.

The accountability by participating pharmacies for the vaccines distributed to them was poor. Less than 50% of all vaccines that were distributed during the trial were accounted for (either reported as wasted or administered to the AIR), despite reporting requirements being clearly outlined either in the SASA, the terms and conditions of the trial, or the program information on the WA Health website.

Many of these issues are characteristic of new programs and are likely to improve with education and ongoing monitoring of compliance. The following section outlines some strategies to improve compliance following the completion of the trial period.

5 Recommendations

This section draws on the findings documented in the previous sections to provide recommendations for consideration by the evaluation project managers, and implementation by the program administrators.

Completion of the trial period

Based on the positive consumer feedback, and increased access to vaccines for the target group, it is recommended that the Program moves out of the trial status and becomes an ongoing program within the broader WA Influenza Immunisation Program³¹.

Under the *Pharmacist-administered influenza vaccination program for older adults*³² CDCD will continue distribution of NIP-funded influenza vaccines to community pharmacies.

Implementation of improved distribution model

Adjustments should be made to the distribution model for 2021. It is recommended that vaccines are distributed through one pharmaceutical wholesaler. This would improve CDCD's ability to effectively manage supply without increasing distribution costs significantly.

The following programmatic changes for 2021 are also recommended to support distribution:

- Set allocation of doses to participating pharmacies based on usage and demographic data, where available and;
- Communication around the programmatic changes, and the implications to service provisions to stakeholders and key organisations.

Assessment of compliance with reporting requirements

To support a safe and high-quality Program, it is recommended that assessment of individual pharmacies' reporting performance at the end of each vaccine distribution season. The following activities should be assessed: the vaccine encounters reported to AIR compared with vaccines ordered, and compliance with cold chain breaches and vaccine wastage reporting.

Improved accountability for the vaccines will support pharmacies to be compliant with the Administration of Vaccines by Pharmacists SASA, under which they operate, and the new mandatory Australian Immunisation Register Amendment (Reporting) Rules 2021³³, effective 1 March 2021.

Partnership with Western Australia Primary Health Alliance to provide support to immunising pharmacists

It is recommended that CDCD partners with Western Australia Primary Health Alliance (WAPHA)³⁴ to facilitate support for immunising pharmacists similar to what is currently provided

³¹ 'Influenza Immunisation Program', Government of Western Australia, Department of Health.

https://ww2.health.wa.gov.au/Articles/F_I/Influenza-immunisation-program

³² 'Pharmacist-administered Influenza Vaccination Program for Older Adults', Government of Western Australia, Department of Health.

https://ww2.health.wa.gov.au/Articles/N_R/Pharmacist%20administered%20influenza%20vaccination%20program%20for%20older%20adults

³³ 'Australian Immunisation Register Amendment (Reporting) Rules 2021 (Cth)'. [Australian Immunisation Register Amendment \(Reporting\) Rules 2021](#).

³⁴ 'WA Primary Health Alliance', WA Primary Health Alliance, 2021. <https://www.wapha.org.au/>

for General Practice. This may include support officers and/or online resources such as access to immunisation related HealthPathways, and education events.

Development of pharmacist-administered vaccination guidelines

It is highly recommended that Western Australia develops pharmacist-administered vaccination guidelines, such as those developed by Victoria³⁵ and Queensland³⁶. Additionally, a flow chart to summarise the key information contained in the SASA and guidelines, as created by Victoria, is also recommended.

It is proposed that the Western Australia pharmacist-administered vaccination guideline includes, but is not limited to, the specification of:

- Target groups identified in the '*Administration of Vaccine by Pharmacists*' SASA
- Requirements for premises, professional governance, staffing, equipment resources and protocols, including but not limited to:
 - Emergency response protocol
 - Cold chain management
 - Reference to the National Vaccine Storage Guidelines³⁷
 - Reference to the WA Cold Chain Protocol, and how to report cold chain breaches³⁸
 - Contents of a pre-vaccination screening checklist, as prescribed in the Australian Immunisation Handbook
 - Assessment and consent
 - Monitoring
 - Managing and reporting adverse events
 - Record keeping
 - Reporting to the AIR
 - Misadministration of vaccines
 - Provision of follow-up care for vaccinees
 - Reporting of vaccination to nominated GP/other health care provider where relevant
- Fees and charges

It is recommended that these guidelines are developed in consultation with stakeholders and key organisations.

It is also recommended that pharmacy-specific vaccination promotional and educational resources are developed, following consultation with the sector regarding areas of need.

³⁵ Victorian Government, *Victorian Pharmacist-Administered Vaccination Program Guidelines*, 2020. <https://www2.health.vic.gov.au/public-health/immunisation/immunisers-in-victoria/pharmacist-immunisers/guidelines>

³⁶ Queensland Health. *Queensland Pharmacist Vaccination Standard April 2020*. Available from: https://www.health.qld.gov.au/_data/assets/pdf_file/0016/444130/standard-pharmacy-vaccination.pdf

³⁷ The Australian Government. *National Vaccine Storage Guidelines 'Strive for 5'*. Available from: <https://www.health.gov.au/resources/publications/national-vaccine-storage-guidelines-strive-for-5>

³⁸ '*Cold Chain Management*', Government of Western Australia, Department of Health, 2020. https://www2.health.wa.gov.au/Articles/A_E/Cold-chain-management

Strengthening relationships with key stakeholders

Pharmacists play an important role in providing immunisations, particularly in the administration of non-government funded seasonal influenza vaccines. To ensure that this cohort of the immunisation workforce is supported and maintained, it is recommended that pharmacy representation is invited on immunisation associated steering committees, such as Western Australia Immunisation Strategy Implementation Steering Committee (WAISISC)³⁹, and the Western Australia Vaccine Safety Advisory Committee (WAVSAC).

6 Conclusions

The evaluation of the WA Pharmacist Influenza Vaccination Trial aimed to assess pharmacy engagement in the trial, the consumer uptake of NIP-funded vaccines at community pharmacies, and to consider ongoing implementation of the program.

Pharmacy engagement was positive, with 393 pharmacies engaged in the trial over the three-year period. This translated to at least 29,000 pharmacist-administered NIP-funded vaccinations being administered to the target group from May 2018–August 2020.

Due to the positive consumer response to the Program during the trial period, NIP-funded influenza vaccines will continue to be distributed to community pharmacies as part of the Pharmacist-Administered Influenza Vaccination Program for Older Adults.

Unaccounted for vaccine remains a concern and should be addressed as a priority. Recommended strategies to improve compliance with reporting requirements include the development of program guidelines and pre-allocation of vaccine to participating pharmacies.

³⁹ 'Western Australian Immunisation Strategy 2016–2020: Message from the Minister for Health', Government of Western Australian, Department of Health, 2016. https://ww2.health.wa.gov.au/Articles/F_1/Immunisation-strategy

Appendix 1 - Overview of the trial

This section provides an overview of the WA Pharmacist Influenza Vaccination Trial.

Scope of the trial

The scope of the trial included distribution of NIP-funded influenza vaccines for persons aged 65 years and over to community pharmacies that registered for the trial.

Duration of the trial

WA DoH commenced the trial in May 2018 for an initial two-year period, however due to supply and distribution constraints, NIP vaccines were brought back from pharmaceutical wholesalers into the WA Health vaccine warehouse in 2018. As such, the trial was extended an additional year (through 2020) to ensure that two seasons of distribution via the pilot model were carried out prior to the evaluation being completed.

Distribution model used during the trial

In WA, NIP vaccines are distributed to immunisation service providers across the state by a third-party logistics service, under a contractual agreement with the WA DoH. As outlined in Appendix Figure 1, the standard distribution model utilised by CDCD involves vaccines being delivered to providers directly from the WA Health vaccine warehouse to metropolitan providers, and via regional distribution centres outside of the metropolitan area. Regional distribution centres are generally hospital pharmacies. In the standard distribution model, CDCD manages vaccine orders from immunisation service providers utilising the online ordering system and via monitoring distribution reports at the WA Health vaccine warehouse. For example, providers place vaccine orders, which are reviewed by CDCD staff before the orders are approved.

In contrast, for the trial, NIP vaccines were distributed to participating pharmacies via selected major pharmaceutical wholesalers, rather than adding participating pharmacies to the standard distribution model (Appendix Figure 1). As such, participating pharmacies would place orders with pharmaceutical wholesalers. To support equitable distribution of vaccines to participating pharmacies, CDCD requested that pharmaceutical wholesalers restrict the number of doses distributed in 2020.

In 2018 and 2019 participating pharmacists were able to order NIP vaccines from any of the selected wholesalers. In 2018 and 2019, the wholesalers were not provided with lists of registered pharmacies that agreed to participate in the trial. Interim data indicated that this had led to some pharmacies ordering the NIP vaccines although they had not registered for the trial or agreed to the terms and conditions.

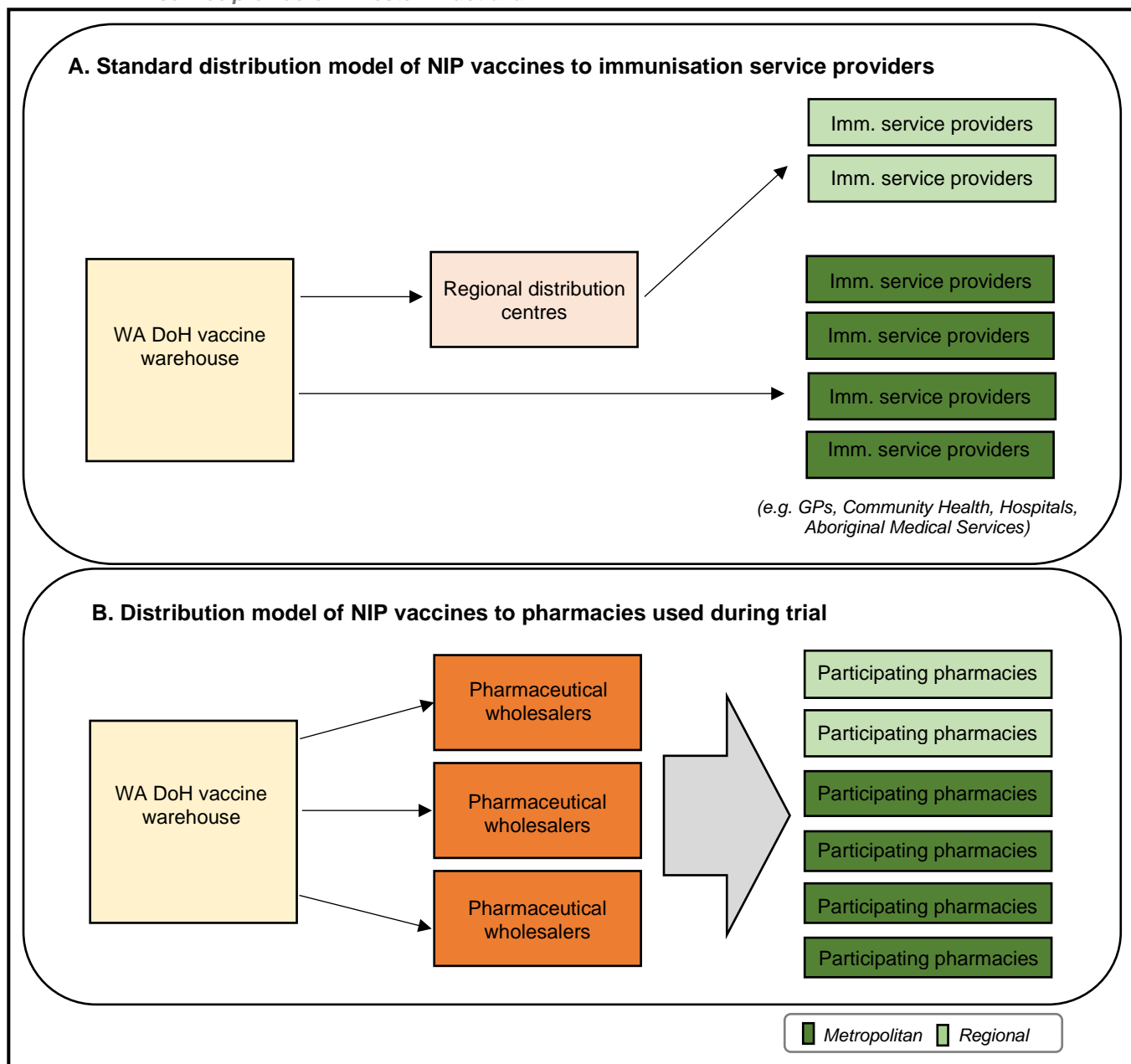
The distribution model utilised for the trial was proposed as a low-cost mechanism for distributing the vaccines; the WA DoH was only charged for units distributed, plus the cost of delivering the vaccines to the pharmaceutical wholesalers. This trial model meant that pharmacies accessed NIP vaccines through the same mechanism as private market vaccines.

A major point-of-difference between the standard and trial distribution models is that WA DoH manages stock in only one location in the standard model (the WA Health vaccine warehouse), whereas in the trial model, stock is managed across an additional three locations (i.e. the pharmaceutical wholesalers). During periods of surge demand on vaccine supply, managing

vaccine in multiple locations is very challenging, as it is very difficult to ensure that there is adequate vaccine to meet demand across all locations. For example, once vaccine is exhausted in one location, it may be challenging for pharmacies to access vaccine from another wholesaler if they do not hold an account with the wholesaler. This has led to stock depletion and, in turn, inability to supply vaccines to providers. When there are vaccine shortages, this may mean that some providers do not get vaccines supplied to them.

In 2020, to have better oversight over the distribution to participating pharmacies, the following modifications were made. Firstly, only pharmacies registered to participate in the trial were able to order the vaccine from the pharmaceutical wholesalers, and that pharmacies had to register their interest before vaccine distribution commenced. In addition, initially in 2020 participating pharmacies could only order NIP vaccine from their nominated wholesaler. However, due to the unprecedented demand for the vaccine in the wake of the COVID-19 pandemic, these restrictions were eased.

Appendix Figure 1 Standard and trial distribution models used for the supply of NIP vaccines to immunisation service providers in Western Australia



Eligibility for participation in the trial

Any WA pharmacy offering immunisation services at the time was eligible to register for the trial. WA DoH partnered with the PGA (WA Branch) and to promote the trial on the PGA website, and through their electronic alert system (PGA eAlerts) in 2018 and 2019. In 2020, WA DoH also engaged with the PSA (WA Branch), to promote the trial through their newsletters. In 2018 and 2019 WA DoH sent letters to the business premises of all registered pharmacies (approx. 660 pharmacies as at January 2020) to invite them to participate in the trial. In 2020, all invitations to participate in the trial were done via email.

Registration for the trial

Registration for the trial required pharmacists to agree to the terms and conditions specified by CDCD and to provide business contact details. These terms and conditions were aligned with those required by all other immunisation service providers that access NIP and state-funded vaccines from CDCD, and include:

- Provide an immunisation service in accordance with the Administration of Influenza Vaccines by Pharmacists, Structured Administration and Supply Arrangement (SASA)
- Recording all immunisations in the Australian Immunisation Register
- Compliance with the National Vaccine Storage Guidelines
- Compliance with WA Cold Chain protocol
- Report all vaccine wastage (including vaccines discarded due to expiry date to CDCD)

Cost of immunisation service

NIP vaccines are supplied at no cost to the immunisation service providers, and therefore is provided at no cost to the vaccinee (i.e. a vaccinated individual). The individual pharmacy is responsible for the amount and levy for any service costs to administer the vaccine, and/or to provide any related professional care. The vaccines were available for administration to all eligible patients aged 65 years and older only.

Appendix 2– Data sources

This section provides a description of the data sources utilised for the evaluation.

The Australian Immunisation Register (AIR)

The Australian Immunisation Register (AIR) is a whole-of-life immunisation register that is intended to capture all immunisations of all people of all ages. The Australian Immunisation Register Act 2015 (Commonwealth) permits the Department of Health to access information on the AIR for conducting research relating to vaccinations. CDCD routinely exports reports produced for state health departments which includes line listed data for individuals and contains demographic and vaccine administration details (including vaccinee name date of birth, postal address, email address, telephone number, as well as provider details). Data were extracted on the 9 August 2020 from the AIR. Analysis of AIR extracts were used to understand the characteristics of persons aged 65 years and over who had a vaccination encounter recorded as a NIP vaccine at a pharmacy during the trial.

Distribution, wastage and cold chain breach data

CDCD receives regular line listed distribution reports from wholesalers. Distribution data is collated from line listed distribution data provided to CDCD from the pharmaceutical wholesalers. Distribution data for 2020 is correct as at 17 August 2020. Any vaccine that is discarded is required to be reported to WA Health. Vaccines may be discarded due to a cold chain breach, expiry, or user error. Vaccines that experience a cold chain breach are assessed on the available thermostability data provided by the manufacturer. WA Health retains data of cold chain breaches as reported by providers. As influenza vaccines are seasonal, large volumes are discarded due to expiry, this data is also collected by WA Health. This data is used to forecast usage of vaccines in future years.

Western Australian Vaccine Safety Surveillance (WAVSS) System

WAVSS is a Western Australian Department of Health initiative to monitor vaccine safety. WAVSS accepts reports of suspected adverse events following immunisation (AEFIs) from health providers and directly from the public. AEFIs are defined as unwanted or unexpected events following the administration of a vaccine. AEFIs are classified as 'common/minor' or 'significant', common/minor reactions are not required to be reported. Significant reactions are those which require ongoing treatment, hospitalisation, or are deemed as medically important. Data was extracted from WAVSS to ascertain reports of AEFIs associated with administration of an over 65 influenza vaccine at a community pharmacy in 2018, 2019, and 2020.

Registration details of participating pharmacies

All registered pharmacists invited to participate in the trial were required to register their details with WA Health, and agree to the terms and conditions. This database included pharmacy business name, pharmacy address, contact phone number and email address, AIR provider number, Pharmaceutical Benefit Scheme (PBS) number, and agreement with WA Health Terms and Conditions (provided in the 'Scope of the Pilot Model' above). In 2018 and 2019 details of registration were collected via an online form in SurveyMonkey. In 2020, registration details were

collected via REDCap⁴⁰. Additionally, pharmacists were asked to nominate their preferred wholesaler and to provide relevant account numbers.

Over 65s Vaccinee Survey

The ‘*Over 65s Vaccinee Survey*’ design and methodology was modified from the 2019 project entitled ‘Evaluating the accuracy of influenza and meningococcal vaccination records on the Australian Immunisation Register’, also coordinated by CDCD. Additional questions were developed such that data collected could be used as specific indicators to inform the evaluation. The survey was of mixed design, comprised mainly of logic questions, Likert-scale questions, and open-ended questions. The information required from the survey included:

- Reasons for choosing pharmacy for receiving vaccination
- Vaccination habits (annual, opportunistic, first time, etc)
- Setting in which vaccination was received
- Satisfaction with experience

A sampling frame was obtained from the routine report exported by CDCD from the Australian Immunisation Register (AIR). Potential participants included any person aged 65 years and older currently residing in WA who have an influenza vaccine recorded as being administered by a community pharmacist in AIR in 2019, and with a valid telephone number listed with their AIR record. Those excluded from the study included:

- persons outside the target age;
- persons who did not have an influenza vaccine recorded as administered by a community pharmacist in the AIR in 2019;
- persons residing outside WA at the time of vaccination or currently, and;
- persons that do not have a valid address and telephone number recorded in the AIR.

Data for this sampling frame were extracted on the 8 September 2019. The sampling frame was comprised of 9,308 individuals.

Based on a predicted 60% participation rate, to obtain a confidence level of 95% with a 5% margin of error, a sample size of 600 persons was determined to be adequate for the study. A random sample of 600 persons with a valid phone number were thus selected from the sampling frame. Using the addresses listed on AIR, all 600 potential participants were sent a letter inviting them to take part in the study, along with a participant information sheet and consent form. Individuals who responded to this letter by declining participation were not included in the study. The survey was created in REDCap and was administered as a computer-assisted telephone interview (CATI) by experienced interviewers over a two-week period from 18-29 of November 2019. This survey was approved by WA DoH HREC (PRN RGS0000003442).

Analysis of data collected using the ‘*Over 65s Vaccinee Survey*’ was used to understand the characteristics of persons aged 65 years and over who received a NIP vaccine at a pharmacy in 2019.

⁴⁰ Paul Harris et al. ‘*Research Electronic Data Capture (REDCap)—A Metadata-Driven Methodology and Workflow Process for Providing Translational Research Informatics Support*’. *Journal of Biomedical Informatics*. 42, no. 2 (2009): 377-381.

A total of 415 persons (69.2%, 415/600) participated in the survey. Of the 600 potential participants, 14 declined to participate, and 171 were unable to be contacted for the survey. The characteristics of the survey participants were slightly inconsistent with the characteristics of vaccination encounters extracted from the AIR in 2019. Specifically, in the survey participants cohort there were more individuals in the younger age groups compared with their representation in the vaccination encounters from the AIR extract. No Aboriginal people participated in the survey. The geographic distribution of survey participants was similar to the vaccination encounters extracted from the AIR.

Participating Pharmacy Survey

The '*Participating Pharmacy Survey*' was specifically designed for the purposes of this evaluation. All participating pharmacies (n=401) were invited to complete the survey, and any pharmacy that did not participate in the trial were excluded from the study. Utilising registration details, participating pharmacies were sent a letter and email inviting them to take part in the study, along with a participant information sheet. Individuals were provided with contact details to decline participation. Following this, an email was addressed to the pharmacy notifying them of the upcoming survey being disseminated to them. This email specified that an immunising pharmacist was required to complete the survey, and that email may be forwarded to immunising pharmacists. Only one participant from each pharmacy were invited to complete the survey. Following this second email, the survey was disseminated via the database in which the survey was created. The database sent reminders to complete the survey. The survey was open to respondents from the 21 November – 4 December 2019, and then was extended for a second round from 4 – 13 December due to relatively low response rates.

The participating pharmacy survey was created and disseminated via REDCap as an online survey. The cross-sectional survey was of mixed design, comprised mainly of logic questions and Likert-scale questions, and open-ended questions. The survey questions were developed such that data collected could be used as specific indicators to inform the evaluation, and were created in consultation with the existing literature, where relevant⁴¹. The information required from the survey included:

- The estimated number of NIP vaccinations provided at the pharmacy
- Promotional activities engaged by the pharmacy
- Methods of reporting immunisations to the AIR
- Barriers to providing immunisations
- Perceptions of usefulness of communications supplied by CDCD
- Integration into the WA DoH Immunisation Program

A preliminary iteration of the survey was circulated to the key stakeholders for consultation before the final dissemination to potential participants. Stakeholders engaged in the review process include each of the Medicines and Poisons Regulation Branch at DOHWA, PGA, and PSA.

Consent to participate in the survey was required at the start of the survey, if consent was not provided the survey was terminated.

⁴¹ Salisa Westrick, et al. 'National Survey of Pharmacy-Based Immunization Services'. *Vaccine*. 36, no. 37 (Sep 2018): 5657-5664. DOI: 10.1016/j.vaccine.2018.07.027

Supporting communications were disseminated from the PSA and PGA to endorse and promote the survey amongst their memberships.

This survey was approved by DOHWA HREC PRN RGS0000003442.

Audit of participating pharmacies

The '*Audit of Participating Pharmacies*' was specifically designed as a quality assurance measure, to better ascertain the usage of NIP vaccines at pharmacies that participated in the trial. The pharmacies that did not participate in the 'Participating pharmacy survey' (n=204) were contacted via email to inform them that an audit of their vaccine stock would be undertaken via a computer assisted telephone interview (CATI). The audit was created in REDCap and was administered as a CATI by experienced interviewers over a two-week period from 11 - 20 February 2020. The information required from the audit included:

- Awareness of requirements to report instances of immunisations to the AIR
- Methods of reporting immunisations to the AIR
- Number of NIP doses administered as reported to the AIR
- Number of NIP doses discarded

Appendix 3– Participating pharmacy profile

This section provided an analysis of the pharmacies that participated in the trial.

Details of participating pharmacies

Appendix Table 1 summarises the details of pharmacies that participated in the trial.

Appendix Table 1 Participating pharmacy profile

Participating pharmacy details	2018 n (%)	2019 n (%)	2020 n (%)
Pharmacy participation in the trial			
Pharmacies that registered for the trial	253	365	393
Pharmacies that registered but did not order	35	57	20
Pharmacies that ordered that did not register	36	45	0
Total pharmacies that ordered (actively participated; 'participating') ¹	264	353	373
Total pharmacies engaged in the trial ²	289	410	393
Participating pharmacy locality³			
Total participating pharmacies	264	353	373
<i>Metro</i>			
East Metro	65 (24.6)	96 (27.2)	97 (26.0)
North Metro	80 (30.3)	95 (26.9)	101 (27.1)
South Metro	61 (23.1)	78 (22.1)	91 (24.4)
<i>Regional</i>			
Goldfields	7 (2.7)	8 (2.3)	8 (2.1)
Great Southern	10 (3.8)	13 (3.7)	11 (2.9)
Kimberley	-	3 (0.8)	2 (0.5)
Midwest	10 (3.8)	18 (5.1)	17 (4.6)
Pilbara	6 (2.3)	5 (1.4)	4 (1.1)
South West	17 (6.4)	23 (6.5)	27 (7.2)
Wheatbelt	8 (3.0)	14 (4.0)	15 (4.0)

¹Participation in the trial is defined as ordering NIP vaccines

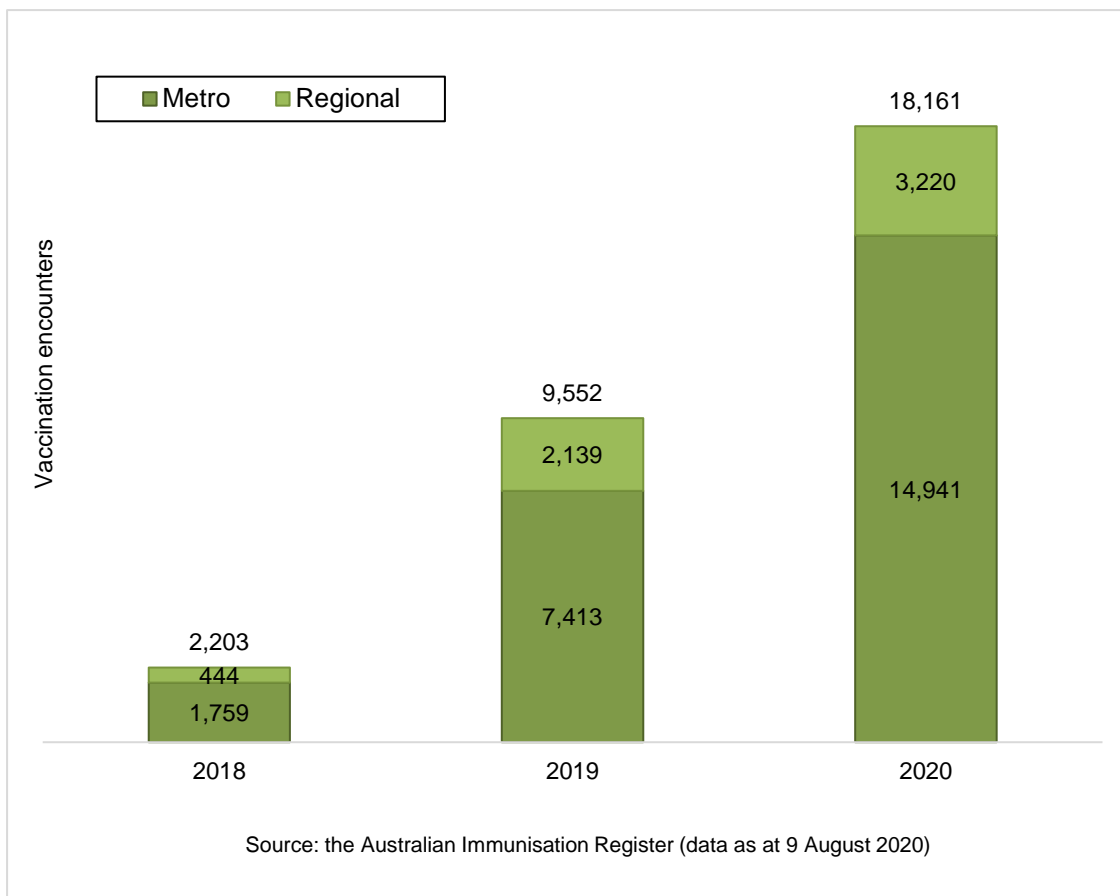
²Ordered or registered for the trial

³Locality is defined by Public Health Unit postcode range

Source: CDCD vaccine distribution data and registration details of participating pharmacies (data as at 17 August 2020), the Australian Immunisation Register (data as at 9 August 2020)

Majority of pharmacies were located in the Perth metropolitan region (Table 3). Of which, pharmacies in the North Metro region administered the most doses: 44.6% of total doses in 2018 (982/2,203), 36.4% (3,476/9,552) in 2019, and 32.3% (5,871/18,161) in 2020. The number of vaccination encounters recorded by providers in the South Metropolitan region has increased from 14.9% (329/2,203) in 2018 to 27.4% (4,972/18,161) in 2020. In the regions, majority of vaccination encounters were recorded by pharmacies in the South West region, followed by the Midwest. The least number of vaccination encounters were recorded by pharmacies in the Kimberley (Appendix Table 1).

Appendix Figure 2 *Influenza vaccination encounters of persons aged 65 years and older at pharmacies in Western Australia 2018-2020, by locality of provider in either Metropolitan or Regional locations.*



Profiles of participating pharmacy survey respondents

Analysis of the participating pharmacies survey conducted in 2019 was utilised to understand the profile of pharmacies that participated in the trial.

The survey was completed by 43.3% (158/365) of pharmacies that had registered for the trial.

A total of 114 respondents (72.2%, 114/158) indicated that they were an immunising pharmacist at the pharmacy that they were completing the survey on behalf of. Of the survey respondents, 67.7% (107/158) indicated that the pharmacy they were participating on behalf of was part of a banner group; 30.4% (48/158) indicated that they were not part of a banner group, while 1.9% (3/158) were unsure. Of the pharmacies that did belong to a banner group the three major groups reported were Terry White Chemmart (23/158), Pharmacy 777 (17/158), and Friendlies (14/158).

Respondents reportedly completed their immunisation course through PGA (WA Branch) (46.2%, 73/158), followed by PSA (WA Branch) (25.5%, 83/158), and UWA (0.6%, 1/158), and PSA (NSW Branch) (0.6%, 1/158).

Appendix 4– Characteristics of vaccination encounters

Appendix Table 2 – 4 provide the characteristics of vaccination encounters of persons who received NIP-funded influenza vaccines during the trial, as recorded in the AIR.

Appendix Table 2 Characteristics of vaccination encounters of persons who received NIP-funded seasonal influenza vaccine for persons aged 65 years and over administered at a pharmacy in 2018

2018	65-69 n (%)	70-74 n (%)	75-79 n (%)	80+ n (%)	Total n (%)
Total encounters¹	1,171 (53.2)	539 (24.5)	274 (12.4)	219 (9.9)	2,203
Gender					
Female	559 (47.7)	256 (47.5)	148 (54.0)	142 (64.8)	1,105 (50.2)
Male	612 (52.3)	283 (52.5)	126 (46.0)	77 (35.2)	1,098 (49.8)
Aboriginality²					
Aboriginal	1,170 (99.9)	538 (99.8)	274 (100.0)	219 (100.0)	2,201 (99.9)
Non-Aboriginal	1 (0.1)	1 (0.2)	0 (0.0)	0 (0.0)	2 (0.1)
Locality					
<i>Metro</i>					
East Metro	238 (20.3)	108 (20.3)	55 (20.1)	47 (21.5)	448 (20.3)
North Metro	530 (45.3)	239 (44.3)	115 (42.0)	98 (44.7)	982 (44.6)
South Metro	179 (15.3)	86 (16.0)	37 (13.5)	27 (12.3)	329 (14.9)
<i>Regional</i>					
Goldfields	17 (1.5)	15 (2.8)	7 (2.6)	5 (2.3)	44 (2.0)
Great Southern	40 (3.4)	20 (3.7)	12 (4.4)	10 (4.6)	82 (3.7)
Midwest	34 (2.9)	25 (4.6)	17 (6.2)	8 (3.7)	84 (3.8)
Pilbara	20 (1.7)	3 (0.6)	2 (0.7)	0 (0.0)	25 (1.1)
Southwest	80 (6.8)	29 (5.4)	23 (8.4)	13 (5.9)	145 (6.6)
Wheatbelt	33 (2.8)	14 (2.6)	6 (2.2)	11 (5.0)	64 (2.9)

Note: In 2018 the NIP-funded seasonal influenza vaccine for persons aged 65 years and older was Flud and Fluzone High-Dose.

¹An individual may have more than one vaccination encounter

²The term Aboriginal is inclusive of all persons that identify as Aboriginal or Torres Strait Islander

Source: the Australian Immunisation Register (AIR; data as at 9 August 2020)

Appendix Table 3 Characteristics of vaccination encounters of persons who received NIP-funded seasonal influenza vaccine for persons aged 65 years and over administered at a pharmacy in 2019

2019	65-69 n (%)	70-74 n (%)	75-79 n (%)	80+ n (%)	Total n (%)
Total encounters¹	4,971 (52.0)	2,356 (24.7)	1,180 (12.4)	1,045 (10.9)	9,552
Gender					
Female	2,350 (47.3)	1,108 (47.0)	570 (48.3)	644 (61.6)	4,672 (48.9)
Male	21 (0.4)	1,248 (53.0)	610 (51.7)	401 (38.4)	4,880 (51.1)
Aboriginality²					
Aboriginal	4,950 (99.6)	2,349 (99.7)	1,176 (99.7)	1,043 (99.8)	9,518 (99.6)
Non-Aboriginal	1 (0.4)	7 (0.3)	4 (0.3)	2 (0.2)	34 (0.4)
Locality					
<i>Metro</i>					
East Metro	1,043 (21.0)	452 (19.2)	203 (17.2)	175 (16.7)	1,873 (19.6)
North Metro	1,857 (37.4)	819 (34.8)	440 (37.3)	360 (34.4)	3,476 (36.4)
South Metro	1,039 (20.9)	515 (21.9)	261 (22.1)	249 (23.8)	2,064 (21.6)
<i>Regional</i>					
Goldfields	91 (1.8)	74 (3.1)	46 (3.9)	33 (3.2)	244 (2.6)
Great Southern	199 (4.0)	92 (3.9)	38 (3.2)	41 (3.9)	370 (3.9)
Midwest	193 (3.9)	124 (5.3)	68 (5.8)	64 (6.1)	449 (4.7)
Pilbara	2 (0.0)	0 (0.0)	2 (0.2)	0 (0.0)	4 (0.0)
Southwest	457 (9.2)	208 (8.8)	85 (7.2)	94 (9.0)	844 (88.8)
Wheatbelt	90 (1.8)	72 (3.1)	37 (3.1)	29 (2.8)	228 (2.4)

Note: In 2019 the NIP-funded seasonal influenza vaccine for persons aged 65 years and older was Flud.

¹An individual may have more than one vaccination encounter.

²The term Aboriginal is inclusive of all persons that identify as Aboriginal or Torres Strait Islander.

Source: the Australian Immunisation Register (AIR; data as at 9 August 2020)

Appendix Table 4 Characteristics of vaccination encounters of persons who received NIP-funded seasonal influenza vaccine for persons aged 65 years and over administered at a pharmacy in 2020.

2020	65-69 n (%)	70-74 n (%)	75-79 n (%)	80+ n (%)	Total n (%)
Total encounters¹	8,016 (44.1)	4,720 (26.0)	2,554 (14.1)	2,871 (15.8)	18,161
Gender					
Female	3,849 (48.0)	2,232 (47.3)	1,296 (50.7)	1,713 (59.7)	9,090 (50.1)
Male	4,167 (52.0)	2,488 (52.7)	1,258 (49.3)	1,158 (40.3)	9,071 (49.9)
Aboriginality²					
Aboriginal	7,994 (99.7)	4,707 (99.7)	2,547 (99.7)	2,866 (99.8)	18,114 (99.7)
Non-Aboriginal	22 (0.3)	13 (0.3)	7 (0.3)	5 (0.2)	47 (0.3)
Locality					
<i>Metro</i>					
East Metro	1,802 (22.5)	1,021 (21.6)	600 (23.5)	675 (23.5)	4,098 (22.6)
North Metro	2,689 (33.5)	1,493 (31.6)	778 (30.5)	911 (31.7)	5,871 (32.3)
South Metro	2,060 (25.7)	1,310 (27.8)	726 (28.4)	876 (30.5)	4,972 (27.4)
<i>Regional</i>					
Goldfields	182 (2.3)	101 (2.1)	55 (2.2)	43 (1.5)	381 (2.1)
Great Southern	78 (1.0)	42 (0.9)	15 (0.6)	17 (0.6)	152 (0.8)
Kimberley	5 (0.1)	0 (0.0)	0 (0.0)	1 (0.0)	6 (0.0)
Midwest	311 (3.9)	176 (3.7)	99 (3.9)	95 (3.3)	681 (3.7)
Pilbara	55 (0.7)	11 (0.2)	6 (0.2)	8 (0.2)	80 (0.4)
Southwest	522 (6.5)	321 (6.8)	155 (6.1)	153 (5.3)	1,151 (6.3)
Wheatbelt	312 (3.9)	245 (5.2)	120 (4.7)	92 (3.2)	769 (4.2)

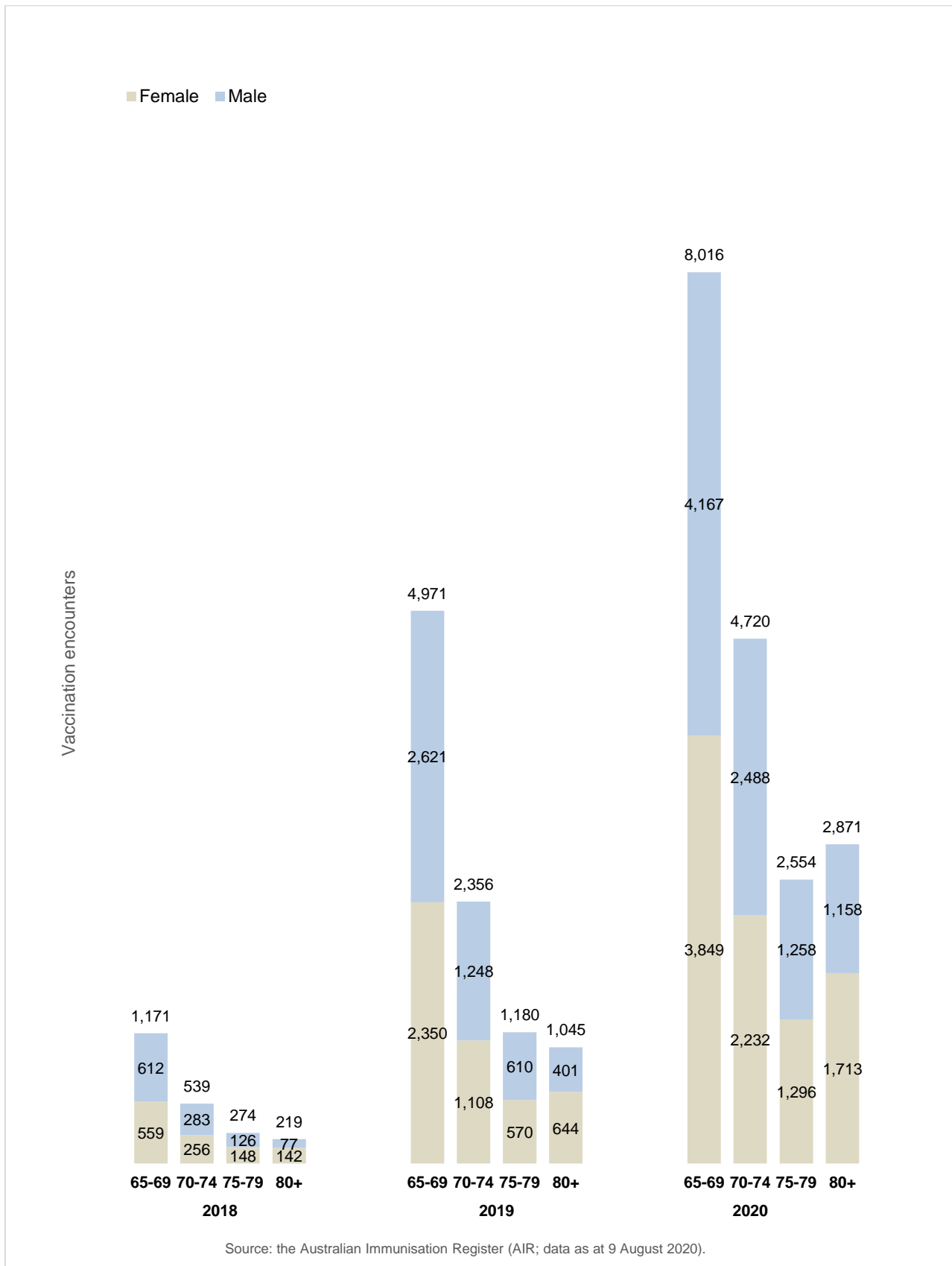
Note: In 2020 the NIP-funded seasonal influenza vaccine for persons aged 65 years and older was Flud Quad, however Flud was also counted here.

¹An individual may have more than one vaccination encounter.

²The term Aboriginal is inclusive of all persons that identify as Aboriginal or Torres Strait Islander.

Source: the Australian Immunisation Register (AIR; data as at 9 August 2020)

Appendix Figure 3 Vaccination encounters of persons who received a NIP vaccine at a pharmacy by gender and age group from 2018-2019.



Appendix 5– Characteristics of survey respondents

This section summarises the characteristics of 'Over 65s Vaccinee Survey' respondents who received a NIP-funded influenza vaccine at a community pharmacy in 2019 in Western Australia, presented in Appendix Table 5.

Appendix Table 5 Characteristics of survey respondents who received a NIP-funded seasonal influenza vaccine for persons aged 65 years and over administered at a pharmacy in 2019.

'Over 65s Vaccinee Survey' respondents	65-69 n (%)	70-74 n (%)	75-79 n (%)	80+ n (%)	Total n (%)
Total participants	248 (59.8)	116 (28.0)	35 (8.4)	16 (3.8)	415
Gender					
Male	125 (50.4)	55 (47.4)	18 (51.4)	9 (56.3)	207 (49.9)
Female	123 (49.6)	61 (52.6)	17 (48.6)	7 (43.8)	208 (50.1)
Aboriginality¹					
Non-Aboriginal	248 (100.0)	116 (100.0)	35 (100.0)	16 (100.0)	415 (100.0)
Aboriginal	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Locality²					
<i>Metro</i>					
East Metro	48 (19.4)	22 (19.0)	9(25.7)	2 (12.5)	81 (19.5)
North Metro	80 (32.3)	43 (37.1)	9(25.7)	5 (31.3)	137 (33.0)
South Metro	74 (29.8)	27 (23.3)	7(20.0)	3 (18.8)	111 (26.7)
<i>Regional</i>					
Goldfields	3 (1.2)	4 (3.4)	0 (0.0)	0 (0.0)	7 (1.7)
Great Southern	14 (5.6)	5 (4.3)	2 (5.7)	0 (0.0)	21 (5.1)
Kimberley	0 (0.0)	1 (0.9)	0 (0.0)	0 (0.0)	1 (0.2)
Midwest	7 (2.8)	2 (1.7)	3(8.6)	1 (6.3)	13 (3.1)
Pilbara	0 (0.0)	1 (0.9)	0 (0.0)	0 (0.0)	1 (0.2)
Southwest	16 (6.5)	7 (6.0)	3 (8.6)	3 (18.8)	29 (7.0)
Wheatbelt	6 (2.4)	4 (3.4)	2(5.7)	2 (12.5)	14 (3.4)
Concession Status					
Yes	85 (34.3)	57 (49.1)	24 (68.6)	12 (75.0)	178 (42.9)
No	162 (65.3)	59 (50.9)	11 (31.4)	4 (25.0)	236 (56.9)
Refused	1 (0.4)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.2)
Health Insurance Status					
Yes	138 (55.6)	54 (46.6)	15 (42.9)	4 (25)	211 (50.8)
No	110 (44.6)	62 (53.4)	20 (57.1)	12 (75)	204 (49.2)

¹The term Aboriginal is inclusive of all persons that identify as Aboriginal or Torres Strait Islander

² Locality is defined by Public Health Unit postcode range

Source: the Australian Immunisation Register (AIR; data as at 8 September 2019) and the 'Over 65s Vaccinee Survey' (Nov. 2019)

Appendix 6– Vaccination habits of survey respondents

This section presents a summary of the vaccination habits, and reasons for accessing pharmacy services as reported by 'Over 65s Vaccinee Survey' respondents' (Appendix Table 6).

Appendix Table 6 Vaccination habits of survey respondents

Vaccination habits	65-69 n (%)	70-74 n (%)	75-79 n (%)	80+ n (%)	Total n (%)
Total responses	248 (59.8)	116 (27.9)	35 (8.4)	16 (3.9)	415
What month did you receive your flu vaccine in 2019? n = 415					
March	10 (4.0)	1 (0.9)	2 (5.7)	2 (12.5)	15 (3.6)
April	63 (25.4)	24 (20.7)	11 (31.4)	4 (25.0)	102 (24.6)
May	100 (40.3)	55 (47.4)	10 (28.6)	6 (37.5)	171 (41.2)
June	43 (17.3)	18 (15.5)	8 (22.9)	1 (6.3)	70 (16.9)
July	11 (4.4)	6 (5.2)	1 (2.9)	1 (6.3)	19 (4.6)
August	6 (2.4)	0 (0.0)	1 (2.9)	1 (6.3)	8 (1.9)
September	1 (0.4)	1 (0.9)	0 (0.0)	0 (0.0)	2 (0.5)
Unsure/Don't know	13 (5.2)	11 (9.5)	2 (5.7)	1 (6.3)	27 (6.5)
Refused	1 (0.4)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.2)
Is this the first time that you received your flu vaccine at a community pharmacy? n = 415					
Yes	111 (44.8)	48 (41.4)	23 (65.7)	13 (81.3)	195 (47.0)
No	137 (55.2)	68 (58.6)	12 (24.3)	3 (18.7)	220 (53.0)
Do you normally receive the flu vaccine? n = 415					
This is the first time	35(14.1)	11(9.5)	3(8.6)	0(0)	49(11.8)
Rarely	11(4.4)	7(6.0)	0(0)	0(0)	18(4.3)
Sometimes	31(12.5)	12(10.3)	4(11.4)	2(12.5)	49(11.8)
Always/usually	171(68.9)	86(74.1)	28(80.0)	14(87.5)	299(72.1)
When did you receive your last known flu vaccine? n = 415					
2018	186 (75.0)	99 (85.3)	30 (85.7)	15 (93.8)	330 (79.5)
2017	14 (5.6)	1 (0.9)	1 (2.9)	1 (6.3)	17 (4.1)
2016	5 (2.0)	1 (0.9)	0 (0.0)	0 (0.0)	6 (1.4)
2015	1 (0.4)	1 (0.9)	0 (0.0)	0 (0.0)	2 (0.5)
2014	2 (0.8)	1 (0.9)	1 (2.9)	0 (0.0)	4 (1.0)
Before 2014	1 (0.4)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.2)
Unsure/Don't know	39 (15.7)	13 (11.2)	3 (8.6)	0 (0.0)	55 (13.3)
Where did you receive your last known flu vaccine? n = 415					
Your regular GP	68 (27.4)	39 (33.6)	18 (51.4)	11 (68.8)	136 (32.8)
Another GP	1 (0.4)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.2)
Community pharmacy	125 (50.4)	60 (51.7)	9 (25.7)	5 (31.3)	199 (48.0)
Workplace clinic	12 (4.8)	5 (4.3)	3 (8.6)	0 (0.0)	20 (4.8)
Hospital clinic	2 (0.8)	0 (0.0)	0 (0.0)	0 (0.0)	2 (0.5)
Aboriginal Medical Service	35 (14.1)	11 (9.5)	3 (8.6)	0 (0.0)	49 (11.8)
Other (please specify)	0 (0.0)	0 (0.0)	1 (2.9)	0 (0.0)	1 (0.2)
Unsure/Don't know	5 (2.0)	1 (0.9)	1 (2.9)	0 (0.0)	7 (1.7)
Why did you receive your flu vaccine at a pharmacy? n = 415¹					
Convenience	220 (88.7)	105 (90.5)	28 (80.0)	16 (100)	369 (88.9)
GP booked out	14 (5.6)	10 (8.6)	2 (5.7)	2 (12.5)	28 (6.7)
Cheaper than GP	20 (8.1)	6 (5.2)	5 (14.3)	0 (0.0)	31 (7.5)
Free with health insurance	139 (56.0)	56 (48.3)	15 (42.9)	5 (31.3)	215 (51.8)
Other (please specify)	25 (10.1)	15 (12.9)	7 (20.0)	5 (31.3)	52 (12.5)
Unsure/Don't know	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Refused	1 (0.4)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.2)
Total responses	419	192	57	28	696

¹n = number of respondents. Respondents were able to provide more than one answer to this question.

Source: the Australian Immunisation Register (as at 8 September 2019) and the 'Over 65s Vaccinee Survey' (Nov. 2019)

Reasons for uptake of service

When asked '*Why did you receive your flu vaccine at a pharmacy?*' [in 2019], over half reported that it was due to convenience (53.0%, 369/415). This was relatively consistent across the age groups. Following convenience, the most predominant reason was due to the service being offered for free with their health insurance (30.9%, 215/415).

Of those that reported 'Other', majority reported that lack of vaccine supply (32/52) was the reason they received their vaccine at a community pharmacy in 2019. Themes identified in 'Other' were convenience (8/52), work provided a voucher for pharmacy vaccination (4/52), because it was advertised at the pharmacy (1/52), that they don't have a regular GP (1/52), that it was free with health insurance (1/52), that their workplace did not have an over 65 vaccine (1/52), and because they were a regular customer at the pharmacy (1/52).

Appendix 7– Safety and quality profile of service provision

This section presents an analysis of adverse events related to vaccination with a NIP vaccine at a pharmacy during the trial, and self-reported compliance with provision of required services.

Adverse events following immunisation

Adverse events following immunisation (AEFIs) are defined as unwanted or unexpected events following the administration of a vaccine. The fact that an adverse event occurred following immunisation is not conclusive evidence that the event was caused by a vaccine. In WA, there is a statutory requirement for health professionals to report an AEFI to the WA DoH, per the requirements of the Public Health Act 2016 and the Public Health Regulations 2019. Under the SASA, immunising pharmacies are required to report AEFIs to the Western Australian Vaccine Safety Surveillance (WAVSS) System. AEFIs may be reported to WAVSS passively from medical professionals and members of the public, or through active surveillance data gathered by SmartVax.

AEFIs reported via passive surveillance

During the trial, five individual reports of AEFI were reported to WAVSS. Of these, two were considered to be serious/significant (Appendix Table 7).

The 2020 WAVSS Annual Report showed that of the individuals who reported AEFI, 1%, 3% and 6% of individuals reported receiving their vaccination at a pharmacy in 2018, 2019, and 2020 respectively.

Appendix Table 7 AEFIs reported to WAVSS from individuals who received NIP-funded vaccine from a pharmacy during the trial

Reaction	n	Vaccination Year
Lymphadenopathy*	1	2019
Lethargy	1	2020
Injection site reaction - minor/common/expected	1	2020
Rash	1	2020
Influenza-like-illness*	1	2020

*Denotes serious/significant reactions

Source: Western Australia Vaccine Safety Surveillance (WAVSS) System (data as at 9 August 2020)

Provision of required services

Pharmacies that participated in the survey reported high levels of compliance with approved setting requirements under the SASA (Appendix Table 8).

Self-reported compliance	Yes n (%)	No n (%)	Unsure n (%)
For the following equipment and/or services please select those that are available at your pharmacy			
Screened area or private room (n=158)	157 (99.4)	1 (0.6)	0 (0)
Sufficient space to accommodate patient (n=158)	157 (99.4)	1 (0.6)	0 (0)
Area for patient to lie prone (n=158)	149 (94.3)	5 (3.2)	4 (2.5)
Seated area for post-immunisation observation of patients (n=157)	154 (98.1)	3 (1.9)	0 (0.0)
Up to date, written procedures covering provision of immunisation services (n=158)	156 (98.7)	1 (0.6)	1 (0.6)
In-date anaphylaxis response kit (n=158)	158 (100.0)	0 (0.0)	0 (0.0)
Access to current online edition of the National Vaccine Storage Guidelines(n=158)	152 (96.2)	2 (1.3)	4 (2.5)
Additional staff during immunisation periods (n=158)	150 (94.9)	2 (1.3)	6 (3.8)

Source: the 'Participating Pharmacy Survey' (Dec. 2019)

Appendix 8– Usage of NIP vaccine

This section provides a summary of vaccine usage during the trial.

Ordering patterns of participating pharmacies

The median number of doses ordered per pharmacy increased from 9 per pharmacy in 2019 to 100 per pharmacy in 2020. The largest range of doses ordered per pharmacy was in 2019 where a maximum of 1,090 doses were ordered by a single pharmacy (Appendix Table 9). Symbion were the largest distributors across the trial, with Sigma distributing the second highest number of doses, followed by API. Vaccine distribution to pharmacies moved forward progressively in the calendar year from 2018 to 2020 (Appendix Figure 4).

Appendix Table 9 Distribution of doses to participating pharmacies

Doses distributed during the trial	2018 n (%)	2019 n (%)	2020 n (%)
Total doses allocated to participating pharmacies	8,200	26,500	41,000
Total doses distributed to participating pharmacies	8,010 (97.7)	24,068 (90.8)	40,200 (98.0)
Australian Pharmaceutical Industries	895 (11.1)	4,805 (20.0)	12,000 (29.9)
Sigma Healthcare	2,270 (28.3)	5,645 (23.5)	13,230 (32.9)
Symbion Pharmacy Services	4,845 (60.5)	13,618 (56.5)	14,970 (37.2)
Median no. of doses distributed to participating pharmacies	20	9	100
Range of doses distributed to participating pharmacies	5-200	1-1090	10-300

¹Ordered or registered for the trial

²Locality is defined by Public Health Unit postcode range

Source: CDCD vaccine distribution data (data as at 17 August 2020)

Administration of vaccines according to pharmacy survey participants

In the participating pharmacy survey, participants reported that according to their records, the median number of doses administered was 30, and the range reported as administered was 0-800 doses (n=156). These data are also discrepant with that of the distribution and AIR data for 2019. However, in the later audit of pharmacies (n=196), the median doses reported as administered (17), and the range (0-340) were more in line with that reported to the AIR (Appendix Table 9).

Record management practices

In the same survey, participating pharmacies were asked to provide details of their documentation practices and mechanism for reporting immunisation encounters into the AIR (Table 15). Almost all (98.7%, 156/158) of the respondents indicated that they did record the immunisations that they administered to the AIR, while two (1.3%) indicated that they did not. 68 (43.0%, 68/158) pharmacies indicated that they manually entered the records into the AIR, while 88 (55.7%, 88/158) indicated that their system automatically uploads the records into the AIR. Of those that their system automatically entered their data into the AIR, 50.0% reportedly used GuildCare, while the other 50.0% indicated that they used MedAdvisor. The two pharmacies that responded that they didn't record the immunisation records reportedly did not do so because they were not registered as an immunisation provider (n=1), and because they were unsure/don't know (n=1). 156/158 (98.7%) of the respondents indicated that they were aware that reporting immunisation

records into the AIR is a mandatory requirement for immunising pharmacists (Appendix Table 10).

In the audit of participating pharmacies (n=196), 93.8% (167/196) indicated that they were aware that it was conditional for immunising pharmacies to report to the AIR, while 5.6% (11/196) indicated that they were unsure. When asked 'Do you think that there is an awareness of the AIR amongst pharmacists providing vaccinations?', 87.3 (158/196) said yes, 5.5% (10/196) said no, 6.6% (12/196) said that they were unsure, and one refused to answer the question.

Appendix Table 10 Documentation practices and mechanism for reporting immunisation encounters into the AIR reported by pharmacies that participated in the survey.

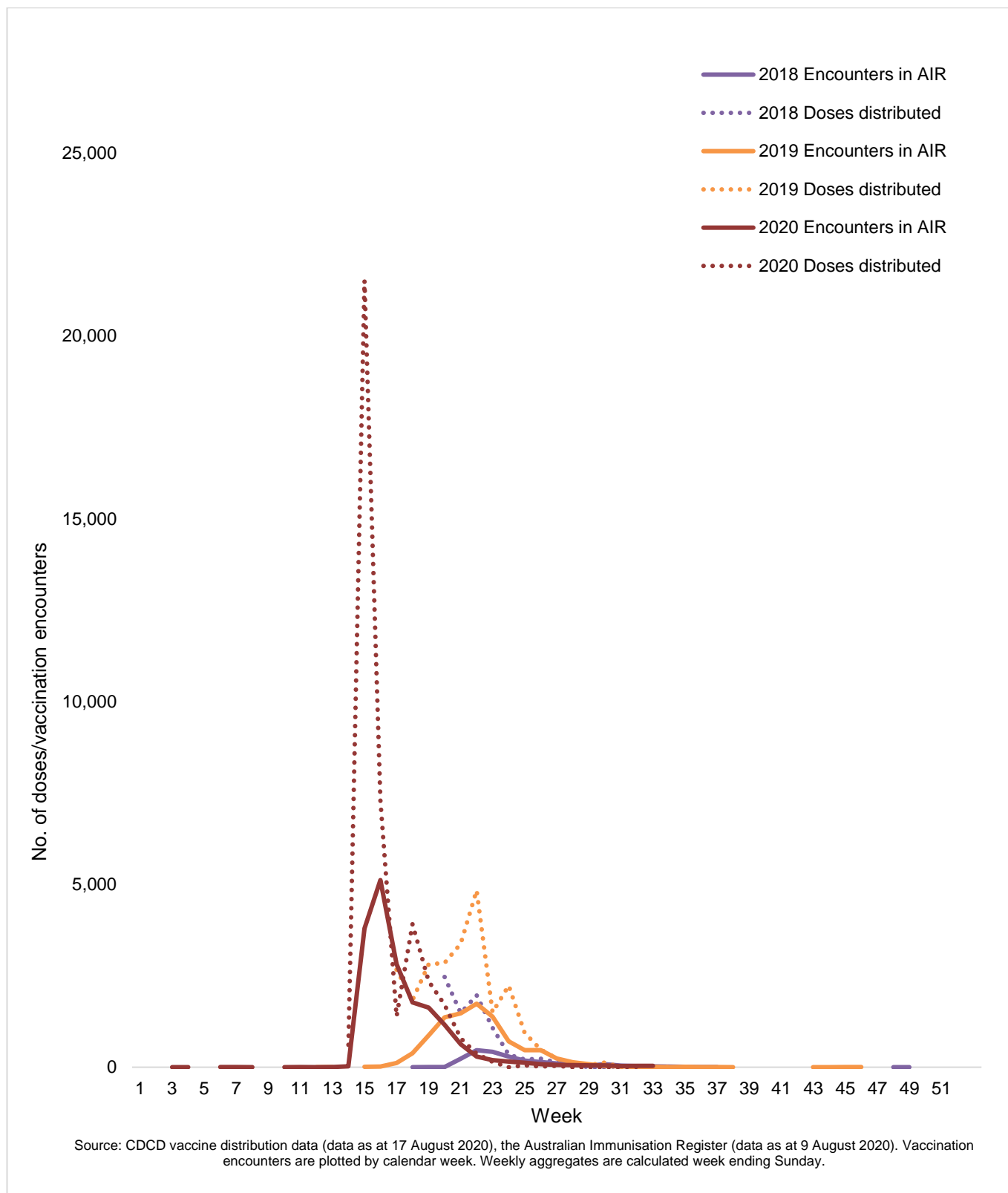
Question from ' <i>Participating Pharmacy Survey</i> '	n (%)
Did you record the immunisations you administered into the AIR? (n= 158)	
Yes, we manually enter the records into the AIR	68 (43.0)
Yes, our system automatically uploads the records into the AIR	88 (55.7)
No, we did not record the immunisations into the AIR	2 (1.3)
Unsure/Don't know	0 (0)
Which record management software do you use? (n=88)	
GuildCare	44 (50.0)
MedAdvisor	44 (50.0)
Were you aware that reporting immunisation records into the AIR is a mandatory requirement for immunising pharmacists? (n= 158)	
Yes	156 (98.7)
No	1 (0.6)
Unsure/Don't know	1 (0.6)

Source: the '*Participating Pharmacy Survey*' (Dec. 2019)

Distribution compared with usage of vaccines

Appendix Figure 4 demonstrates that discrepancies between doses distributed to pharmacies compared with the vaccination encounters entered into the AIR for the same week.

Appendix Figure 4 Doses of NIP vaccine distributed to pharmacies compared with vaccination encounters of persons who received NIP vaccine at a pharmacy.



Appendix 9– Consumer experience

This section summarises 'Over 65s Vaccinee Survey' respondents' perception of safety and satisfaction with their experience of receiving a NIP vaccine at a pharmacy in 2019, and the cost associated.

Safety and satisfaction

Almost all respondents reported that they felt safe (412/415) and satisfied with their experience (408/415) receiving their influenza vaccine at the pharmacy, as shown in Appendix Table 11.

Appendix Table 11 Consumer experience reported by survey respondents

Consumer experience	65-69 n (%)	70-74 n (%)	75-89 n (%)	80+ n (%)	Total n (%)
Total responses	248 (59.8)	116 (27.9)	35 (8.4)	16 (3.9)	415
Did you feel safe receiving your influenza vaccine at the pharmacy? n = 415					
Yes	246 (99.2)	115 (99.1)	35 (100.0)	16 (100.0)	412 (99.3)
No	0 (0.0)	1 (0.9)	0 (0.0)	0 (0.0)	1 (0.2)
Unsure/Don't know	1 (0.4)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.2)
Refused	1 (0.4)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.2)
Overall, were you satisfied with your vaccination experience at the pharmacy? n = 415					
Yes	244 (9.4)	113 (97.4)	35 (100.0)	16 (100.0)	408 (98.3)
No	2 (0.8)	2 (1.7)	0 (0.0)	0 (0.0)	4 (1.0)
Unsure/Don't know	2 (0.8)	1 (0.9)	0 (0.0)	0 (0.0)	3 (0.7)

Source: the Australian Immunisation Register (AIR; data as at 8 September 2019) and the 'Over 65s Vaccinee Survey' (Nov. 2019)

Cost of service provision

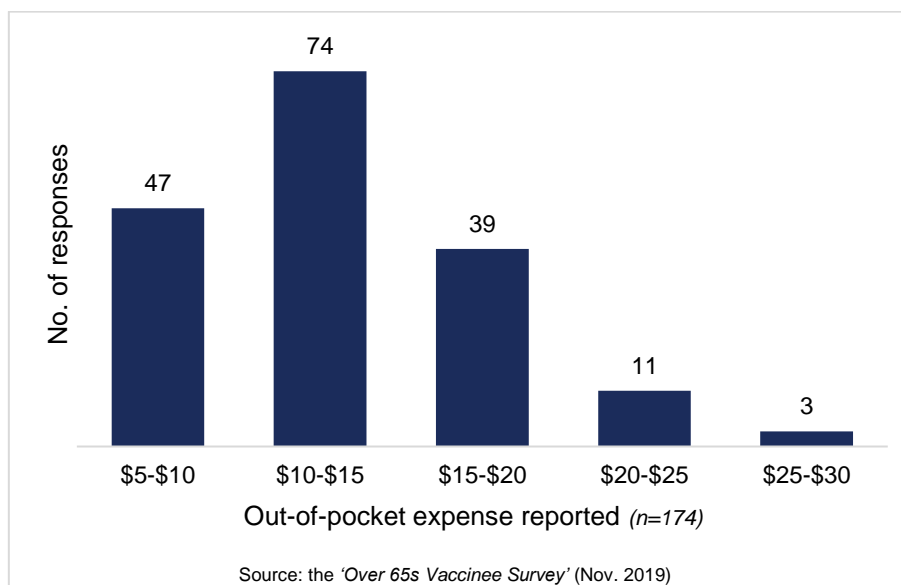
Appendix Table 12 and Appendix Figure 5 summarise the cost that survey respondents recall paying to receive a NIP vaccine at a pharmacy. Approximately half (50.8%, 211/415) of respondents indicated that they did not pay an out-of-pocket expense for their influenza vaccine that they received at the pharmacy in 2019. This is likely because they received their vaccine as free if they were HBF members, which 47.5% (197/415) of the respondents reportedly were.

Appendix Table 12 Cost associated with vaccination service reported by survey respondents

Cost reported by survey respondents	65-69 n (%)	70-74 n (%)	75-89 n (%)	80+ n (%)	Total n (%)
Total responses	248 (59.8)	116 (27.9)	35 (8.4)	16 (3.9)	415
Did you pay an out-of-pocket expense for the influenza vaccine that you received at the pharmacy this year? n = 415					
Yes	100 (40.3)	58 (50.0)	17 (48.6)	7 (43.8)	182 (43.9)
No	133 (53.6)	53 (45.7)	17 (48.6)	8 (50)	211 (50.8)
Unsure/Don't know	14 (5.7)	5 (4.3)	1 (2.8)	1 (6.2)	21 (5.1)
Refused	1 (0.4)	0 (0)	0 (0)	0 (0)	1 (0.2)
How much did you pay for your influenza vaccination at the pharmacy this year? n = 415					
Less than \$5	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
\$5-\$10	26 (10.5)	12 (10.3)	6 (17.1)	3 (18.8)	47 (11.3)
\$10-\$15	38 (15.3)	25 (21.6)	8 (22.9)	3 (18.8)	74 (17.8)
\$15-\$20	21 (8.5)	16 (13.8)	2 (5.7)	0 (0)	39 (9.4)
\$20-\$25	10 (4.0)	1 (0.9)	0 (0)	0 (0)	11 (2.7)
\$25-\$30	0 (0)	3 (2.6)	0 (0)	0 (0)	3 (0.7)
More than \$30	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Unsure/Don't know	153 (61.7)	59 (50.9)	19 (54.3)	10 (62.5)	241 (58.1)
Refused	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Were you happy to pay this amount for your influenza vaccine? n = 415					
Yes	85 (34.3)	55 (47.4)	13 (37.1)	6 (37.5)	159 (38.3)
No	7 (2.8)	2 (1.7)	3 (8.6)	0 (0)	12 (2.9)
Unsure/Don't know	156 (62.9)	59 (50.9)	19 (54.3)	10 (62.5)	244 (58.8)
Refused	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

Source: the Australian Immunisation Register (AIR; data as at 8 September 2019) and the 'Over 65s Vaccinee Survey' (Nov. 2019)

Appendix Figure 5 Out-of-pocket expense reported by survey respondents who received a NIP vaccine at a pharmacy in 2019



Appendix 10– Intention to access pharmacy vaccination services in the future

This section summarises ‘Over 65s Vaccinee Survey’ respondents’ intention to access vaccination services at pharmacies in the future.

Appendix Table 13 Intention to access future vaccination services at pharmacies from survey respondents

Intention to access services	65-69 n (%)	70-74 n (%)	75-89 n (%)	80+ n (%)	Total n (%)
Total responses	248 (59.8)	116 (27.9)	35 (8.4)	16 (3.9)	415
Would you receive a vaccine at a pharmacy again? n = 415					
Yes	231 (93.1)	99 (85.3)	32 (91.4)	13 (81.3)	375 (90.4)
No	7 (2.8)	10 (8.6)	1 (2.9)	1 (6.3)	19 (4.6)
Unsure/Don't know	10 (4.0)	7 (6.0)	2 (5.7)	2 (12.5)	21 (5.1)
Why would you choose to receive an influenza vaccine at a pharmacy again? ¹ n = 635					
Convenience	217 (55.9)	93 (80.2)	27 (54.1)	13 (65.0)	350 (55.1)
Happy with service/experience	21 (5.4)	17 (14.7)	8 (9.9)	1 (5.0)	47 (7.4)
Cheaper than other locations	20 (5.2)	14 (12.1)	4 (8.1)	0 (0.0)	38 (3.8)
Free with health insurance membership	125 (32.2)	43 (37.1)	11 (20.0)	4 (20.0)	183 (28.8)
Other (please specify)	1 (0.3)	4 (3.4)	5 (9.1)	2 (10.0)	12 (1.9)
Unsure/Don't know	3 (0.8)	1 (0.9)	0 (0.0)	0 (0.0)	4 (0.6)
Refused	1 (0.3)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.2)
Why would you choose not to receive an influenza vaccine at a pharmacy again? ¹ n = 23					
Not happy with service	0 (0.0)	3 (21.4)	0 (0.0)	0 (0.0)	3 (13.0)
Not preferred location to receive flu vaccine	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Too expensive	0 (0.0)	2 (14.3)	0 (0.0)	0 (0.0)	2 (8.7)
Other (please specify)	6 (85.7)	8 (57.1)	1 (100.0)	1 (100.0)	16 (69.6)
Unsure/Don't know	1 (14.3)	1 (7.1)	0 (0.0)	0 (0.0)	2 (8.7)
Would you recommend family and friends receive an influenza vaccine at a pharmacy? n = 415					
Yes	225 (90.7)	86 (74.1)	29 (82.9)	11 (68.8)	351 (84.6)
No	6 (2.4)	8 (6.9)	1 (2.9)	1 (6.3)	16 (3.9)
Unsure/Don't know	16 (6.5)	22 (19.0)	5 (14.3)	4 (25.0)	47 (11.3)
Refused	1 (0.4)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.2)
What is your preferred location for seasonal influenza vaccine? n = 415					
Regular GP	33 (13.3)	24 (20.7)	12 (34.3)	8 (50.0)	77 (18.6)
Community pharmacy	189 (76.2)	83 (71.6)	21 (60.0)	8 (50.0)	301 (72.5)
Workplace clinic	4 (1.6)	0 (0.0)	0 (0.0)	0 (0.0)	4 (1.0)
Other (please specify)	4 (1.6)	2 (1.7)	0 (0.0)	0 (0.0)	6 (1.4)
Unsure/Don't know	17 (6.9)	7 (6.0)	2 (5.7)	0 (0.0)	26 (6.3)
Refused	1 (0.4)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.2)

¹ Respondents were able to provide more than one answer to this question, therefore the denominators are not consistent with other questions

Source: the Australian Immunisation Register (AIR; data as at 8 September 2019) and the ‘Over 65s Vaccinee Survey’ (Nov. 2019)

Thematic analysis of the responses from participants, who indicated that they would not like to receive a flu vaccine at a pharmacy, revealed that the majority (9/15) indicated that the GP is their preferred location to receive the influenza vaccine. Sub themes identified within this were preference to attend the GP due to bulk-bill service provision (2/9), proximity (1/9), and currency of medical records (1/9). Four respondents indicated that they were concerned about the efficacy of the vaccine provided at the pharmacy. For example, respondents reported ‘I was told that the pharmacy didn't have the right vaccine or it was different than what a GP would be giving patients’,

and *'read in the press that vaccine at the pharmacy is not the same as at GP'*. Two respondents indicated that they would not like to return because they experienced an adverse event following immunisation (AEFI) at the pharmacy, one reported the following *'got a swollen arm after injection'*, and *'got a virus after the injection and has suffered all sorts of things - ie dropped face but it has gone back to standard now'*.

Appendix 11– Awareness of service provision

This section presents summaries of the method/s by which ‘Over 65s Vaccinee Survey’ respondents’ indicated they were made aware that they could receive their seasonal influenza vaccine at a community pharmacy (Appendix Table 14), and the methods reported as utilised by respondents from the ‘Participating Pharmacy Survey’ to promote awareness of immunisation services provided at their pharmacy (Appendix Table 15).

Vaccinees

Advertising at the pharmacy was reportedly the most common way survey participants recalled finding out that they could receive an influenza vaccine at a pharmacy (50.1%, 208/415) Appendix Table 14. Following this, 27.5% (114/415) reported that they were made aware of the service provision by another mechanism. Of the other mechanisms, 24.3% (101/415) said they were contacted by their health insurance (HBF) via email or letter notifying them about the service provision. Other mechanisms for becoming aware of service provision not listed in included: referral from a GP (6/415), from the workplace (4/415), communication from pharmacy (2/415), and from the internet (1/415). Notably, word of mouth was reported as the mechanism for 19.8% (82/415) of survey respondents.

Appendix Table 14 Awareness of service provision among survey respondents

Mechanism of awareness of service provision	65-69 n (%)	70-74 n (%)	75-89 n (%)	80+ n (%)	Total n (%)
How did you find out that you could receive an influenza vaccine at a pharmacy?¹ n = 520					
Total Participants	248	116	35	16	415
Offered to me at the pharmacy	12 (4.8)	8 (6.9)	6 (17.1)	4 (25.0)	30 (7.2)
Advertising at the pharmacy	117 (47.2)	65 (56.0)	18 (51.4)	8 (50.0)	208 (50.1)
TV	21 (8.5)	10 (8.6)	4 (11.4)	0 (0.0)	35 (8.4)
Radio	8 (3.2)	1 (0.9)	1 (2.9)	0 (0.0)	10 (2.4)
Newspaper	15 (6.0)	8 (6.9)	5 (14.3)	0 (0.0)	28 (6.7)
Social media	5 (2.0)	2 (1.7)	1 (2.9)	0 (0.0)	8 (1.9)
Public transport notices/billboards	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Word of mouth	48 (19.4)	24 (20.7)	7 (20.0)	3 (18.8)	82 (19.8)
Other (please specify)	78 (31.5)	26 (22.4)	7 (20.0)	3 (18.8)	114 (27.5)
Unsure/Don't know	2 (0.8)	2 (1.7)	0 (0.0)	0 (0.0)	4 (1.0)
Refused	1 (0.4)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.2)

¹ Respondents were able to provide more than one answer to this question, therefore the denominators are not consistent with other questions

Source: the Australian Immunisation Register (AIR; data as at 8 September 2019) and the ‘Over 65s Vaccinee Survey’ (Nov. 2019)

Participating pharmacies

Majority of the pharmacies that responded to the ‘Participating Pharmacy Survey’ indicated that they did engage in activities to promote awareness of immunisation services provided at the pharmacy (86.7%, 137/158), Table 18. Of the pharmacies that indicated that they did promote the immunisation services at the pharmacy, most indicated that they utilised posters at the pharmacy (30.3%, 133/373), social media (19.6%, 73/373), and brochures/educational material in the pharmacy (19.0%, 71/373). 11.8% (44/373) of pharmacies indicated that they used flyers accompanying prescriptions dispensed to promote vaccination services. Thematic analysis of the ‘other’ methods used to promote patient awareness of immunisations service at the pharmacy,

revealed that they also used posters in the shopping mall (n=1), word of mouth (n=1), and communications from HBF (n=2).

Appendix Table 15 Strategies to promote vaccination services by pharmacies

Strategies to promote vaccination service by pharmacies	Yes n (%)	No n (%)	Unsure n (%)
Did your pharmacy engage in any activities to promote awareness of immunisation services provided at your business? n = 158	137 (86.7)	15 (9.5)	6 (3.8)
Which of following methods did your pharmacy use to promote patient awareness of immunisation services? ¹ n=1106			
Total	373	733	0
Posters at pharmacy	133 (30.3)	25 (3.4)	0 (0)
Flyers accompanying prescriptions dispensed	44 (11.8)	114 (15.6)	0 (0)
Brochures and educational material in pharmacy	71 (19.0)	87 (11.8)	0 (0)
Newspapers or radio	28 (7.5)	130 (17.7)	0 (0)
Social media	73 (19.6)	85 (11.6)	0 (0)
Television	11 (2.9)	147 (20.1)	0 (0)
Other	13 (3.5)	145 (19.8)	0 (0)

¹Respondents were able to provide more than one answer to this question, therefore the denominators are not consistent with other questions.

Source: the 'Participating Pharmacy Survey' (Dec. 2019)

Appendix 12– Barriers and challenges

This section presents an analysis of perceived barriers and challenges as reported by respondents that participated in the *‘Participating Pharmacy Survey’* (Appendix Table 16), and from a thematic analysis of ‘other comments’ collected during the *‘Audit of Participating Pharmacies’*.

Organisational/environmental factors

Funding

Thematic analysis of the 39 responses to the question *‘Were there any other challenges you faced when providing immunisation services to patients aged 65 years and over?’*, funding issues were identified 29 times. Within this, the cost to customer (n=23), cost to pharmacy (n=5), and general funding issues (n=1) were reported.

In relation to cost to customer, many respondents indicated that the cost that was passed on to the customer, due to a lack of funding, was a challenge for them. For example, respondents reported that *‘Charging in store for administering Influenza Vaccine whilst Doctors do not’*, *‘Many over 65 year old’s expected to receive their vaccination at no charge’*, *‘Explaining to the reason why we have to charge for it and why they are not charged at the doctor’*, and that *‘[it was] Frustrating to get no NIP/Medicare reimbursement for administering when the local GP can’*.

Cost to the pharmacy was identified five times in the 39 responses, although it is implied in some of the responses relating to the cost of the customer. Respondents reported that *‘Cost of training staff to level required for delivery of the service’*, *‘We are unable to access Medicare payment for giving the vaccines or recording them on AIR even though we have to employ extra staff members to be available when the service is provided and to provide first aid training for them’*, and that *‘From a remuneration perspective the fact that a pharmacy is not remunerated as a doctor is via Medicare is a disincentive. Sure, we can charge for administration but in the real world that is not going to happen.’*

One respondent indicated that *‘staff time/paperwork/storage/ordering’* was covered by the vaccinee administration fee, while another indicated that *‘[the costs of] pharmacists time, wipes/bandaids if required, needles’* were not adequately covered under the current system.

Supply

Majority 96.2% (152/158) of survey respondents indicated that they had sufficient supply of vaccines, while 1.9% (3/158) said that they did not. Constraints around the supply of vaccine were indicated to be a great deal challenging for 8.4% (13/156). Five pharmacies reported experiencing supply constraints when trying to order NIP vaccine in 2019. Two of these reported experiencing constraints in May, and three reported experiencing these constraints during June.

Supply was identified four times as a challenge from free-text responses provided by respondents. Specifically, one respondent indicated that *‘over the 2019 influenza period. at times the wholesalers were out of stock and we could not supply’*, while another indicated that they wanted access to vaccine earlier, *‘Ensure vaccine is ready for the start of the influenza vaccination period to best protect those over 65 year olds who travel’*.

Record management and accessing the AIR

In the survey of participating pharmacies, a total of 12 pharmacies (7.7%) found that accessing the AIR was a great deal challenging, while 14.7% (23/156) found it moderately challenging, 14.1% (22/156) found it occasionally challenging, 37.8% (59/156) found it rarely challenging, whilst 23.1% (36/156) found it to never be challenging. While accessing the AIR was not identified as something that was challenging for survey participants who responded to the question of 'other challenges faced', reimbursement for time spent entering the data into the AIR was reported. Additionally, time spent documenting patient immunisations was indicated as being rarely (35.9%, 56/156) or never (22.4%, 44/156) challenging by survey respondents, and was not identified in the responses given to the question of 'other challenges faced'.

Pharmacies that were audited (n=196/201) via computer-assisted telephone interview (CATI) indicated that accessing the AIR and issues with record management were both issues when asked to provide comments. Of the 43 'comments' responses, issues with the AIR was raised ten times, whilst issues with record management was raised six times. The issues with the AIR were mainly around not knowing the AIR provider number or issues with the patient/record management software not sending reports of vaccination to the AIR. For example, '*The Immunising pharmacist no longer works at the pharmacy and they are having trouble finding the AIR number*' and '*upload on AIR through GuildCare and it sent a message saying busy*'.

Administration of vaccines

Time spent administering immunisations was only challenging a moderate amount or more in 12.8% (18/156) of the respondents. Two respondents indicated that the needle not being attached to the injection was something that they perceived as a challenge.

Overordering of vaccines

Accidental overordering was indicated as a challenge by one survey respondent and by eight pharmacies that were audited. Respondents indicated that they ordered more than required by mistake or misunderstanding, whilst others indicated ordering the vaccine by mistake altogether.

Patient-related factors

Apart from the cost passed on the customers (addressed in the funding section above), the fact that patients can receive their immunisations elsewhere, and the lack of awareness of immunisation services being provided at the pharmacy were the biggest challenges.

Cost and access to immunisation services at other locations

Specifically, 21.2% (33/156) respondents indicated that the fact that patients can receive their immunisations elsewhere was a great deal challenging, while 22.4% (35/156) indicated that was challenging a moderate amount, and 17.3% (27/156) indicated that it was challenging only occasionally. Not having insurance coverage for immunisations was never challenging for 38.5% (60/156) of respondents, while 4.5% (7/156) found this to be a great deal challenging. This may be due to over 65s accessing vaccination services at a pharmacy, because it was provided free-of-cost as part of their health insurance (as indicated by the '*Over 65 Vaccinee Survey*' responses).

Lack of awareness amongst vaccinees

Lack of awareness amongst persons aged 65 years and older was indicated as a challenge in nine of the 39 responses of pharmacies that participated in the survey. Of these responses, three respondents indicated that there was a general lack of awareness that pharmacists may immunise, whilst the other nine indicated that there was a lack of knowledge amongst vaccinees about the specific over 65 vaccine. For example, *'I believe the greatest challenge is the lack of patient knowledge that they can receive their NIP influenza vaccination from their pharmacist'*, and *'They did not know of this service being provided through pharmacies'*. With regards to the specific over 65 vaccine, pharmacists indicated that there was confusion amongst vaccinees about the different formulations. One respondent wrote, *'There needs to be more education about the benefits of the over 65 vaccine to those over 65, I encountered some people requesting to have the quadrivalent as they believe they were healthy enough to receive the 4 strain instead of the 3 strain despite their age'*, while another indicated that *'Explaining the difference between vaccines and recommendations for age groups'* was a challenge.

Talking to patients about immunisation

The time it takes to talk to patients about being immunised was mostly selected as being never challenging (29.0%, 45/155), or rarely challenging (35.5%, 55/155), but was found to be occasionally challenging for 25.8% (40/155) of respondents. However, survey respondents found that explaining the type of vaccine being administered was challenging, as discussed above.

Not having enough potential patients to justify ordering vaccines was reportedly only an occasional challenge for 18.1% (28/155) of respondents. Patients not coming in regularly was identified as being an occasional challenge for 17.9% (28/156) of respondents, a moderate challenge for 16.0% (25/156), and a great deal challenging for 6.4% (10/156).

Appendix Table 16 Barriers to immunisation service provision as reported by participating pharmacies

Barriers to immunisation services	Never	Rarely	Occasionally	A moderate amount	A great deal	Unsure	N/A	Total
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n
Organisational/environmental barriers								
Lack of reimbursement	13 (8.5)	11 (7.2)	17 (11.1)	35 (22.9)	68 (44.4)	4 (2.6)	5 (3.3)	153
Accessing the AIR	36 (23.1)	59 (37.8)	22 (14.1)	23 (14.7)	12 (7.7)	2 (1.3)	2 (1.3)	156
Documenting patient immunisation records	44 (28.2)	56 (35.9)	28 (17.9)	18 (11.5)	9 (5.8)	0 (0.0)	1 (0.6)	156
Time spent administering immunisation	35 (22.4)	65 (41.7)	35 (22.4)	15 (9.6)	5 (3.2)	0 (0.0)	1 (0.6)	156
Time spent ordering vaccines	61 (39.1)	60 (38.5)	25 (16.0)	6 (3.8)	3 (1.9)	0 (0.0)	1 (0.6)	156
Time spent preparing the immunisation	35 (31.9)	50 (46.0)	15 (13.8)	6 (5.5)	1 (0.9)	0 (0.0)	2 (1.8)	109
Time spent on billing	45 (28.8)	62 (39.7)	20 (12.8)	10 (6.4)	4 (2.6)	2 (1.3)	13 (8.3)	156
Time spent on insurance admin	41 (26.5)	50 (32.3)	9 (5.8)	9 (5.8)	3 (1.9)	4 (2.6)	39 (25.2)	155
Lack of support from banner group	63 (40.4)	50 (32.1)	5 (3.2)	7 (4.5)	0 (0.0)	2 (1.3)	29 (18.6)	156
Constraints around the supply of vaccine	48 (31.0)	35 (22.6)	37 (23.9)	18 (11.6)	13 (8.4)	0 (0.0)	4 (2.6)	155
Lack of physical space for delivery of vaccine	119 (76.3)	23 (14.7)	6 (3.8)	3 (1.9)	1 (0.6)	0 (0.0)	4 (2.6)	156
Patient-related barriers								
Time it takes to talk to patients about being immunised	45 (29.0)	55 (35.5)	40 (25.8)	12 (7.7)	3 (1.9)	0 (0.0)	0 (0.0)	155
Not having enough potential patients to justify ordering vaccines	66 (42.6)	38 (24.5)	28 (18.1)	14 (9.0)	6 (3.9)	1 (0.6)	2 (1.3)	155
Patients not having insurance coverage for immunisations	60 (38.5)	35 (22.4)	14 (9.0)	6 (3.8)	7 (4.5)	8 (5.1)	26 (16.7)	156
The fact that patients can receive immunisations elsewhere	24 (15.4)	35 (22.4)	27 (17.3)	35 (22.4)	33 (21.2)	1 (0.6)	1 (0.6)	156
Patients not coming in regularly	40 (25.6)	47 (30.1)	28 (17.9)	25 (16.0)	10 (6.4)	4 (2.6)	2 (1.3)	156

Source: the 'Participating Pharmacy Survey' (Dec. 2019)

Appendix 13– Perceived integration into WA DoH immunisation program

This section provides an analysis of respondents' perceptions of integration into the WA DoH Influenza Immunisation Program, and the reported usefulness of communications supplied by CDCD.

Pharmacist perceptions of integration into the program

More than 75% (120/158) of the survey respondents indicated that they felt integrated into the WA DoH influenza immunisation program. Of the remaining respondents, 10.1% said that they did not feel integrated, while 13.9% (22/158) were unsure. In response to the question '*Why didn't you feel integrated into the WA Health influenza immunisation program?*', the main theme identified for this was the 'lack of funding/renumeration' (n=11). The following themes were also identified: the lack of support from other health care providers (n=3), and WA Health (n=2), and issues around information, namely, the lack of public awareness of immunisation service provision at pharmacies (n=2), and the lack of education of pharmacies (n=2).

The funding/renumeration responses were mainly around the lack of renumeration for the services provided, e.g. '*both GP/nurse can claim via provider number but pharmacist get paid nothing, so I feel we are the "odd one out" - doing work without getting paid*', and '*No revelation in any advertising that pharmacists are not paid for the service they provide regarding over 65, or any other immunisation, by the Health Dept. The fact that every other health professional receives payment from the Health Dept for the immunisation services they provide and for uploading information into the AIR etc*'.

Survey participants responded that there '*[were] ridiculous assertions being made by GPs regarding pharmacist immunisations*', and that '*We would like better support from the WA Health Dept*'.

The lack of education for pharmacists was evident in responses such as '*Not enough information is given to pharmacy*', and that '*training and promotional materials have not been tailored to suit accessing vaccination in the pharmacy, it mostly targets general practice*'.

Suggestions for better integration into the program

Survey participants indicated that they would feel better integrated into the influenza immunisation program if there was promotion of pharmacist immunisation services (n=23), reimbursement for services (n=21), expansion of scope of service provision (n=3), more pharmacy-specific education for pharmacists (n=2), and better supply of vaccine (n=1).

Respondents indicated that to promote immunisation services at pharmacies, there should be general advertising (n=12), such as '*on social media, tv and radio*', that there should be education of the public regarding the role of pharmacists as immunisers (n=8), and education of health providers (n=3). Also, majority of respondents (81.4%, 127/156) indicated that the availability of NIP-funded TIV could have been better marketed to the eligible cohort (persons aged 65 years and over) in 2019.

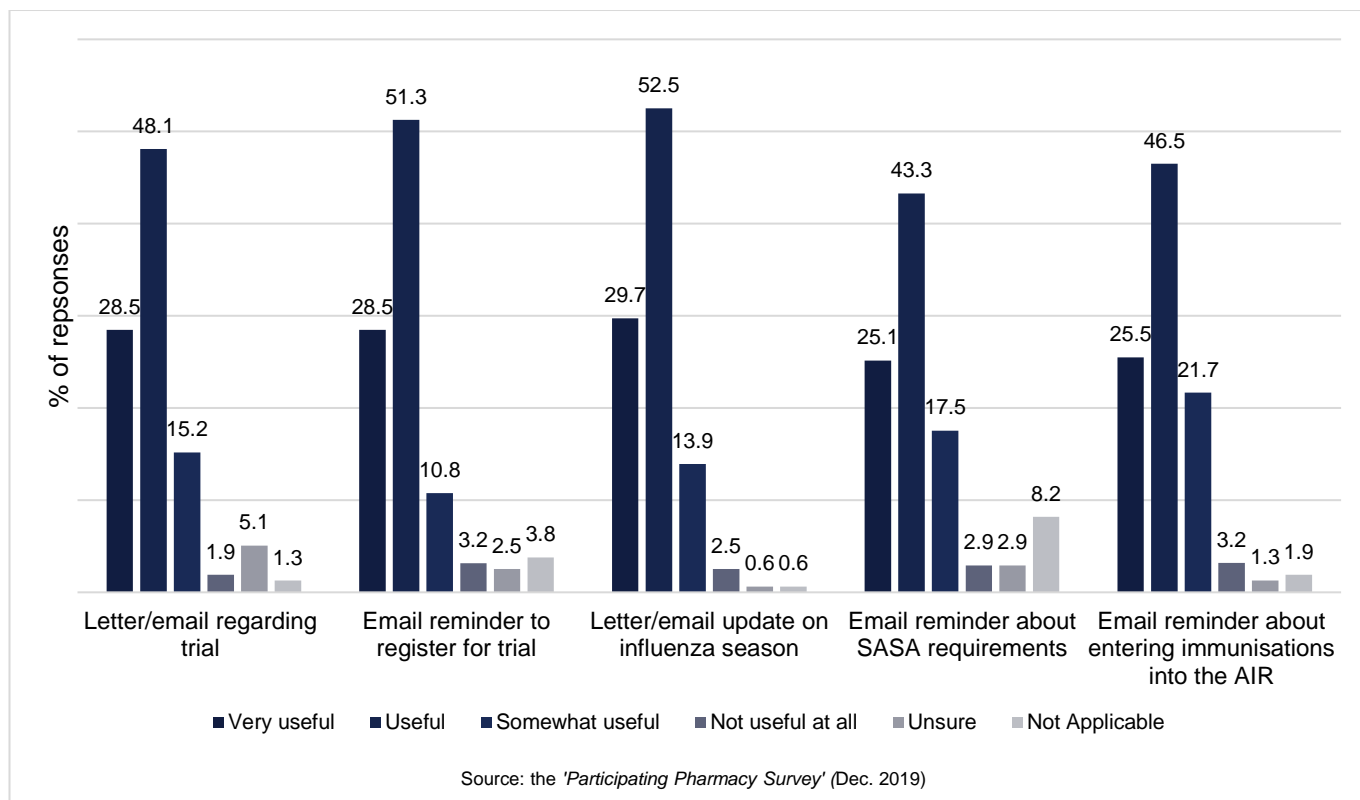
Specifically, respondents said that '*majority of pharmacists are motivated health professionals that genuinely want to help the WA Health achieve immunisation goals... promoting the message that we are all one striving for the same goal*', that '*[we should] educate doctors more on the*

positive impact pharmacists are having in growing the numbers of community members being vaccinated', and that there should be 'education of doctors about training and safety of pharmacists' vaccinating'.

Usefulness of communications received by WA Health

Throughout 2019, various communications were sent to pharmacies regarding the trial. As part of the 'Participating Pharmacy Survey', participants were asked to rate the usefulness of these communications. Majority of respondents indicated that they found all of the communications to be useful or very useful (Appendix Figure 6). The communication that was rated to be most useful was the letter/email update on the influenza season. Eighty-two percent of respondents (82.3%; 130/158) indicated that letter/email update was useful or very useful. This communication included the recommendations from the Australian Technical Advisory Group on Immunisation (ATAGI) around timing of vaccination, age recommendations for different vaccines, and the strains covered by each vaccine, adapted for immunising pharmacies in WA. It should be noted that these communications are available via the internet, as well as sent to providers engaged in immunisation programs run by WA Health. Least useful of the communications was reportedly the reminder about the SASA requirements, with 20.5% of respondents indicating that they found it to be somewhat useful or not useful (Appendix Figure 6).

Appendix Figure 6 Usefulness of communications provided by WA Health as indicated by survey participants



Nearly 90% of respondents (89.9%, 142/158) indicated that they thought that the communications from WA Health during 2019 were adequate, while 4.4% (7/158) indicated that they would have like additional communications. The remaining respondents were unsure or didn't know (5.7%, 9/158). Those that wanted additional communications (n=3) suggested 'charts on injecting technique', 'training relevant to vaccine delivery in the pharmacy', and 'myths about vaccine safety and how to tackle questions and challenges from the anti-vaccinator'.

Of the survey respondents, 14.6% (23/158) would like info disseminated through Pharmaceutical Society of Australia (WA Branch), and 23.4% (37/158) preferred information to be disseminated through The Pharmacy Guild of Australia (WA Branch).

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on request for a person with disability.**

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