

Development of a Patient Decision Aid for deprescribing cholinesterase inhibitors

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Background: Engaging consumers (people living with dementia and their carers) in the shared decision-making process with their healthcare professional is an essential element of providing patient-centred care. Decision aids are tools that can facilitate shared decision-making and produce treatment decisions that align with the consumer's goals and preferences.

Aim: To develop a Decision Aid for deprescribing or continuing ChEIs. This is designed to complement an evidence-based deprescribing guideline for ChEIs and memantine, which includes an algorithm to help clinicians deprescribe these medications appropriately.

We developed a decision aid for consumers to facilitate shared decision-making with their healthcare professional about continuing or stopping their Cholinesterase inhibitor (ChEI)

Should I continue or stop my dementia medicine?

This information sheet helps people living with dementia, their carers and family to have a conversation with their healthcare professional. Do not change your medicine(s) without speaking with your doctor, nurse practitioner or pharmacist.

1. Why is this choice being offered?

Donepezil (Aricept®), rivastigmine (Exelon®), and galantamine (Razadyne®) are used to treat the symptoms of dementia. These medicines are called **cholinesterase inhibitors**. In some people living with dementia these medicines can offer some relief from symptoms for a limited time.

In some situations, it is a good idea to consider a trial of stopping the dementia medicine:

- It has **not been helpful** since it was started or is **no longer helpful**
- The condition has progressed to **later stages of dementia** (e.g. receiving palliative care)
- The **harms** of the medicine (side effects) outweigh the **benefits**

2. What are the options?

- ● ● Continue taking the dementia medicine
The same care and monitoring will be provided. You will be given the opportunity to try stopping the dementia medicine in the future.

- Trial stopping the dementia medicine
This may involve slowly reducing the dose before stopping. You will receive extra monitoring during the process, and be told what symptoms can occur. The medicine can be started again if necessary.

3. What else should I know?

- There is not one **"right"** decision. The right decision for you depends on what is important to **you** and your health.
- Stopping the medicine **doesn't mean giving up** - it means being on the right medicines at the right time for you.
- Stopping the medicine **doesn't accelerate the disease**, hasten death or cause irreversible damage.
- The medicine **can be started again** if necessary.

If you are making this decision for a loved one, this may seem hard. The healthcare professional is here to help. Consider what your loved one would choose. What do they value the most?

Design and methods:

Development involved defining the purpose, scope and target audience, and assembling a steering group to review the prototype draft's content and format. It also involved conducting one-on-one interviews with healthcare professionals and consumers.

Results: A steering group composed of clinicians and consumer representatives was assembled. The group reviewed the prototype and changes were made for further testing. One-on-one interviews were conducted with 3 General Practitioners and 7 consumers (one person living with dementia and 6 carers). The research team synthesised the findings to complete two rounds of modification. Iterative changes to improve the content, format and structure of the decision aid were made.

Trends in prescription opioid dispensing among people with a history of opioid dependence: A retrospective study in New South Wales, Australia

Ms Chrianna Bharat^{1*}, Dr Sebastiano Barbieri², A/Prof Timothy Dobbins³, A/Prof Sarah Larney⁴, Dr Natasa Gisev¹, Prof Adrian Dunlop^{5,6}, Prof Michael Farrell¹, & Prof Louisa Degenhardt¹
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 Unpublished research: Manuscript in preparation

The Difference is Research

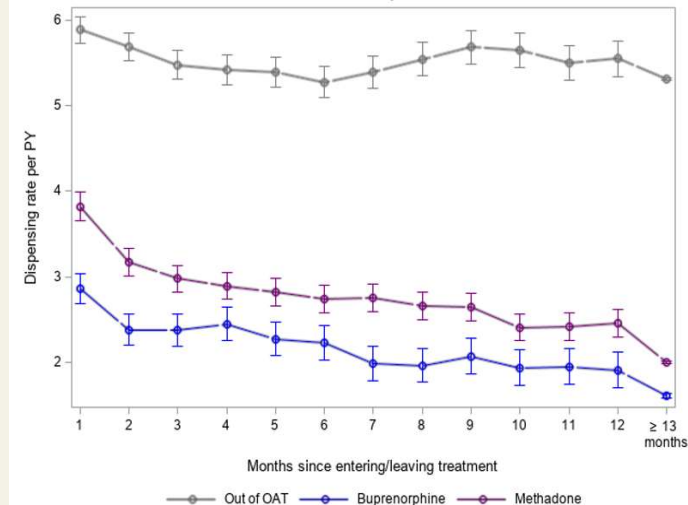
RESULTS

- At cohort entry, 53.7% were aged <40 years, 36.4% were female and 43.7% were enrolled in OAT
 - Dispensing rates for codeine decreased over time; oxycodone rates increased steadily but decreased following the introduction of tamper resistant formulations (in April 2014; **Fig 1**)
- Opioid dispensing rates were:
- Higher during periods out of OAT compared to in OAT
Adj. IR : Out of OAT, 6.3 [6.1-6.5]; In OAT, 2.7 [2.6-2.8]
 - Similar between OAT medications
Adj. IR: Buprenorphine, 2.4 [2.3-2.6]; Methadone, 2.6 [2.5-2.8]
 - Monotonically decreasing during time in OAT and highest in the first month out of OAT (**Fig 2**)

CONCLUSIONS & IMPACT

- Dispensing rates of prescription opioids are shown to be dynamic across time and treatment variables
- Dispensing rates likely to be impacted by the clinical profile of people retained (and not-retained) in OAT long-term
- Improved knowledge of the patterns of prescription opioid use in this population may support improved clinical knowledge and prescribing guidance

Figure 2. Opioid dispensing rates during time within OAT and following cessation of OAT



Rates of opioid dispensing were lower in opioid agonist treatment compared to out of treatment, and decreased with time since entry.

ACKNOWLEDGEMENTS

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BACKGROUND

- Managing pain in people with a history of opioid dependence can pose substantial challenges, especially when concurrently receiving opioid agonist treatment

- There is a lack of knowledge around the rate and characteristics of opioid prescribing in this population

AIM

This study examined the trends in prescription opioid analgesic dispensings among a cohort of people with a documented history of opioid dependence.

METHODS

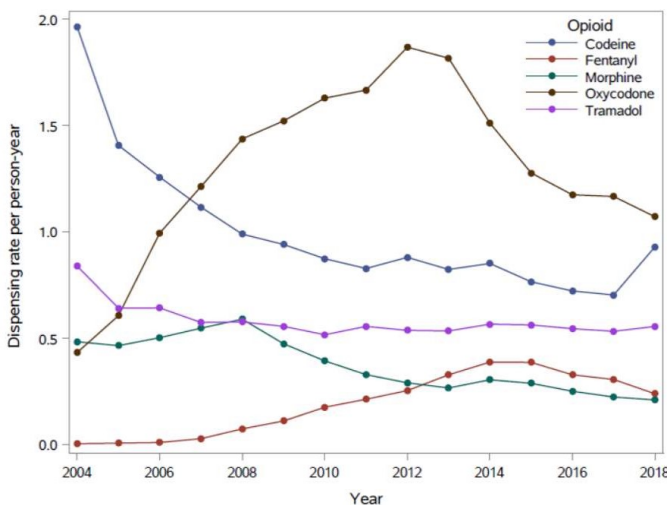
Sample: 28,891 people adult residents in NSW who had a documented history of opioid dependence when initiating a new prescribed opioid treatment episode between (1/2003 - 12/2018)

Outcome: Number of opioid analgesic dispensings

Analysis:

- Negative binomial generalised estimating equations estimated adjusted incidence rates (IR) and rate ratios for opioid dispensings per person-year (PY)
- All models adjusted for calendar year, age, sex, history of cancer, and comorbidity indicators

Figure 1. Opioid-specific dispensing rates per person-year by calendar year for the top 5 most commonly dispensed opioids



Evaluating the impact of new prescribing restrictions for proton pump inhibitors in Australia: an interrupted time series analysis

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Background

In May 2019 tightened prescribing restrictions were introduced for proton-pump inhibitors (PPIs) publicly-subsidised through Australia's Pharmaceutical Benefits Scheme (PBS), requiring prescribers to obtain permission to prescribe high and standard strength PPIs. The impact of these restrictions on PPI use in Australia is not yet known.

Methods

- Setting:** Australia maintains a publicly funded healthcare system entitling all citizens and eligible residents to subsidised prescription medicines through the PBS
- Data:** PPI dispensing records from national 10% sample of PBS beneficiaries and national pharmaceutical sales data (Table 1)
- Outcomes:** Monthly PPI dispensings, kilograms of PPIs sold/dispensed, and switches from higher to lower strength formulations per 10,000 treated; January 2017 to December 2020.
- Statistical analyses:** Interrupted time series analysis using autoregressive models.

Results

- Immediate decrease (-7,830 [95%CI: -8,818 to -6,842]) in standard strength PPI dispensings/month; slowly rebounded to exceed pre-intervention levels by December 2020 (Figure 1)
- High strength dispensings more than halved their pre-intervention average/month; low strength dispensings more than doubled their pre-intervention average/month (Fig 1)
- Transient increases in switches to lower strength formulations in May (478/10,000) and June (375/10,000) 2019; returned to pre-intervention levels by 2020
- Kilograms of PPIs sold/month followed a similar pattern to PBS kilograms dispensed/month except for standard strength formulations, where kilograms dispensed decreased by -74 (95%CI: -93 to -55) but sales remained unchanged (Figure 2)

Conclusions

- Tightened prescribing restrictions had an immediate and sustained impact on PPI use in Australia
- PPI use was more closely aligned with guideline recommendations from May 2019
- Some patients likely switched to private market prescriptions for standard strength PPIs

Table 1. PPI medicine availability in Australia.

PPI	Strength	PBS strength classification	Availability in Australia		
			PBS	Private	OTC
Esomeprazole	40 mg	High	✓	✓	-
Esomeprazole	20 mg	Standard	✓	✓	✓
Lansoprazole	30 mg	Standard	✓	✓	-
Lansoprazole	15 mg	Low	✓	✓	-
Omeprazole	20 mg	Standard	✓	✓	✓
Omeprazole	10 mg	Low	✓	✓	✓
Pantoprazole	40 mg	Standard	✓	✓	-
Pantoprazole	20 mg	Low	✓	✓	✓
Rabeprazole	20 mg	Standard	✓	✓	-
Rabeprazole	10 mg	Low	✓	✓	✓

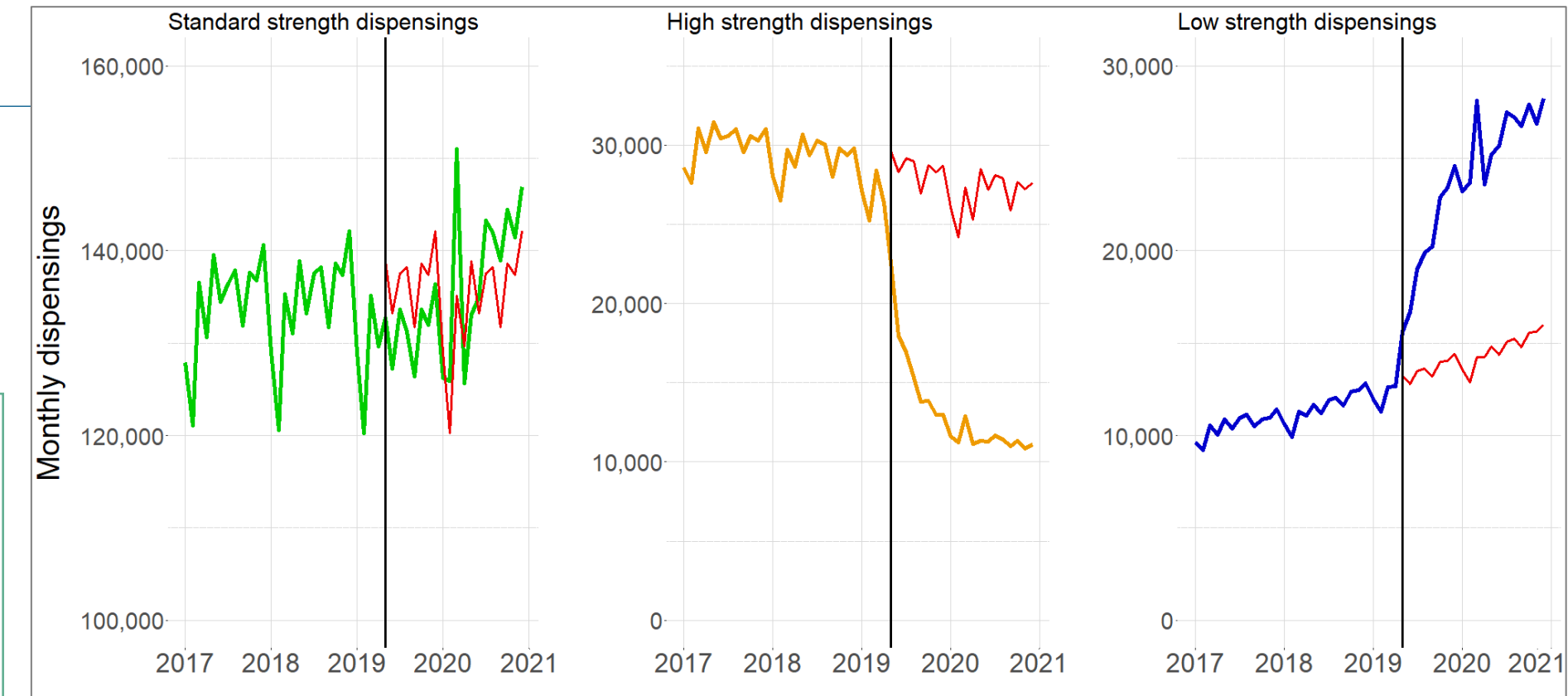


Figure 1. Monthly PPI observed dispensings and predicted dispensings (red) based on the pre-May 2019 trend; by strength. Vertical black line indicates May 2019.

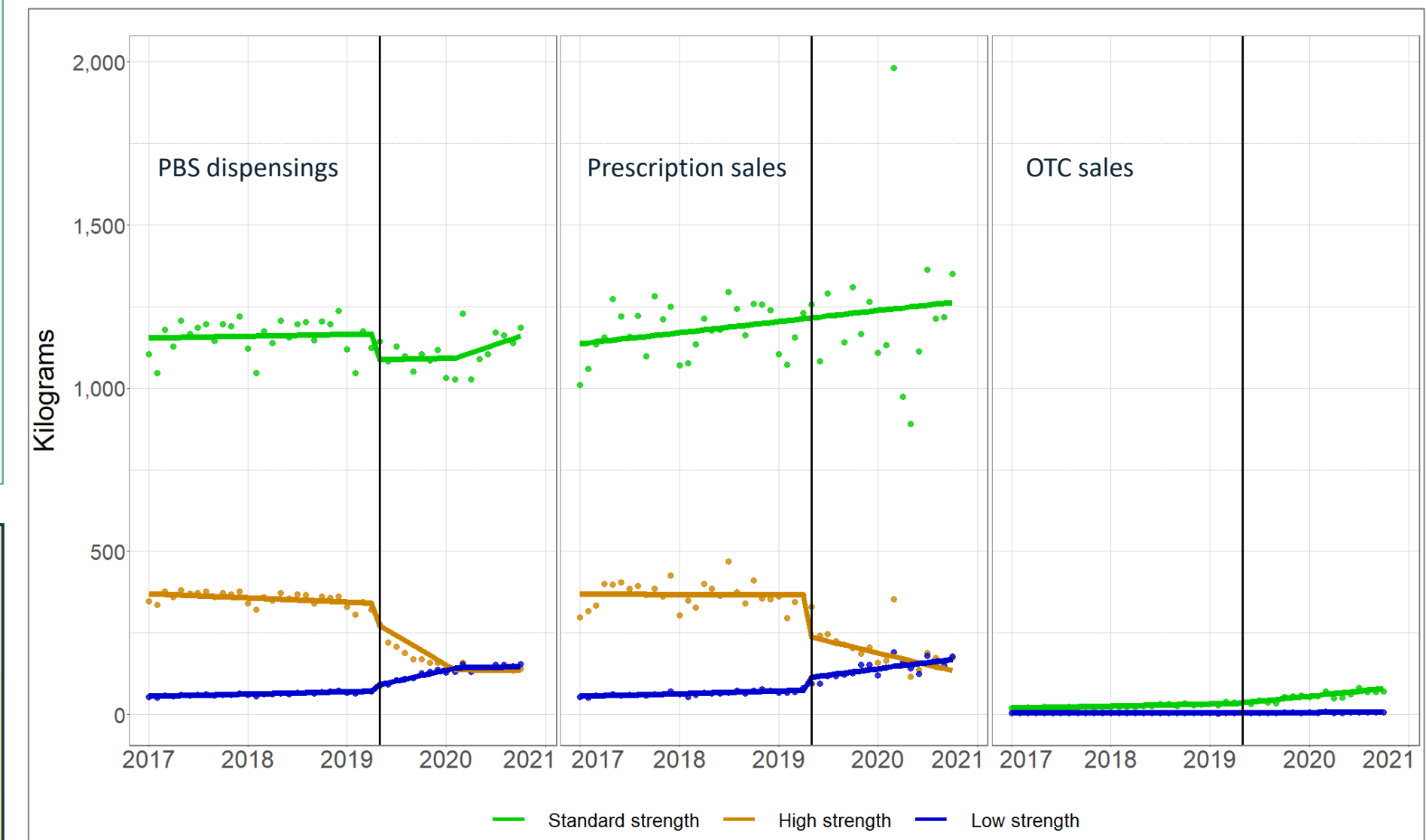


Figure 2. Volume (kgs) dispensed via the PBS (left), sold via prescription (centre), and sold via OTC (right), per month. Points: observed kilograms dispensed/sold; solid line: fitted linear trend; vertical black line indicates May 2019.

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Medicines Intelligence CRE real world evidence • smarter medicine use

Are we using Australian routinely collected data to its full potential? An analysis of published research on medicine use and health related outcomes

mini*
1st Annual
Research
Symposium and
Policy Forum

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Background and aims

- Routinely collected data on prescribed medicines is used increasingly to evaluate real-world medicines effectiveness and safety
- Australia's Pharmaceutical Benefits Scheme (PBS) dispensing data can be leveraged for post-market surveillance of medicines
- Here, we catalogue published literature using PBS dispensing claims to assess medicine use and health related outcomes

Methods

- Peer-reviewed studies published between 1987 and 2020
- Independent reviewers screened abstracts and full-text manuscripts and extracted data in duplicate
- We characterised publications according to:

Type of outcome

- Safety
- Effectiveness

Study population

- Age restrictions
- Entitlement level

Medicine group

- Assigned WHO ATC classification
- Medicine focus of each study

Stratified by analytical approach – individual level (track patients over time) and aggregate level

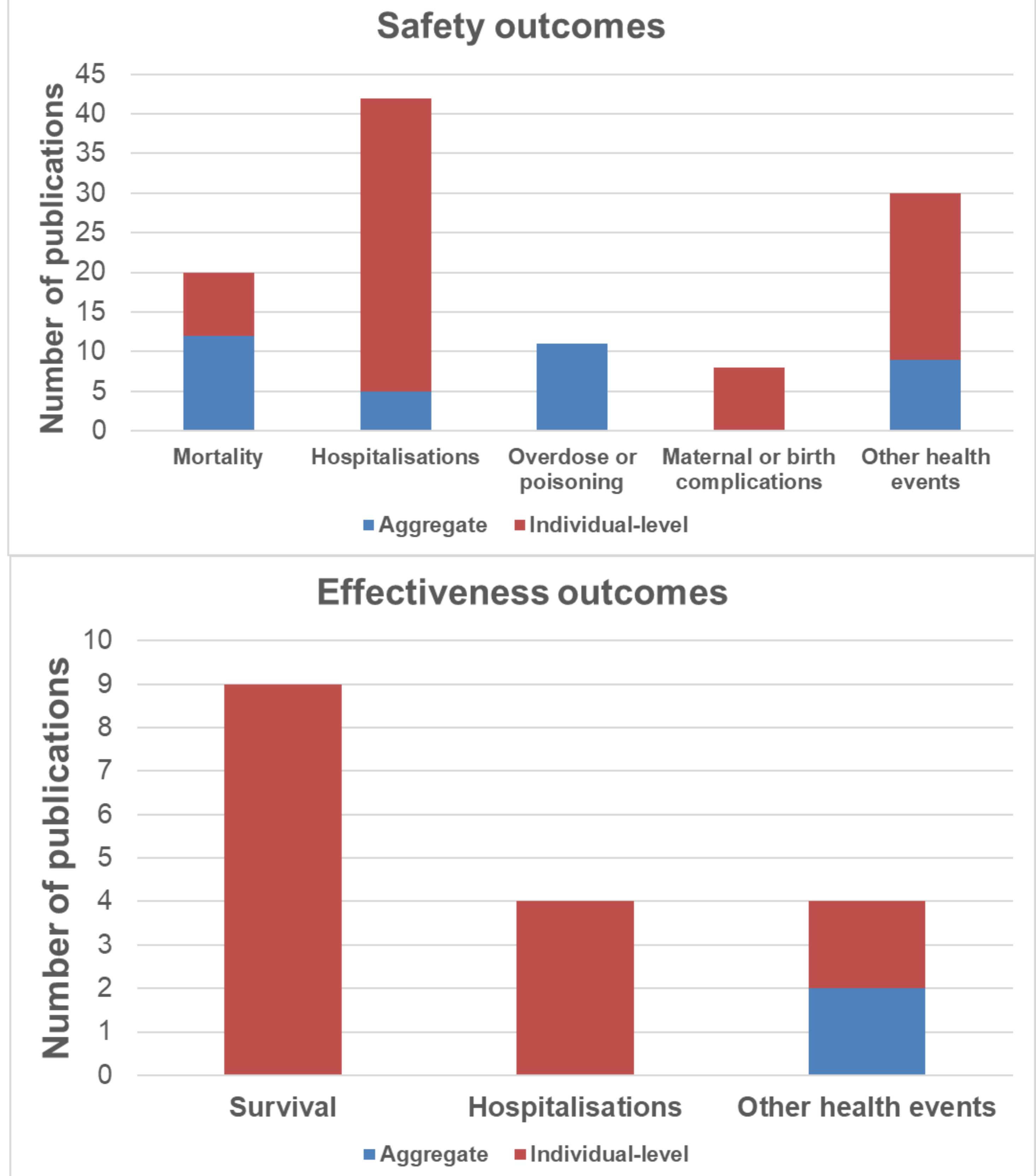
Results

- 107** studies published; **48** between 2016 and 2020
- 28** used aggregated data (ecological designs), **12** used medicines dispensed as a proxy of health-related outcomes and **67** linked PBS data to other health datasets

Number of studies (%) by study population and analytical approach (1987 - 2020)

	Aggregate data (N = 28) n (%)	Individual-level data (N = 79) n (%)
Study Population: Age profile		
No age restrictions	24 (85.7)	18 (22.8)
Older adults (≥ 65 years)	0 (0.0)	46 (58.2)
Adults (≥ 18 years)	3 (10.7)	4 (5.1)
Women of child-bearing age	0 (0.0)	10 (12.7)
Children	1 (3.6)	1 (1.3)
Study population: Beneficiary status		
All PBS beneficiaries	24 (85.7)	25 (31.6)
Concessional PBS beneficiaries	4 (14.3)	9 (11.4)
Clients of the Department of Veterans' Affairs	0 (0.0)	45 (57.0)

Results



Medicine groups evaluated:

- 45% nervous system (e.g. opioids, psychotropics)
- 18% cardiovascular system (e.g. statins, antihypertensives, antithrombotics)
- 16% alimentary tract and metabolism (e.g. anti-diabetics, PPIs)

Conclusions

- Studies using PBS data to assess medicine-related outcomes is growing albeit slowly and likely reflects the challenges of developing fit-for purpose collections to explore these issues
- Most studies focus on safety and are concentrated among subpopulations and medicines classes which do not align with the burden of disease and medicines use Australia-wide

Impact

- There are significant gaps in our understanding of medicine related outcomes in Australia
- Developing a linked dataset that is reflective of the Australian population will help address significant gaps in our understanding of the outcomes of medicine use in populations underrepresented in clinical trials

POPPY II Cohort Profile – a population-based linked cohort examining the patterns and outcomes of prescription opioid use in NSW, Australia, 2003-2018

Natasa Gisev¹, Sallie-Anne Pearson², Timothy Dobbins³, Luke Buizen¹, Tom Murphy¹, Andrew Wilson¹, Fiona Blyth⁵, Adrian Dunlop^{6,7}, Sarah Larney⁶, David C. Currow⁹, Louisa Degenhardt¹

Background

- There is significant concern about the increased use of prescription opioids over recent years in several countries including the US, Canada, the UK and Australia.¹
- In Australia, opioid dispensing increased almost four-fold between 1990 and 2014.²
- There are no population-based Australian studies examining the long-term patterns and outcomes of people prescribed opioids.

Aim

The overall aim of this study was to characterise people initiating opioids in New South Wales (NSW), Australia, between July 2003 and December 2018. Specific aims were to:

1. Describe sociodemographic characteristics of NSW adult residents initiating prescribed opioids.
2. Examine health status, including medical conditions, health service and prescribed medicine use prior to opioid initiation.
3. Examine opioid use characteristics at the time of initiation, including type and number of opioids initiated, administration route, and amount dispensed.



Methods

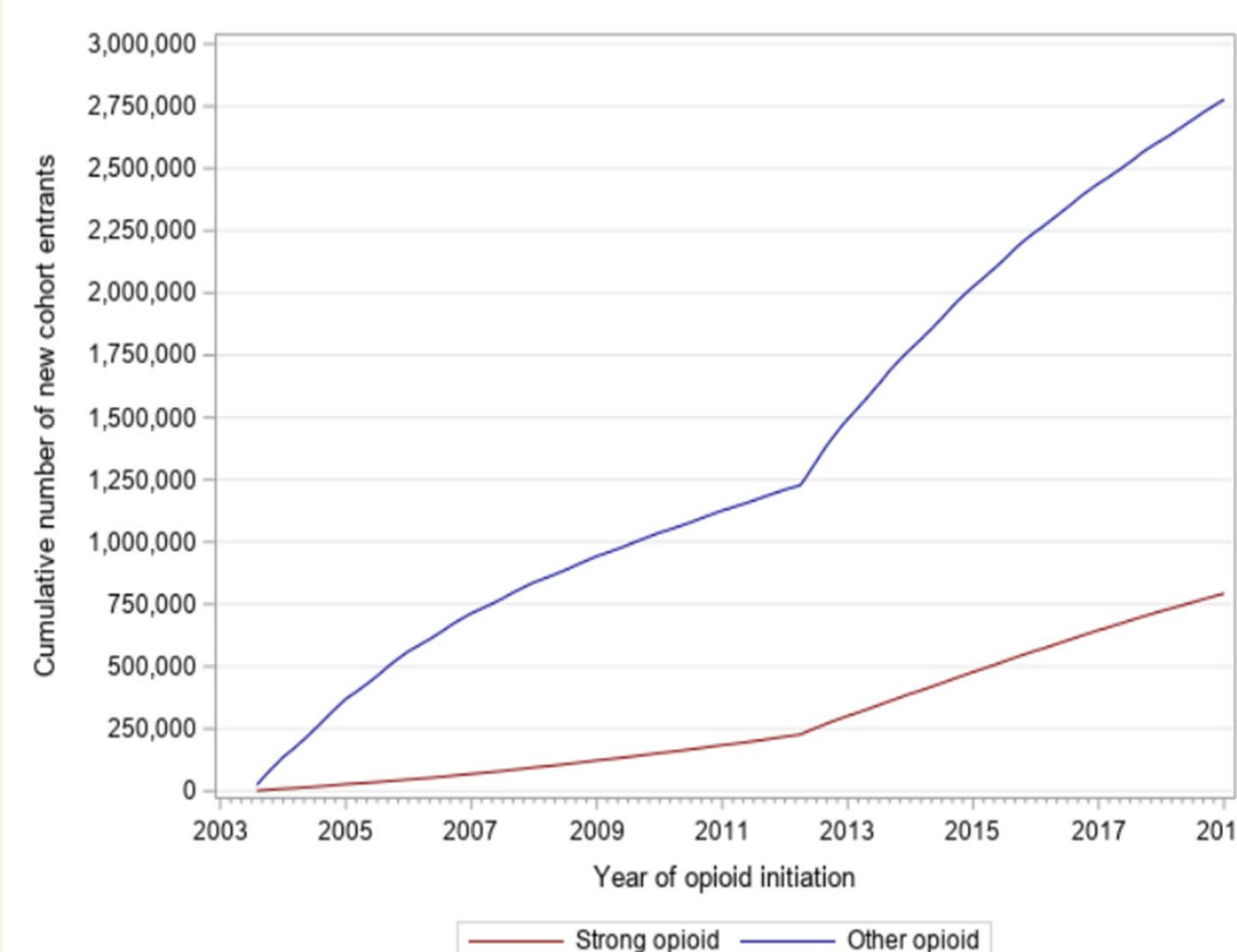
- Retrospective population-based cohort study of adult residents in NSW, Australia, initiating prescribed opioids through Australia's Pharmaceutical Benefits Scheme between July 2003 and December 2018
- Linked to nine other datasets containing information on socio-demographic and clinical characteristics, health service use, and adverse outcomes.
- To account for changes in data capture for subsidised medicines over this time, a sub-cohort of those who initiated prescribed opioids between 1st July 2013 and 31st December 2018 was also constructed.
- Evidence of medical conditions in the 12 months prior to and including the day of opioid initiation was identified using composite indicators incorporating dispensing histories, contact with inpatient hospital services, cancer registry notifications, and registrations for opioid agonist therapy
- Use of primary and acute health care services prior to and including the day of opioid initiation was identified using data from the Medicare Benefits Schedule (MBS) and inpatient hospital services data.

Results

Table 1: Key cohort characteristics

Characteristic	Overall cohort (2003-18)	Sub-cohort (2013-18)
	N (%)	N (%)
Female	1,879,968 (52.4)	1,351,658 (52.4)
Aged ≥ 65 years	956,325 (26.8)	670,081 (18.8)
Living in a major city	2,530,789 (71.4)	1,839,072 (71.9)
Living in most disadvantaged socio-economic area	651,908 (18.4)	446,221 (17.5)
Medical conditions:		
Cancer	207,261 (5.8)	139,726 (5.4)
Endocrine	144,148 (12.8)	392,310 (15.2)
Mental and neurological	1,131,633 (31.7)	888,615 (34.5)
Cardiovascular	1,769,304 (49.6)	1,245,964 (48.3)
Musculoskeletal	189,370 (5.3)	121,441 (4.7)
Respiratory	439,192 (12.3)	348,884 (13.5)
Health service use:		
Any GP visit	3,386,877 (94.9)	2,473,412 (95.9)
Any allied health practitioner visit	376,167 (10.5)	446,999 (17.3)
Any inpatient hospital admission	1,358,929 (38.1)	988,679 (38.3)
Initiated on a strong opioid	792,936 (22.2)	764,477 (29.6)

Figure 1: Cumulative number of new cohort entrants per month by opioid type (strong vs other) – overall cohort



Results (continued)

Figure 2: Cumulative number of new cohort entrants per month by opioid type (strong vs other) – sub-cohort

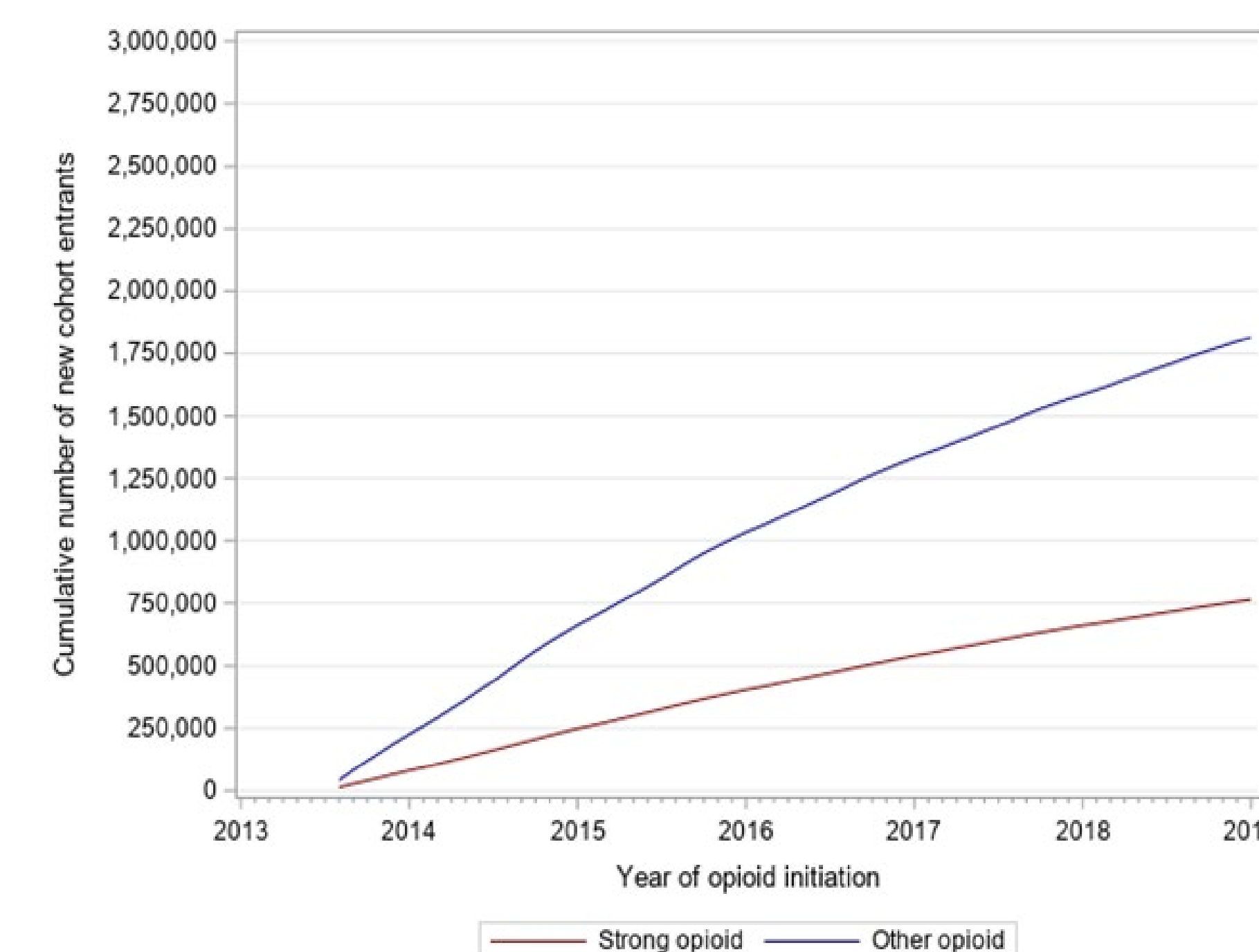
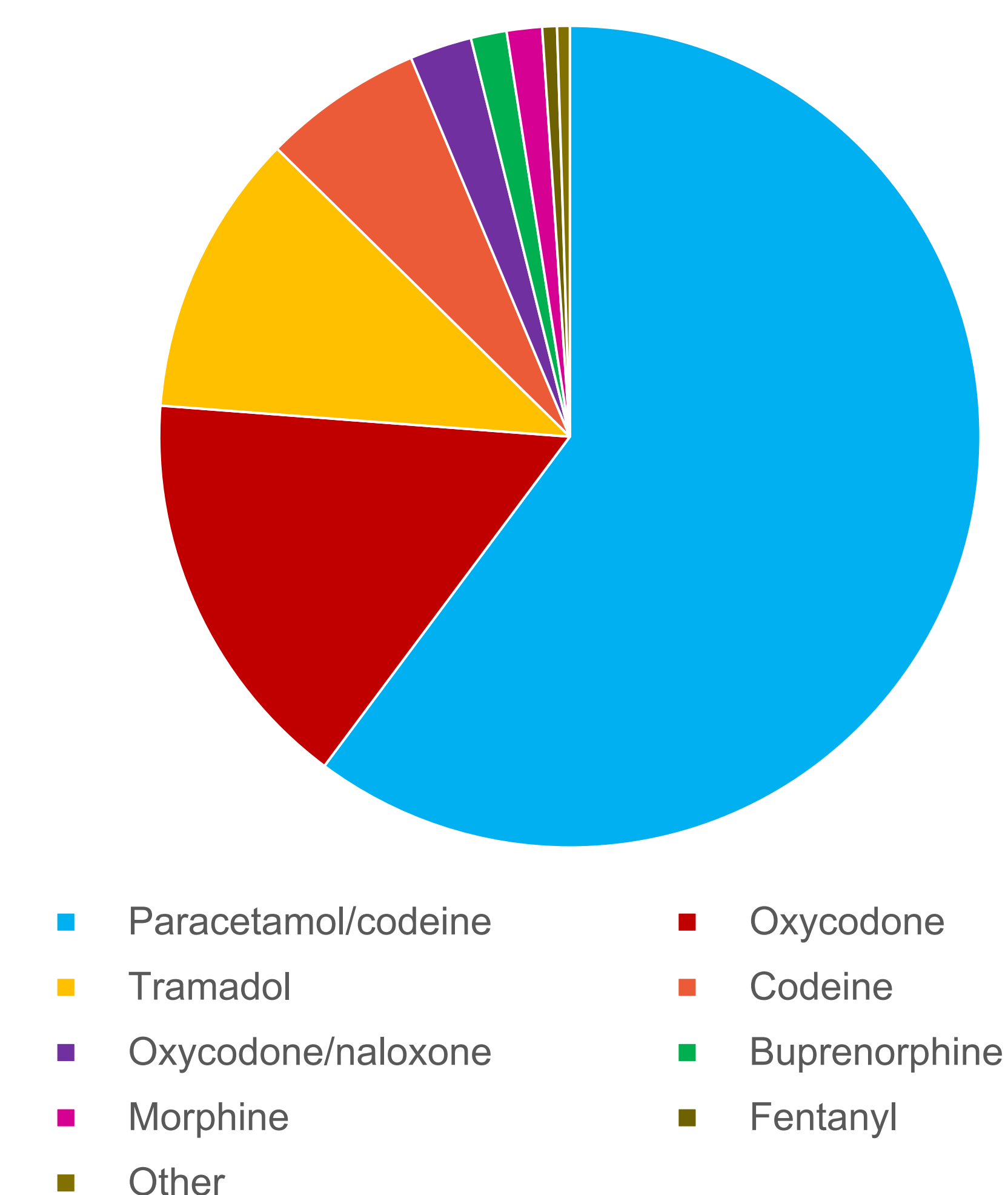


Figure 3: Type of opioid initiated (overall cohort)



The Difference is Research

Discussion

- The sub-cohort is representative of approximately 27% of all people who initiated opioids nationally at this time.
- The socio-demographic characteristics of the cohort were broadly similar to the general NSW population.³
- Approximately 6% of the cohort had evidence of cancer treatment in the year prior to opioid initiation, roughly two and a half times the NSW prevalence of cancer (2.2%).⁴
- The percentage of people with depression (9.5%, 10%) was higher than the 12-month prevalence of Australians experiencing a depressive episode (4.1%).⁵
- Paracetamol/codeine, oxycodone, and tramadol were the most commonly initiated opioids, which is consistent with general pain management recommendations during the study period.

Conclusion

- The POPPY II study is the largest post-marketing surveillance study of prescribed opioids in Australia, and one of the largest studies worldwide.
- Understanding the characteristics of the cohort will inform future work aimed at generating robust evidence of the course and outcomes of prescribed opioid use in the Australian community.

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- NDARC is supported by funding from the Australian Government Department of Health under the Drug and Alcohol Program.

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Rituximab and Pyoderma Gangrenosum. An investigation of risk using a systems biology approach in the FAERS Database.

Background:

A previous study using the FDA Adverse Event Reporting System (FAERS) found an increased risk of Pyoderma Gangrenosum (PG) associated with rituximab, however the comparisons medicines used were unclear.

Rituximab has unique structural and pharmacological properties and is used to treat a range of immune-related diseases which are also associated with PG, all of which may influence the causal pathway.

Objective:

To test a systems biology approach for selection of comparator medicines to clarify the risk of PG associated with rituximab use.

- all other medicines,
- all other monoclonal antibodies (mAbs) (structural),
- all other CD20 antagonists (pharmacological)
- Indication (background risks).

Methods:

- Fuzzy matching was used to identify all adverse event reports in the FDA Adverse Event Reporting System (FAERS, 2013-2020) where rituximab was the primary suspect.
- Bayesian Confidence Propagation Neural Network (BCPNN) Information Component (IC), with a 95% confidence interval, was used to test for adverse drug reaction reporting disproportionality. A potential signal was identified when the exponentiated IC estimate (an estimate on the ratio scale) was >2 and the 95% confidence interval lower bound was > 1.

Hillen JB, Standford T and Pratt N

Quality Use of Medicines and Pharmacy Research Center

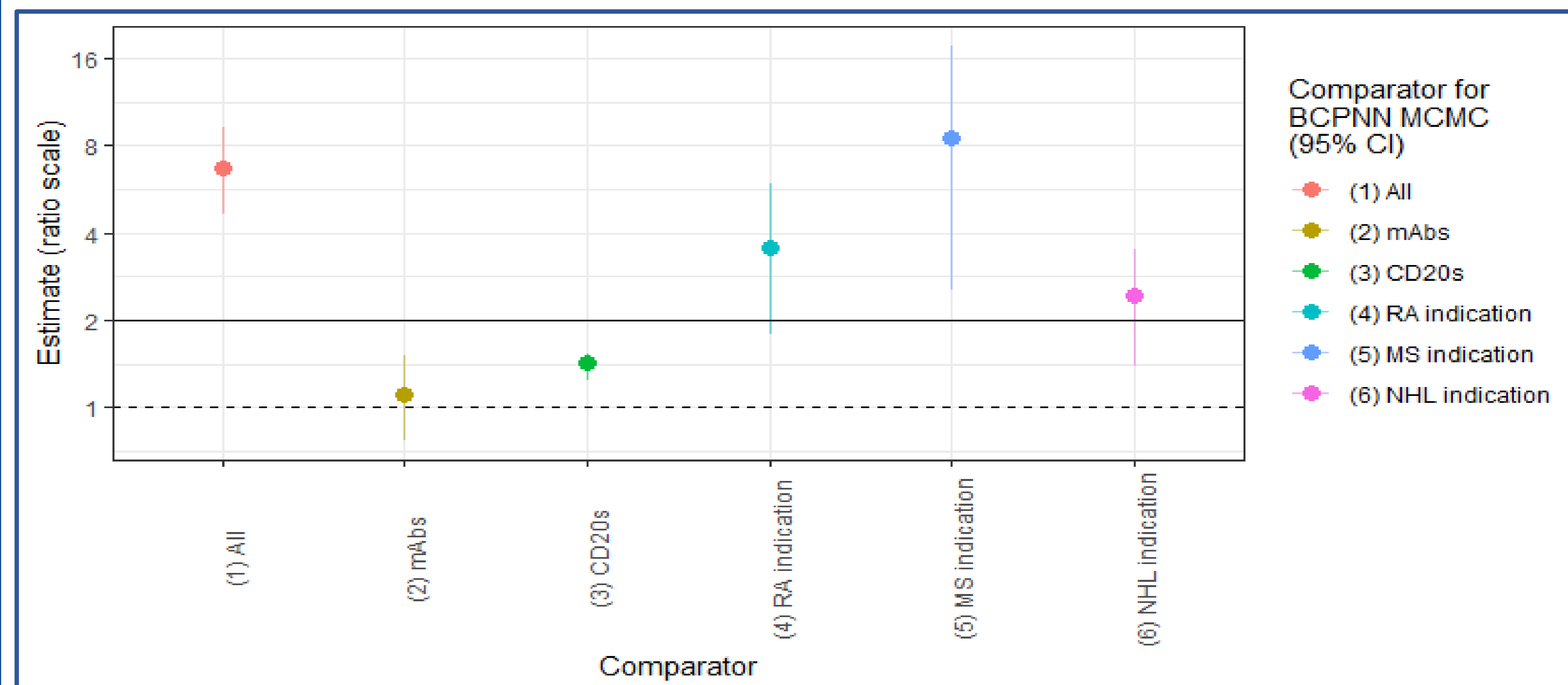
11056
PG Reports in FAERS

63%
Female

32 cases
Rituximab
primary suspect

48 Median
Age

Signal detection estimates (BCPNN MCMC) of rituximab v other comparators for pyoderma gangrenosum.



Conclusion:

Rituximab was disproportionately associated with PG compared to all other medicines but **NOT** when compared to other medicines with the same structural or pharmacological action.

Our results suggest that causal pathways may include structural and or pharmacological pathways and risk is modified by the underlying immune disease.

Impact: Post-market surveillance of biologic medicines in FAERS should consider a systems biology approach, particularly when the outcome of interest is associated with the underlying immune condition being treated by the medicine of interest

1st mini annual
research symposium
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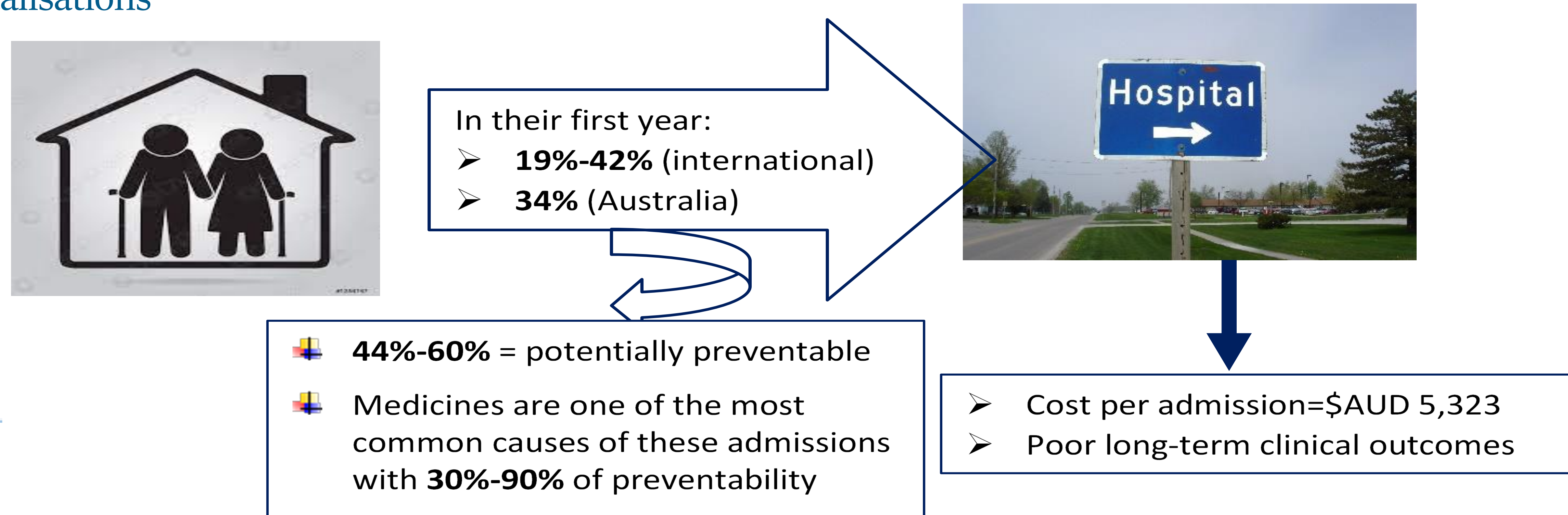
Medication-related hospital admissions in aged care residents

Kalisch Ellett, Lisa M¹, Kassie, Gizat M¹, Caughey, Gillian E^{1,2,3}, Pratt, Nicole L¹, Ramsay, Emmae¹, Roughead, Elizabeth E¹

mini*
1st Annual
Research
Symposium and
Policy Forum

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Background: Problems associated with medicines are one of the most common causes of avoidable hospitalisations



Aim: To determine the prevalence of hospitalisations preceded by suboptimal medication-related care

Method: 18,874 hospitalisations of Australian veterans between 2014 and 2019 from the Australian Government Department of Veterans' Affairs database were evaluated against guideline-recommended medication-related processes of care using validated indicators.

Results	
Patients aged 65 years or over = 7644 admissions for fracture	6645 (87%) = Use of a falls-risk medicine
Male patients with history of osteoporosis or fracture = 1814 admissions for fracture	520 (29%) = No use of bisphosphonate, denosumab or teriparatide
Female patients with history of osteoporosis or fracture = 5832 admissions for fracture	1635 (28%) = No use of hormone replacement therapy, bisphosphonate, denosumab, teriparatide or selective oestrogen receptor modulators
History of congestive heart failure = 1063 admissions for Heart failure	1063 (30%) = Not currently using a medicine acting on angiotensin
History of chronic atrial fibrillation or ischaemic stroke (IS) = 1111 admissions for IS	185 (17%) = No current use of warfarin, aspirin or direct oral anticoagulant
Use of an oral hypoglycaemic agent = 66 admissions for Hyperglycaemia	12 (18%) = HbA1c level not monitored in the previous 6 months
Use of insulin = 202 admissions for Hyperglycaemia or hypoglycaemia	32 (16%) = HbA1c level not monitored in the previous 6 months
Regular use of a strong opioid analgesic = 712 admissions for Chronic constipation	79 (11%) = No current use of a laxative
Asthma patients with short acting beta-agonist > 3X/ week = 94 admissions for Asthma	11 (12%) = No use of inhaled corticosteroids

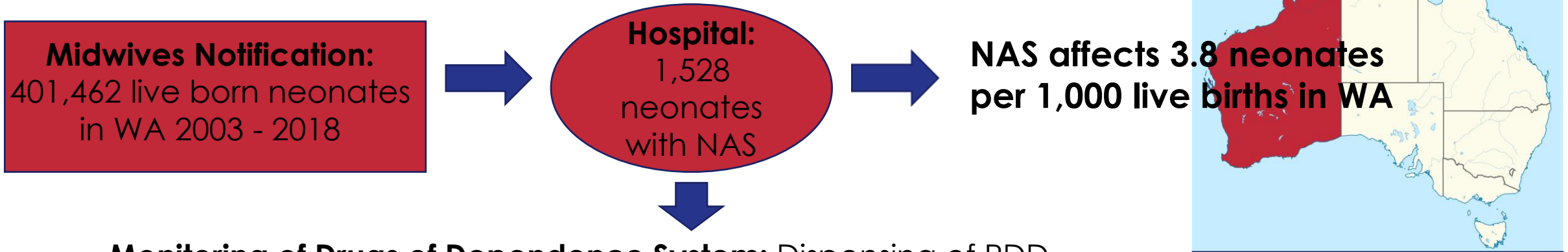
Conclusion: Nearly half of hospital admissions were preceded by suboptimal medication-related processes of care. Interventions to improve use of medicines for aged care residents in these areas are warranted.

Link to full article: <https://doi.org/10.1111/ajag.12975>

Contribution of pharmaceutical drugs of dependence to the incidence of neonatal abstinence syndrome in Western Australia

Kelty E, Cumming C & Preen DB.

Aim: Estimate the contribution of pharmaceutical drugs of dependence (PDD) to neonatal abstinence syndrome (NAS)



Monitoring of Drugs of Dependence System: Dispensing of PDD

Type of PDD	Examples	Cases of NAS
Any		632 (41.4%)
Use to treat of opioid use disorders	Methadone & buprenorphine	538 (35.2%)
Opioids used to treat pain	Oxycodone & fentanyl	80 (5.2%)
Non-opioids	Alprazolam & methylphenidate	26 (1.7%)

**PDD contribute to
41.4% of cases of NAS**

**Opioids used to treat
opioid use disorders
are the main PDD
contributors to NAS ¹**



Consumer and clinician questions about quality use of medicines in people living with dementia: what are the priorities for future research?

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Stakeholder Steering Group: Ann Pietsch, consumer representative; Timothy Pietsch, consumer representative; Ron Sinclair, consumer representative; Craig Whitehead, Geriatrician; Stephanie Daly, GP; Josephine To, Pharmacist; Marie Wittwer, Director of Care and Manager Residential Facilities; Judy Deimel, Nurse Practitioner; Lenore de la Perrelle, Social Worker



With so many possible avenues for research, where do we start?

What is Quality Use of Medicines?

Using medicines safely and effectively, and selecting the best treatment for the individual (including not using medicines) to obtain optimal health outcomes

What are the challenges to achieving quality use of medicines in people living with dementia?

- Exclusion of people living with dementia in drug trials = unknown benefits and harms
- Polypharmacy, multimorbidity, and underuse of medicines are common
- Issues with communication between healthcare professionals and at transitions of care
- Continually changing goals of care which changes the benefit:risk ratio

Aim

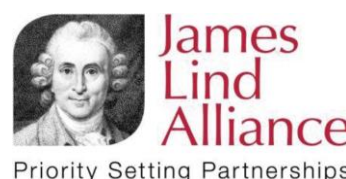
To identify the top 10 unanswered questions in the field of quality use of medicines in people with dementia according to Australians living with dementia, their carers, family and friends and health care providers.

Purpose: To inform health research funders, advocacy groups and policy makers about the unanswered questions, with the aim of directing future research funding, research efforts, and policy and practice change.

Methods

Following the James Lind Alliance (JLA) method to identify and prioritise the Top 10 unanswered questions.

- JLA is a non-profit making initiative.
- Brings people with experience of the condition, carers and clinicians together in Priority Setting Partnerships (PSPs).



Steps completed:

- 1 • Create a Steering Group and recruit Partner Organisations
- 2 • Gather evidence uncertainties (survey)
- 3 • Summarise the responses gathered

Future steps:

- 4 • Evidence checking
- 5 • Interim priority setting (survey)
- 6 • Workshop
- 7 • Publish and promote the Top 10 research priorities

Results

What questions and/or concerns have you had about medicine use in people living with dementia?

- 151 Consumer Responses
 - People living with dementia (14)
 - Carers (38)
 - Family, friend or other (103)
- 77 Clinician Responses
 - GPs (6)
 - Geriatricians (8)
 - Other specialists (6)
 - Pharmacist (11)
 - Nurse (29)
 - Assistant in nursing/care worker (4)
 - Allied Health and other (13)
- 8 Key Informant Interviews

Themes (number of questions in theme)
Awareness and education (3)
Changed behaviours (3)
Healthcare system and person-centred care (7)
Residential aged care facilities (2)
Medication management (6)
Polypharmacy, multimorbidity and deprescribing (8)
Treatment of dementia (9)
Specific co-morbidities (11)
Adverse drug reactions and harms (12)
Monitoring for harms and benefits (1)
Pharmacokinetic and pharmacodynamic changes (1)
Influences on prescribing (2)
COVID-19 and lockdown restrictions (2)

Example quotes and summary questions:

- How can I make it easier for my mother to remember to take her medication? → Summary question: How can people living with dementia and their carers be supported to manage medicines safely at home? (Medication management theme)
- How can I avoid transfer to residential care simply for reasons of medication mismanagement? → Summary question: When, how and in who should medicines be used to treat depression and anxiety in people living with dementia? (Specific co-morbidities theme)
- Do his medications lessen his anxiety?
- Is there an antidepressant that is preferred for use in dementia patients?

Partner organisations: Leading Age Services Australia, Australian Association of Consultant Pharmacy, Consumers Health Forum of Australia, Speech Pathology Australia, The Society of Hospital Pharmacists of Australia, Australian College of Nurse Practitioners, Australian Association of Gerontology, Australian Nursing and Midwifery Federation, National Aboriginal and Torres Strait Islander Health Worker Association

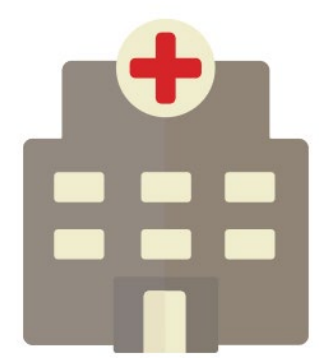
Annelies L. Robijn^{1,2}, Benjamin Hsu², Sallie-Anne Pearson², Clara K. Chow³, Kris B. Filion^{4,5}, Mark Woodward^{6,7,8}, Alys Havard^{1,2}

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The Difference is Research

Background

Smokers with cardiovascular disease who continue to smoke are at increased risk of recurrent events and mortality.(1)



The hospital discharge period presents a window of opportunity to cease smoking after a cardiovascular event.(2)

Smoking cessation pharmacotherapies (SCP) are the most effective treatment for smoking cessation.(3)



Varenicline and Nicotine Replacement Therapy (NRT) patches are safe and effective among cardiovascular patients.(4) In Australia, bupropion is also available as SCP but is very low utilisation, therefore we do not focus on it in this study.

Previous research has demonstrated that women are less likely to receive recommended secondary prevention after cardiovascular disease.(5)



Aims

i) To measure the utilisation of SCPs after hospital admission for a major cardiovascular disease (MCD) and,

ii) to determine whether sex differences exist in the utilisation of these pharmacotherapies

Methods

- A retrospective population-based cohort study
- Hospital admissions from the Admitted Patient Data Collection (APDC) and prescription medicine records from the Pharmaceutical Benefits Scheme (PBS)
- All patients admitted to a **New South Wales** hospital with a **diagnosis of a major cardiovascular disease** and a secondary diagnosis of **current tobacco use**.
- Excluded patients with a five year history of a major cardiovascular disease, those who died in hospital and those who were dispensed bupropion (the third SCP available in Australia).
- Outcome was dispensing of **Varenicline or Nicotine Replacement Therapy within 90 days** after discharge.

Statistical Methods

- Proportions of any SCP and each SCP separately in total and by sex.
- Logistic regression models to determine odds ratios for women vs men in the likelihood of being dispensed any SCP and each SCP separately
- Analyses adjusted for comorbidities or use of medicines that had a known association with sex and were conceivably related to use of SCPs.

Results

In 20,282 of the 252,939 hospitalisations for a cardiovascular disease, the patient had a current tobacco use diagnosis.



This comprised 13,996 males and 6,286 females.

The most common diagnosis among both genders was Acute Coronary Syndrome (48% among men vs 40% among women), followed by cerebrovascular disease (25% among men vs 35% among women).



More women than men were born in Australia (74% vs 65%).

More women than men had anxiety disorders (16% vs 8%) or mood disorders (35% vs 19%).



10.8% of men and 12.3% of women received a SCP within 90 days post-discharge. NRT patches were used by three-quarters of SCP users among both sexes.

Women were **16% more likely** to receive **any SCP** (95%CI 1.05-1.27) compared to men.

Women were **11% more likely** to receive **varenicline** than men (95%CI 0.93-1.31); however not statistically significant.



Women were **16% more likely** to receive **NRT** (95%CI 1.05-1.29) compared to men.



Sex disparities **did not maintain** after adjustment for confounders.

Upon stratification by type of cardiovascular disease, sex differences were only apparent among those with acute coronary syndrome. No sex differences in other ischemic heart disease, cerebrovascular disease, peripheral arterial disease.

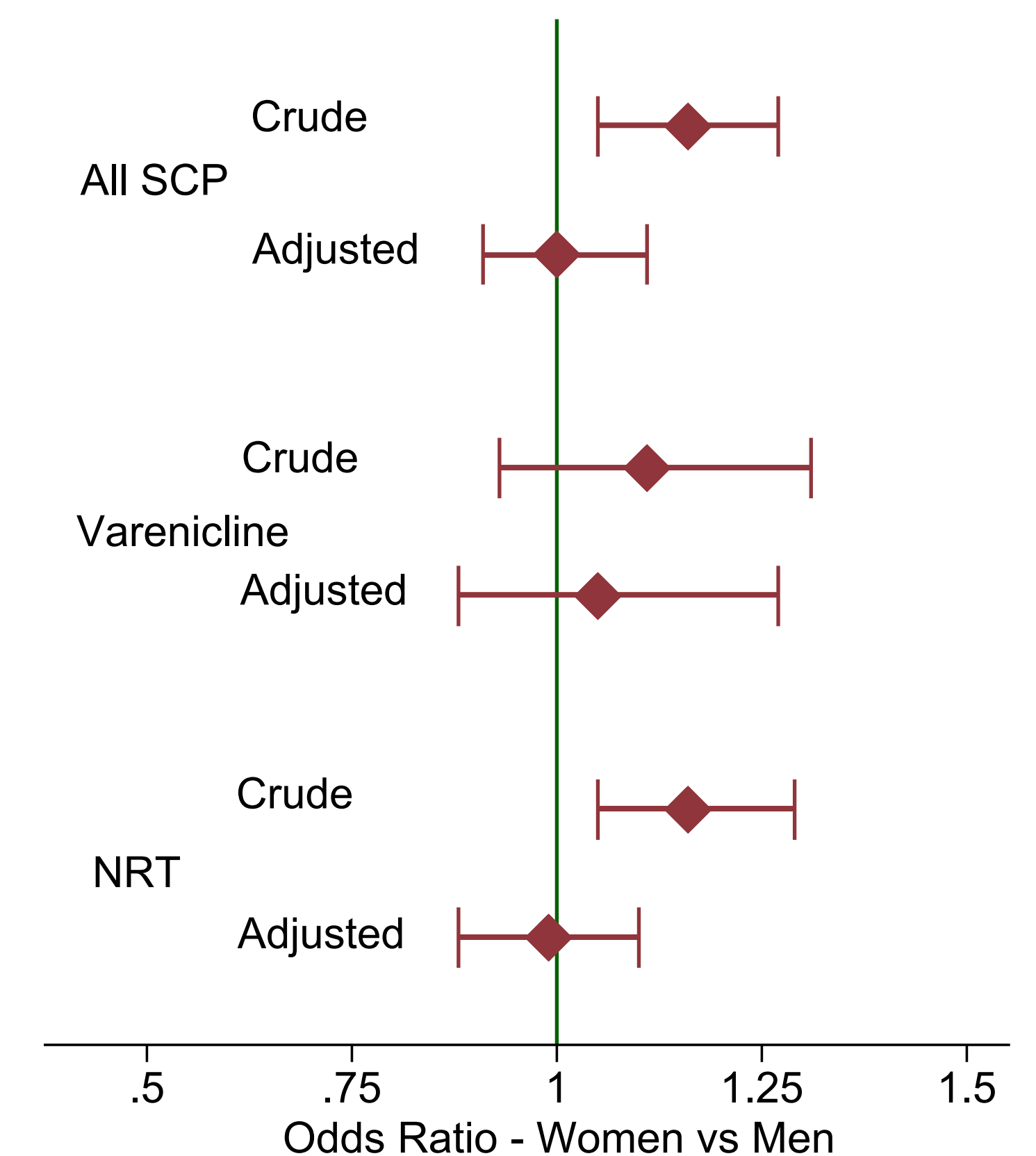


Figure 1. Odds ratios (crude and adjusted) of use of any SCP and each SCP individually.

Implications

This study provides new evidence relating to the quality use of SCPs. The limited use of SCP among both sexes indicates that more can be done to assist with smoking cessation among cardiovascular patients upon discharge from hospital.

Conclusion

- Less than 10% of people who smoke and are admitted to hospital in NSW with cardiovascular disease are dispensed a SCP within 90 days after discharge.
- Sex differences exist although not in the hypothesised direction.
- These sex differences were not maintained after adjusting for confounders.

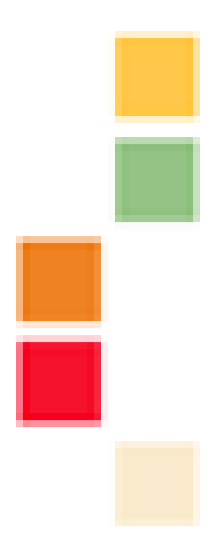
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Icons from www.piktochart.com

Disclosure of Interest Statement:

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Opioid prescribing patterns among medical practitioners in New South Wales, 2013-18

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What knowledge gap does this study address?

International jurisdictions have identified considerable variation in opioid prescribing, with a small proportion of practitioners prescribing a substantial proportion of all opioids. Prescribing behaviour can vary by jurisdiction due to differences in local medicine regulations and policies. We have no population-level data on practitioner-level opioid prescribing behaviour in Australia.

What were our objectives?

To describe the variation in practitioner-level opioid prescribing and to characterise distinct practitioner groups based on opioid prescribing behaviour and patient characteristics.

Methods

Data source: The POPPY II cohort is comprised of all NSW residents who initiated opioids between 2003 and 2018. It includes linked medicines claims, hospitalisation, and mortality registry data.

Study population: All NSW-based medical practitioners who prescribed opioids, 2013-2018 (n=32,876).

Outcomes: Opioid dispensing per prescriber per year measured in oral morphine equivalents (OME mgs)

Clustering (2018 only): We used Partitioning Around Medoids to identify distinct opioid prescriber groups based on their prescribing behaviour and patient characteristics among prescribers with at least 10 patients prescribed opioids.

Opioid prescribing distribution

- The top 1% of medical practitioners prescribed 15% of all OME mgs (Fig 1); this was consistent across years.
- The top 1% of practitioners prescribed a median of 1.4 million OME mgs to 259 patients, while the bottom 50% prescribed a median of 890 OME mgs to 4 patients

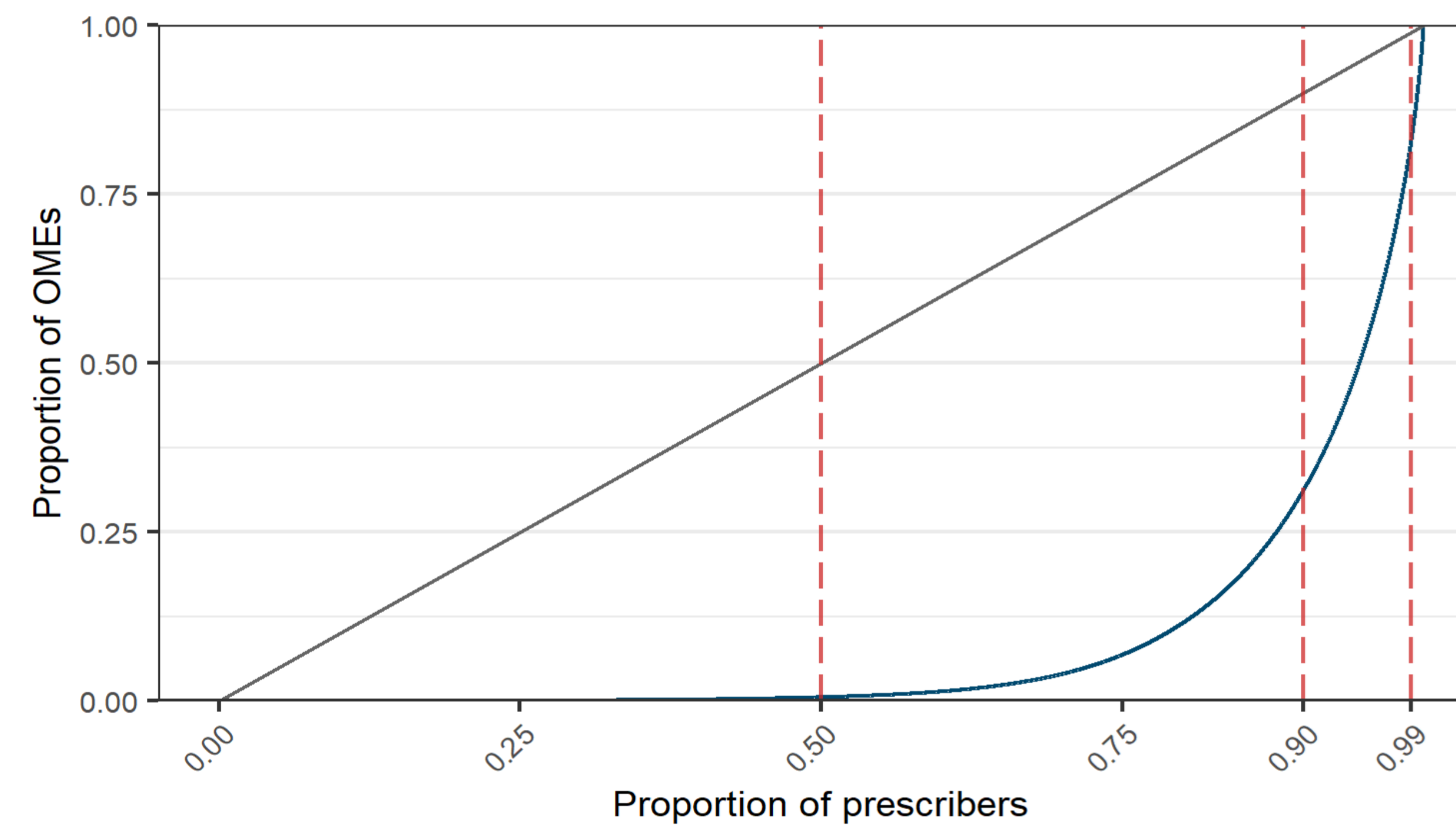


Figure 1. Lorenz curve for opioid prescribing

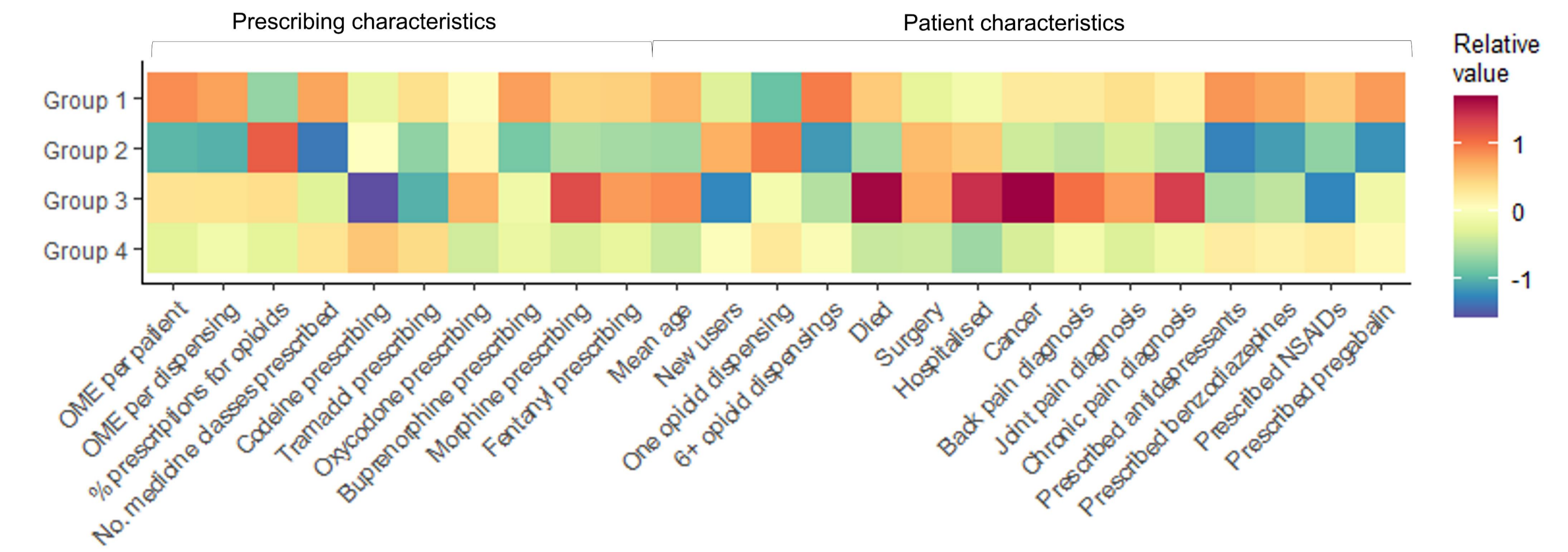
Conclusion and implications

We observed substantial disparity in opioid prescribing that was consistent across the study period. While some variation is warranted, patient characteristics lionly explain part of this variation.

While policies to improve opioid prescribing are often targeted at prescribers, the large volume prescribed by the top prescribers suggests more targeted interventions may be warranted.

Clusters of opioid prescribers in 2018

Figure 2. Relative frequency of measures by prescriber group (red=higher, blue=lower)



- The prescriber group distinguished by older patients with high analgesic use prescribed disproportionately more opioids—both per patient and overall—than other prescriber groups including the group distinguished by high rates of comorbidity/palliative care (Group 3).

Opioid prescriber group	Prescribers, n (%)	Opioid patients, n (%)	Total OME Kgs, n (%)
Group 1: Older patients w/ high analgesic use	5536 (24%)	560,503 (71%)	1,728,896 (77%)
Group 2: Younger patients w/acute opioid use	4013 (17%)	192,214 (24%)	35,024 (2%)
Group 3: High comorbidity and palliative care	938 (4%)	38,407 (5%)	51,680 (2%)
Group 4: Generalist	4387 (19%)	371,692 (47%)	419,752 (19%)
Group 5: <10 patients*	8534 (37%)	29,323 (4%)	19,559 (1%)

*Pre-defined group; due to small number of patients not included in cluster analysis

Acknowledgements and disclosures: In 2020, the CBDRH received funding from AbbVie Australia to conduct post-market surveillance research. AbbVie did not have any knowledge of, or involvement in, the current study. This research is supported by the NHMRC CRE in Medicines Intelligence (#1196900). AS is supported by a NHMRC Early Career Fellowship (#1158763). In the past three years, LD has received funding from Indivior, Seqirus for studies of new opioid medications in Australia. LD is supported by an NHMRC Senior Principal Research Fellowship (1135991) and a US NIH NIDA grant (R01DA1104470). NDARC is funded by the Australian Government Department of Health and Ageing. The views expressed in this publication do not necessarily represent the position of the Australian Government.



fuzzyfaers: Automated capture of FAERS records for non-standardised drug names

Problem:

- Adverse events in FAERS (FDA Adverse Event Reporting System) use a standard classification (preferred term level labels of the Medical Dictionary for Regulatory Activities, MedDRA),
- However, the drug name field is entered as *free text which can lead to misclassification of medicines.*

Solution:

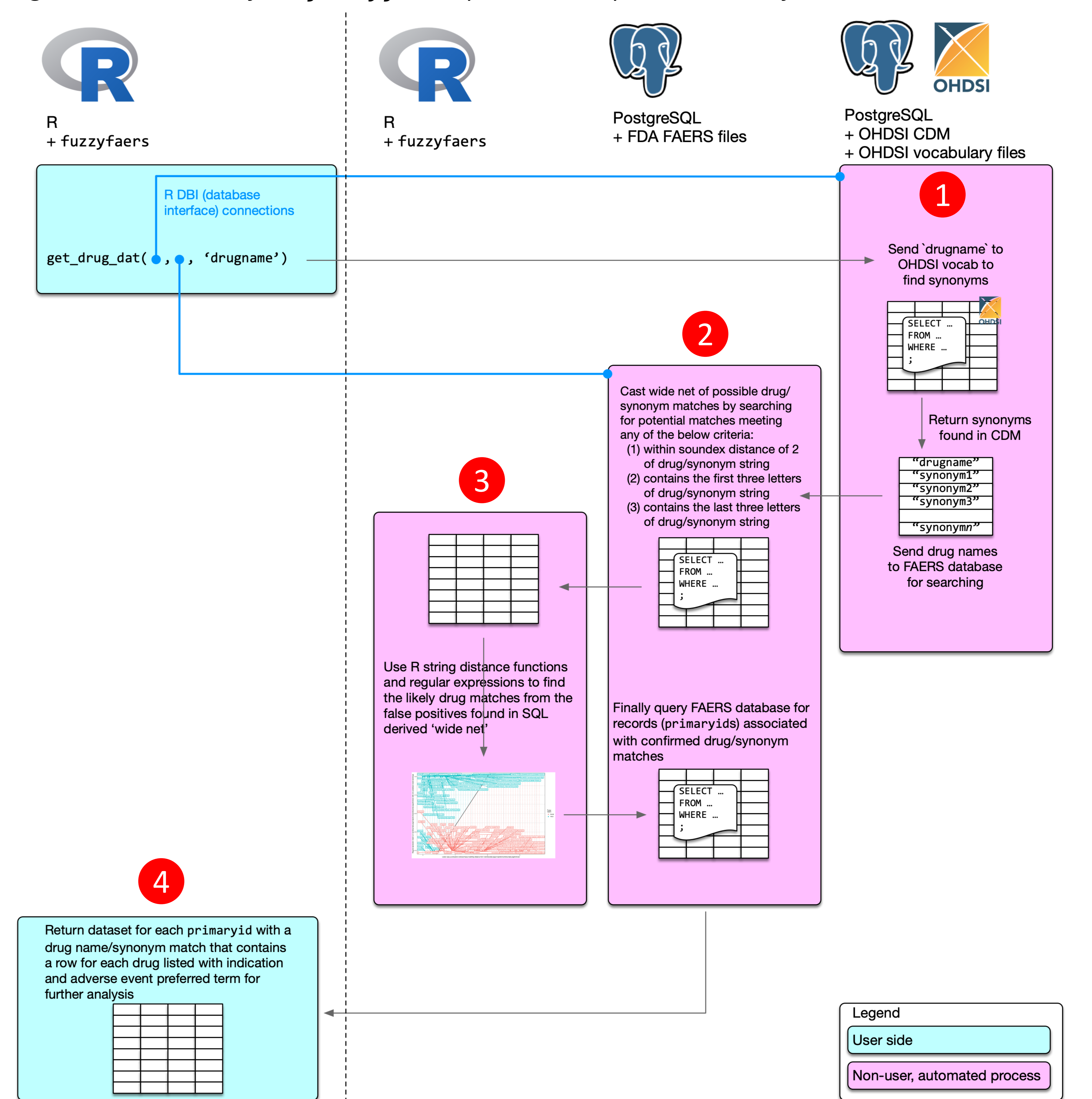
- Automatically capture all records pertaining to a particular medicine, including generic and branded synonyms, misspellings and included superfluous text.
- We present an R package, fuzzyfaers, that performs a sequence of automated steps to extract medicines records from FAERS using fuzzy string matching (*Figure 1*):

- establish drug synonyms in a freely available medicine vocabularies available from OHDSI,
- query FAERS to shortlist potential drug representations using a non-restrictive criteria (soundex similarity and substring matches)
- assess shortlist using classification boundaries based on regular expressions and string similarity distance.
- Expert review of matches and non-matches

Conclusion:

fuzzyfaers successfully automated drug record capture in FAERS with minimal human intervention. This process will help to improve the accuracy of potential ADR analyses using FAERS.

Figure 1: schematic of the fuzzyfaers process to capture records of relevant medicine records



Example: *rituximab*

- Automatically found synonyms: *ruxience, mabthera, rituxan* and *truxima*.
- 544,914 unique drug name entries in FAERS for the period 2013-2020:
 - 227,805 (42%) were shortlisted for fuzzy matching.
- Of the 279 unique presumptive representations of rituximab identified by fuzzyfaers expert review found one false negative and four false positive classifications
- Sensitivity and specificity of fuzzyfaers identifying rituximab records were both greater than 99.6%.

Impact: standardising FAERS data will providing a more robust and speedier process for drug-outcome adverse event screening for clinical practice.

The fuzzyfaers package is available at github.com/tystan/fuzzyfaers

Changes in Systemic Cancer Therapy in Australia During the COVID-19 Pandemic: a Population-Based Study

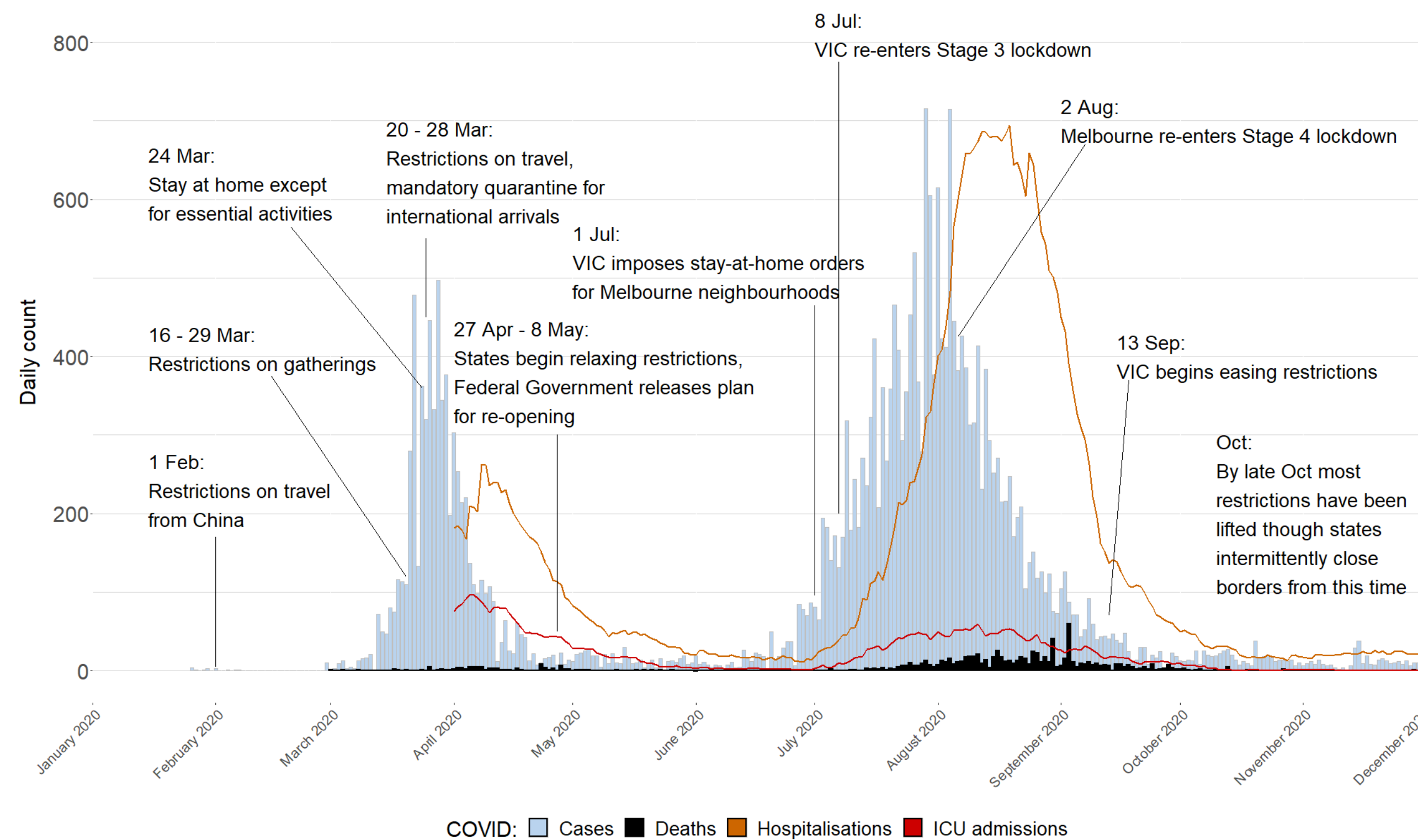
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1st Annual
Research
Symposium and
Policy Forum

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Background

Since the emergence of COVID-19, there have been increasing concerns about delays and/or discontinuations in cancer care. In Australia in 2020, there were relatively low COVID-19 infection rates, with the first wave of infections occurring in March 2020 and a second wave in July 2020. It is unclear to what extent systemic cancer therapy was impacted by COVID-19 in Australia in the context of low rates of COVID-19 transmission in 2020.



COVID-19 cases, hospitalisations and restrictions in Australia in 2020

Aims

We aimed to examine changes in systemic cancer therapy in Australia during the COVID-19 pandemic in 2020. Specifically, we describe changes in dispensing, initiation and discontinuation of antineoplastic and endocrine medicines used to treat cancer.

Methods

We undertook a population-based, observational study using all records of cancer medicines dispensed to a 10% sample of PBS-eligible people between 1 January 2017 through 31 December 2020.

Medicines of interest included:

- Antineoplastic agents (medicines beginning with ATC code L01)
- Endocrine therapies (medicines used to treat cancer beginning with L02)

We examined 3 monthly medicine utilisation measures:

- Dispensings – reported per 100,000 population
- Initiations – defined as a dispensing of a cancer medicine where no cancer medicines were dispensed during the preceding 365 days, reported per 100,000 population
- Discontinuations - defined as a gap of 90 days between cancer medicines dispensings or following the last observed dispensing, reported per 1,000 people treated in the previous month

We used interrupted time series analysis with autoregressive integrated moving average (ARIMA) models to quantify changes in these utilisation measures. We modelled temporary changes in March, April and July 2020 and level shifts from April through December 2020 in our ARIMA models.

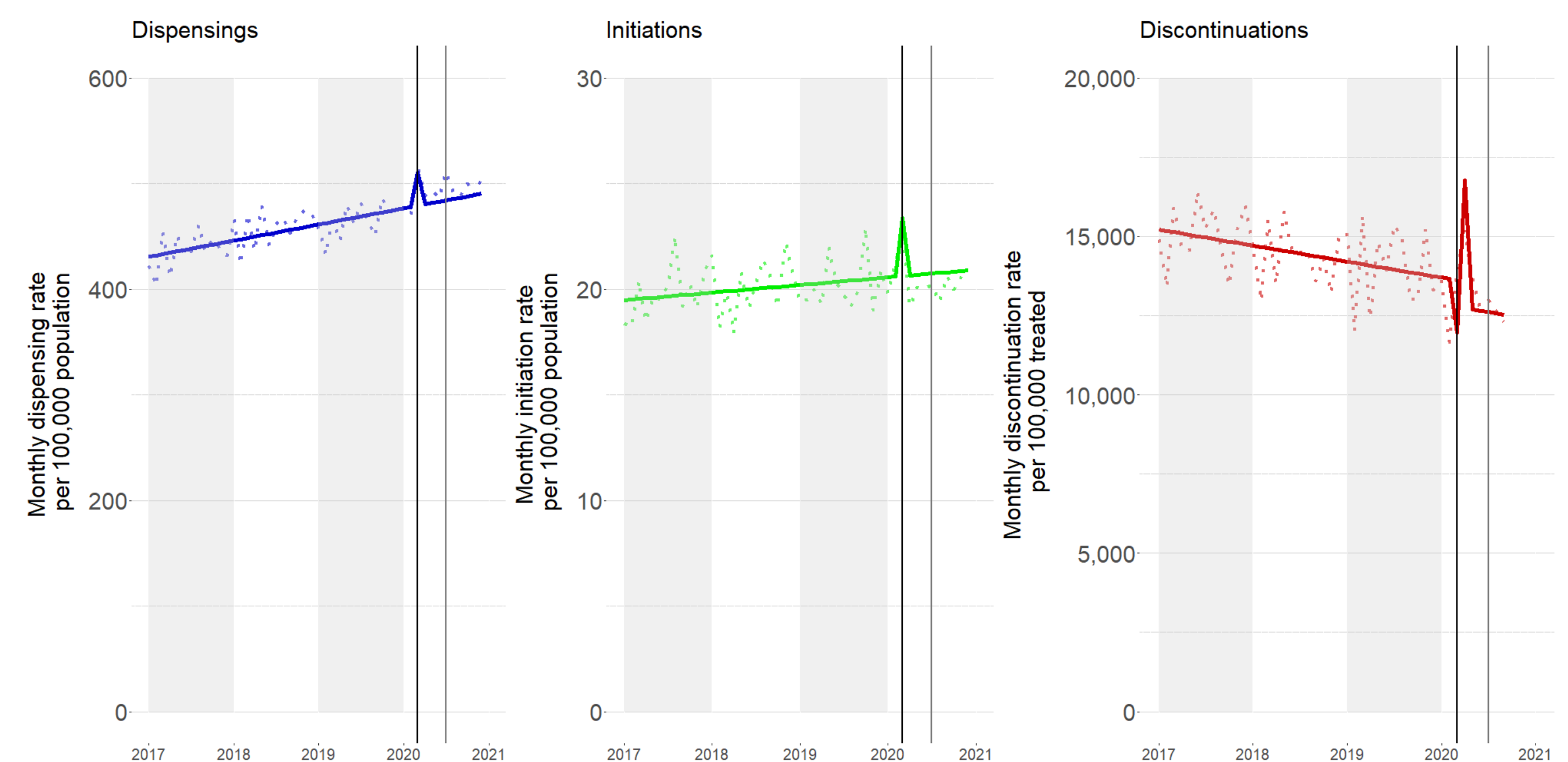
Conclusions

In Australia in 2020, there were minimal changes to cancer medicines relating to the COVID-19 pandemic. Despite early concerns about the potential for COVID-19 to compromise the clinical care of people with cancer, effective control of community transmission during the first year of the pandemic in appears to have mitigated the impact of COVID-19 on cancer medicines use in Australia in 2020.

Results

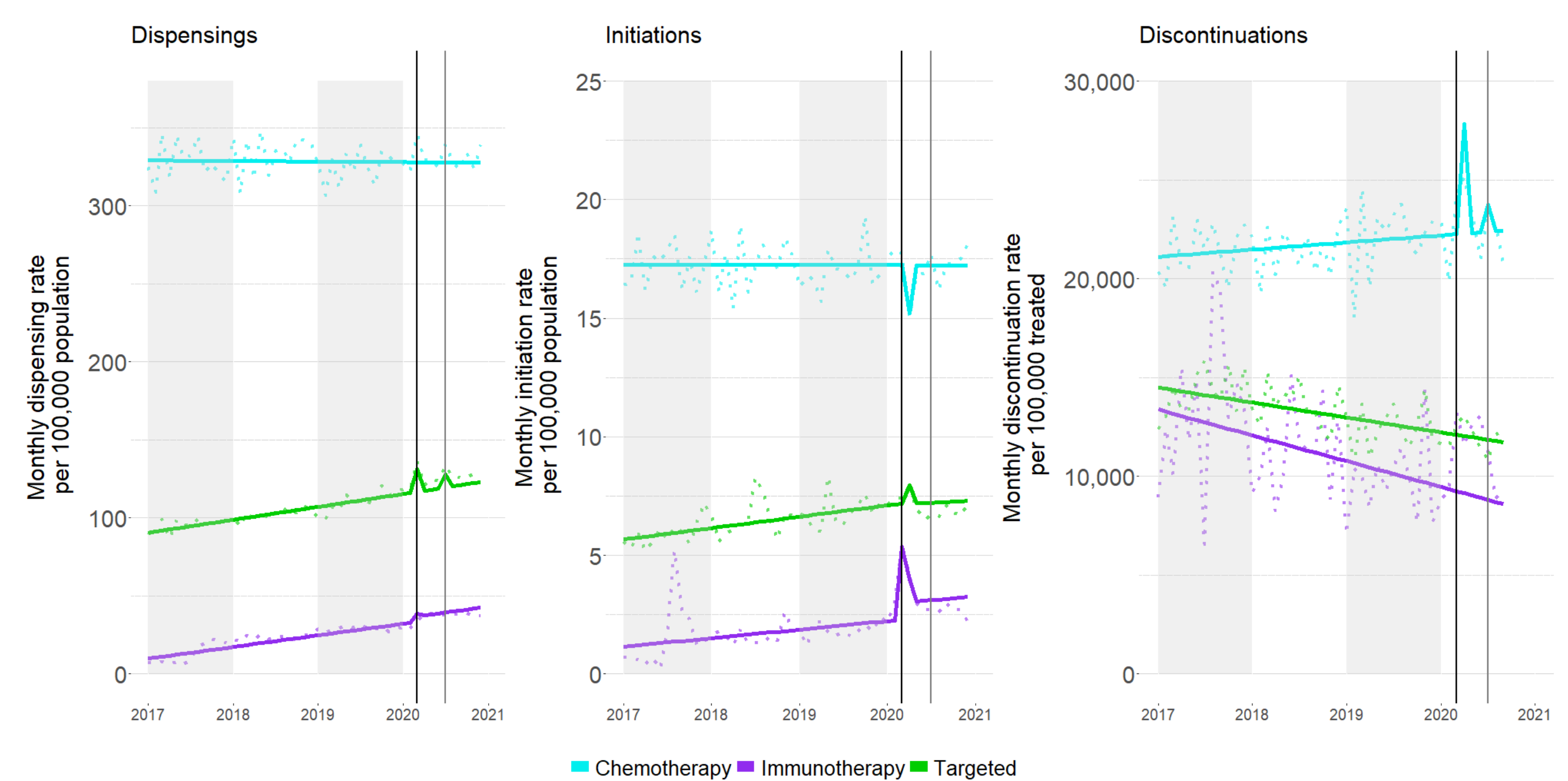
Dispensing, initiation and discontinuation of all antineoplastic medicines

- March to December 2020: no decrease in antineoplastic dispensing
- March 2020: temporary increase in dispensing (39/100,000 population) and initiation of all antineoplastic medicines (3/100,000 population)
- April 2020: temporary increase in discontinuation of antineoplastic medicines (35/1,000 people treated)



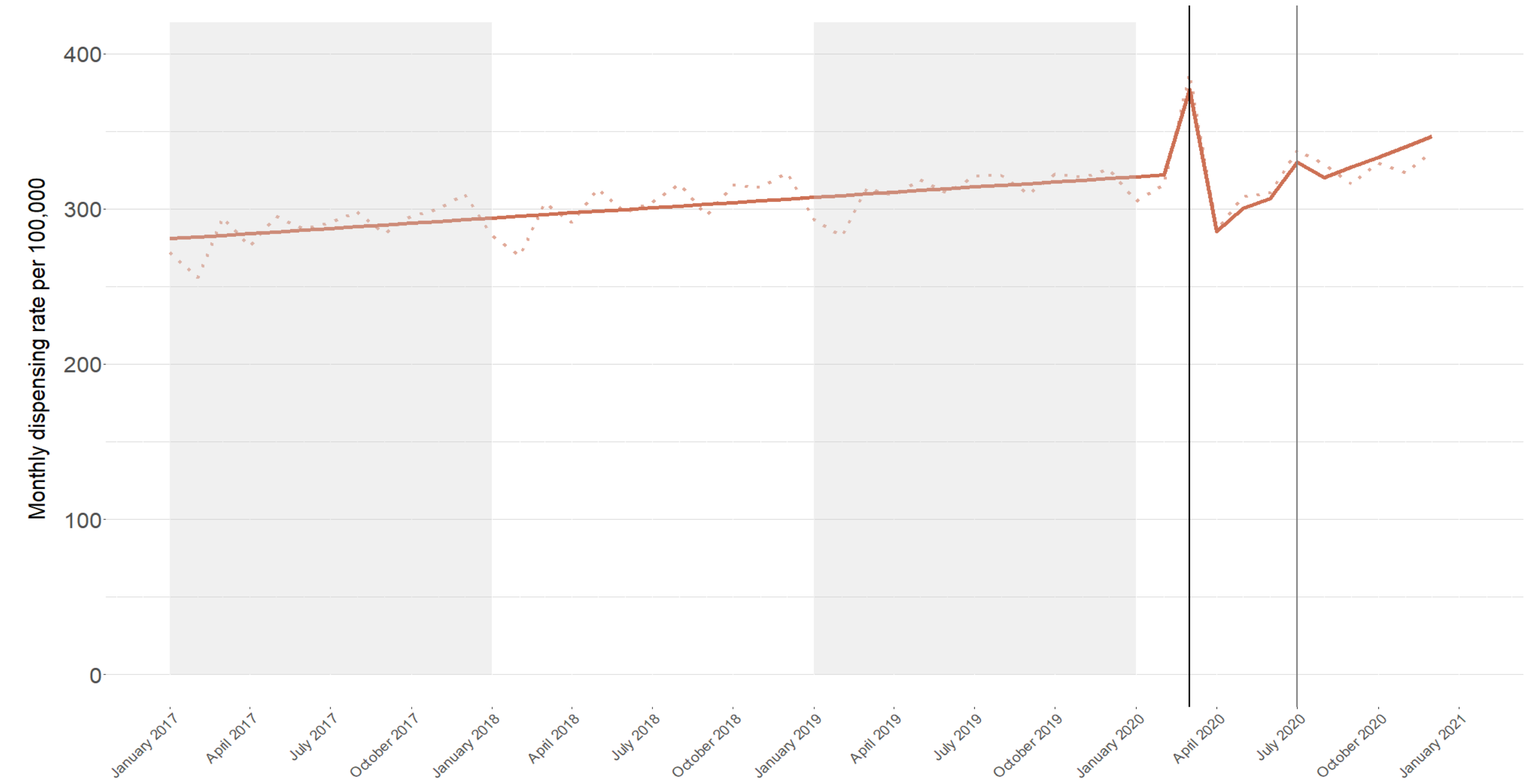
Dispensing, initiation and discontinuation of antineoplastic medicines, by drug class

- April 2020: temporary decrease in chemotherapy initiation (-2/100,000 population) and temporary increase in chemotherapy discontinuation (52/1,000 treated)



Dispensing of endocrine therapy

- Temporary increase in March 2020 (51/100,000 population) and decrease from April 2020 onwards (-34/100,000 population), likely due to stockpiling



Black line = March 2020, Grey line = July 2020

Please see publication for more details:
[Tang et al The Lancet Regional Health 2021](#)

Prescription opioid use in Australian women of reproductive age

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Background

- Prescription opioid use in pregnancy has been linked to congenital malformations in infants and adverse perinatal outcomes.¹
- The limited and conflicting evidence regarding the safety of opioids in pregnancy underscores the importance of the quality use of opioid medicines in women who might become pregnant.
- As around half of all pregnancies are unplanned², prescription opioid use among women of reproductive age may result in exposure in unplanned pregnancies.
- Thus, an understanding of prescription opioid use among women of reproductive age is crucial.

Objective

1. To examine trends in the prevalence and incidence of prescription opioid use in Australian women aged 15 to 44 years.
2. To estimate the number of calendar months each year that women were dispensed prescription opioids.

Methods

- Retrospective cross-sectional study involving women aged 15 to 44 years using pharmaceutical dispensing claims for a 10% random sample of Australians between 2013–2020.
- We measured annual prevalence (≥ 1 opioid dispensed) and incidence (≥ 1 opioid dispensed with no opioid dispensing for prior 12 months) of opioid use by opioid type and age group.
- We determined the total number of calendar months in which an opioid was dispensed. The number of women in each category of duration (e.g., 1 month) was divided by the total number of women that had filled a prescription each year, and averaged across the study period.

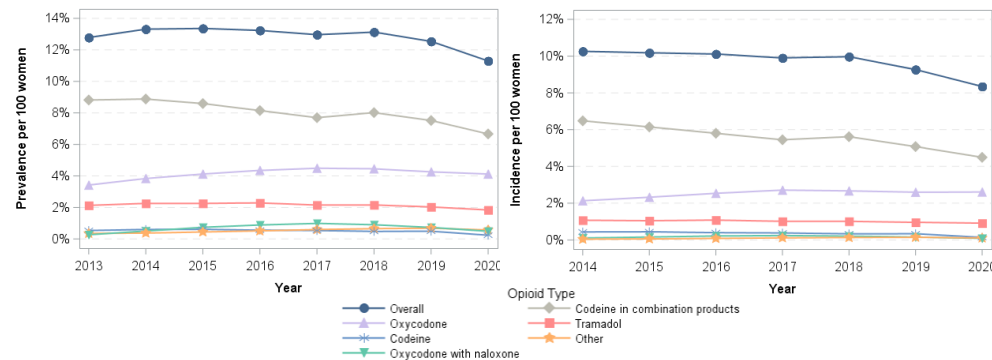
References

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2. Finer et al. *Disparities in rates of unintended pregnancy in the United States, 1994 and 2001*. *Perspect Sex Reprod Health*, 2006. **38**(2): p. 90–6.0

Results

- On average, the prevalence of opioid use was 12.8% and incidence of opioid use was 9.7% each year.
- The prevalence decreased by 11.7%, while the incidence decreased by 19.4%.
- Codeine in combination products, oxycodone and tramadol were the most common opioids dispensed.

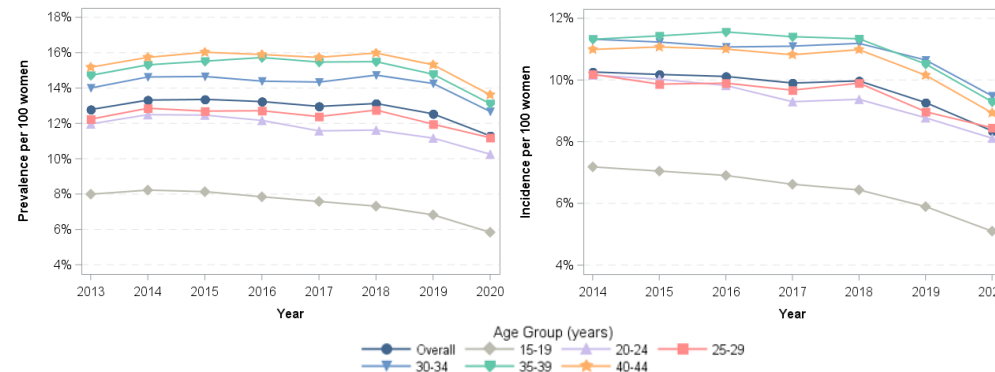
Prevalence and incidence of opioid use among women aged 15 to 44 years by opioid type



*Other opioids include buprenorphine, fentanyl, hydromorphone, methadone and morphine.

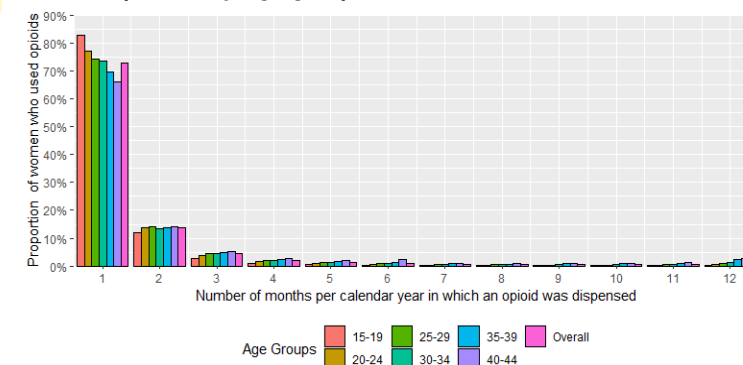
- The prevalence and incidence of opioid use was lowest in women the lowest birth rates (those aged 15 to 19 years) and high in women with the highest birth rates (those aged 30 to 34 years).

Prevalence and incidence of opioid use among women aged 15 to 44 years by age group



- Among all women dispensed opioids, over two-thirds (72.7%) received an opioid in only one month a year.
- This short-term use was highest among women aged 15 to 19 years (82.7%) and lowest among women aged 40 to 44 years (66.0%).

Total number of calendar months per year in which an opioid was dispensed by age group



Conclusion & Impact

- Prescription opioid use remains common in Australian women of reproductive age which raises concerns about potential suboptimal quality use of medicines in this population, although the appropriateness of prescribing requires investigation.
- However, it is reassuring that the majority of opioid use is short-term, which minimises the risk of exposure overlapping with pregnancy.

Disclosure

Declarations: SP is a member of the Drug Utilisation Sub Committee of the Pharmaceutical Benefits Advisory Committee. The views expressed in this paper do not represent those of the Committee. In 2020, the Centre for Big Data Research in Health, UNSW Sydney received funding from AbbVie Australia to conduct post-market surveillance research. AbbVie did not have any knowledge of, or involvement in, the current study. The remaining authors declare no conflict of interest.

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Acknowledgements: We acknowledge Melisa Litchfield for her role in providing the data and gaining ethics approval. We further thank the Australian Government Services Australia for providing the data.

Changing general practitioner when entering residential aged care: impact on psychotropic medicine use and polypharmacy in 2,250 Australians with dementia

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Background

Aged care systems around the world are under pressure because of ageing populations and the increasing prevalence of dementia. Systemic weaknesses have been widely recognised,^{1,2} and inappropriate medicine use was among the problems scrutinised by the Australian Royal Commission into the Quality and Safety of Aged Care, particularly the use of antipsychotics and sedatives as chemical restraints.^{2,3} Polypharmacy is common in residential aged care,^{4,5} as is potentially inappropriate prescribing.^{4,6} In Australian aged care facilities, psychotropic medicines (antipsychotics, benzodiazepines, antidepressants) are often dispensed to people with dementia,⁷ especially soon after entry into residential care, a critical transition point.⁸

One potential major adjustment for people during the transition to residential care is a change in general practitioner (GP).⁹ GPs are the major prescribers in Australian residential aged care,¹⁰ but little is known about how many residents change GPs when they enter aged care facilities, or the effect this has on their care. **We explored GP continuity for people with dementia entering residential care and how it influences their medicine use**, examining associations with both overall prescribing (including polypharmacy) and that of psychotropic medicines in particular.

Methods

We included participants from the 45 and Up Study¹¹ with diagnoses of dementia who entered permanent residential aged care during 1 January 2010 – 30 June 2014 and were alive six months after entry, who had been dispensed medications during the preceding two years only as concessional beneficiaries, and for whom at least three GP claims had been lodged prior to entry and at least one after entry into residential care. People with dementia were identified using previously described criteria:¹² any claim for dementia-specific medications (donepezil, rivastigmine, galantamine, memantine), or dementia diagnosis codes in hospitalisation records, aged care assessments, or the Aged Care Funding Instrument (used to assess required level of care) between July 2006 and entry into permanent residential care.

The category of GP most frequently seen by a resident during the six months after residential care entry was determined by comparing Medicare Benefits Schedule (MBS) claims for GP visits during this period with MBS records for the 24 months preceding entry. Three categories were defined:

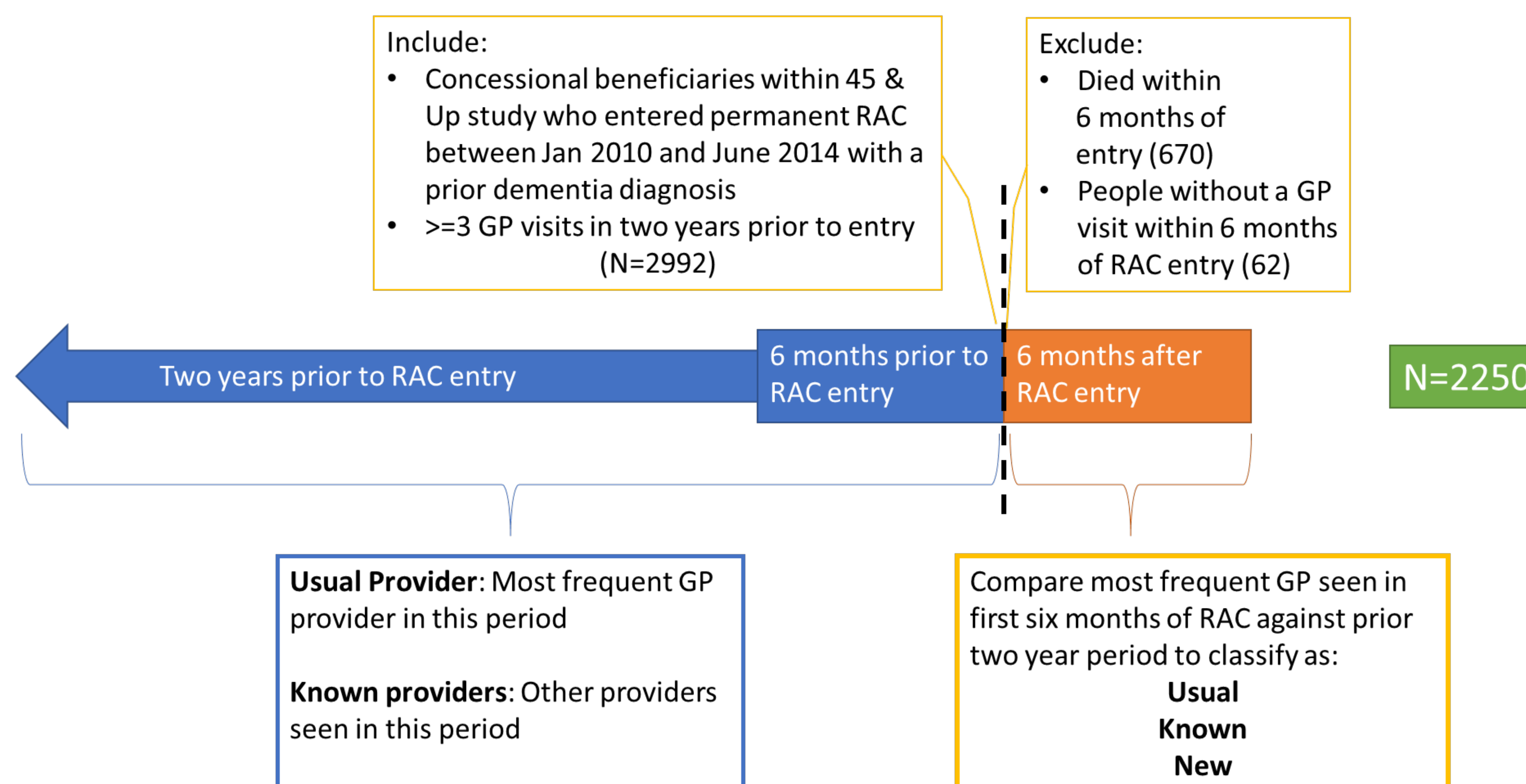
- “usual” when the GP most frequently seen by a resident had also been their most frequent GP prior to entry;
- “known” when the resident had seen the GP prior to entry but the GP was not their usual GP; and
- “new” when the resident had not seen the GP prior to entry to residential care.

Outcomes – six months after entry to RAC

1. Number of unique medicine dispensings (based on 7 digit ATC code)
2. Proportion with polypharmacy (≥ 5 medicines) and hyper-polypharmacy (≥ 10 medicines)
3. Proportion with an antipsychotic/ benzodiazepine/ antidepressant dispensing

Statistical Analysis

We calculated Inverse Probability of Treatment (IPT) weights to balance group characteristics using a range of covariates from the 45 and Up Baseline Survey, and prior health and social care use based on administrative datasets. The main analyses used IPT weighted regression – Logistic for binary outcomes and Poisson for count data to assess relative differences between groups. These additionally controlled for prior medicine use in the six month period before entry to RAC and prior hospitalisation (using the “survey” package in R).



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Changing general practitioner when entering residential aged care: impact on psychotropic medicine use and polypharmacy in 2,250 Australians with dementia

mini*
1st Annual
Research
Symposium and
Policy Forum

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Results

A total of 2250 residents with dementia were included in our study. Their mean age was 84.1 years (standard deviation [SD], 7.0 years; 1236 were women (54.9%). The most frequently seen GP in residential care was their usual GP for 625 residents (27.8%), a known GP for 645 residents (28.7%), or a new GP for 980 residents (43.6%).

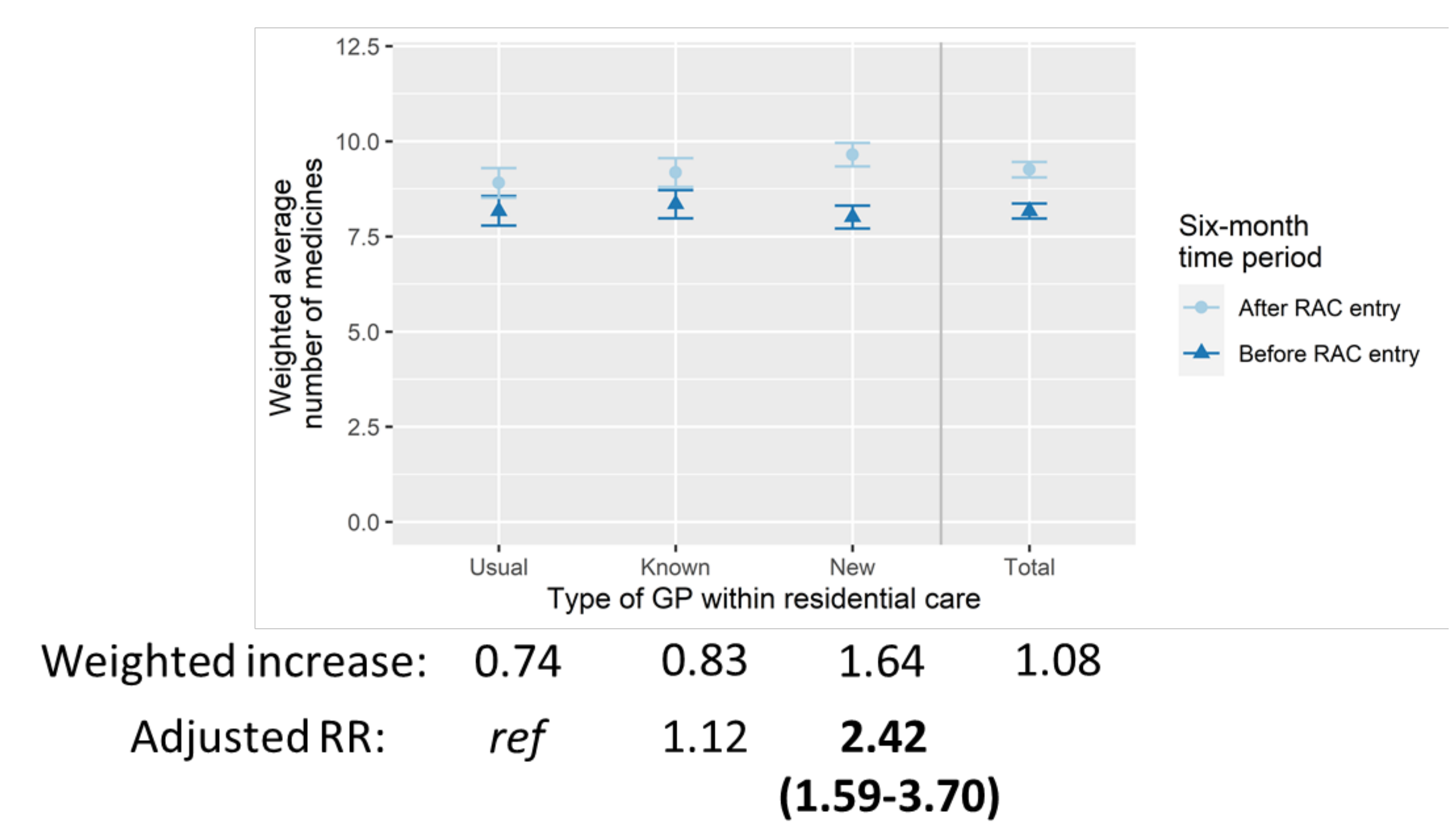
The increase in mean number of medicines for the new GP group (+1.6 medicines; 95% CI, 1.4–1.9 medicines) was larger than for the usual GP group (+0.7 medicines; 95% CI, 0.4–1.1 medicines; adjusted rate ratio [aRR], 2.42; 95% CI, 1.59–3.70); the mean increases for the known (+0.8 medicines; 95% CI, 0.5–1.2 medicines) and usual GP groups were similar (aRR, 1.12; 95% CI, 0.71–1.75) (**Panel A**).

After weighting and adjusting for pre-residential care levels of poly- and hyperpolypharmacy and for emergency hospitalisation, the odds of polypharmacy (adjusted odds ratio [aOR], 1.53; 95% CI, 1.09–2.14) and hyperpolypharmacy in residential care (aOR, 1.47; 95% CI, 1.14–1.89) were higher for the new GP group than for the usual GP group. Odds for the known and usual GP groups were similar (polypharmacy: aOR, 0.93; 95% CI, 0.64–1.36; hyperpolypharmacy: aOR, 1.21; 95% CI, 0.92–1.60). (**Panel B**).

After weighting and adjusting for pre-residential care levels of medicine use and prior emergency hospitalisation, the odds of being dispensed any psychotropic medicine (aOR, 1.64; 95% CI, 1.24–2.18), antipsychotics (aOR, 1.59; 95% CI, 1.18–2.12), or benzodiazepines (aOR, 1.69; 95% CI, 1.25–2.30) were each higher for the new GP than the usual GP group; those for the dispensing of antidepressants were similar (aOR, 1.32; 95% CI, 0.98–1.77). For all medicine types, the odds were similar for the usual and known GP groups. (**Panel C**).

The odds of antipsychotics (aOR, 1.85; 95% CI, 1.31–2.61), benzodiazepines (aOR, 1.89; 95% CI, 1.24–2.90), and antidepressants (aOR, 1.64; 95% CI, 1.10–2.44) being initiated for residents were each higher for the new GP than the usual GP group. The odds of initiating antipsychotics (aOR, 1.31; 95% CI, 0.88–1.96), benzodiazepines (aOR, 1.27; 95% CI, 0.75–2.15), or antidepressants (aOR, 1.41; 95% CI, 0.89–2.21) were similar for the known GP and usual GP groups. (**Panel D**).

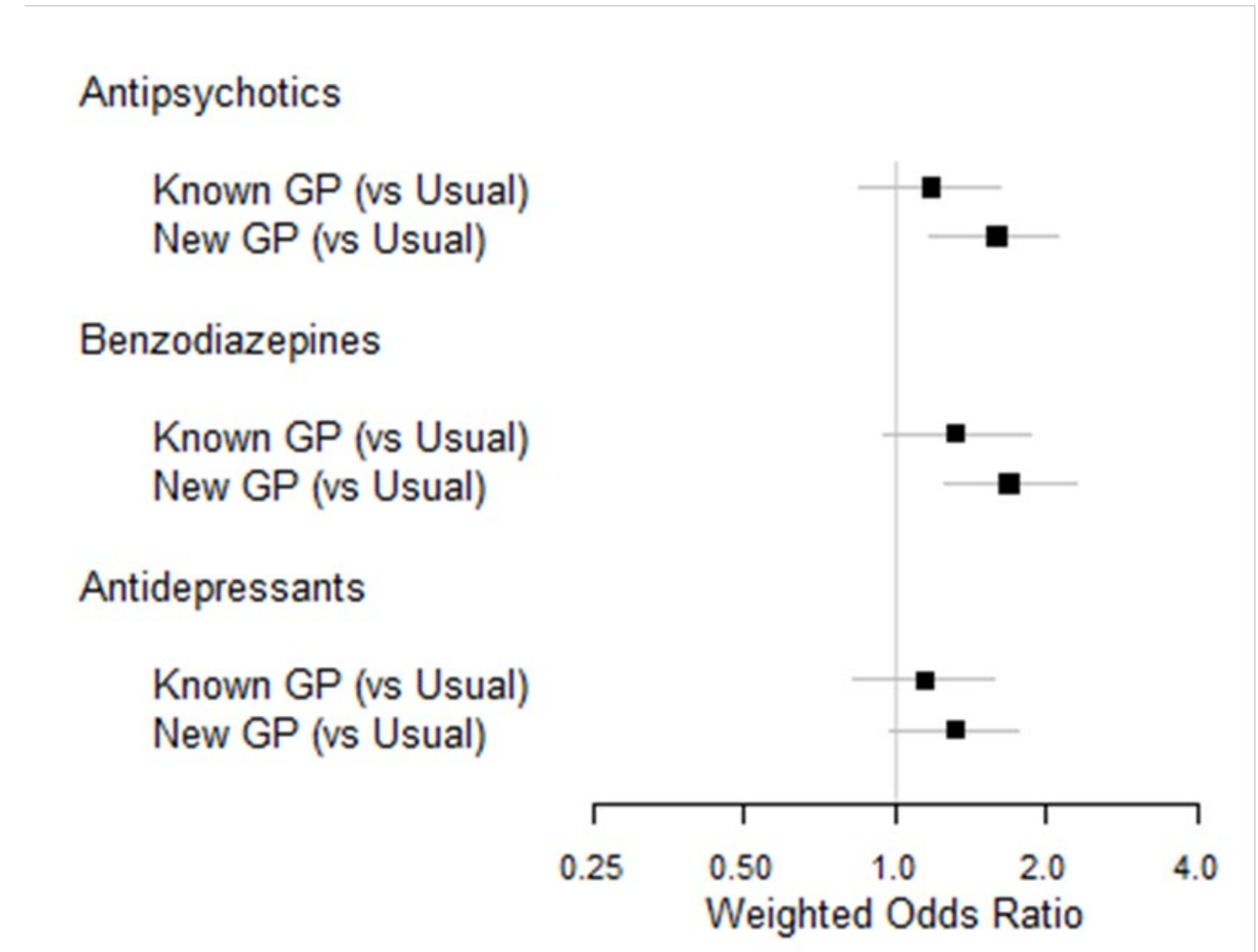
A
Weighted number of medicines dispensed and Weighted increase (controlling for prior use and prior hospitalisation)



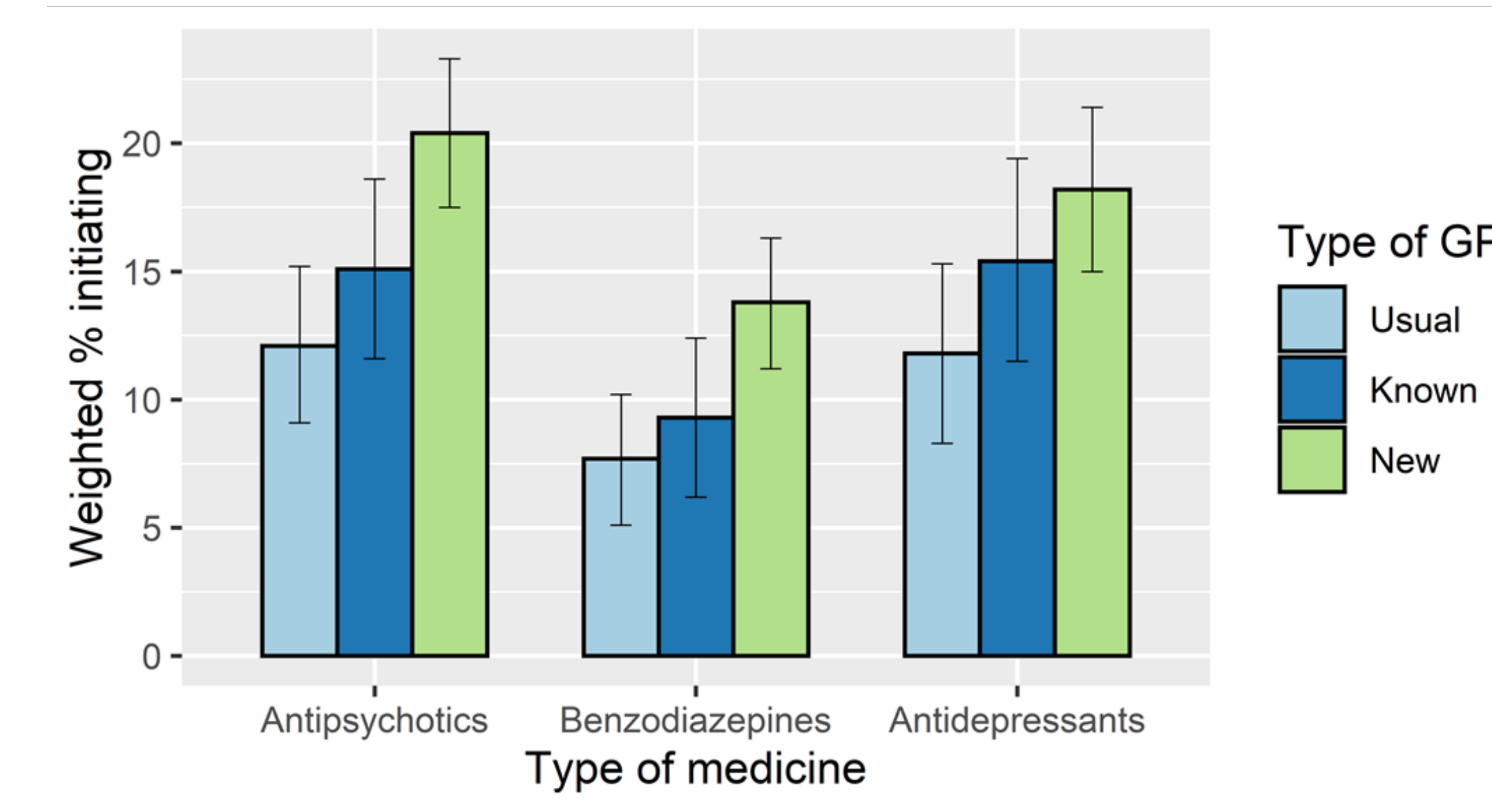
B
Weighted % with Polypharmacy and Hyperpolypharmacy before and after RAC entry

GP type	Weighted % with ≥ 5 medicines post-entry	Weighted % with ≥ 10 medicines post-entry
Usual	84.6	33.8
Known	84.6	43.2
New	88.6	46.2

C
Weighted odds of a psychotropic dispensing in RAC (controlling for prior use and prior hospitalisation)



D
Initiation among those naïve to the medicine



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Discussion

We found that most people with dementia changed GPs when they entered residential care: 44% to previously unfamiliar GPs, and 29% to GPs known to them but not their usual GPs. There are no national data with which to directly compare our estimates, but an earlier study in South Australia similarly found that 62–76% of patients discharged from hospital to residential aged care facilities changed GPs.¹³

Residents seeing new GPs were dispensed more medicines, including antipsychotics and benzodiazepines than other new residents with dementia, the increase in dispensing after entering residential care was greater for these people, and the proportion subject to polypharmacy was larger. New GPs may appropriately initiate new treatments in response to recent changes in a patient's needs or a differing view of these needs. Polypharmacy in older people can be appropriate, but it also increases the risks of medication errors and hazardous interactions.¹⁴ The expected benefits of antipsychotics and benzodiazepines for older people with dementia are small and the risk of adverse effects is high, prompting recommendations to first try non-pharmacological alternatives.³

Conclusions

Medicine use increases to a greater degree and psychotropic drugs are dispensed at higher rates for people with dementia who change GP when they enter residential aged care than for people who continue seeing their regular GP. Facilitating GP continuity of care and better supporting GP handover processes could help prevent potentially inappropriate initiation of psychotropic medicines.

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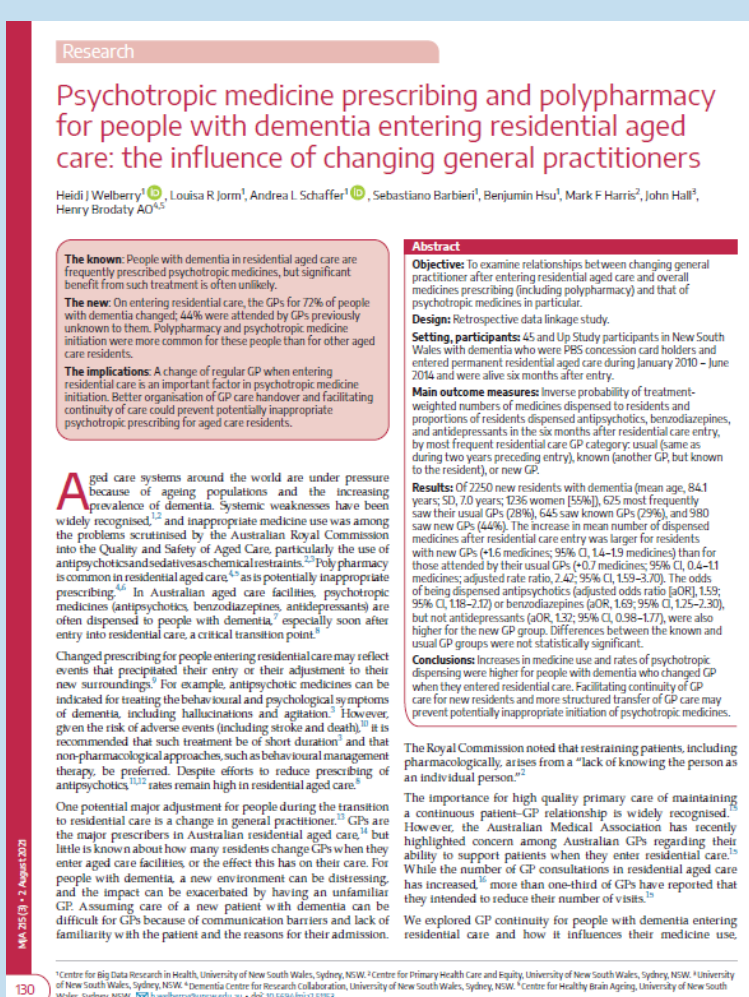
<https://www.mja.com.au/journal/2021/215/3/psychotropic-medicine-prescribing-and-polypharmacy-people-dementia-entering>

An associated podcast is available here:

<https://www.mja.com.au/podcast/215/2/mja-podcasts-2021-episode-28-psychotropics-and-dementia-effect-changing-gp-heidi>

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