

MEDICINE SAFETY: **RURAL AND REMOTE CARE**





ABOUT PSA

PSA is the only Australian Government-recognised peak national professional pharmacy organisation representing all of Australia's 34,000 pharmacists working in all sectors and across all locations. PSA is committed to supporting pharmacists in helping Australians access quality, safe, equitable, efficient and effective health care.

PSA believes the expertise of pharmacists can be better utilised to address the health care needs of all Australians. PSA works to identify, unlock and advance opportunities for pharmacists to realise their full potential, to be appropriately recognised and fairly remunerated.

PSA has a strong and engaged membership base that provides high-quality health care and are the custodians for safe and effective

medicine use for the Australian community. PSA leads and supports innovative and evidence-based healthcare service delivery by pharmacists.

PSA provides high-quality practitioner development and practice support to pharmacists and is the custodian of the professional practice standards and guidelines to ensure quality and integrity in the practice of pharmacy.

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FOREWORD

The declaration of Quality Use of Medicine and Medicine Safety as Australia's 10th National Health Priority Area by the Federal Minister for Health in November 2019 was a watershed moment for patient care in Australia. The elevation to a National Health Priority Area raises awareness and sets the platform for systematic change to promote medicine safety across our entire healthcare system.

The Pharmaceutical Society of Australia (PSA) has been at the forefront of the medicine safety agenda in Australia. To that end, we commissioned a series of medicine safety reports that clearly highlight the need to take action.

Our seminal report, *Medicine Safety: Take care*, released in January 2019 was sobering. It revealed more than 250,000 Australians are admitted to hospital each year because of harm caused by their medicines.

The cost of medicine-related problems was calculated at \$1.4 billion annually. Further, an additional 400,000 Australians present to hospital emergency departments every year as a result of medicine misadventure. There is clearly opportunity for pharmacists to intervene as over half of these are preventable.

The second report in the series, *Medicine Safety: Aged care*, showed how vulnerable elderly Australians are to problems with their medicines. More than 95% of people living in aged care facilities have at least one problem with their medicines; most

have three or more problems, and over half of all people living in aged care facilities are prescribed medicines considered potentially inappropriate for older people.

The data on chemical restraint in aged care is even more staggering. One in five people living in aged care are on antipsychotics; more than half use the medicine for too long. Up to one third of people living in aged care are on benzodiazepines; again, more than half use the medicine for too long.

Our third report, *Medicine Safety: Rural and remote care*, reveals the extreme challenges patients in rural and remote Australia have in accessing health care and the impact that this has on the safe and appropriate use of medicines. An estimated 72,500 Australians living in rural and remote areas are admitted to hospital each year due to medicine-related problems, half of which are preventable. The estimated cost to the Australian healthcare system from this is \$400 million each year.

The challenges in accessing health care in rural and remote areas are due, in part, to the tyranny of distance which reduces ordinary access to health care that urban Australians take for granted. Shortages in Australia's

rural and remote healthcare workforce contribute to reduced access to the services that Australians need to maintain good health and manage their medicines. Lower levels of access to health services mean people in rural and remote areas, generally experience greater burden of disease and have poorer health outcomes.

Medicine Safety: Rural and remote care also highlights that available data, specifically focused on the needs of rural and remote Australians, are sparse and insights into the area must be improved.

The seven million Australians who call rural and remote Australia home, deserve better. It should not matter where you live, all Australians are worthy of the best health care the country can provide.

We must address rural and remote challenges of medicine safety as a matter of urgency.



Associate Professor Chris Freeman
National President

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It should not matter where you live. All Australians are worthy of the best health care the country can provide.

EXECUTIVE SUMMARY

EXTENT OF PROBLEM

Medicine-related hospital admissions

- 72,500 Australians living in rural and remote areas are admitted to hospital each year due to medicine-related problems.
- Annual cost to the healthcare system is \$400 million.
- 50% of this harm is preventable.

Medicine adherence

- 1.3 million Australians living in rural and remote areas do not take their medicines at all or as intended.
- Annual cost of medicine non-adherence in rural and remote Australia is estimated to contribute \$2.03 billion to health costs.

Disease burden and preventable hospitalisations

- Increased disease burden and potentially preventable hospitalisation in rural and remote Australia are up to 2.4 times that of non-rural Australians.

Indigenous Australians at risk

- The rate of preventable hospitalisations for Indigenous Australians is three times higher than that for non-Indigenous Australians.
- 53% of the Indigenous Australian participants in a regional Australian study were affected by suboptimal prescribing, polypharmacy and inappropriate or under-prescribing.

Unintentional drug-induced deaths

- The rate of unintentional drug-induced deaths in rural and remote Australia is higher than capital cities and increasing at three times the rate.
- Between 2011 and 2018 unintentional drug-induced deaths increased 15.9% in rural and regional Australia compared to 3.6% in capital cities.

Workforce

- By 2027, without intervention, it is estimated there will be as few as 52 pharmacists per 100,000 people in regional and remote areas, compared to 113 pharmacists per 100,000 people in major cities.

Lack of data

- The paucity of empirical data, where medicine safety problems are not routinely logged, reported and monitored, impedes progress in addressing the multitude of health challenges affecting rural and remote Australians.
- This also impedes progress to achieve targets which Australian governments have committed to, such as a 50% reduction in medicine errors, adverse drug events and medicine-related hospital admissions by 2025.



PSA RECOMMENDATIONS

01

PSA recommends the following actions to reduce the extent of medicine-related harm experienced by people living in rural and remote Australia:

Build rural and remote pharmacist workforce capacity and capability.

- 1.1 Establish accredited 'rural generalist' pharmacists who are able to support rural and remote Australians through collaborative prescribing, pathology ordering and chronic disease management in collaboration with rural general practitioners.
- 1.2 Establish a workforce strategy and provide funding to attract and retain pharmacists in rural and remote Australia in primary care settings such as community pharmacy, general practice, aged care facilities and Aboriginal Community Controlled Health Centres, as well as rural and regional hospitals.

02

Encourage collaborative and enhanced pharmacy practice in rural and remote Australia.

- 2.1 Fund case conferencing, as recommended by the Medicare Benefits Schedule (MBS) Review Taskforce, to improve medicine safety through collaborative care.
- 2.2 Fund a Rural Pharmacy Enhanced Services Program for pharmacists to deliver health services not adequately available in rural and remote areas.



03

Improve access to medication management reviews for rural and remote Australians.

- 3.1** Allow all patients to be able to access medication management reviews, permanently, via telehealth.
- 3.2** Fund rural and remote pharmacists to become accredited to undertake Home Medicines Reviews and Residential Medication Management Reviews.
- 3.3** Remove service caps for the provision of Home Medicines Reviews and Residential Medication Management Reviews to improve access to services in Modified Monash Model (MMM) 3 to 7 areas.

04

Embed pharmacists within Aboriginal Community Controlled Health Organisations.

- 4.1** Fund pharmacists to be embedded in Aboriginal Community Controlled Health centres to deliver targeted and culturally safe care, improve medicine adherence and to address polypharmacy and other quality use of medicine issues.

05

Develop national minimum medicine safety standards and quality benchmarks.

- 5.1** Establish national minimum medicine safety standards and quality benchmarks, consistent with the Australian Government's commitment to clinical governance to inform, support and advance Australia's medicine safety agenda.
- 5.2** Fund the Australian Institute of Health and Welfare (AIHW) to measure and monitor progress and report on the extent of medicine-related harm, particularly in rural and remote Australia.



BACKGROUND

In 2017, the World Health Organization (WHO) released the third Global Patient Safety Challenge: Medication Without Harm, seeking to reduce severe avoidable medicine-associated harms by 50% globally within five years.

The WHO strategy focuses on acute, primary and aged care, identifying as priorities: polypharmacy, reducing harm from high-risk medicines, and improving medicine safety at transitions of care.¹

In Australia, Quality Use of Medicine and Medicine Safety was announced as the 10th National Health Priority Area in 2019 and, in 2020, Australia responded to the WHO challenge with a goal to reduce medicine errors, adverse drug events and medicine-related hospital admissions by 50% by 2025.²

When medicine-associated harm occurs, potentially preventable hospitalisations (PPH) may result. PPH reflect the effectiveness of health care in the community since higher rates may signal a lack of timely, accessible and adequate primary care.³ In 2017–18, 1 in every 15 hospitalisations (748,000, or 6.6% of all hospitalisations) was classified as potentially preventable.

There were nearly 45,000 PPH of Indigenous Australians, at a rate of 8,000 per 100,000 people – three times higher than for

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When medicine-associated harm occurs, potentially preventable hospitalisations (PPH) may result.





1.5x

How much more likely Australians living in outer regional areas are to die from preventable illness.

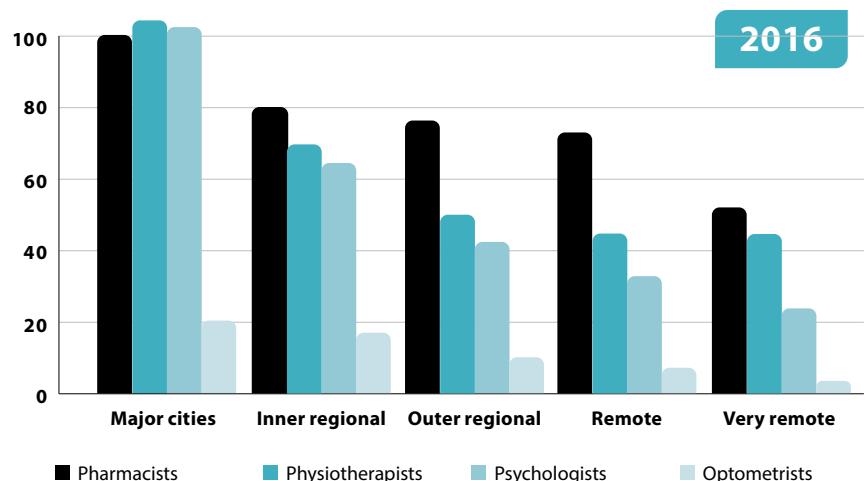
2.5x

How much more likely Australians living in remote areas are to die from preventable illness.

non-indigenous Australians (2,700 per 100,000).³ Australians living in outer regional areas are 1.5 times more likely to die from preventable illness, potentially preventable either by having individualised care or by being treated through existing primary or hospital care. This rate increases to 2.5 times for those in remote Australia.

This report explores medicine safety in rural and remote Australia. Rural and remote Australia includes many different towns and communities. The people who choose to live there experience many desirable benefits but also many challenges due to their isolation relative to metropolitan areas. Rural and remote Australians experience poorer health outcomes, higher rates of hospitalisation and poorer access to primary care.⁴

FIGURE 1: Number of health professionals per 100,000 population across different regions





HEALTH PROFESSIONAL ACCESS IN RURAL & REMOTE AUSTRALIA

Access to primary health care is crucial for access to medicines and health advice. The relative isolation of practitioners and their patients can exacerbate health disparities.



307

Approximate number of towns with just one community pharmacy, in 2016.

Access to general practitioners (GPs) is less in rural and remote areas than in major cities and inner regional areas. In 2017, the full-time service equivalent (FTE) per 100,000 population was 65, 75 and 85 FTE per 100,000 in very remote, remote and outer regional areas, respectively, compared to 110 FTE for major cities and inner regional areas. Pharmacies in these towns provide a range of support to the residents that cannot be underestimated.

Figure 1 indicates the number of health professionals per 100,000 population across different regions of Australia.

There is currently an inadequate supply of the health workforce in

one community pharmacy, and 57 of these had no medical centre.⁷

Regarding the use of medicines, many have adverse effects which go unrecognised as they may be subtle and difficult to identify. Pharmacist monitoring of changes in symptoms and earlier treatment can reduce both medicine-induced deterioration and the risk of developing frailty.⁸

Therefore the number of pharmacists in remote and very remote areas is disproportionate to the health challenges experienced by the population in these areas. Recruitment and retention of the pharmacist workforce to rural and remote areas is also a common challenge experienced across all professions, often resulting in longer waiting times for patients as health service demand often exceeds the existing workforce.

Another report cited a prediction that in 2027–28 there would be 80 and 52 pharmacists per 100,000 people in regional and remote areas, respectively, compared to 113 pharmacists per 100,000 people in major cities.

Concerns were expressed that the standard of health care for rural and

moderately accessible, remote or very remote areas to provide necessary services for an already under-served, vulnerable population.^{5,6} There are reports that, in 2016, approximately 307 towns in these areas had only

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The number of pharmacists in remote and very remote areas is disproportionate to the health challenges experienced by the population in these areas.



CASE EXAMPLE 1

Duplication of therapy resulting in hospitalisation

A male in his 70s presented at a regional hospital acute care unit with a rapid heart rate, heavy sweating and confusion. He was subsequently admitted and diagnosed with serotonin syndrome.

The male was taking medicines for cholesterol, hypertension and depression. He was a smoker, regularly consumed alcohol and was described as having low health literacy.

Upon investigation, it emerged that he was taking multiple brands of sertraline due to a misunderstanding – he thought they were different medicines. Serotonin syndrome is a serious health condition and can be caused by excessive sertraline doses.

Contributing factors to this confusion were that the man lived between two different towns, went to multiple pharmacies, had difficulty securing medical appointments and had never received a medication management review.

remote areas should be equal to that available in metropolitan areas. It was also noted that “community pharmacists are an essential part of the healthcare team dedicated to providing valuable primary healthcare services across Australia”.⁹

In preparing this report, a narrative review was undertaken to

identify the best available evidence on the impact of medicine safety in rural and remote Australia.

Where empirical research has not been available, extrapolation of national or local data sets have been used to estimate the burden and costs of medicine harm in rural and remote Australia.

HEALTH SITUATION IN RURAL & REMOTE AUSTRALIA

Burden of disease – preventable hospitalisations

In a 2019 report on rural and remote health, the AIHW¹⁰ characterised the health risk factors, burden of disease and the impact of cost relative to income on the health of Australians living in rural and remote areas.

Outside major cities, Australians have a higher prevalence of health risk factors such as smoking, being overweight or obese, eating a diet lacking nutritional quality, being sedentary and consuming alcohol at more than moderate levels.

The burden of disease increases with remoteness for coronary heart disease, chronic kidney disease, chronic obstructive pulmonary disease (COPD), lung cancer, stroke, suicide, self-harm and type 2 diabetes. Australians living outside capital cities received 18% less household income per week but must pay higher prices for both goods and services.

Burden of disease (expressed as disability-adjusted life years per 1,000 population) increases with remoteness; 1.4 times the rate of disease burden is experienced by rural and remote Australians compared with those in major cities. For Indigenous Australians, 2.3 times the rate of disease burden is experienced compared with other Australians.¹¹

It is not possible to directly determine the contribution of medicine-related harm to the burden of disease given the paucity of empirical data.

It stands to reason though, that a higher burden of disease implies increased need for medicines which further implies increased risk of medicine-related harm for rural and remote Australians.

Similarly, PPH, emergency department (ED) presentations and preventable deaths point to higher levels of medicine-related harm in rural Australia.

Similarly, PPH, emergency department (ED) presentations and preventable deaths point to higher levels of medicine-related harm in rural Australia. Potentially preventable hospitalisations result in:

- 1 in 15 hospital admissions (6.6% of total)
- 1 in 10 hospital bed days (9.8% of total).^{3,12}

The rate of these admissions increases with remoteness (2015/16 PPH per 1,000 population increased from 25 for major cities to 39.5 remote and 60.9 very remote).¹³ Presentations to EDs also increase with remoteness¹⁴ and approximately half have been estimated to be medicine-related, as demonstrated in Figure 2.

Potentially avoidable deaths occur in very remote regions at 2.5 times the rate of major cities.¹³ Even if medicine-related harm occurs at a similar rate in rural and remote Australia compared to more urban areas, given the higher rates of PPH in rural and remote areas, it is likely in fact that medicine-related harm causing





hospital admission or presentation is proportionally higher in rural and remote Australia compared to urban areas.

Comparison of ED use patterns in rural and metropolitan NSW (2012-2018) reveals ED presentations have outpaced population growth generally, but rates of presentation are higher for rural areas.

There are differences in who presents and why, including higher presentation levels in the 15-39 year age group and presentations by lower acuity patients, particularly in lower socioeconomic status regions.¹⁵

Rural ED usage patterns reflect poorer access to primary health care, particularly for disadvantaged groups, and highlight the need for policy and decision-making to be based on data specific to rural and remote areas.

Better use of pharmacists in rural and remote areas to address lower acuity ED presentations could

reduce the burden on overworked EDs and hospitals in rural and remote Australia.

It would also allow pharmacists to practice their skills and knowledge to the full extent, increasing job satisfaction and workforce retention in rural Australia.

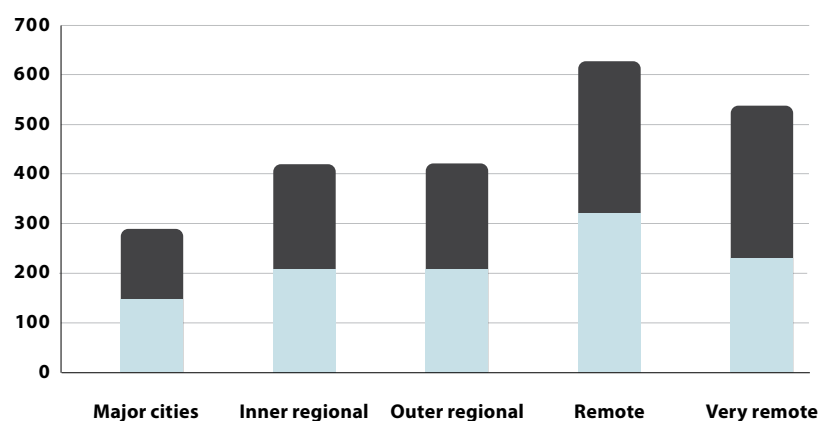


FIGURE 2: Australian emergency department presentations (2018/2019)

■ Rate of ED presentations (all) / 100,000 population
 ■ Rate of ED presentations likely caused by medicines / 100,000 population

Burden of disease – incidence of chronic diseases

Chronic diseases are a leading cause of morbidity and mortality in Australia and have a persistent and adverse impact on patients. Almost half (47.3%) of Australians have at least 1 of 10 selected chronic conditions and 1 in 5 have multiple chronic conditions, based on 2017–18 estimates.^{16,17} Most of the disease burden is attributable to cancer, cardiovascular diseases, mental and substance use disorders, musculoskeletal conditions, and injuries¹⁸:



Diabetes

An estimated 1.2 million Australians (4.9% of the total population) had diabetes in 2017–18, based on self-reported data.¹⁶ The prevalence of diabetes was similar across different areas of remoteness and included types 2 and 1, but not gestational, diabetes. Rates of death and hospitalisation due to diabetes in people in remote and very remote areas were twice the rates in major cities.¹⁹



Cardiovascular disease

Cardiovascular disease includes several conditions affecting the heart and blood vessels such as coronary heart disease (CHD), stroke and heart failure.²⁰ The impact of cardiovascular disease is significant as 1.2 million (5.6%) Australian adults¹⁶ are affected. Prevalence is higher for men than for women but increases for both with age. While prevalence does not vary significantly by remoteness, hospitalisation rates are 30% higher in rural and remote areas.¹⁸



Ischaemic heart disease

More than one-third of deaths from ischaemic heart disease in rural Australia are attributable to differences in risk factors.²¹ If people living in rural Australia had the same levels of risk factors as those in metropolitan areas, ischaemic heart disease mortality gap between metropolitan and rural populations would be reduced by more than 38%.



Medicine safety problems can happen at different times or points on the treatment continuum, including prescribing, dispensing or administration of a medicine, or at transitions of care. At each of these points, decisions of health professionals and patients can lead to medicine-related harm.

For example, Stocks and colleagues²² identified health inequalities due to geography in statin prescribing across Australia, adjusting for age, gender and socioeconomic status.

By using deaths from CHD as a proxy for CHD risk, they identified that deaths in men and women were lower in urban areas (male 178.1 per 100,000 per year, female 98.5) than in rural (male 193.4, female 103.3) or remote regions (male 195.2, female 102.6). Conversely, statin prescribing was higher in urban areas than in rural or remote regions.



Aboriginal and Torres Strait Islander people

Indigenous Australians experience a burden of disease 2.3 times that of non-Indigenous Australians, as well as reduced life expectancy, which further decreases with increasing remoteness. Claims for MBS-funded GP visits for Indigenous Australians are 15% higher than for non-Indigenous Australians (2017-18), while MBS claims for specialist services are 44% lower.

The rate of hospitalisation for Indigenous Australians due to a chronic condition such as coronary heart disease (CHD), diabetes and chronic kidney disease is, on average, greater than three times that for non-Indigenous Australians.¹⁷

In addition, in 2017-2018, the rate of preventable hospitalisations for Indigenous Australians was three times that of other Australians and the rate increased by 25% between 2012-13 and 2017-18.³

In 2013-14, Pharmaceutical Benefits Scheme (PBS) expenditure per person (mainstream benefits) for Indigenous Australians was 33% that of non-Indigenous Australians.

Mainstream arrangements accounted for 65% of benefits paid for Indigenous Australians, the remainder being Section 100 and other special supply PBS drugs.²³

In its 2020 report on Indigenous primary care,²⁴ the AIHW identified 210 organisations that provide Indigenous-specific primary healthcare services caring for 498,000 clients.

Aboriginal Community Controlled Health Organisations provide most primary health services to Indigenous Australians but pharmacy service integration has been uncommon.

MEDICINE SAFETY

IN RURAL & REMOTE AUSTRALIA

The PSA's seminal report *Medicine Safety: Take care*²⁵ showed the extent of the burden of problems associated with medicine use in Australian society. There are more than 250,000 hospital admissions related to medicine misadventure, at a cost of \$1.4 billion per annum. In addition, 400,000 Australians present to emergency departments because of harms associated with their medicines.

Given approximately 29% of the population live in rural and remote areas and, using extrapolation of datasets and reports available, this would suggest that:

- **72,500** Australians who live in rural and remote areas are admitted to hospital each year due to problems related to their medicines
- this costs the Australian healthcare system approximately **\$400 million** per annum
- it would be expected that a further **116,000** rural and remote Australians present to ED (where available) because of medication misadventure.

Given the health disparities that occur in rural and remote Australia, this data is likely to be a **significant under-estimation**.

Medicines are intended to relieve symptoms, manage chronic diseases and treat or cure acute self-limiting disease states, but their use can be problematic, particularly for older Australians.

The *Medicine Safety: Aged care* report revealed more than 95% of residents in aged care facilities have at least one issue with their medicines, and many have three problems.²⁷

More than half of all people living in aged care facilities are prescribed medicines that are potentially inappropriate for their age group. Medicine issues in Australia are not limited to or even concentrated in aged care, for example:

- Up to one-fifth of ED presentations have been described as re-presentations within 28 days of discharge from hospital²⁸ and are potentially medicine-related in 21% of cases.

- 59% of hospital re-presentations, preventable medicine-related issues were established as the main cause. Early medicine-related re-presentations were common, with 49% occurring within 7 days of discharge, and 20% on day one.²⁸
- Re-presentations to ED mostly involved cardiovascular medicines and adverse drug reactions in older patients with polypharmacy.

Miller and colleagues²⁹ identified medicines that posed particular risk in a study of 7,518 patients attending 482 GPs who were randomly selected, representing 2.7% of all practicing GPs in Australia.

Opioids were responsible for 8.2% of all adverse drug events while non-steroidal anti-inflammatory drugs were also frequent causes of hospitalisation and accounted for 12.2% of all hospitalisations for medicine misadventure.²⁹

Quantifying adverse medicine events for rural Australians is complex. Increased disease burden and PPH rates of between 1.2 and 2.4 that of non-rural Australians¹³ suggest

Extent of medicine use in rural and remote Australia

	Australian data	Rural and remote residents
People taking a prescribed medicine every day	> 9 million	2.61 million
People taking two or more prescribed medicines in a week	8 million	2.32 million
People taking over-the-counter medicines daily	> 2 million	0.58 million
People taking a complementary medicine daily	> 7 million	2.03 million

Source: PSA analysis based on available data²⁶



72,500

Number of Australians in rural and remote areas who are admitted to hospital each year due to problems related to their medicines.



\$400 million

Estimated subsequent cost to the healthcare system each year.



116,000

How many presentations to ED are estimated to be caused by medication misadventure in rural and remote Australians each year.

medicine harm is more substantial in rural and remote areas. Other contributing factors may include workforce issues such as a focus on dispensing and supply rather than the provision of other medication management services where the pharmacist workforce is insufficient.

The extent to which these factors influence medicine-related harm is opaque and requires specific data collection and monitoring in the rural and remote context.

High rates of chronic disease and comorbidity contribute to high risk of medicine-related harm and poor health outcomes for Indigenous Australians.²⁴ Page and colleagues³⁰ undertook a cross-sectional study of medicines use by older Indigenous Australians in the Kimberley region of Western Australia. They concluded that more than half of the participants (53%) were affected by suboptimal prescribing, seen as polypharmacy, inappropriate- or under-prescribing:

- 20% had been prescribed at least one inappropriate medicine;
- 12% prescribed one or more medicines relatively contraindicated in older people;
- 12% had potential under-prescribing.

The study highlights the need for culturally appropriate, targeted strategies for improving prescribing in this at-risk group. Overall, the challenge in addressing medicine safety problems will be to set achievable goals, measure progress against those goals, and develop system and workforce policy settings to achieve the goals.



CASE EXAMPLE 2

Absence of pharmacists embedded in aged care

A woman in her 80s developed severe and painful mouth ulcers at a residential aged care facility in rural Australia where she lived. Following telephone requests from carers at the facility, multiple prescriptions for triamcinolone dental paste were written by the prescriber to treat the ulcers.

The woman also took several other medicines which she had difficulty swallowing.

Upon investigation, it emerged the carers routinely crushed her medicines and suspended them in fruit jam to help her swallow them.

This included her alendronate tablets – a medicine given once a week to prevent osteoporosis.

Alendronate is known to cause ulceration of mucous membranes if not taken according to strict dosing instructions including, swallowing the tablet whole and remaining upright for 30 minutes following the dose.

Factors contributing to suboptimal medicine use and harm

Many factors contribute to suboptimal medicine use or medicine-related harm. Those discussed in the following section are polypharmacy, medicine adherence, mental ill-health, overuse of opioids and transitions of care.

Polypharmacy

Polypharmacy is common among older Australians.

As the population ages, with an associated increasing burden of chronic diseases, we expect to see a corresponding increase in multiple medication use.

Recently published research³⁵ identified that polypharmacy affected almost one million older Australians and noted that the number will increase as the population ages, with approximately 290,000 people living in rural or remote areas.

Buist and colleagues³⁵ explored polypharmacy in rural Australia and, in a pilot study in Tasmania, identified 446 patients from the electronic medical record who were aged 70 years or older and who were taking three or more medicines. Multidisciplinary medicines reviews were conducted with 105 patients, including 36 nursing home residents.

The study's rural and remote patients were collectively taking 875 medicines (average 8.3, range 3–18). Following review, 147 medicines were ceased, lowering the average

number of medicines per patient to 6.9 with a range of 2 to 14 medicines. Over a third of medicines ceased were cardiovascular agents, mostly anti-hypertensives.³⁵

Specific diseases and/or medicines may also impact a patient's quality of life.

Through an Australian online survey, Welton and colleagues³⁶ explored the impact of symptoms or conditions associated with well-controlled epilepsy such as sleep issues, memory issues or migraines and the medicines used to manage these conditions.

They showed people living with epilepsy in rural or even inner regional areas are less likely to have their epilepsy regularly managed by a neurologist, which may result in poorer health and poorer quality of life, which both intensify the negative effects of co-morbidities and adverse medicines effects.

Welton and colleagues³⁶ note rural-regional-urban health disparities have been documented previously in Australia, with higher mortality and morbidity especially noted in remote communities compared to metropolitan areas reflecting differential access to care and the different resulting quality of life experiences.

Medicine adherence

Medicine adherence is defined as 'the extent to which the patient's behaviour matches agreed recommendations from the

What is polypharmacy?

Polypharmacy is commonly identified when a patient is prescribed and takes five or more medicines,³¹ with some more recent considerations to include complementary and non-prescribed medicines.

Further, there is recognition for significant polypharmacy such that ten or more medicines are termed hyper-polypharmacy and fifteen or more medicines is identified as extreme hyper-polypharmacy.³²

Consequences for patients with inappropriate polypharmacy include decreased quality of life, increased mortality, increased risk of falls and frailty, increased risk of hospitalisation, loss of independence and placement in residential care.³³

Not all polypharmacy is inappropriate and an individual with several chronic conditions may well have medicines for each. However, as the number of medicines a patient takes increases, so does the risk of medication-related problems.³⁴



290,000

Number of Australians in rural or remote areas affected by polypharmacy



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Consequences of inappropriate polypharmacy include decreased quality of life, increased mortality, increased risk of falls and frailty, increased risk of hospitalisation, loss of independence and placement in residential care.

prescriber', while medicines can be prescribed for patients, approximately 50% of people with chronic disease do not take their medicines correctly or, sometimes, at all.³⁷

Of the 2.61 million patients in rural and remote Australia taking at least one prescribed medicine daily, 1.3 million are estimated to be not taking their medicines at all or not taking them as prescribed.

Australian Bureau of Statistics (ABS) data indicate 7.6% of patients who received a prescription delayed getting the medicine, or did not get it at all, due to cost, and the proportion was higher in areas of disadvantage.³⁸

Suboptimal adherence to commonly prescribed medicines in cardiovascular disease and mental health contribute significantly to disease progression and mortality, increasing the budget impact on the Australian healthcare system.

A trend to lower per capita spending on medicines by remoteness has been reported³⁹ and PBS expenditure for regional and remote residents is 70-80% of that for metropolitan residents which is inconsistent with the increased

burden of disease experienced regionally. This disparity, combined with lower polypharmacy rates,³¹ reinforces likely lack of access to medicines and suboptimal usage due to a complex range of contributing factors including health workforce, service provision and geographic isolation.

Annual costings of medicine non-adherence are estimated to be approximately \$7 billion in Australia.⁴⁰ In rural and remote Australia, this would represent \$2.03 billion annually.

Additionally, 10% of hospitalisations in older adults are attributed to medicine non-adherence with the typical non-adherent patient requiring three extra medical visits per year, leading to \$2,000 increased treatment costs per annum.

Inappropriate use of medicines costs the Australian public hospital system \$1.4 billion per year representing 2-3% of all hospital admissions,²⁵ with this figure rising to 20-30% of all admissions in the population aged 65 years and over. It is estimated that 4.7% of total Australian health expenditure is avoidable due to suboptimal medicines use, extrapolating to \$8 billion annually.⁴⁰ In terms of rural and remote Australia, this cost could be \$2.32 billion related to health expenditure which is avoidable due to suboptimal medicines use.

Mental ill-health

The ABS National Health Survey (2017-2018)¹⁶ revealed 20% of the population in outer regional, remote and major cities, and 23% in inner regional locations, were currently diagnosed with a condition related to mental ill-health.

Rates of subsidised and co-payment supplied medicine for mental health-related conditions are lower in remote and very remote regions (Table 1). This suggests that people in remote and very remote regions are not being prescribed or are not collecting their medicine to treat their mental health condition. Another aspect of medicine use that varies with remoteness is the annual number of prescriptions/patient.

This varies from 10 prescriptions/patient (major cities and inner/

outer regional) to 8-9 prescriptions/patient (remote and very remote).

Assuming that a single prescription supply is for one month, the lower number of prescriptions indicates that patients are less adherent to a prescribed medicine regimen over a year, which might be due to accessibility, adherence or both.

Overuse of opioids

Prescription opioid medicines have a significant role to play in the management of moderate to severe pain after surgery and for patients with cancer. They also have a somewhat more limited but still important role for some patients with chronic non-cancer pain.

In 2018, it was identified that 3.24 million Australians live with chronic pain, which is projected to increase to 5.23 million in 2050.⁴¹ For people living with chronic pain, under-treated or untreated chronic pain has multiple impacts on their physical, mental and social health.

Even where pain is managed, many individuals do not have access to persistent pain clinics and best practice pain management, with a particular lack of services in rural and remote areas of Australia.

This lack of coordinated care has resulted in increased prescribing of strong opioid medicines, with risks of misuse and harm,⁴¹ such as accidental poisoning or overdose.

A recent Queensland study established that 6.43% of the state's population had been prescribed opioid medicines in 2018.⁴² Geographic inequality in treatment with opioids for non-cancer chronic pain persists with regional and remote Australians more likely to report communication problems and lack of confidence in their doctor in treating pain, difficulties accessing specialists and difficulty affording medicines.⁴³

Within Australia and world-wide, harm associated with opioid use has increased over time.

Gisev and colleagues⁴⁴ report that opioid prescribing has increased

TABLE 1

Regional differences in supply rates for mental health-related prescriptions¹⁶

(Limitations: as outer regional and remote community data are combined in the ABS data but not in the AIHW data, the data are not directly comparable. ABS data do not include very remote, selected Indigenous communities and public dwellings e.g. hospitals, aged care.)

	Rate of subsidised & co-payment mental health related prescriptions (%) 2018-2019	Prescriptions/patient (incl. co-payment)
Major cities	16.3	10.1 (8.9)
Inner regional	21.2	10.1 (9.4)
Outer regional	18.4	9.8 (9.1)
Remote	13.0	9.2 (8.5)
Very remote	7.1	8.3 (7.9)



CASE EXAMPLE 3

Missed diagnosis results in unnecessary opioid use

A man in his early 60s experienced severe stomach pain for some time.

After waiting several weeks for a GP appointment, he was prescribed buprenorphine 5 micrograms/hour patches.

The man was also taking *Atozet* 10/80 (ezetimibe 10 milligrams/atorvastatin 80 milligrams), a combination tablet containing two different ingredients, to manage his high cholesterol levels. Stomach pain is a symptom of rhabdomyolysis, a rare yet serious known side effect of atorvastatin. Medical review subsequently confirmed this diagnosis.

Contributing factors to this medicine safety problem were waiting times to see his prescriber, short duration of medical appointment and restrictions preventing the local pharmacist from adjusting medicine therapy or ordering pathology which could have identified the issue earlier.

15-fold in Australia in just the last two decades, alongside increases in a range of opioid-related harms such as opioid dependence and overdose.

In Australia's annual overdose report 2020⁴⁵ opioids were the medicines most identified in unintentional drug-induced deaths in 2018, representing nearly 60% of all unintentional drug-induced deaths. This was predominantly due to prescribed medicines such as oxycodone, morphine and codeine (45%), and illicit medicines such as heroin (36%).

Since 2011, the rate of unintentional drug-induced deaths in regional parts of Australia has surpassed the rate seen in capital cities.

From 2011 to 2018 the rate of unintentional drug-induced deaths in rural and regional Australia increased by 15.9%, while the rate in capital cities increased by only 3.6%.

Opioid dependence is a complex medicines issue usually requiring

lengthy treatment. In Australia, opioid replacement therapy (ORT) or opioid substitution therapy (OST) are used for dependence on illicit substances such as heroin but also for pharmaceutical opioid dependence.⁴⁶

However, access to these treatments in rural areas can be challenging, with identified barriers including access to prescribers and community pharmacies providing the program, stigma, out-of-pocket costs of the opioid replacement medicine and structure of the available program.

Patients in rural areas have significantly fewer OST/ORT prescriber options and they travel longer distances to reach these services compared with metropolitan patients. Public rural patients travel seven to nine-fold the median distance to access these services compared to public metropolitan patients.⁴⁷

**CASE EXAMPLE 4****Medicine shortages risk patient's health**

A man in his 50s was regularly taking *Sevikar* (olmesartan/amlodipine), a combination tablet containing two different ingredients, to manage high blood pressure and other cardiovascular risks.

Upon presenting a repeat prescription to his pharmacist for supply, he was advised the strength of the medicine he was taking was unavailable and expected to be out of stock for several months.

Regulations prevent pharmacists from supplying tablets of alternate strengths or alternative dose forms, and there was a six-week wait for a medical appointment in the town.

The patient went without their medicines for several weeks while they phoned pharmacies in nearby towns to see if any had the medicine in stock. They eventually found a pharmacy in a town 108 km away that could fill the prescription and made a three-hour round trip to access their medicine.

Contributing factors to this medicine safety problem included inadequacy of medicine shortages regulations, waiting times to see a doctor and restrictions on pharmacist practice.





More than 50% of medicines errors occur at transitions of care.

Transitions of care

Transitions of care include movements of patients between home in the community, to and within a local or regional hospital, residential care settings and consultations with different healthcare providers.

During transitions of care, patients' medicines may be reviewed and changed multiple times.⁴⁸

Some transition points have been identified as being more prone to error, such as admission to a hospital, transfer from ED to intensive care, from intensive care to wards within the hospital and again from hospital returning to home or residential care. More than 50% of medicines errors occur at transitions of care,⁴⁹ and poor medicines management during or immediately after hospital admission increases the risk of readmission in the next month by 28%.

Accordingly, in Australia, various strategies have been trialled and implemented to improve medicine safety at transition points. These include medication reconciliation and discharge planning within hospital settings, electronic prescribing in hospital and community, personal electronic health records such as My Health Record and collaborative medicines review in the community home or residential care setting.⁵⁰

The involvement of pharmacists

in transitions of care is vital from a medicine safety perspective. It may involve a team of hospital pharmacists, community pharmacists, or pharmacists working in general practice or aged care facility. One study reported that community pharmacist involvement in transitions of care has a positive impact on medicine safety where interventions are undertaken as intended.⁵¹

Fredrickson and Burkett⁵² undertook a systematic review to characterise interventions which improve medicine safety in the transition from the acute hospital attendance to residential aged care. Continuity of medicine management upon discharge from hospital required that the community healthcare team received the following: medicines ideally in an appropriate dose administration aid, an accurate, current medicines administration chart or order comprehensive and accurate discharge medicines information.

This is significant as Australian studies have demonstrated that medicine administration errors occur in 20% of patients discharged from hospital to residential aged care, more than 60% of patients discharged to aged care do not have a current medication chart, and up to 40% do not have their new medicines available in time for their first scheduled dose.⁵²

IMPROVING MEDICINE SAFETY AND PATIENT CARE

IN RURAL AND REMOTE AUSTRALIA

This report has identified the impact of medicine safety problems in rural and remote Australia. However, the causes of these medicine safety problems are complex and multifactorial.

Without a specific focus on the rural health workforce in Australia we will see little improvement in complex and chronic disease management, and we risk failure in delivering on the objectives of Australia's 2019 Long Term National Health Plan and unique National Medicines Policy.

Similarly, given the higher incidence of chronic health conditions and poorer clinical outcomes in rural communities, it is imperative that integrated health care emphasises greater collaboration between services.⁵³

A new way of providing primary care must be developed in order to improve health outcomes for people in rural areas and address the challenges (see **Tables 2 and 3**) in the primary care system in these locations.



TABLE 2

Strengths in rural and remote areas which provide opportunities to improve medicine safety

Aligned networks of capability across communities and regions will provide scale to support a strengthened platform for team-based multi-disciplinary care, enabling workforce and care redesign and incorporating technological and digital health enablers.



Accessibility of pharmacists

Community pharmacists are consistently identified as very accessible health professionals as community pharmacies are often open on more days of the week and for longer hours than other health professionals. However, access alone need not generate impacts on patient health outcomes, nor on medicine safety. Rural pharmacists see the benefit to their communities of providing expanded pharmacy services.⁵⁴

Barriers to providing expanded pharmacy services include:

- Workforce shortages
- Inadequate workforce incentives
- Inadequate access to training.

Enablers include:

- Community relationships
- Clear community needs
- Benefits of filling gaps created by absence of other health service providers.



Doctor of Pharmacy

Pharmacy education may change as the proposed Doctor of Pharmacy (Pharm. D.) degree is developed and implemented in Australia.

This degree should be focused on clinical pharmacy and practice competencies and incorporate longer placements to better equip pharmacists to contribute towards the health outcomes of their communities. It would be expected that scope of practice fulfilment would occur, and subsequent award increases to address low remuneration of Australian pharmacists.



Digital connections

Digital health offers opportunities to overcome the tyranny of distance for rural and remote patients. Australia's National Digital Health Strategy proposes 'safe, seamless and secure: evolving health and care to meet the needs of modern Australia'.

Benefits from greater uptake and participation to achieve the proposed health outcomes include:

- Health information that is available whenever and wherever it is needed
- Health information that can be exchanged securely
- High-quality data with a commonly understood meaning that can be used with confidence
- Better availability and access to prescriptions and medicines information
- Digitally-enabled models of care that improve accessibility, quality, safety and efficiency.

Although information is increasingly becoming available, faster adoption is needed for the full benefit to be realised. Access to more information may lead to the need for upskilling of pharmacists, changes to pharmacy education and funding for the increase time to synthesise the information.

TABLE 3

Weaknesses in rural and remote areas
which must be addressed to improve medicine safety

Workforce shortages

There are known pharmacist workforce shortages in rural and remote areas (see Figure 3).^{6,55}

This has been identified as a major contributor to poorer health outcomes experienced by Australians living in rural and remote areas. Challenges for rural and remote health professionals include a higher workload than their regional and metropolitan counterparts, exacerbated by short staffing, difficulty accessing relief pharmacists (locums), a wider range of duties, and being a sole practitioner.⁵⁶

In addition, geographical distance, cost of travel and accommodation, and inability to replace staff on leave are factors that may interfere with the ability to attend educational training and conferences for professional development.

Viability in primary care

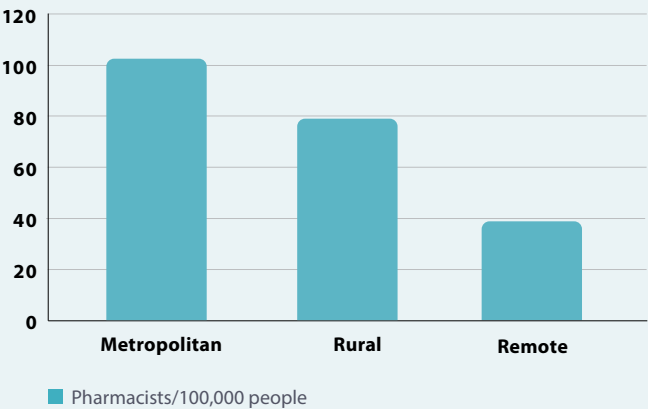
Community pharmacies and general practices in rural and remote Australia report ongoing financial hardship. Concerns of viability impair the attraction and retention of primary healthcare providers in rural and remote areas.⁵⁷

Pharmacist training

During semi-structured interviews with pharmacists as part of the preparation of this report, further topics were identified to facilitate collaboration and cooperation across primary care.

These included basic upskilling in understanding ECGs, basic radiographs and the requirements of common pathology tests to facilitate faster and more precise referrals to appropriate health professionals. This could be provided formally as continuing professional development and some initiatives may benefit from inclusion in pharmacy intern training programs.

FIGURE 3: Australian distribution of pharmacist workforce⁶



Pharmacy assistant and technician training

Pharmacy assistants and technicians currently practice within both community and hospital pharmacy, and in Australia, do so under the supervision of a pharmacist.

Overseas, 'accuracy checking technicians', where a pharmacy technician completes the final check of a prescription after pharmacist's clinical review, have been employed for over two decades.

Klammer and Ensom⁵⁸ in 1994 questioned whether it was a pharmacist's registration or their education which made them more qualified to do a final check of repackaged medicines than a well-trained pharmacy technician.

Accuracy-checking pharmacy technicians are now integrated into practice in the United Kingdom, the United States of America, Canada, New Zealand and, of interest, in a hospital in Australia.

There is an opportunity for legislative changes to initiate accuracy-checking technicians in Australia and for regulatory bodies to ensure appropriate training and standards to fulfil this role.

This will allow time for pharmacists to spend on the provision of further professional services to provide better care and improved medicine safety outcomes in under-served rural and remote communities.



Inadequate recognition of the value of pharmacists

While having pharmacists empowered to use their full skillset is recognised as being potentially most beneficial in rural and remote communities, there may be barriers other than time and staffing such as the perceptions of other health professionals in the community.⁵⁹

Taylor and colleagues explored the perceptions of 122 Australian rural and remote health practitioners across Australia. Allied health practitioners chose on average 6.4 services that they felt would address unmet needs in their community. However, 18 GPs stated that pharmacists should not provide any expanded services, and GPs on average identified 1.4 services that pharmacists could provide to assist their community.⁶⁰

Links between general practice and allied health including pharmacy are poorly developed, and roles, training and capabilities may not be well understood.⁶⁰

The major barrier to pharmacists taking responsibility and accountability for medicines safety may well be the absence of funded case conferencing with the practitioners who have the most potential to benefit – prescribers.

A fundamental shift is required across all health professions' scopes of practice to deliver patient care that reduces health inequality.

Hossain and colleagues⁶¹ explored the perceptions of 'others' (including patients, GPs and nurses) to community pharmacist expanded services. Respondents identified that acceptability varied according to perceptions of the pharmacist's education and training, collaboration between the pharmacist and the GP, and accessibility of the pharmacy setting.

Poor medicine safety data

The need for rurally targeted research and research infrastructure extends to pharmacy service delivery models and clinical need, workforce training, capability and retention, and appropriate funding and remuneration models.^{31,62,63}

These are all critical to delivery of quality care and medicine safety.

Rural and remote pharmacists in Australia have an opportunity to significantly address the breadth of disadvantage afflicting many people living in rural and remote Australia.

Innovative models of care, available to rural and remote practitioners, should be adopted and implemented as a matter of urgency.



TABLE 4

Key areas to be addressed to resolve under-supply of pharmacists⁶

Personal characteristics	Worksite characteristics	Features of rural and remote practice which support retention
<p>Personal characteristics providing a good fit for rural and remote practice:</p> <ul style="list-style-type: none"> valuing being an accessible health professional and focused on helping people valuing better and broader relationships with patients and the healthcare team having a family and previous rural/remote practice experience. 	<p>Worksite factors that promote retention in rural and remote areas:</p> <ul style="list-style-type: none"> use of advanced skills access to continuing professional development suitable accommodation adequate locum support 	<p>Pharmacist recruitment and retention are linked to:</p> <ul style="list-style-type: none"> connection to the community having family in the community being welcomed and integrated into community life.

Addressing workforce shortages

Addressing workforce shortages requires strategies which consider the characteristics outlined in Table 4.⁶ Rural and remote pharmacists in Australia have an opportunity to significantly address the breadth of disadvantage afflicting many people living in rural and remote Australia. Innovative models of care, available to rural and remote practitioners, should be adopted and implemented as a matter of urgency. This includes supporting rural and remote pharmacists, with appropriate training in providing primary health services (e.g. mental health support), to work in collaboration with general practitioners and other rural/remote health practitioners, and thereby more effectively address the primary health care and medication management needs of patients.

Benefits: Pharmacists' participation in chronic disease management items



Reduced burden of illness for patients with chronic disease



Improved medicine use and reaching of treatment targets



Reduced adverse events and improved medicine safety for patients with chronic disease



Improved coordination of care for patients with chronic disease

Recommendation 01

Build rural and remote pharmacist workforce capacity and capability.

- 1.1 Establish accredited 'rural generalist' pharmacists, who are able to support rural and remote Australians through collaborative prescribing, pathology ordering and chronic disease management in collaboration with rural general practitioners.
- 1.2 Establish a workforce strategy and provide funding to attract and retain pharmacists in rural and remote Australia in primary care settings such as, community pharmacy, general practice, aged care facilities and Aboriginal Community Controlled Health Centres, as well as rural and regional hospitals.

Inter-professional communication and improving coordination of care

As referred to earlier in this report, pharmacists are often one of the only healthcare professionals in some rural and remote regions, therefore empowering pharmacists to practice using their full skillset as part of collaborative care teams could reduce the burden of medication misadventure.

Engaging independent consultant pharmacists on a regional basis to provide professional services across local communities could support workforce shortages that may also

be present.⁶⁴ This includes providing enhanced services, such as smoking cessation and increased vaccination services to reduce the burden on an already stretched general practice community.

As the most accessible health providers, pharmacists are well placed and willing to deliver a much greater role in Australia's health system. In regional, rural and remote Australia, where pharmacists may be the only health provider in a community, this role in the health system is especially

valued. Yet, recognition and integration of pharmacists into primary care in Australia remains generally poor.

A recent international systematic review reported that improved integration of pharmacists in primary care resulted in reduced use of unnecessary GP appointments and reduced ED attendance.⁶⁵

A comprehensive rural enhanced services program is fundamental to the integration of community pharmacists into primary care in Australia.

Benefits of utilising and building upon the accessibility of community pharmacies to improve consumer access to health services:

FOR PATIENTS



- Greater access to diverse range of health services, particularly in regional and remote communities, including in mental health and alcohol and drug services
- Better integration of pharmacists into multidisciplinary teams.
- Improved health through behaviour change from preventative health initiatives.
- Earlier diagnosis and referral of health conditions to enable more effective treatment and management of health issues.
- Reduced costs to access care.

FOR PHARMACISTS



- More proactive role in patient care.
- Increased utilisation of pharmacist skills, especially in case finding and health literacy improvements.
- Recognition of preventative healthcare role of pharmacists.
- Formal recognition of the role of community pharmacists as integral primary healthcare providers.

FOR AUSTRALIA'S HEALTH SYSTEM



- Address unmet population health needs.
- Increased consumer exposure to public health campaigns.
- Reduced health spending through delaying disease progression and/or spread.
- Improved access to healthcare across Australia.
- More equitable access to care.
- Reduced government costs associated with the delivery of care.

Benefits of a rural enhanced services program.⁵





Supporting health services that meet the needs of rural and remote Australians

Areas in rural and remote Australia with limited population often face challenges in accessing the full range of pharmacy services. Medicine safety could be improved by using telehealth for inter-professional communication and case conferences improving inter-professional communication.

• Screening and risk assessment

A number of researchers have investigated the impacts that pharmacists achieve. For example, Buss and colleagues⁶⁶ evaluated services provided in Australian community pharmacies such as clinical interventions and chronic disease screening and monitoring. They reported positive outcomes for medicines reviews, cardiovascular and diabetes awareness and understanding, and for the provision of assistance with smoking cessation and weight management. These outcomes are significant since obesity, cardiovascular disease and complications are leading causes of morbidity and mortality in Australia. In addition, they contribute to medicine safety as patients understand their medicines more fully, including purpose and interactions with other medicines. Pharmacists also assist consumers with the selection and purchase of medicines to assist in the management of minor or acute self-limiting conditions such as tinea, tension headaches, constipation and hay fever.

• Minor ailment scheme

Dineen-Griffin and colleagues⁶⁷ explored the impact of pharmacists on minor ailments and established that whilst community pharmacists in usual practice do impact patient outcomes, pharmacists engaged in a Minor Ailments Scheme trial made more appropriate referrals for 'red flag' symptoms and for prolonged duration of symptoms being treated by patients with non-prescribed medicines, and achieved greater symptom resolution rates. Given the reduced access to medical professionals in rural and remote Australia, utilising and supporting community pharmacies as triage and referral sites is an untapped opportunity in rural and remote Australia.

Commonly in these pharmacies, it is observed that the pharmacists deliver a wide range of health services (e.g. vaccination, diabetes screening, asthma checks) and the pharmacy is regarded as an important health, social and community hub. Similarly, pharmacists are recognised as early adopters of technology and increasingly use digital health systems such as My Health Record and Real Time Prescription Monitoring to identify and resolve medicine-related problems.⁶⁸

A rural pharmacy enhanced services program would support the delivery of services that are required within rural communities due to lack of access to healthcare professionals and increased disease burden.

Examples of these programs include:

- smoking cessation
- airways disease (e.g. asthma and COPD)
- screening and risk assessment (e.g. cardiovascular disease and diabetes)
- wound care
- mental health (triage and referral), including suicide prevention
- weight management
- telehealth services.

Recommendation 02

Encourage collaborative and enhanced pharmacy practice in rural and remote Australia.

- 2.1 Fund case conferencing, as recommended by the Medicare Benefits Schedule (MBS) Review Taskforce, to improve medicine safety through collaborative care.
- 2.2 Fund a Rural Pharmacy Enhanced Services Program for pharmacists to deliver health services not adequately available in rural and remote areas.

Expanding medication management review services

Pharmacists, when they review medicines and their use, act as a final ‘safety net’ for patients. Medicine reviews range from:

- standard pre-dispensing review of prescribed medicine
- more formal reviews conducted in the pharmacy
- MedsChecks for patients taking 5 or more medicines
- Diabetes MedsChecks for patients living with diabetes
- Home Medicines Reviews (HMR)
- and Residential Medication Management Reviews (RMMR).

Unfortunately, due to limited funding available in the Community Pharmacy Agreements for these programs there has been limitations placed on their delivery, placing patients at risk of medicine-related harm, due to restrictions on frequency of service, and limits placed on how many reviews a pharmacist can conduct in a calendar month. There can be challenges in access to, or provision of, these services.

Medication management reviews such as HMRs are undertaken by pharmacists who are credentialed to provide them.³¹ Available data on HMRs show that the level of service provision differs between states/territories and is not reflective of population numbers, with Tasmania having the highest and the Northern Territory the lowest.³¹

Hall and colleagues⁶⁹ discussed the issues faced in Northern Queensland in implementing HMR services in remote communities. Due to the cap placed on HMR services, the cost of accommodation and flying or driving to more remote communities limits provision of HMR services. To overcome these limitations, telehealth versions of HMR services have been trialled.

The group’s findings revealed that similar interventions were made in both the face-to-face and telehealth HMR services. The barriers they faced included needing another allied health provider to facilitate the telehealth connection and patients needing to travel to the telehealth site. Staff turnover at these remote sites is generally high so continuity of care and retraining are likely to be ongoing issues. It would be envisaged that with greater health care adoption of telehealth that these barriers would be reduced over time.

Medicine reviews by pharmacists are associated with a reduction in medicine costs due to reduced prescribing (reduced polypharmacy) and reduction in medical costs associated with medicine misadventure (GP visits and hospitalisation).

Medicines cost savings have variously been estimated to be approximately 9% per patient/year, or equivalent to a mean reduction of one medicine per patient.⁷⁰





Telehealth: medication management reviews

Since 1997, the Federal Government has funded medicines reviews by appropriately qualified pharmacists to reduce medicine-related harm. More recently, to address concerns and recommendations resulting from the Aged Care Royal Commission, accredited pharmacists are reimbursed to provide up to two “follow-up” medicine review services in the nine months following the initial review.⁷¹ This is especially helpful for patients with multiple chronic diseases and/or multiple medicines and multiple doses daily.

During the COVID-19 pandemic, telehealth has been explored as an avenue for the safe delivery

of medicines reviews. Hanjani and colleagues⁷² in a scoping review identified that telehealth is a feasible way of delivering medicine reviews and established that telehealth medicines reviews improved health and medicines use outcomes, were well accepted by patients, had high patient satisfaction and generated cost savings through saving travel costs and time.

Recommendation 03

Improve access to medication management reviews for rural and remote Australians.

- 3.1 Allow all patients to be able to access medication management reviews, permanently, via telehealth.
- 3.2 Fund rural and remote pharmacists to become accredited to undertake Home Medicines Reviews and Residential Medication Management Reviews.
- 3.3 Remove service caps for the provision of Home Medicines Reviews and Residential Medication Management Reviews to improve access to services in Modified Monash Model (MMM) 3 to 7 areas.

Supporting medicine safety through providing culturally safe care

Pharmacists can clearly play a role in delivery of targeted and responsive care. Integrating delivery of medicine and pharmacy services into Aboriginal Community Controlled Health Services (ACCHSs), such as described by Couzos and colleagues, the IPAC project,⁷³ is an example of this approach.

IPAC targets adults with chronic disease and at risk of developing medicine-related harm and will be evaluated against clinical and quality use of medicines outcomes, as well as stakeholder perceptions and cost-effectiveness. The underlying premise is that pharmacist services integrated within ACCHSs will deliver higher quality outcomes and greater service utilisation than usual care.

The development of culturally appropriate healthcare service delivery models, including medicine management services is crucial to addressing the high disease burden experienced by Aboriginal and Torres Strait Islander people.

• Improving medicine review services

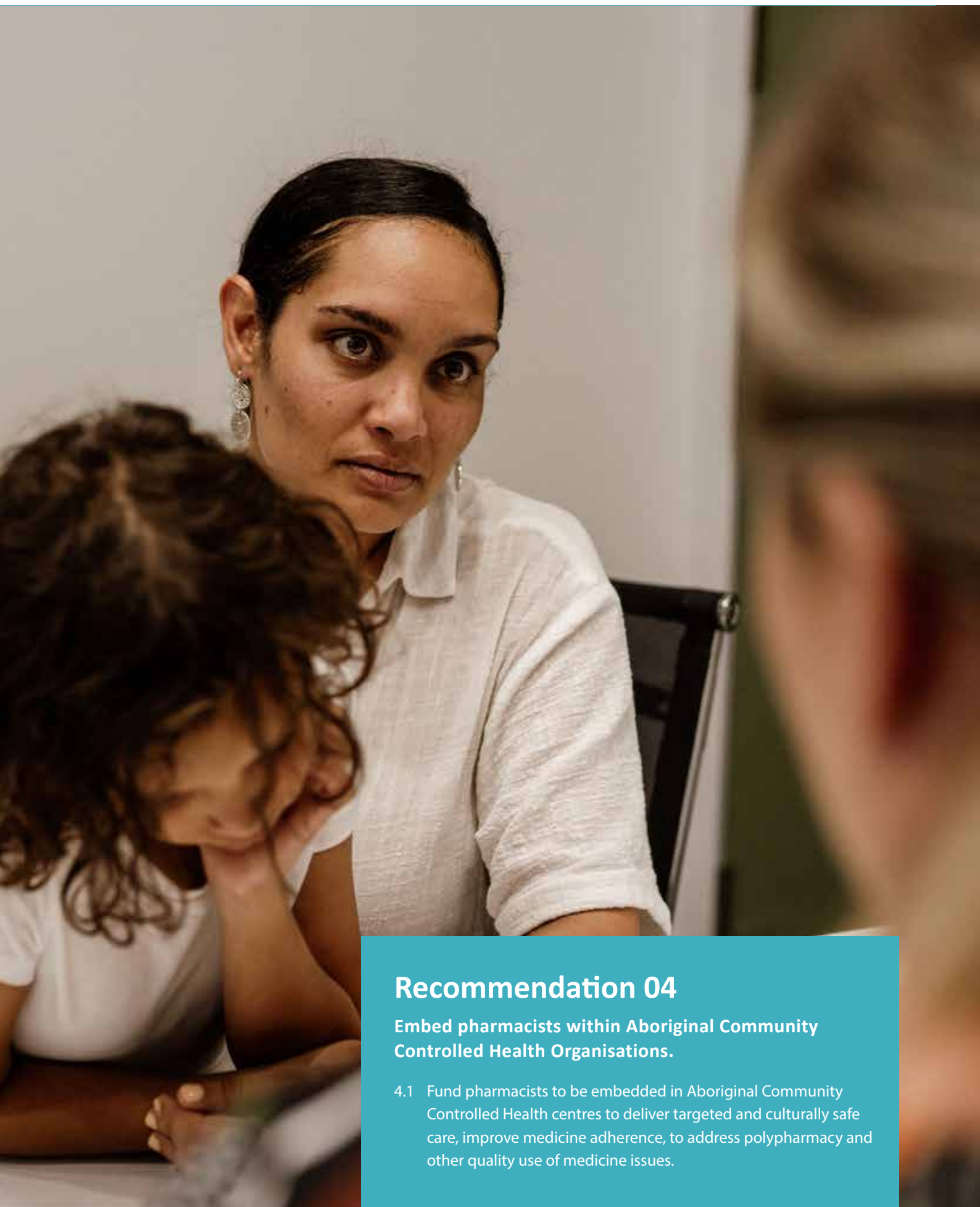
Home Medicines Reviews and MedsChecks are not effectively targeted towards Aboriginal and Torres Strait Islander people. Factors contributing to this include cultural and language barriers, 'rules' governing delivery of funded services (where and by whom) and funding models that discourage involvement of Aboriginal health workers – in short, a model of service delivery that is not culturally acceptable or well-integrated.^{74,75}

The Indigenous Medication Review Service (IMeRSe) study⁷⁶ is a two-year prospective study which aims to develop and evaluate the feasibility of a culturally appropriate medicine management service delivered by community pharmacists in collaboration with Aboriginal health workers in order to address administrative, cultural and other barriers to access by Indigenous people. Spinks and colleagues⁷⁷ have recently developed a set of clinical indicators to be used during medicines review to identify suboptimal care and prevent or manage medicine related issues that might otherwise lead to preventable hospitalisations.

• Supporting more of Australia's first people to become health professionals

Indigenous Australians are under-represented in all AHPRA-registered health practitioner categories (other than Aboriginal and Torres Strait Islander health practitioners), representing 1% of the overall total of registered health practitioners. Aboriginal and Torres Strait Islander pharmacists are 0.3% of all registered pharmacists (compared with medical practitioners 0.4% and nurses/midwives 1.3%). There have been only minor increases in Indigenous representation 2014-19 (Indigenous pharmacist increase 0.3-0.4%).⁷⁸

AHPRA's Aboriginal and Torres Strait Islander Employment Strategy 2020-2025⁷⁹ has formalised goals for increasing Aboriginal and Torres Strait Islander workforce participation (2% by 2025) through prioritising recruitment, culturally safe practices and workplaces, and investment in Aboriginal and Torres Strait Islander workforce engagement.



Recommendation 04

Embed pharmacists within Aboriginal Community Controlled Health Organisations.

- 4.1 Fund pharmacists to be embedded in Aboriginal Community Controlled Health centres to deliver targeted and culturally safe care, improve medicine adherence, to address polypharmacy and other quality use of medicine issues.

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Pharmacy should not be forgotten as an integral part of the rural community.

It involves an enormous capital investment from pharmacists but is often forgotten in government and broader health community decision making.

Mark Kirschbaum, Centre for Rural Health, University of Tasmania⁸⁷



Addressing gaps in medicine safety evidence and research

There is an urgent need for health practitioners, researchers and policy makers to have access to rural-specific data and research otherwise health service delivery decisions are based on Australia-wide or metropolitan data.

Increasingly, there is recognition of the inadequacy of doing so and recognition of the need for targeted approaches designed to address the unique and varied circumstances experienced in rural Australia.⁸⁰

Medicine safety issues are likely to occur with greater frequency in polypharmacy and complex care and this is linked to potentially preventable hospitalisations, with hospitalisation itself also linked to increased adverse medicine events.⁸¹ However, the rate of association of these interrelated events has not been empirically determined for rural Australians, and is likely to be exacerbated in rural Australia where access issues prevail.³¹

Rural health research is underfunded relative to the proportion of the population living rurally, particularly considering the level of health inequality and disease burden experienced by rural and remote residents. National Health and Medical Research Council

funding for projects aimed at delivering health benefits to rural Australians represented only 2.4% (\$11 million) of total funding in 2014 (\$450 million), up from 1% in 2000.⁸²

Funding issues aside, conducting research within the rural environment has its own challenges. Rural researchers have identified poor recognition of their work, fewer opportunities relative to city-based colleagues, high workloads and limited staffing, reduced collaborative and networking capacity, limited career progression,⁸³ and ethical review and governance⁸⁴ as impediments to the maintenance of a sustainable rural research environment.

With regard to Aboriginal and Torres Strait Islander populations, addressing research gaps requires a collaborative, inclusive approach that has often been lacking.⁸⁵

A robust evidence base is essential. Consideration of the features of rural delivery models for a range of services (including aged care, mental health and diabetes care) has highlighted the importance of service evaluation.⁸⁶

Recommendation 05

Develop national minimum medicine safety standards and quality benchmarks.

- 5.1 Establish national minimum medicine safety standards and quality benchmarks, consistent with the Australian Government's commitment to clinical governance to inform, support and advance Australia's medicine safety agenda.
- 5.2 Fund the Australian Institute of Health and Welfare (AIHW) to measure and monitor progress and report on the extent of medicine-related harm, particularly in rural and remote Australia.

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The seven million
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and remote Australia
home, deserve better.



