Older Australians: Trends and Impacts of Alcohol and Other Drug Use

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Preventing harmful drug use in Australia

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FINAL REPORT

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Contents **Page**

Acknowledgments 6

Commissioning the report 6

Executive summary 7

Chapter One: Introduction **16**

1.1 Background 16

1.2 Project overview 18

1.3 Terminology 19

1.3.1 Alcohol and other drugs (AOD) 19

1.3.2 Older Australians 19

Chapter Two: Literature review **21**

2.1 Prevalence of alcohol and other drug use amongst older Australians 22

2.1.1 Alcohol use 22

2.1.2 Illicit drug use 28

2.1.3 Misuse of pharmaceuticals 33

2.2 Alcohol and other drug use use amongst future generations of older Australians 35

2.3 Why older people use alcohol, illict drugs or misuse pharmaceutical drugs 38

2.3.1 Alcohol use 38

2.3.2 Illicit drug use 40

2.3.3 Misuse of pharmaceutical drugs 42

2.4 AOD screening instruments 44

2.5 Alcohol-related harms and benefits 47

2.5.1 Alcohol and cancer 49

2.5.2 Alcohol and cardiovascular disorders 50

2.5.3 Alcohol and cognitive function 51

2.5.4 Alcohol and depression 53

2.5.5 Alcohol and trauma 53

2.5.6 Alcohol and concomitant medication use 55

Page

2.5.7 Alcohol-related hospitalisations 58
2.6 Potential harms related to illicit drug use amongst older people 61
2.7 Potential harms associated with the misuse of pharmaceutical drugs 67
2.8 Physiological changes that occur with ageing 71
2.9 Potential economic costs of AOD use amongst older Australians 72
2.9.1 AOD treatment and opiate substitution therapies (OST) 73
2.9.2 Homelessness 75
2.9.3 Aged care 76
2.9.4 Hospital costs 77
2.9.5 Ambulance costs 78
2.9.6 Over-the-counter medications 78
2.10 Receptiveness of older people to health related messages and treatment initiatives 79
2.11 Summary 88

Chapter Three: Key informant research investigating alcohol and other drug use amongst older Australians

3.1 Introduction 90
3.2 Methods 90
3.2.1 Development of the key informant questionnaire 90
3.2.2 Components of the key informant questionnaire 90
3.2.3 Recruitment and interview protocol 91
3.2.4 Sample 92
3.3 Results 92

Chapter Four: Discussion and conclusion 107

Glossary of terms **112**
Glossary of acronyms **113**
Appendices **114**
References **119**

List of Tables **Page**

Table 1: Proportion of people aged 55 and older who drank above the 2009 NHMRC guidelines for lifetime-risk by age and sex, 2007-2016 24

Table 2: Proportion of people aged 55 and older who drank above the 2009 NHMRC guidelines for single-occasion risk by age and sex, 2007-2016 265

Table 3: Prevalence of drinking at levels of very high-risk of alcohol-related harm (consumption of 11 or more standard drinks) by age, 2010-2016 26

Table 4: Prevalence of lifetime-risk and single-occasion risk of alcohol-related harm amongst Indigenous and non-Indigenous Australians by age and sex 27

Table 5: Recent use of cannabis, ecstasy, meth/amphetamine cocaine amongst Australians aged 45 years and older, 2001-2016 30

Table 6: Recent misuse of pharmaceuticals by age and sex, 2001-2016 34

Table 7: Common medications used by older people contraindicated for use with alcohol 57

Table 8: Alcohol-related Emergency Department presentations amongst older Australians by age and sex, 2005/06 - 2011/12 59

Table 9: Risks associated with the use of cannabis, cocaine, meth/amphetamine, ecstasy and heroin 61

Table 10: Illicit drugs and commonly used medications that may cause adverse reactions 66

Table 11: Commonly misused pharmaceutical drugs and possible risks 68

Table 12: Questions included in the key informant questionnaire 91

List of Figures **Page**

Figure 1 Proportion of people aged 65 and older who drank above the 2009 NHMRC guidelines for lifetime-risk by age and sex, 2014-2015 24

Figure 2 Age distribution of illicit drug users and the general population aged 14 or older, 2001 and 2016 (%) 31

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Commissioning of the report

This project was commissioned by the Commonwealth of Australia, Department of Health to review the evidence currently available relating to alcohol and other drug use amongst older Australians.

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Executive summary

Australia, like other developed countries, has a rapidly ageing population. While in 2016 only 15% of Australians were aged 65 and older, it is expected that by 2056 this figure will increase to 22%. People are also living longer and in recognition, older Australians (defined here as 65 years and older) have been categorized into three distinct age groups: 65-74 years (young-old), 75-84 years (older-old) and 85+ years (oldest-old). However, these definitions are not applicable for all older Australians and as Aboriginal Australians have a reduced life expectancy in comparison to the general population, the term older Australian typically refers to an Aboriginal person once they reach 50 years of age.

Not only does Australia have an ageing population but we are also witnessing an important demographic milestone as the first of the 'baby boomer' cohort, born in the postwar period between 1946 and 1966, near, reach or pass retirement.

This is significant for many reasons. Firstly, this group is "challenging traditional assumptions of passive and dependent ageing" (Kendig, 2017, p. 20). Secondly, they appear to have more liberal attitudes towards psychoactive drugs than any previous generation and thirdly, have higher levels of illicit drug use and misuse of pharmaceuticals than any previous generation.

The aim of this this report was to explore the impact of alcohol, illicit drugs and the misuse of pharmaceutical drugs (AOD) amongst older Australians. The report includes a detailed literature review and the results from a survey that took place in August 2017 with 18 key informants from across Australia. The aim of the literature review was to: examine rates of AOD use amongst older Australians; review reasons for AOD use; describe some of the problems associated with AOD use; examine the potential economic costs associated with AOD use amongst older Australians; and finally to examine the responsiveness of older people to AOD related health advice.

Rates of alcohol, illicit drugs and the misuse of pharmaceutical drugs amongst older Australians

Alcohol use

- In 2016, almost 1 out of every 4 (24.3%) males and 7.7% of females, aged 65-74 was drinking, on average, more than 2 standard drinks per day.
- In 2016, more than 1 out of every 5 (20.9%) males and 4.6% of females aged 65-74 was drinking, on average, more than 4 standard drinks per day at least monthly, but not as often as weekly.
- In 2015, 19% of Indigenous males and 4.7% of Indigenous females aged 55 and over were drinking, on average, more than 2 standard drinks per day.

Illicit drugs

- In 2016, 6.3% of Australians aged 65 and older had used an illicit drug in the past 12 months. In 2001 this figure was 3.9%.
- Between 2001 and 2016, the proportion of males aged 65+ using cannabis in the past 12 months more than doubled from 0.6% to 1.3% and the rates amongst older women increased five fold from 0.1% to 0.5%.
- In 2016, amongst Australians aged 55 and older 0.2% had recently used cocaine, 0.2% methamphetamine and 0.2% had recently used ecstasy[1]

Misuse of pharmaceutical drugs

- In 2016, 4.9% of women and 4.7% of men aged 65 and older reported using a pharmaceutical drug for non-medical purposes in the past 12 months.
- In 2016, more Australians aged 65 and older had recently misused pharmaceuticals than the numbers who had used cannabis, cocaine, meth/amphetamine or ecstasy combined.

Reasons for AOD use amongst older people

Alcohol

- Aetiology for alcohol use will vary from early-onset versus late-onset typology.

[1] These figures from the 2016 NDSHS have a relative standard error of 25% to 50% and should be used with caution

- Older people drink alcohol to socialize, to relax, to celebrate special events, and to deal with grief. Problematic and late-onset alcohol use is likely to be prompted by psychosocial factors such as grief, loss, loneliness, homelessness, retirement, pain and/or depression.
- With continued improvements in medicine, the current generation of older Australians is much healthier than previous generations. While this is a laudable improvement, paradoxically this has weakened one of the major motivators for a reduction in alcohol use-namely declining health with increased age.

Illicit drugs

- There is very little research in Australia on the reasons that older people choose to take illicit drugs. There is some suggestion that an early-onset, late-onset typology may apply to illicit drugs. For early-onset survivors their continued use may have become habitual and compulsive or for others their drug use is often quite unremarkable and is seen as a normal aspect of life. Those who commence use later in life appear to have been prompted by issues of grief, loss or through the formation of new relationships with partners who use illicit drugs.

Misuse of pharmaceuticals

- The limited literature suggests that rather than misusing pharmaceuticals to "get high" most older people misuse pharmaceuticals to enhance or extend effects in dealing with conditions, for which the drugs were originally prescribed. This misuse may also result in ongoing dependency and prompt continued use.

Potential problems associated with AOD use amongst older people

- As people age, their ability to metabolise drugs decreases, as does their body's water to fat ratio which can result in: increased drug concentrations; reduced liver blood flow; and, decreased liver enzyme efficiency. There are also age-related changes in neurotransmitter systems that can mediate drug effects in the brain. This means that compared to younger people, a similar dose of alcohol, illicit drugs or pharmaceuticals can cause greater impairment increasing the risk of significant harm (e.g. falls).

- The consequences resulting from falls suffered by older people are usually more serious and longer lasting than those associated with younger people. More complex medical conditions, secondary medical issues and longer recovery periods can lead to comparatively longer periods of hospitalisation. The longer recovery period and sometimes-permanent limitations on lifestyle can have significant impacts on mental health.

Alcohol

- There is a well-established association between alcohol and more than 60 types of diseases, cancer, depression, and falls.
- Heavy prolonged use of alcohol can have indirect effects on brain function resulting in problems such as Wernicke-Korsakoff syndrome and may also have a direct neurotoxic effect on the brain producing a form of 'alcoholic dementia'.
- Alcohol is contraindicated for many medications commonly prescribed for older people and concomitant use can have serious consequences such as increasing the risk of falls, motor vehicle accidents, gastric inflammation, liver damage and overdose.
- The presumption that moderate levels of alcohol have a protective effect on all-cause mortality and have cardio-protective benefits remains contentious.
- Rates for alcohol-related Emergency Department presentations have increased for older men and women since 2005/06. There are higher rates of admission amongst older women than older men and higher rates with increasing age.

Illicit drugs

- Engaging in long-term illicit drug use increases the window of exposure to a range of illnesses and diseases.
- Poly-drug use is common and this increases the likelihood of a range of adverse outcomes including overdose.
- Many illicit drugs are contraindicated for common prescription medications and when combined can result in adverse reactions.
- Older people with a history of illicit drug use are likely to be biologically much older than their chronological age and have a range of chronic co-occurring illnesses.

- Many older people with a history of illicit drug use delay or avoid accessing health services because of stigma and previous experiences of discrimination by medical staff. This lack of engagement with health services can result in lost opportunities to assist individuals in improving their health.

Misuse of pharmaceutical drugs

- Harms may be compounded by the mistaken belief that as a doctor has prescribed a drug it is therefore 'safe'.
- Misuse of opiate-based medications can lead to complications with pain management, dependence, hyperalgesia, gastro-intestinal disease, clotting disorders, liver and kidney problems.
- Benzodiazepines, sedatives and hypnotics have been linked with increased risk of falls, confusion and hip fractures.
- Pharmaceuticals pose significant risks if not taken as prescribed e.g. injecting a substance which was designed to be swallowed can lead to severe circulation problems.
- Poly-pharmacy is common and there is a positive correlation between the number of medications used and the potential for medication-related harms such as toxicity, dysfunction, drug-drug interactions, dependence, insomnia and tolerance.
- Many older people with a history of misusing pharmaceutical drugs and in particular those with a history of injecting pharmaceutical drugs often delay or avoid accessing health services because of stigma and previous experiences of discrimination.

Economic costs associated with problematic AOD use amongst older Australians

- The literature examining the costs of AOD use among older people in Australia is negligible.
- In 2010, the cost of alcohol-related harm in Australia was reported to be $36 billion and it has been estimated that illicit drug use cost in excess of $8.2 billion annually. AOD use amongst older Australian will contribute to these costs.

Receptiveness of older Australians to health related messages on AOD use and AOD treatment

- Older men and women are receptive to discussing and receiving alcohol-related health related information from both their GP and pharmacist. These clinical conversations happen rarely.
- Shame and embarrassment are significant barriers to older Australians initiating conversations about alcohol use with health practitioners.
- Shame, stigma and discrimination are significant barriers to clinical conversations about illicit drug use and the misuse of pharmaceuticals.
- Advances in e-based health promotion strategies may help overcome transport and mobility issues faced by many older people. Such approaches may also facilitate access to health information for those unwilling to discuss their concerns or ask questions about their AOD use with their GP or other health provider.
- Health related messages on alcohol, illicit drugs or the misuse of pharmaceuticals need to be targeted, tailored and age-specific and may need to combat scepticism and cynicism amongst older people and ageist attitudes amongst some health professionals.
- Evidence from overseas indicates that older people do as well, if not better than younger people in alcohol-related treatment. There is only limited research related to other drugs, making conclusions about efficacy difficult.

Key informant interviews

The major issues arising from the key informants interviews were**:**

- AOD associated co-morbidity among older Australians is complex, problematic and under-recognised.
- There is a high degree of stigma associated with AOD use amongst older people and this may prevent people from seeking assistance and compound poor health outcomes.
- There is a need for targeted and tailored prevention initiatives delivered across multiple settings.

- There are limited treatment options for older people and this is further exacerbated in rural and remote areas and for Aboriginal Australians.
- There is a need to raise awareness of AOD use with older Australians and with professionals working with older people.
- Inter-sectoral partnerships across AOD and ageing sectors are required to develop coordinated and comprehensive responses.
- There is an ageing cohort of opiate substitution clients transitioning into aged care. These clients have complex issues. Enhanced clinical guidelines and transition strategies/procedures are required.
- Adoption of the principles underpinning the Cultural Respect Framework need to be applied to AOD use amongst older Indigenous Australians with significant involvement from Aboriginal elders.
- Epidemiological research on AOD use amongst older Australians is required as is research to establish evidence based best practice in relation to prevention and treatment initiatives.

Implications

The ageing of the population and the current levels of AOD use amongst older Australians, represent a significant public health issue, which projections suggest will greatly increase in coming years. While, over recent years, there has been increasing attention on alcohol use amongst older Australians the use of illicit drugs by older adults remains largely unacknowledged and ignored. This needs to change, and to successfully address AOD use by older people, we must accept that drug use has no age limits. This will require a paradigm shift in our beliefs and concepts about ageing.

Recommendations

1. Tailored, targeted prevention initiatives that are age-specific and focused on the specific risks and harms associated with AOD use amongst older people need to be developed. These will need to: be relevant to diverse groups of older Australians across the country and focus on the unique motivations that influence the behaviour of older people. They

may also need to compete against ageist attitudes amongst some health professionals and some degree of cynicism and scepticism amongst older Australians.

2. AOD use and ageing must be acknowledged within health, welfare and ageing, national and jurisdictional policies, strategies and action plans with the aim of improving access to treatment, education, information, and services for older people.
3. Ensure that screening and assessment for AOD use and related problems amongst older Australians becomes systemic and routine across all health settings.
4. Incorporate information on 'alcohol, illicit drugs, the misuse of pharmaceuticals and healthy ageing' into professional education and training for all health and welfare professions at the pre-service and post-service levels. Training should also cover the issues of stigma and discrimination to better ensure that 'trust' between older patients and health practitioners can occur. Unless this happens harm will be compounded.
5. Establishment of working parties at state and national levels and the development of interdisciplinary teams who have specialised knowledge and clinical expertise in the assessment and management of older people with complex comorbid (including AOD use) issues. Such working parties are required to ensure that a multi and interdisciplinary approach to best understand and respond effectively to alcohol and other drug use amongst older Australians occurs.
6. Increased funding for research on AOD use amongst older people. In particular longitudinal and ethnographic research is required that examines:
    a) The prevalence of alcohol, illicit drug use and the misuse of pharmaceuticals, trajectories of use and the related bio-psycho-social harms experienced amongst different groups of older Australians i.e. Aboriginal and Torres Strait Islander peoples, older people in rural and remote communities, and in Culturally and Linguistically diverse (CALD) communities;
    b) The extent, variability and impact of long-term stigma and discrimination, among those older Australians using, and experiencing harms related to, alcohol, illicit drugs or misusing pharmaceuticals.
    c) The prevalence and outcomes of the early-onset late-onset typology for alcohol, illicit drugs and the misuse of pharmaceuticals.
    d) Effectiveness of different treatment models and options (i.e. in-patient versus out-patient versus out-reach versus peer-support; mixed-age versus age-specific etc.) for different groups of older people and for those who have co-occurring physical and mental health issues or other impairment.

e) Effectiveness of different prevention messages and the optimum dissemination methodology.

Conclusion

While AOD use amongst older Australians remains low in comparison to the rest of the population, there are some worrying trends. People in their 60's are now the age group most likely to consume 5 or more standard drinks on at least five days per week and more males and females in their 60's had used an illicit drug in 2016 compared to 2013. Additionally, females aged in their 50's (who represent the next generation of older Australians) are now the most likely age group of females to drink more than 2 standard drinks per day.

In light of these findings and with the ageing of the population, innovative prevention and intervention approaches targeted at potential older at-risk Australians are required. Such approaches should consider elder-specific patterns of AOD use and the distinct medical and mental health issues relevant to older people. Both the health, alcohol and other drug and gerontology fields need to work collaboratively to ensure that we develop a much greater level of understanding about AOD use amongst older Australians. Such an understanding is required to ensure that time- and cost-effective methods of screening, intervention and prevention options are developed so as to provide an optimal response to a potentially vulnerable and growing population. In doing so we can enhance 'healthy ageing' and simultaneously mitigate the 'collision of conundrums' of AOD and ageing.

Chapter One: Introduction

1.1 Background

Since the latter part of the twentieth century, population ageing has been a defining characteristic of all developed and many developing nations (Evans, 2000; Lynskey, Day, & Hall, 2003; United Nations Department of Economic and Social Affairs Population Division, 1998). In 1995, there were 566 million people aged 60 years or older constituting 10% of the world's population (United Nations Department of Economic and Social Affairs Population Division, 1998). The World Health Organization (WHO) estimate that the proportion of the world's population aged over 60 will increase to 22% in 2050, representing 2 billion people (World Health Organization, 2015b).

In Australia, data from the Australian Bureau of Statistics indicate that in December, 2016, the population in Australia was 24,385,600 persons (Australian Bureau of Statistics, 2017b). In 2016, Australians aged 65 years and older represented 15.2% of the population (Australian Bureau of Statistics, 2017b) and this figure is expected to increase to 22% in 2061 and 25% in 2101 (Australian Bureau of Statistics, 2013) representing approximately 6.5 million people.

The population shift evident in Australia and elsewhere is due to a reduction in birth rates and a simultaneous increase in life expectancy. In the year 2013/15 the average life expectancy at birth for Australians was, 80.4 years for males and 84.5 years for females (Australian Bureau of Statistics, 2016b) placing Australia in the top ten OECD countries (OECD (Organisation for Economic Co-operation and Development), 2016).

As people reach old age they are at higher risk of developing chronic diseases, which may result in disability and death. In 2016, there were 158,504 deaths in Australia (Australian Bureau of Statistics, 2017c) and the leading causes of deaths were: ischaemic heart disease, dementia (including Alzheimer's), and cerebrovascular diseases (Australian Bureau of Statistics, 2017c). The WHO have concluded that ischaemic heart disease, stroke and other types of cardiovascular disease caused 31% of all deaths globally and noted that harmful alcohol use is associated with all of these diseases (World Health Organization, 2017), Long-term risky alcohol use has also been linked to many other conditions common to older populations such as mouth, pharyngeal, liver, colorectal and breast cancer, and has

been cited as the seventh leading risk factor for people aged 50-69 years of age for total burden of disease (Shield & Rehm, 2015).

Apart from caffeine, alcohol is the most widely used psychoactive recreational drug in Australia (Australian Institute of Health and Welfare, 1999, 2002, 2005a, 2005b, 2007, 2017d). In the financial year 2015/16, the average Australian aged 15 years or older consumed 9.7 litres of alcohol (Australian Bureau of Statistics, 2017a). The net government revenue from alcohol taxation for the 2015/16 financial year was $6.2 billion which represents a billion dollar increase from a decade earlier (Australian Institute of Health and Welfare, 2007; Parliament of Australia, 2015). However, this revenue covers less then half the cost of alcohol-related harm, which in 2010 was estimated at $14.4 billion (Manning, Smith, & Mazerolle, 2013).

Based upon results from the 2016 National Drug Strategy Household Survey (NDSHS), about 77% of the Australian population aged 14 years and over had consumed alcohol in the past 12 months, and 5.9% drank alcohol on a daily basis (Australian Institute of Health and Welfare, 2017d). Since 2004, the proportion of people exceeding lifetime risk guidelines have declined, but for the first time, more women aged 50-59 years of age (13.0%) are exceeding the lifetime-risk alcohol guidelines than women 18-24 years of age (12.8%) (Australian Institute of Health and Welfare, 2017d).

Similarly, while recent use (defined as use in the past 12 months) of illicit drugs, amongst younger people (14-29 year olds) has decreased since 2001, the opposite has occurred for Australians over 50. For people aged in their 50's the rates of illicit drug use have increased from 6.7% in 2001 to 11.7% in 2016. Similarly, for those 60 years and older the rates have increased from 3.9% in 2001 to 6.9% in 2016.

There has also been a significant increase from 2013 to 2016 in the lifetime prevalence of illicit drug use amongst Australians aged 60 or older. In 2013, 25% of males and 18% of females had used an illicit drug in their lifetime, and in 2016, these figures increased to 30% of males and 22% of females (Australian Institute of Health and Welfare, 2017d).

Data from the 2016 NDSHS also indicates that 2.5 million people have misused a pharmaceutical drug in their lifetime with pain killers/analgesics and opioids the most

commonly misused class of pharmaceuticals. While, the highest rate of misuse was among young adult (18-24 year old) males, use of 'pain killers/analgesics and opioids' was most common among people in their 40's (Australian Institute of Health and Welfare, 2017d).

With the significant ageing of the Australian population, even if current patterns of alcohol and other drug consumption in Australia remain stable it is likely that there will be an increase in the number of older Australians at-risk of alcohol, illicit and pharmaceutical misuse related problems simply because of the increased numbers of older adults. However, if, as some researchers have suggested, there is likely to be an increase in drug usage amongst future generations of older people (Degenhardt, Lynskey, & Hall, 2000) there may well also be a concomitant increase in the prevalence of drug related problems. With this in mind, alcohol and other drug use amongst older Australians is poised to become an increasingly important public health issue.

1.2 Project overview

This project involved seven components. These were:

1. Formation of an expert reference group which assisted with: identifying key informants at the national level who could be contacted for input (see component 5 below); identifying grey literature; and, reviewing the draft and the final report. The members of this expert reference group were: Professor Steve Allsop (National Drug Research Institute, Curtin University), Mr. Gary Kirby (Director, Prevention Services, Mental Health Commission, WA), Ms. Sheila McHale, (CEO of Palmerston Association Inc.), and Mr. Mark Teale, (CEO, Council on the Ageing (COTA) Western Australia).
2. Critical review of the international research literature on the problems associated with long-term alcohol use and the effects on individuals' cognitive function, rates of drug use, reasons for drug use, and prevalence of AOD use amongst different cohorts of older people.
3. Critical review and examination of the impact of AOD use to ascertain indirect impact of AOD use i.e. AOD related accidents and injuries and any economic costs associated with increased need for residential age care or increased need for AOD related treatment places.

4. Critical review of the international and Australian research literature on the receptiveness of older people to health related messages and optimum measures and responses to reducing potential harm associated with AOD use amongst older people.
5. Interviews with key informants (N=18) on critical issues related to AOD use and ageing and potential opportunities in raising awareness about AOD use amongst older people and health providers.
6. Development of a final report and formulation of recommendations including identification of any gaps in the available evidence.

1.3 Terminology

1.3.1 Alcohol and other drugs (AOD)

In this report the term "alcohol and other drugs" refers to alcohol, illicit drugs and the misuse of pharmaceuticals. Illicit drugs and the misuse of pharmaceutical are defined in this report as:

1. Illicit drugs: drugs that are prohibited from manufacture, sale or possession in Australia. For example, cannabis, cocaine, heroin and amphetamine-type stimulants
2. Misused pharmaceutical drugs: drugs that are available from a pharmacy, over the counter or by prescription, which may by subject to misuse - for example opioid-based pain relief medications, opioid substitution therapies (OST), benzodiazepines, over-the-counter (OTC) codeine and steroids. (Australian Institute of health and Welfare, 2017 b).

1.3.2 Older Australians

The term older-person has been defined by the United Nations (2003) as any person over 60 years of age. However, in many countries, including Australia, the United Kingdom and the United States, the term older-person has been used to refer to anyone aged 65 years and older. As this definition can encompass people whose ages vary by many decades, the term older-person has been further divided into three age groups (Australian Association of Gerontology, 2005; Broe, 2004; Maddox, 1985; Selvanathan & Selvanathan, 2004). The

oldest of the three groups, described as the *oldest-old* are people aged 85 years and older. The *older-old* group includes those people 75 to 84 years of age and the *young-old*, are aged 65 to 74 years (Broe, 2004). However, these definitions are not applicable for all older Australians and as Aboriginal Australians have a reduced life expectancy in comparison to the general population, the term older Australian typically refers to an Aboriginal person once they reach 50 years of age (Department For Health and Ageing Government of South Australia, ND). Therefore in this report the term older Australian will generally refer to non-indigenous Australians aged 65 years and older and Aboriginal Australians aged 50 years and older.

Chapter Two: Literature review

The literature review commences with a discussion on the prevalence of alcohol, illicit drugs and the misuse of pharmaceutical drugs amongst older Australians. Next the review will examine the research literature on alcohol and other drug use amongst future cohorts of older Australians. Following this is an overview of the possible reasons that may explain why older people use alcohol, illicit drugs and/or misuse pharmaceuticals. A discussion on available alcohol and other drug screening instruments and their appropriateness for use with older people is followed by a review of the research on alcohol, illicit, and pharmaceutical misuse-related harms with a particular focus on older people.

Some of the physiological changes that occur with ageing and how these impact on AOD use amongst older people will then be discussed prior to examining some of the potential economic costs associated with AOD use amongst older Australians. The review will then conclude with an examination of the receptiveness of older people to AOD health messages and treatment initiatives.

The publications included in the literature review came from searching the following databases: ProQuest, Science Direct, Medline, PsychLit and AgeLine. Searches of the National Institute of Alcoholism and Alcohol Abuse (NIAAA) database, Cochrane Collaboration and the Internet (Google and Google scholar) were also undertaken. In addition, articles were sourced from the reference lists of accessed articles and organisations such as the Australian Institute of Health and Welfare, Government of Australia, Australian Bureau of Statistics, WHO, United Nations, NIAAA. This process resulted in excess of 400 publications being included in the report.

The review of the literature commenced on 15 July 2017 and closed on 15 September 2017. Only publications that were printed in English were included in the report.

2.1 Prevalence of alcohol and other drug use amongst older Australians

2.1.1 Alcohol use

Australia

The current cohort of *young-old* Australians was born during the years 1943 to 1952, the cohort of *older-old* Australians between 1933 and 1942 and the *oldest-old* Australians were born in the years prior to 1932. These were periods of tremendous social upheaval, which included the Great Depression and the Second World War.

During the 1930's the temperance movement was very influential in many countries, including Australia, and there were strict restrictions on both the opening hours of licensed premises and the numbers of liquor licenses issued (McAllister, Moore, & Makkai, 1991). Such restrictions, coupled with the reduction in disposable income as a result of the economic effects of the Depression, meant that the consumption of alcohol in Australia was at an all time national low (McAllister et al., 1991; Norton, 1983). Consequently, in comparison to later generations, Australians who grew up during this time had fewer opportunities to drink heavily during their young adult lives (Hall & Degenhardt, 1998).

From 1930 until 1982, there was a steady increase in the apparent consumption of alcohol in Australia. This peaked in 1982 at 9.8 litres of alcohol per capita (World Drink Trends, 2004). This declined to 7.3 litres of alcohol per capita in 2001/02 (World Drink Trends, 2004). In 2015, the apparent consumption of alcohol by Australians aged 15 years and older was 9.7 litres per person per year, above the OECD average of 9.0 litres, placing Australia as 14th overall in all OECD countries, but having the second highest level of consumption amongst English speaking countries (Organisation for Economic Co-operation and Development (OECD), 2017).

Results from the 1988 National Campaign Against Drug Abuse Survey, indicated that 21% of men and 6% of women over 40 years of age were moderate to heavy drinkers, while 29% of men and 55% of women in this age group were abstainers or drank rarely (Commonwealth Department of Community Services and Health, 1989).

Ten years later, Australian data from 1998 (when the present cohort of *young-old* were aged between 36 and 45 and the current cohort of older-old were aged 46-55 and the cohort of oldest-old were aged 56+) showed that amongst people aged 50 to 59 years, 61.6% of men and 37.1% of women were regular drinkers (Higgins, Cooper-Stanbury, & Williams, 2000). In the 2004 National Drug Strategy Household Survey (NDSHS) (Australian Institute of Health and Welfare, 2005b) there was no data provided for Australians aged 65 and older, but data for those aged 60 and older indicated that 62% of men and 39.7% of women, drank alcohol at least weekly.

A frequent result from Australian national surveys on alcohol consumption has been the relatively high prevalence of daily consumption amongst older age groups. Until 2007, all data for Australians aged 60 and older was aggregated in NDSHS reports, making it difficult to discuss trends for different cohorts of Australians aged 65 and older. But, based on data for Australians aged 60 and older, in 2001, 16.1% of older people drank alcohol on a daily basis compared to 8.3% of the population aged 14 and older. In the same year, of the 13 million Australians who consumed alcohol in the prior 12 months, 2.5 million or 19% were aged 60 and older (Australian Institute of Health and Welfare, 2002). Moreover, some 8% of Australian men over 60 years of age drank at levels that put them at-risk of harm in the long-term and 13.2% drank at levels that placed them at-risk of short-term harm. For women over 60 years of age, these figures were 4.4% and 4.6% respectively (Australian Institute of Health and Welfare, 2002). Data gathered in 2004 were similar (Australian Institute of Health and Welfare, 2005a).

However, as all data from people 60 years and older were aggregated, it is probable that the drinking levels of the *young-old* were minimised by aggregating their data with that from older age groups. This conclusion has been borne out by later NDSHS reports where data for older Australians has been disaggregated and results indicate that with increasing age there is a commensurate decrease in consumption.

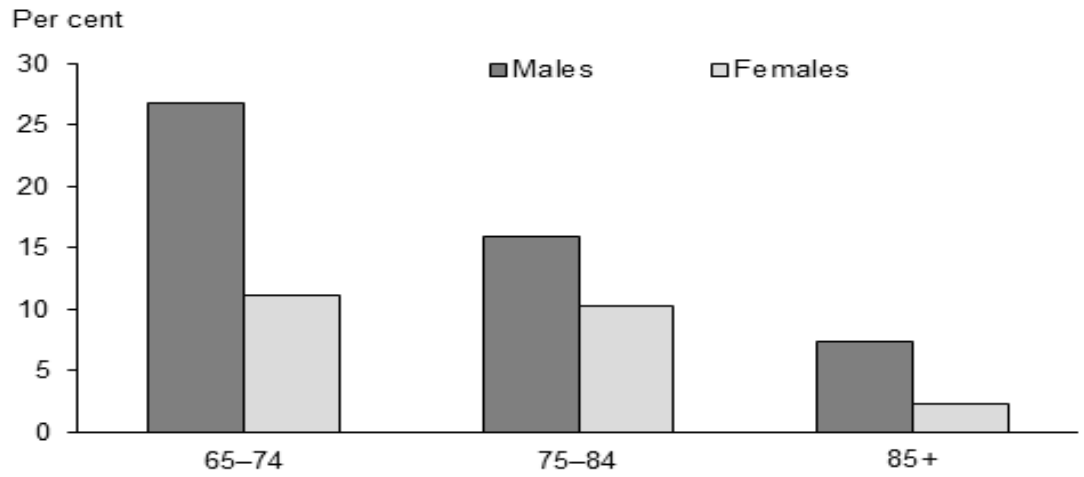
Data that was interrogated from the 2016 NDSHS indicate that approximately 24% of males and 8% of females aged between 65-74 were drinking at levels placing them at lifetime-risk of harm as were 17% of men and 3% of women aged 75 and older. For more detail see Table 1 and Figure 1.

Table 1: Proportion of people aged 55 and older who drank above the 2009 NHMRC guidelines for lifetime-risk by age and sex, 2007-2016.

Gender	Low risk (a)				Risky (b)			
Males	2007	2010	2013	2016	2007	2010	2013	2016
55-64	58.2	57.2	55.2	54.5	29.8	28.6	29.6	28.8
65-74	57.3	57.9	54.9	57.9	25.8	25.0	26.0	24.3
75+	59.2	59.6	58.6	58.1	18.0	16.7	15.5	16.8
Females								
55-64	68.0	67.5	69.0	66.2	9.8	10.0	10.5	10.8
65-74	59.1	62.8	63.1	63.1	6.9	6.2	7.3	7.7
75+	55.3	53.4	52.4	56.4	4.4	4.7	2.8	2.9
Persons								
55-64	63.3	62.3	62.1	60.4	19.2	19.3	20.1	19.8
65-74	58.2	60.3	59.0	60.5	16.3	15.5	16.6	15.9
75+	57.1	56.0	55.1	57.2	10.5	9.7	8.3	9.0

(a) On average, had no more than 2 standard drinks per day.
(b) On average, had more than 2 standard drinks per day.
(Australian Institute of Health and Welfare, 2017e)

Figure 1: Proportion of people aged 65 and older who drank above the 2009 NHMRC guidelines for lifetime-risk by age and sex, 2014-2015.



(Australian Institute of Health and Welfare, 2017g)

Results also indicate that approximately 1 in 5 (20.9%) men aged 65-74 and 1 in 10 (10.8%) men aged 75 and older exceeded the NHMRC guidelines for single-occasion risk

at least monthly. For women, the comparable figures were 4.6% for 65-74 year olds and 1.1% for 75 years+. For more detail see Table 2.

Table 2: Proportion of people aged 55 and older who drank above the 2009 NHMRC guidelines for single-occasion risk by age and sex, 2007-2016.

Gender	At least yearly but not monthly (a)				At least monthly (b)			
Males	2007	2010	2013	2016	2007	2010	2013	2016
55-64	12.5	11.8	10.6	11.4	31.3	31.4	31.8	32.0
65-74	7.8	7.0	6.6	7.2	20.0	19.1	20.8	20.9
75+	5.7	3.6	3.9	3.9	9.3	9.7	8.4	10.8
Females								
55-64	7.5	7.1	7.3	7.2	8.1	8.3	8.8	10.5
65-74	3.0	1.9	2.7	4.2#	3.1	3.3	4.7	4.6
75+	*0.8	*1.4	*1.3	2.2	2.7	2.5	*1.6	*1.1
Persons								
55-64	9.9	9.5	8.9	9.3	19.0	19.9	20.3	21.3
65-74	5.4	4.4	4.7	5.7	11.5	11.1	12.7	12.6
75+	3.0	2.3	2.4	2.9	5.7	5.5	4.6	5.4

(a) Had more than 4 standard drinks at least once a year but not as often as monthly.
(b) Had more than 4 standard drinks at least once a month but not as often as weekly.
#=-Statistically significant change since 2013
* Estimate has a relative standard error of 25% to 50% and should be used with caution.

When data for very high-risk drinking (defined as the consumption of 11 or more standard drinks at least yearly) are examined, it is noteworthy that while there were significant decreases for 16-17, 18-19 and 25-34 year olds, the rates increased for 55-64 year olds. There were no changes for older Australians with 1.6% of 65-74 year olds and 0.9% of 75 + year olds drinking at levels of very high risk of alcohol-related harm. For more detail see Table 3.

Table 3: Prevalence of drinking at levels of very high risk of alcohol-related harm (consumption of 11 or more standard drinks) by age, 2010 to 2016.

	At least yearly			At least monthly		
Persons	2010	2013	2016	2010	2013	2016
16-17	17.6	13.4	6.8#	9.9	10.4	4.6#
18-19	38.3	29.7	22.5#	26.7	16.4	12.7
20-24	37.3	33.9	31.2	22.5	18.2	16.1
25-34	29.1	27.7	25.0#	13.0	12.4	11.3
35-44	19.6	19.8	20.2	8.1	8.3	8.2
45-54	13.2	12.6	14.5	6.3	5.2	6.1
55-64	7.0	6.5	9.1#	3.4	2.8	4.3#
65-74	2.6	3.5	3.4	1.4	2.0	1.6
75+	2.1	1.7	2.1	*1.1	0.9	0.9

Statistically significant change between 2013 and 2016.
* Estimate has a relative standard error of 25% to 50% and should be used with caution.
(Australian Institute of Health and Welfare, 2017e)

At the time of writing there were no data yet available from the Australia Institute of Health and Welfare (AIHW) comparing alcohol use amongst older people living in rural versus metropolitan areas. However, general population data indicate that people in remote and very remote areas were more likely to drink alcohol in quantities that placed them at-risk of harm from alcohol-related disease or injury than people in major cities. Additionally, levels of alcohol use consistently increased in remote and very remote areas and the proportion of those drinking at risky levels also increased with increasing remoteness (Australian Institute of Health and Welfare, 2017d).

As the sample size of Indigenous Australians who completed the NDSHS was low, the AIHW do not include any specific findings on AOD use amongst older Aboriginals. However, general population data from the NDSHS show that Indigenous Australians are more likely to abstain from alcohol (31%) than non-Indigenous Australians (23%) but amongst those who do drink, a higher proportion drink at risky levels.

To include information on alcohol consumption amongst older Aboriginal Australians for this report, the 2014-15 National Aboriginal and Torres Strait Islander Social Survey (NATSISS) (Australian Bureau of Statistics, 2016a) was reviewed. While there was no specific data on those aged 50 +, it would appear that the prevalence of lifetime-risk for

both Indigenous males and females, aged 55 and over were lower than the rates for all non-Indigenous males and females aged 55 to 74 years (See Table 4).

Although different reporting methods are used in the NATSISS and the NDSHS, it also appears that the prevalence of single-occasion risk may be lower among Indigenous males and females aged 55 and older when compared to Non-indigenous males and females aged 55-64, but not when compared to males and females aged 65-74 (See Table 4).

Table 4: Prevalence of lifetime-risk and single-occasion risk of alcohol-related harm amongst Indigenous and Non-Indigenous Australians by age and sex.

	Age	**Lifetime risk (%)**	**Single occasion risk# (%)**
Indigenous Males	55+	19.0	27.8
Indigenous Males	45-55	29.3	44.7
Non-indigenous Males	55-64	28.8	32.0
Non-indigenous Males	65-74	24.8	20.9
Indigenous Females	55+	4.7	7.8
Indigenous Females	45-55	11.3	25.1
Non-indigenous Females	55-64	10.8	10.5
Non-indigenous Females	65-74	7.7	4.5

(Australian Bureau of Statistics, 2016a)

There is no information in the NATSISS that explains whether the percentages relate to people exceeding the guidelines on a monthly or a yearly basis. The percentages from the NDSHS relate to the percentages of people exceeding the single risk guidelines on "at least a monthly but not yearly basis". This needs to be considered when viewing the data.

Comparisons with other countries

Internationally, various methodologies are used to assess alcohol consumption, alcohol-related harm, hazardous-use and harmful-use, making it difficult to compare with Australian prevalence data. The definitions of "older people" and "at-risk" consumption have also varied internationally and this combined with the absence of a universal definition of a 'standard drink' hampers comparisons between international studies. Despite these limitations, there is some indication that older Australians are drinking at similar or higher levels than counterparts in other countries.

The 2008-2012, National Survey on Drug Use and Health in the U.S, which included more than 29,000 respondents aged 50 and older, indicated that 1.7% of those aged 65+ and

4.3% of those aged 50-64 met criteria for an alcohol use disorder (Choi, Marti, & DiNitto, 2014). Results from the National Epidemiological Survey on Alcohol and Related Conditions indicated that between 2001-02 to 2012-13 there was a 65% increase in the rates of risky-drinking (defined as consuming more than 56g of alcohol per day for women and 70g of alcohol per day for men) amongst Americans aged 65 and older increasing from 2.3% to 3.8%. Over this same period, the proportions meeting DSM-IV classification for the presence of an alcohol-use disorder doubled from 1.5% to 3.1% (B. Grant et al., 2017).

In the UK, data from the 2016 Opinions and Lifestyle Survey indicate that 10.3% of those aged 65+ reported drinking at high-risk levels (defined as >64g of alcohol for men and >48g for women) on their last heaviest drinking session (Office for National Statistics, 2017).

Using levels of alcohol consumption to compare drinking in different countries, Gell, Meier and Goyder (2015) concluded that the rates of "excessive drinking" (defined as >32g ethyl alcohol/day for men and >24g /day for women) among 50-75 year olds were higher in the U.K. than in Australia.

In other research which examined "at-risk" consumption (defined as more than 28g ethyl alcohol/ day) older Australian men and women had higher levels of at-risk consumption than those in either the U.S. or Asia (French, Sargent-Cox, Sarang, & Anstey, 2014).

2.1.2 Illicit drug use

Australia

Data from the 2016 NDSHS indicate that 37.1% of Australians aged 14 or older had used an illicit drug (excluding pharmaceuticals) in their lifetime, and 2.5 million or 12.6% had used an illicit drug in the past 12 months. Both these figures have remained relatively stable over the past 15 years.

At the time of writing, no data cubes were yet available from the 2016 NDSHS and as the data tables included in the AIHW report (Australian Institute of Health and Welfare, 2017e) have combined the misuse of pharmaceutical drugs with the use of all other illicit

drugs, it is not possible to compare trends in the use of illicit drugs (excluding pharmaceutical drugs) for older Australians. Hence the following information will be limited to examining age and gender information on cannabis, ecstasy, meth/amphetamine and cocaine (no data was included in the report on heroin use amongst Australians aged 55+).

In 2016, rates for the recent use (defined as use in the past 12 months) of cannabis among younger age groups (14-39 years) are lower than in 2001. Conversely, rates of use amongst those aged 65+ have more than doubled from 0.6% for men, in 2001 to 1.3% in 2016 and from 0.1% for women, to 0.5% in 2016. Additionally, results indicate there has been a slight, but statistically significant increase in recent use of cannabis among people aged 60+, from 1.2% in 2013 to 1.9% in 2016 (Australian Institute of Health and Welfare, 2017d). See Table 5 for more detail.

Because there were so few older Australians using other illicit drugs, data on cocaine, ecstasy and methamphetamine for Australians aged 55+ were aggregated and no data was included on heroin. For cocaine, ecstasy and methamphetamine, rates of recent use amongst those aged 55+ has doubled from 0.1% to 0.2% (Australian Institute of Health and Welfare, 2017e). See Table 5 for more detail.

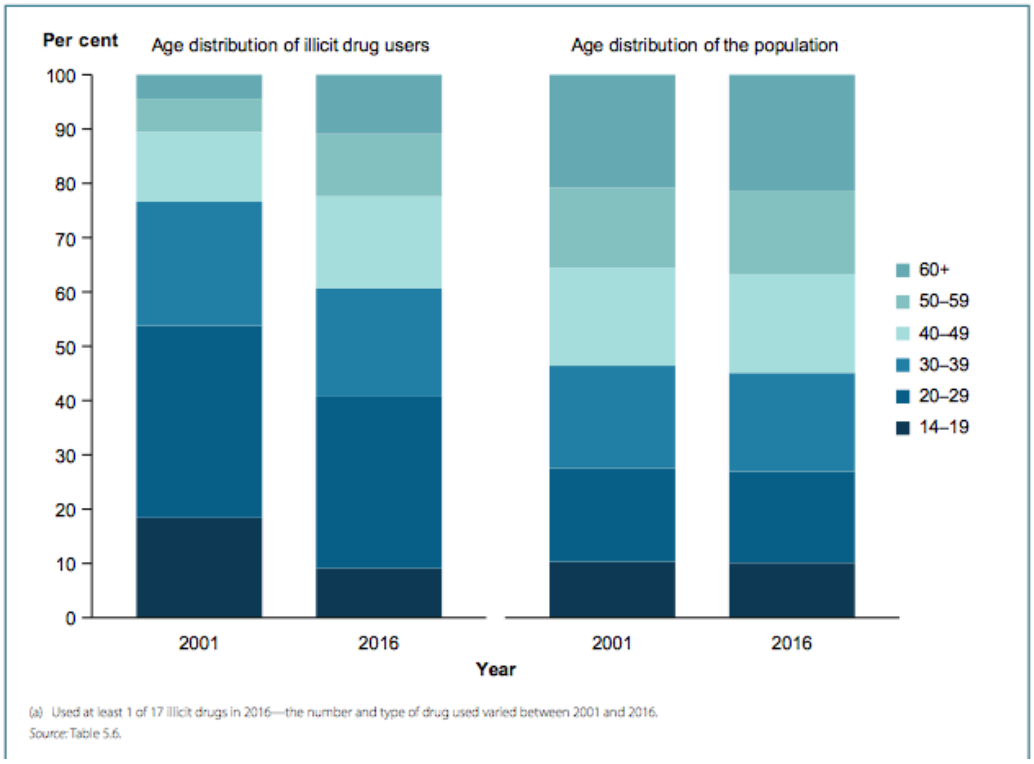
Table 5: Recent use of cannabis, ecstasy, meth/amphetamine and cocaine amongst Australians aged 45 and older, 2001- 2016

		2001	2004	2007	2010	2013	2016
Cannabis	Males						
	45-54	6.9	8.9	9.6	10.3	10.3	13.4#
	55-64	1.8	1.9	2.1	4.5	6.9	7.4
	65+	*0.6	**0.1	*0.2	*0.2	0.9	1.3
	Females						
	45-54	4.4	3.3	4.2	5.0	6.5	5.7
	55-64	*0.7	1.1	0.9	1.9	3.1	3.6
	65+	**0.1	*<0.1	**0.1	**<0.1	*0.4	0.5
Ecstasy	Males						
	45-54	*0.2	*0.7	*1.3	*0.6	*0.9	*1.0
	55+	n.p.	n.p.	**0.1	**<0.1	*0.1	*0.3
	Females						
	45-54	n.p.	**0.1	*0.5	*0.3	*0.5	*0.2
	55+	**<0.1	<0.1	n.p.	**0.1	*<0.1	**<0.1
Meth/amphetamine	Males						
	45-54	*0.4	*0.9	*0.7	1.0	1.4	1.7
	55+	**<0.1	**<0.1	*<0.1	**<0.1	*0.2	*0.3
	Females						
	45-54	*0.3	**0.2	**0.3	*0.4	*0.4	*0.6
	55+	**0.1	**<0.1	**<0.1	**<0.1	n.p.	**<0.1
Cocaine	Males						
	45-54	**0.1	*0.3	*0.8	*0.6	1.5	1.8
	55+	**0.2	n.p.	**<0.1	**<0.1	*0.2	*0.3
	Females						
	45-54	*0.3	**<0.1	**0.1	*0.4	*0.5	*0.7
	55+	**<0.1	**<0.1	n.p.	n.p.	**<0.1	**<0.1

* Estimate has a high relative standard error of 25% to 50% and should be used with caution
** Estimate has a high level of sampling error (relative standard error of 51% to 90%), meaning that it is unsuitable for most uses.
# Statistically significant change between 2013 and 2016.

Across all states and territories in Australia, there were very few significant changes in illicit drug use by age group. However, for people aged 60 or older in Tasmania, the rates of recent illicit drug use, increased from 3.7% in 2013 to 10.1% in 2016 (Australian Institute of Health and Welfare, 2017d). People in their 60s+ now also make up a much greater proportion of illicit drug users (this figure includes the misuse of pharmaceutical drugs) increasing from 4.4% in 2001 to 10.9% in 2016. See Figure 2.

Figure 2: Age distribution of illicit drug users and the general population aged 14 or older, 2001 and 2016 (%)



(Australian Institute of Health and Welfare, 2017b p. 57).

As with alcohol, there were no specific data available in the NDSHS report on levels of illicit drug use amongst older Australians living in rural or remote areas. However, population level data suggest that 25% of people in remote and very remote areas have used an illicit drug in the last 12 months as compared to 15.6 % in major cities, 14.9% in inner regional areas and 14.4% in outer regional areas (Australian Institute of Health and Welfare, 2017d).

Similarly, there were no results in the 2016 NDSHS on the prevalence of illicit drug use amongst older Indigenous Australians. However, data from the National Aboriginal and Torres Strait Islander Social Survey 2014-15 indicate that 38% of men aged 45-54 and 14.6% of men aged 55 and older had used an illicit drug in the past 12 months. Amongst women aged 45-54, 23.5% had used an illicit drug in the past 12 months as had 11.9% of women aged 55 years and older (Australian Bureau of Statistics, 2016a). These figures suggest that the rates for illicit drug use are higher amongst Indigenous than non-Indigenous older Australians.

Comparisons with other countries

On an international level, there is also evidence of increasing levels of illicit drug use amongst older people (T. Anderson & Levy, 2003; D Rosen, 2004). Research from the U.S. has shown that between 2002 and 2005 among adults aged 55-59, the prevalence of illicit drug use increased from 1.9% to 3.4% (Satre, 2015).

More recently, data from the 2013 U.S. National Survey on Drug Use and Health indicated that the rates of recent illicit drug use (defined as use in the past month[2]) amongst 50 to 54 year olds, increased from 6.7% in 2011 to 7.9% in 2013. Amongst those aged 60 to 64, rates increased from 2.7% in 2011 to 3.9% in 2013. However, rates dropped for those aged 55 to 59 from 6.0% in 2011 to 5.7% in 2013 (National Institute on Alcohol Abuse, 2015).

Although there were no specific data in the U.S. on adults aged 65 or older, the figures do suggest that illicit drug use is higher amongst older Australians (6.3%) compared to older Americans. However, as the NDSHS asks participants about their use of any illicit drug over a 12-month period, this is likely to result in a higher number of positive responses and may therefore partly explain the differences between the two countries.

In relation to substance use admissions, data from the U.S., indicate that while the total number of substance 'abuse' treatment admissions between 2000 and 2012 changed only slightly, the proportion attributable to older adults increased from 3.4% to 7.0% (Chhatre, Cook, Mallik, & Jayadevappa, 2017).

In the U.K., national surveys such as the "Statistics on Drug Misuse" and the British Crime Survey are restricted to sampling adults aged 16-59, making it impossible to compare U.K. to Australian data on older people. However, data from the British Crime Survey indicate that between 1998 and 2006/07 while illicit drug use among those aged 30-59 remained relatively stable, drug use increased amongst those aged between 55 and 59 (C Beynon, 2009).

[2] Illicit drug use: use of marijuana, cocaine, heroin, hallucinogens, inhalants, non-medical use of prescription type pain relievers, tranquilizers, stimulants and sedatives.

Data from the National Health Service (U.K.) also support the notion that illicit drug use by older people is increasing, as hospital admission episodes as a result of "poisoning by illicit drugs" amongst 65 to 74 year olds have almost trebled between 2005/06 to 2015/16 and more than doubled amongst those 75 years and older (National Health Service, 2017).

Similarly, research from Europe has shown that between 2002 and 2005 the proportion of patients aged 40 and older being treated for opiate problems increased from 8.6% to 17.6% (European Monitoring Centre for Drugs and Drug Addiction, 2008).

2.1.3 Misuse of pharmaceuticals

Australia

In 2016, based on data from the NDSHS, 4.8% of Australians misused a pharmaceutical drug in the prior 12 months. There were very few gender differences in relation to the reported misuse of pharmaceutical drugs and while the highest rates of misuse (6.2%) were amongst males aged 18-24, the average age of those who misused any pharmaceutical drug was 43 (Australian Institute of Health and Welfare, 2017d).

Data from the NDSHS also indicate that the rates for the misuse of pharmaceuticals has increased for older males aged 65+, from 3.1% in 2001 to 4.7% in 2016. For older women, rates have risen from 3.5% in 2001 to 4.9% in 2016. See Table 6 for more details.

When looking at specific pharmaceuticals, the rates of misuse of tranquilliser /sleeping pills was higher amongst younger (20-29 year olds) than older age groups, but the misuse of pain killers/analgesics and opioids was highest amongst those aged 40-49. The types of pain killers and opioids most commonly misused in the prior 12 months by men and women aged 45 and older were: OTC codeine products (75.2%) prescription codeine products (32.2%), oxycodone (9.4%), tramadol (4.8%), morphine (3.7%), gabapentinoids (2.0%) and fentanyl (0.9%) (Australian Institute of Health and Welfare, 2017e).

As with illicit drugs and alcohol, no data were available on pharmaceutical misuse among older Australians in rural and remote areas but population level data suggests that use was

approximately 4.6% in major capital cities, increasing to 8% in remote and very remote areas (Australian Institute of Health and Welfare, 2017d). There were no data in either the NDSHS or the National Aboriginal and Torres Strait Islander Social Survey on pharmaceutical misuse amongst older Indigenous Australians.

The misuse of pharmaceuticals amongst those aged 65+ is significant because the figures indicate that older Australians are misusing pharmaceuticals in greater numbers than those using cannabis, cocaine, ecstasy and meth/amphetamines combined.

Table 6: Recent misuse of pharmaceuticals by age and sex, 2001- 2016

Gender	**2001**	**2004**	**2007**	**2010**	**2013**	**2016**
Males						
45-54	3.6	3.4	3.4	3.0	3.5 ^	5.3#
55-64	3.3	2.8	*2.4	2.8	4.9 ^	4.1
65+	3.1	3.4	3.8	5.0	4.4 ^	4.7
Females						
45-54	3.1	3.1	3.4	3.8	4.4^	4.8
55-64	3.0	2.8	3.0	3.5	4.3^	3.6
65+	3.5	3.9	3.9	4.5	4.3^	4.9

* Estimate has a relative standard error of 25% to 50% and should be used with caution

** Estimate has a high level of sampling error (relative standard error of 51% to 90%), meaning that it is unsuitable for most uses.

Comparisons with other countries

While international evidence is limited, concern has been voiced in both the U.S. and the U.K. about the misuse of prescription and OTC medications by older people (Royal College of Psychiatrists, 2011; Substance Abuse Mental Health Services Administration, 2012). In terms of prevalence data, AARP Public Policy Institute, (Dean, 2017) concluded that in the U.S., in the prior year, 1.2% of adults 65 and older were misusing painkillers, 0.6% were misusing tranquillizers, and 0.4% had misused sedatives. Of those who had misused painkillers, 70% had sourced the drug from one or more doctors and 27% had sourced them from a friend or relative.

2.2 Alcohol and other drug use amongst future generations of older Australians

Australian surveys have consistently shown that people consume less alcohol as they get older and are less likely to use illicit drugs (Australian Institute of Health and Welfare, 2005b, 2014a, 2017d). While declining health and increased frailty have long been associated with cessation of alcohol use (N. Khan, Wilkinson, & Keeling, 2006; Moos, Brennan, Schutte, & Moos, 2005; Stall, 1987), with the improved health of recent generations of older people, this may no longer be the case. While the improved health of successive generations of older Australians is laudable, paradoxically, this trend has weakened one of the major motivators for a reduction in alcohol and recreational drug use- namely declining health with increased age (Dowling, Weiss, & Condon, 2008).

Additionally, while earlier cohorts of older Australians grew up at a time in which there were significant negative moral attitudes towards alcohol or other drug consumption (McAllister et al., 1991; Oslin, 2000b), the present/coming generation of older people (the 'baby boomer' generation) lived through a period in history in which there was considerable experimentation with a range of illicit drugs and a greater acceptance of both alcohol and other drug use (Huber & Skidmore, 2003; Oslin, 2000b; Pearson, 2001).

This has lead a number of authors to predict that higher levels of alcohol and other drug use may occur amongst future cohorts of older people (Gfoerer, Penne, Pemberton, & Folsom, 2003; Gilhooly, 2005; A. Moore et al., 2005; Moxon & Waters, 2016). This influence of a 'time-period-cohort effect' on changing patterns of AOD use has been demonstrated internationally (Freudenheim et al., 2005; Gfoerer et al., 2003; Gilhooly, 2005; Kerr, Greenfield, Bond, Ye, & Rehm, 2009; Kerr, Greenfield, Bond, Ye, & Rehm, 2004; Preston & Goodfellow, 2006). The influence of a 'cohort effect' has also recently been examined in Australian research by Livingston et al (2016) who found significantly lower levels of alcohol consumption in the most recent born cohorts of Australians, with a peak in consumption occurring amongst women born between 1955 and 1964, and a peak amongst males born between 1975 and 1989.

Compounding difficulties estimating the prevalence of alcohol and other drug use amongst future cohorts of older Australians are indications that while many people reduce their use

of alcohol and other drugs with age, others will continue with their usual level of use, while others commence AOD use late in life. This typology has been referred to as early-onset versus late-onset use (Gossop & Moos, 2008; Kist, Sandjojo, Kok, & van den Berg, 2014; McGrath, Crome, & Crome, 2005; R. Nicholas, A. Roche, N. Lee, S. Bright, & K. Walsh, 2015b; Tavani, Negri, Franceschi, Talamini, & LaVecchia, 1994); or early-onset 'survivors' versus late-onset 'reactors' (European Monitoring Centre for Drugs and Drug Addiction, 2008).

For example, early-onset drinkers are those individuals who have a long history of alcohol use, whereas late-onset drinkers, commenced drinking or increased their drinking in older age, often in response to stressful life events, for example loss of a spouse, or to cope with loneliness, self-medication for pain and sleeping problems (Wilkinson, Allsop, & Dare, 2015). There are some indications that as many as one-third of alcohol-dependent older drinkers only develop these problems after 45 years of age (Nicolien, Sandjojo, Kok, & van den Berg, 2014) and other research indicating that some people may not commence problematic drinking until after 60 years of age (R Atkinson, 1990; Barrick & Connors, 2002).

While the majority of research investigating the early-onset/late-onset typology has occurred with alcohol, there is also some suggestion that this typology applies to the misuse of pharmaceuticals and to a lesser extent - the use of illicit drugs (Wu & Blazer, 2011). For example, there may be some older people who have a long history of misusing pharmaceuticals (early-onset), while there may be an even larger group who only commence doing so, later in life as a coping mechanism for pain, depression, loneliness, anxiety, sleeping problems etc. (Nicholas, Lee, & Roche, 2011).

With evidence that chronic pain is a significant issue for many illicit opioid dependent individuals (Kamali-Sarvestani, Motiallah, & Ghaffarinejad, 2014; Rosenblum et al., 2003), and with the increasing incidence of chronic pain with age, opioid substitution treatment (OST) older clients are particularly at-risk of misusing pharmaceuticals in a late-onset typology.

There has been very limited longitudinal research with illicit drug users into middle age and beyond, and even less with illicit drug users who have had no contact with health or

welfare services, making it difficult to estimate just how common the late-onset-early-onset typology is. However, in a small qualitative study in the U.K. (Roe, Beynon, Pickering, & Duffy, 2010) with older clients attending drug treatment services; subjects matched the early versus late-onset typology. Research from the U.S. also supports the early versus late typology for illicit drugs, but suggests that late-onset illicit drug use may account for less than 10% of illicit drug use amongst older people (M. Taylor & Grossberg, 2012).

The early-onset versus late-onset typology highlights the heterogeneity of older people and their patterns of drug use. In addition to the early-onset/late-onset groups, there will also be older people who have formerly used alcohol, illicit drugs or misused pharmaceuticals and stopped; and another group who commenced use while young and over the past decades have had intermittent periods of cessation and intermittent periods of use. Each of these distinct typologies has differing aetiologies and differing symptomologies; and makes predictions about AOD use amongst future generations of older Australians difficult.

However, what the evidence does show is that recent cohorts of young Australians are drinking less. These trends are not however replicated among older people, and in particular, amongst women born between 1955 and 1974. Similarly, while the recent use of any illicit drug (including the misuse of pharmaceuticals) amongst the population aged 14 years and older has reduced from 16.7% in 2001 to 15.6% in 2016, the rates amongst older Australians have increased from 3.6% to 6.3%.

As younger Australians are drinking at lower levels and fewer are taking illicit drugs than in previous decades; it is possible that when this group reaches “older age” their levels of AOD use will be lower than the current generation of older Australians. Paradoxically, however, as younger Australians are drinking less and taking fewer illicit drugs, they may be a healthier cohort when they reach “older age”, and consequently have less reason to reduce their AOD use.

In summary, predicting what AOD use amongst older Australians will look like in the next, 10, 20 or thirty years is difficult, but there is no doubt that with the ageing of the population AOD use amongst older Australians will have important public health

implications and it is therefore timely that comprehensive flexible responses are developed sooner rather than later.

2.3 Why older people use alcohol, illicit drugs or misuse pharmaceutical drugs

The status, acceptance and use of any drug may be explained by a range of environmental factors, such as advertising, family and peer influences, sanctions, laws; drug factors, such as pricing, availability, effects; and individual factors such as beliefs, and expectations. Consideration of these three factors is a feature of both the public health (W. Miller & Hester, 1995) and Zinberg's (1984) model of drug use. People use alcohol, or any other drug, because they perceive its use to have beneficial pharmacological effects, because it provides membership of a social group and/or because its use is reinforced through participation in social rituals (D. Moore, 1996). As described by Room (1977), understanding the reasons for alcohol or any drug use amongst individuals in the community and understanding the reasons for AOD use amongst those individuals who have developed significant AOD related problems are different propositions, highlighting that the reasons for AOD use will vary greatly.

2.3.1 Alcohol use

In research conducted in New Zealand, by Khan, Wilkinson and Keeling (2006) social reasons were nominated as the most common reasons for drinking amongst a sample of 100 current drinkers aged 65 years and older. Similarly in Scotland, research by D. Nicholson et al.(2017) reported that alcohol use was most often framed in terms of pleasure, relaxation, socialising and ways to mark the passage of time.

In research with older Australian men and women, Wilkinson (2008) reported the reasons for alcohol use were many and varied and included using alcohol to socialise with friends and partners, to relax, to celebrate special events, and to deal with grief.

Illness and pain, stress, boredom, to replace meals, to keep warm and loneliness have also been cited as reasons for drinking amongst older people (Alcohol Concern, 2002; B. B.

Brown & Chiang, 1984; Clough, Hart, Nugent, Fox, & Watkins, 2004; Glynn, Bouchard, LoCastro, & Laird, 1985; Patterson & Jeste, 1999; Zimberg, 1978).

Some of the reasons for drinking will also vary between "social" drinkers and older "problem" drinkers and between early-onset versus late-onset drinkers. In Australian research, Ilomaki et al. (2014) reported that dealing with chronic pain was strongly associated with daily drinking, while binge drinking was significantly associated with concomitant anxiety. Similarly, Gilson, Bryant and Judd (2014b) who conducted research with over 400 community dwelling Australian men and women aged 60 and over, reported that, 5.6% of the sample specifically indicated that they used alcohol to self-medicate their pain. Finally, in other Australian research with community dwelling older adults who were classified as "problem" or "non-problem" drinkers, the problem drinkers were much more likely to drink alcohol to help them sleep, to relax, to manage physical symptoms, to forget worries, to feel more self-confident, to deal with being depressed or nervous and to cheer-up, than non-problem drinkers (Gilson, Bryant, & Judd, 2017).

Some authors (Alexander & Duff, 1988; Ekerdt, DeLabry, Glynn, & Davis, 1989; Perreira & Sloan, 2001) have also argued that retirement can lead to an increase in alcohol consumption as retirement can lead to a loss of status, a sense of role-lessness (sic) and feelings of social marginalisation. Additionally, retirement may provide greater opportunities for alcohol consumption because people are subject to fewer restrictions (e.g. work commitments) and thus experience fewer adverse social consequences when they drink. Finally, retirees may also become involved in subcultures such as retirement communities in which permissive drinking norms may be encouraged (Dare, Wilkinson, Allsop, Waters, & McHale, 2014).

There has also been a body of research examining why people choose to stop drinking and such knowledge is equally as important as understanding why older commence or continue with drinking alcohol. One of the major reasons cited for cessation has been because of deterioration in health (Graham, 1998; Green & Polen, 2001; N. Khan et al., 2006; Moos et al., 2005; Paganini-Hill, Kawas, & Corrada, 2007; Poikolainen, Vartiainen, & Korhonen, 1996; Rice et al., 2000; Straus, 1984; Vahtera, Poikolainen, Kivimaki, Ala-Mursula, & Pentti, 2002; Vogel-Sprott & Barrett, 1984).

The view that people will reduce their alcohol consumption if their health deteriorates was originally proposed by Stall (1987) who developed the morbidity hypothesis to explain the reduction in alcohol consumption with increasing age. According to the hypothesis, as the prevalence of chronic disease increases amongst older people, fewer individuals consume alcohol because of the fear that to do so would aggravate their medical conditions.

There has also been research conducted in the U.S. and Australia indicating that older drinkers would reduce their consumption if they believed this would be beneficial for their health and if their doctor advised them to do so (Borok et al., 2013; Wilkinson et al., 2016).

In summary, the reasons for alcohol use amongst older people is multifaceted and range from using alcohol to celebrate special events to using alcohol on a daily basis to deal with pain, loneliness and loss. Australia's long history with alcohol consumption, has given alcohol a unique place in Australia culture, and prompted research and discussion on why older people drink. However, the same is not the case with illicit drugs where research remains quite limited making discussions on the varied reasons for use difficult.

2.3.2 Illicit drug use

Data from the 2016 NDSHS indicate that very few older Australians use illicit drugs. For example, less than 0.2% of Australians aged 55 or older had used cocaine, ecstasy or meth/amphetamine in the prior 12 months and approximately 1% of Australians aged 65 + had recently used cannabis.

Such low levels of use may partly explain why so little ethnographic research exploring illicit drug use amongst older Australians has occurred. As a consequence of the paucity of research, our knowledge of why older people commence or continue illicit drug use is patchy at best (Moxon & Waters, 2016).

For those older people who have continued with their use of illicit drugs (either intermittently or continuously) it has been suggested that this occurs as drug use has become a normal part of their everyday life (C Beynon, 2009; Gfoerer et al., 2003). Indeed,

research with older heroin users has found that many people continued to use, because 'being a heroin addict' was part of their identity and as a subsequence, they had been unable to transcend their past, assimilate into non-using social groups or cease their use of the drug (T. Anderson & Levy, 2003; Hamilton & Grella, 2009).

Conversely, in U.K. research on illicit drug use through the life-course, Moxon and Waters (2016) concluded that for some older adults, their illicit drug use was not a central feature of their identity, and they had been able to continue with their drug use, while simultaneously engaging in other more conventional pursuits. Indeed in this research with older adults, drug use was often a routine and a quite unremarkable aspect of their lives. These results from individuals who had successfully kept their drug use 'hidden' were very different from the findings discussed in the work by Hamilton and Grella (2009). The results also highlight that reasons for use will vary not only from person to person, and drug to drug but will depend on whether the drug is used in a social versus compulsive manner.

There has also been some interesting research with older cannabis users. For example, Chatwin and Porteous (2013) who interviewed 23 long-term cannabis users, reported that perceived health benefits and a "pursuit of pleasure" were equally strong motivators for use. The authors also reported that despite changes in peoples' circumstances, and subsequent changes in patterns of use, including periods of complete abstention, subjects consistently found ways to sustain or restart their use. Chatwin and Porteous described this sample of long-term cannabis users as "a fairly conventional group of adults, who happen to be regular and long term cannabis users as well as parents, partners, employees and friends" (p.250-252).

Finally, Parker, Williams and Aldridge (2002) have also argued that with the greater social acceptance of cannabis and of "sensible recreational drug use"; some forms of illicit drug use have become normalized and this may partly explain some of the reasons that older people commence or continue with their illicit drug use. This normalization theory has also been supported by Lau et al (2015), who has also postulated that this acceptance

(particularly of cannabis), may also lead to increased drug use amongst older adults in the future.

Some older people will use illicit drugs for pain management and other forms of self-medication (Yarnell, 2015). Nicholas et al (Nicholas et al., 2015b) have also argued that the medicalization of cannabis for the treatment of pain and other conditions may prompt use among older people; and that the high levels of prescription opioid use among older people may act as a gateway to heroin use. However, until more research is undertaken, explanations of illicit drug use amongst older Australians remains speculative at best.

2.3.3 Misuse of pharmaceutical drugs

In their comprehensive report on pharmaceutical use, Nicholas et al (2011) highlighted the complexities surrounding the misuse of pharmaceuticals in Australia and acknowledged that older Australians are a high-risk group for the misuse of prescription and OTC drugs. Indeed, older people have several unique risk factors that can explain why the misuse of pharmaceuticals occurs. For example, older people are more likely to have a number of chronic co-occurring conditions than younger people and as a consequence are also more likely to be prescribed medications.

Older adults who take multiple medications may encounter difficulties remembering to take all their medications at the right time and in the correct dose and those with hearing or vision loss, may also find it difficult to read or understand medication instructions (Sollitto, 2017). Though such behaviours often commence as unintentional, they can, escalate into dependence leading to intentional misuse. That is, over a period of time the person may become physically dependent on a substance and will seek continued doses to avoid withdrawal. Where these drugs will be procured from will vary but there is anecdotal evidence of drugs such as fentanyl being sold or stolen as a form of drug currency, (Lucy Barbour, 2017).

Older adults who live with chronic pain or illness may also experience depression or anxiety, which can also prompt use and misuse (Storr and Green, 2015). Older people with a history of long-term illicit drug use may also be experiencing mental health issues which may precipitate the use and possible misuse of prescription medications (Hamilton & Grella, 2009).

Rather than primarily misusing pharmaceuticals to "get high", international research (Substance Abuse Mental Health Services Administration, 2017) indicates that 63.4% of adults misused prescription pain medications to relieve physical pain, 11.7% of adults did so to 'feel good or get high'; 10.9% did so to relax or relieve tension, and 4.5% misused the medication to help with sleep. Similarly, 46.2% misused benzodiazepines or other tranquillisers to help relax or relieve tension; 21.2% did so to help with sleep, 11.0% did so to feel good or get high; and 10.9% misused the drugs to help with feelings or emotions (Substance Abuse Mental Health Services Administration, 2017).

According to Friedman (2017) these are the same reasons that prompt older people to misuse the same substances. In other words, most people whom misuse prescription and OTC drugs are doing so for the very reasons that the drugs were originally prescribed, with comparatively few misusing to get high.

There is also evidence from the Australian Injecting and Illicit drug Users League (2011) that some older people have misused pharmaceutical opiates for economic reasons. That is, pharmaceutical opiates were seen as a cheaper alternative to black market powders. Similarly, Nicholas et al, (2001) also suggested that for some people the regular costs associated with dispensing of OST were an incentive for people to obtain and misuse pharmaceutical benefit scheme (PBS) subsidised opiates instead.

Finally, Storr and Green (2015) have concluded that: cognitive impairment, poor health (chronic pain, disabilities, sensory deficits), insomnia, previous and/or concurrent psychiatric co-morbidities (i.e. depression), change in social status /activity (retirement, reduced mobility/ability to function, boredom), bereavement, stress and/or reduced coping

skills (family conflict, financial resources), previous substance use disorder and/or concurrent drug use, family history of drug use disorders, properties of the substance (use of multiple substances), social isolation (living alone, loss of family and friends, living in a rural area, nonmedical use and dangerous prescribing practices, are all factors that may explain both the use and possible escalation of use of illicit drugs and the misuse of pharmaceuticals among older adults.

2.4 AOD screening instruments

In recognition that people who use alcohol or other drugs may experience problems, a range of screening and diagnostic instruments have been developed internationally. However, as many of these were originally developed for use with younger people or for the general population, questions have been raised about their appropriateness for older people (F. C. Blow & Barry, 2014; Bright, Fink, Beck, Gabriel, & Singh, 2011; Dawe, Loxton, Hides, Kavanagh, & Mattick, 2002); Gfoerer et al., 2003; Graham, 1986; King, Van Hasselt, Segal, & Hersen, 1994; O'Connell, Chin, Cunningham, & Lawlor, 2003; Rehm & Manthey, 2017; Schofield & Tolson, 2001; C. Taylor, Jones, & Dening, 2014). These concerns have centred on questions of recall impairment for older people, concerns that older people may not exhibit the same adverse social, legal and occupational consequences of AOD use as younger age groups; and that lower levels of consumption may be required to accurately screen for "at-risk" consumption amongst older people (F. C. Blow & Barry, 2014; Fink & Beck, 2005; Lakhani, 1997; Luttrell et al., 1997; O'Connell et al., 2003; Rehm & Manthey, 2017). The information below will briefly describe some of the commonly used screening instruments and discuss their appropriateness for older Australians.

Commonly used alcohol screening instruments include:

- The Alcohol Use Disorders Identification test (AUDIT) (Saunders, Aasland, Babor, de le Fuente, & Grant, 1993). The AUDIT is a ten-item screening instrument developed by a WHO collaboration and is designed to screen for a range of drinking problems and in particular for hazardous and harmful consequences. A shortened version is the AUDIT-C that contains five of the AUDIT questions. The AUDIT and AUDIT-C have been found to be valid

screening tools when the cut off points were adjusted for age (Aalto, Alho, Halm, & Seppa, 2011). In Australian research, Draper and colleagues have concluded that a cut-off score of 5 in the AUDIT-C was recommended for older men and women (B. Draper et al., 2015).

- The Michigan Alcoholism Screening test (MAST) (Selzer, 1971).The MAST is a 24-item screening tool designed to identify and assess alcohol 'abuse' and 'dependence'. Shortened versions of the MAST include the 13-item SMAST and 10-item BMAST. The Short Michigan Alcoholism Screening Instrument - geriatric version (SMAST-G) was developed as the first short-form 'alcoholism screening' instrument tailored specifically for older adults. A score of 2 or more "yes" responses suggests an alcohol problem (F. C. Blow et al., 1992).
- The CAGE (Ewing, 1984) is a four-item screening instrument (have you ever felt you should Cut down? Does others criticism of your drinking Annoy you; Have you ever felt Guilty about your drinking? Have you ever had an "Eye Opener" to steady your nerves or get rid of a hangover?) designed to identify and assess potential alcohol abuse and dependence.

In the U.S., organisations such as The Substance Abuse and Mental Health Services Administration (SAMSHA) recommend the use of screening tools such as the SMAST-G with older clients as the first step in a screening, brief intervention, referral to treatment (SBIRT) protocol (Naegle, nd). The American Geriatrics Society suggests using the CAGE questionnaire (Ewing, 1984) as a screening tool for alcohol dependence. However, a study by Moore and colleagues (A. A. Moore, Seeman, Morgenstern, Beck, & Reuben, 2002) found that less than half off those screening positive on either the SMAST-G or the CAGE screened positive on both measures, reflecting that the instruments may be capturing different elements of at-risk drinking.

The U.S. Preventive Services Task Force (U.S. Preventive Services Task Force, 2013) recommends three screening instruments for use in the primary care setting and these are: the Alcohol Use Disorders Identification Test (AUDIT), the abbreviated AUDIT-Consumption (AUDIT-C) and single question screening asking: How many times in the past year have you had 4 or more drinks in a day?

There do not appear to be recommendations from health or government agencies in Australia about specific screening tools, but the AUDIT and AUDIT-C have been commonly used in Australia across a range of settings and with a range of older people (Gilson et al., 2013; Gilson, Bryant, & Judd, 2014a; Gilson et al., 2017). Draper and colleagues have specifically investigated the accuracy of the AUDIT in a number of studies with older Australians (65 to 74 years) and have endorsed its use with this population (B. Draper et al., 2017).

Another screening tool that has been developed specifically for older people is the Alcohol-Related Problems Survey (ARPS) (Fink, Beck, & Wittrock, 2001; Fink, Hays, Moore, & Beck, 1996; Fink et al., 2002). An Australian version of the ARPS has also been developed and used as part of the Older Wiser Lifestyle program in Victoria (S. Bright & C. Williams, 2017).

The Alcohol, Smoking, Substance Involvement Screening test (ASSIST) developed by the WHO (WHO ASSIST Working Group, 2002) has also been used both nationally and internationally with older people (R. Khan et al., 2012). The ASSIST includes eight questions covering tobacco, alcohol, cannabis, cocaine, amphetamine type stimulants, inhalants, sedatives, hallucinogens opiates and 'other drugs" and takes about 10 to 20 minutes to complete and can be administered by either a clinician or can be self-completed. There has also been research from the U.S. indicating that an audio-guided computer assisted self-interview format of the ASSIST may be a valid alternative to the clinician administered approach and hence of benefit in streamlining screening in primary health care settings (McNeely, Strauss, Rotrosen, Ramautar, & Gourevitch, 2015) The ASSIST has been used with older Australians in both geriatric hospital and community health settings (B. Draper et al., 2017) and Australian researchers are also investigating the utility of a modified version of the tool with older Australians (L. Cusack et al., 2016; L. Cusack et al., 2015).

In addition to tools such as the ASSIST, the Australian Treatment Outcomes Profile (ATOP) has recently been validated in an older population attending a specialist AOD service in Sydney (Lintzeris et al., 2016; Monds et al., 2017) and holds promise as a useful clinical tool for monitoring clinical outcomes. The ATOP is a one page instrument taking approximately ten minutes to complete and examines substance use (alcohol, amphetamine

type substances, benzodiazepines, cannabis, opioids; self-reported physical health, psychological health and quality of life) over the prior 28 days and has been adapted from the validated Treatment Outcomes Profile for Australian settings.

Screening for inappropriate medication prescribing in older people can be undertaken using screening tools such as the STOPP (Gallagher, O'Connor, & O'Mahony, 2011). Additionally, there have also been survey instruments developed for assessing whether pain patients are appropriately using opiate medications e.g. the 31 item Prescription Drug Use Questionnaire, but there remain only very limited options around the development of psychometrically sound tools to screen and assess for other psychotropic medication use (Bloor & Watts, 2015; Satre, 2015).

In summary a range of screening tools are currently available that can be systematically utilised in Australia. With general practice, general hospital wards, emergency departments and community health and welfare settings being ideal places in which screening should take place (Wilkinson, Lintzeris, & Haber, 2009). Such settings are recommended as older Australians present at these settings frequently, and often for conditions which are ideal for collateral discussions of AOD use.

2.5 Alcohol-related harms and benefits

Alcohol is "no ordinary commodity" (World Health Organization Department of Mental Health and Substance Abuse, 2004). Globally, the WHO estimate that 3.3 million or 5.9% of all deaths are from harmful alcohol use and 5.1% of the global burden of disease and injury is attributable to alcohol (World Health Organization, 2015c). Research also indicates that there is a causal relationship between alcohol consumption and more than 60 types of disease and injury (English et al., 1995; Gutjahr, Gmel, & Rehm, 2001; Ridolfo & Stevenson, 2001; Single, Robson, Rehm, Xie, & Xi, 1999; World Health Organization, 2015c) and recent Australian research has indicated that a one litre decrease in annual alcohol consumption per capita is associated with a reduction of male liver cancer by 15% across a twenty year period (Jiang, Livingston, & Room, 2017).

Conversely, moderate alcohol use (often defined as up to 20 grams of alcohol per day) has previously been considered to have a protective effect on all-cause mortality (Bridevaux, Bradley, Bryson, McDonell, & Fihn, 2004; Dawson, 2000; Richard Doll, Peto, Boreham, & Sutherland, 2005; Greenfield, Rehm, & Rogers, 1999; M. Gronbaek et al., 1998; Holman, English, Milne, & Winter, 1996; Lin et al., 2005; Nielsen, Schnohr, Jensen, & Gronbaek, 2004; Noale et al., 2005; Paganini-Hill et al., 2007; Renaud, Gueguen, Siest, & Salamon, 1999; Simons, McCallum, Friedlander, Ortiz, & Simons, 2000; White, 1999) and to reduce the incidence of coronary heart disease (R Doll, 1997, 1998; Ellison, Rothman, Zhang, & Djousse, 2005; Emerson, Shaper, Wannamethee, Morris, & Whincup, 2005; Fuchs et al., 1995; D. M. Goldberg, Hahn, & Parkes, 1995; M Gronbaek, 2002; Hillbom, 1998; Holman & English, 1996; Jackson, 1994; A.L. Klatsky, 2002; McLaughlin et al., 2010; Single et al., 1999; Svardsudd, 1998; van Trijp et al., 2005). Because of this presumed protective effect, the WHO concluded that moderate alcohol use prevented 71,000 deaths in men and 277,000 deaths in women in 2001 (Rehm et al., 2004).

However, a few individual-level studies had failed to substantiate this protective effect in men (Hart, Smith, Hole, & Hawthorne, 1999) and women (Kaye Middleton Fillmore et al., 1998; Maskarinec, Meng, & Kolonel, 1998). After conducting a meta-analysis of 54 published prospective mortality studies, Fillmore *et al.* (2006) concluded that the evidence for a J-shaped risk curve for alcohol use and all-cause mortality was the result of systematic misclassification error whereby participants who had reduced or stopped drinking due to ill-health or ageing were categorised as abstainers.

More recently, (Naimi et al., 2017) who also investigated the impact of selection bias on associations between moderate alcohol consumption and potential protective effects supported the views of Fillmore et al and concluded that mendelian randomization studies have found no protective effect for low-dose alcohol consumption on either dementia, hypertension or coronary heart disease. The research by Naimi and colleagues is also supported by a large scale mendelian randomization study conducted with older Australian men assessing mortality and alcohol consumption (Almeida et al., 2017). These findings challenge the assumption that low dose alcohol consumption confers protective effects.

Alcohol-related burden is linked to two dimensions of consumption: average volume of consumption and patterns of drinking (World Health Organization, 2015c; World Health

Organization Department of Mental Health and Substance Abuse, 2004) and there have been a number of authoritative reviews of the literature on alcohol use and harm (P. A. Anderson & Baumberg, 2006; Rehm et al., 2003; Single, Ashley, Bondy, Rankin, & Rehm, 2000; World Health Organization Department of Mental Health and Substance Abuse, 2004). In the following section, these and more recent publications will be reviewed, with emphasis given to the implications of the findings for older people.

2.5.1 Alcohol and cancer

In Australia in 2010, it was estimated that 3,208 (2.8%) of all new cases of cancer were attributed to alcohol consumption (Cancer Council of Australia, 2017). The World Cancer Research Fund and the American Institute of Cancer Research found probable evidence that alcohol increased the risk of colorectal and breast cancer even at very low levels of consumption (The World Cancer Research Fund and American Institute for Cancer Research, 1997). Since this time, a number of authors have concurred that there is strong evidence of a linear relationship between breast cancer and alcohol (Corrao, Bagnardi, Zambon, & Arico, 1999; Hamajima, Hirose, & Tajima, 2002; Lew, 2008; Oslin, 2000a; Smith-Warner et al., 1998). Oslin (2000a) concluded that the risk of breast cancer was 35% higher in women who drank 36 grams to 48 grams of alcohol per day and 67% higher in women who drank more than 48 grams of alcohol per day compared to those women who did not drink or drank very little. In an assessment of 53 epidemiological studies Hamajima *et al.* (2002) reported an increased cancer risk of 7.1% for every additional ten grams a day increase in alcohol intake. This has significant implications for Australia as breast cancer is the second most common cancer in the nation (Cancer Council of Australia, 2017)

Alcohol has also been estimated to be the leading cause of liver cirrhosis in developed countries (Corrao, Arico, Zambon, Torchio, & DiOrio, 1997; Corrao, Bagnardi, Zambon, & Torchio, 1998; English et al., 1995). Based upon the plethora of available evidence, The World Cancer Research Fund International have now concluded that alcohol increases the risk of six cancers: breast, bowel, mouth/throat, oesophageal and stomach (World Cancer Research Fund International, nd) and that to prevent these cancers, it is best not to drink any alcohol.

The majority of research does seem to indicate an almost linear dose–response relationship between volume of drinking and the relative-risk of cancer (World Cancer Research Fund/ American Institute for Cancer Research, 2007; World Health Organization Department of Mental Health and Substance Abuse, 2004) with the Australian Cancer Council concluding that: alcoholic drinks are carcinogenic to humans and there is no evidence of a safe threshold of alcoholic consumption for avoiding cancer or that cancer risk varies between types of alcoholic beverages (Cancer Council of Australia, 2017).

2.5.2 Alcohol and cardiovascular disorders

Most studies have suggested that low-level alcohol consumption offered some protection against ischaemic stroke (which occurs from a blockage of an artery supplying blood to the brain) (Beilen, Puddy, & Burke, 1996; Hillbom, 1998; Keil, Chambless, Doring, Filipiak, & Stieber, 1997; Kitamura et al., 1998; Knuiman & Vu, 1996; Sacco et al., 1999; Thun et al., 1997; Wannamethee & Shaper, 1996); with research indicating that consumption levels of up to 24 grams per day reduced the risk, whereas consumption of 60 or more grams per day increased the risk (Reynolds et al., 2003).

For haemorrhagic stroke (which follows bleeding from a blood vessel within the brain), the weight of evidence suggests an increase in risk for males even at low-levels of consumption (Berger et al., 1999; Hart et al., 1999; Jackson, 1994; Sacco et al., 1999); while for females the meta-analyses of Ridolfo and Stevenson (2001) indicated a protective effect for drinking below 40 grams of alcohol per day, but an eight-fold increased risk for drinking above these limits.

Additionally, hypertension and other cardiovascular disorders such as cardiac arrhythmias or heart failure appear to be adversely affected by alcohol (H. S. Friedman, 1998; A.L Klatsky, 1995; Puddey, Rakic, Dimmitt, & Beilin, 1999; Rosenqvist, 1998; U.S. Department of Health and Human Services, 1997; Wood, 1998) particularly when levels exceed 350ml per day (Panagiotakos et al as cited in (Kalla & Figueredo, 2017).

Although there have now been more than 100 epidemiological studies suggesting that moderate alcohol consumption is cardio-protective (Gulbransen & McCormick, 2007)

(Kalla & Figueredo, 2017), some critical literature has found that people who never drink were at no greater risk than light drinkers (K. M. Fillmore, Kerr, & Bostrom, 2003; K. M. Fillmore et al., 2006). Because of the systematic error of misclassification that has occurred in much research (K. M. Fillmore et al., 2006), the contention surrounding alcohol's cardio-protective effect is likely to continue (e.g. (Ellison, Harding, et al., 2007; Ellison, Wannamethee, et al., 2007; Rimm et al., 2007). It is however noteworthy, that neither the WHO nor the National Heart Foundation of Australia recommend consuming alcohol to prevent cardiovascular disease (Cancer Council of Australia, 2017). While research continues, the comment by Goldberg (2003) is also particularly relevant: "If alcohol were a newly discovered drug (instead of one dating back to the dawn of human history) we can be sure that no pharmaceutical company would develop it to prevent cardiovascular disease"(p.164).

2.5.3 Alcohol and cognitive function

Several longitudinal and cross-sectional studies have shown an association of light drinking (up to 20/10grams of alcohol per day for men and women respectively) with a reduced risk of cognitive impairment and dementia (Bryan & Ward, 2002; Cassidy et al., 2004; DeCarli et al., 2001; Deng et al., 2006; Ganguli, Bilt, Saxton, Shen, & Dodge, 2005; Lo, Woodman, Pachana, & Byrne, 2014; Lyndsay et al., 2002; McGuire, Ajani, & Ford, 2007; Rodgers et al., 2005; Ruitenberg et al., 2002; Zimmerman, McDougall, & Becker, 2004). Conversely, other research shows no association (Kalapatapu, Ventura, & Barnes, 2017; Kumari et al., 2014; Truelsen, Thudium, & Gronbaek, 2002; Tyas, Manfreda, Strain, & Montgomery, 2001) or an acceleration in cognitive deterioration (Anttila et al., 2004) and the development of early-onset dementia (McMurtray, Clark, Christine, & Mendez, 2006) and others have highlighted the high rates of dementia and cognitive impairment amongst older clients attending AOD specialist services (Monds et al., 2017) and mental health services (Rao, 2016).

In a systematic review of epidemiological studies of alcohol-related dementia, Cheng and colleagues (Cheng et al., 2017) reported that in early-onset dementia, alcohol-related dementia (ARD) accounted for 10% of cases. In another recent systematic review conducted by Xu and colleagues (Xu et al., 2017) of a possible dose-response relationship between alcohol and dementia, the authors concluded that at doses of 12.5g/day the risk of

dementia was decreased, hitting bottom at (RR=0.9) at approximately 6g/day while drinking above 38g/day elevated the risk of all cause dementia.

Much of the published research demonstrating a protective effect in relation to cognitive impairment has methodological anomalies that may reduce their validity. In highlighting how altering methodologies can alter results, Kalapatapu et al (2017) who was investigating the association between alcohol and cognition, initially found that data appeared to support the existence of a protective effect at low level of consumption. However, when mendelian randomization took place and adjustments were made for age, education, sex, race, and smoking, all previously significant associations disappeared.

In an interesting Norwegian study (Nicolien et al., 2014) which investigated cognitive performance and age of onset of drinking (early-onset, late-onset, very late-onset) amongst a group of older male and female alcohol dependent drinkers, all reported similar levels of cognitive functioning but all were below average compared to a healthy control group. One possible conclusion from this research is that the adverse effects of alcohol on cognition are apparent in older alcohol dependent drinkers, irrespective of the onset of their alcohol use.

This has significant implications and could be explained by the increasing vulnerability of the ageing brain i.e. as suggested by Nicolien et al (2014), brain damage due to heavy alcohol use at a younger age has a ceiling effect, while late-onset of heavy use may accelerate the cognitive deterioration often seen as part of the normal ageing process. Such an "increasing vulnerability hypothesis" (Nicolien et al., 2014) is supported by earlier work by Pfefferbaum and colleagues (Pfefferbaum, Sullivan, Mathalon, & Lim K. O, 1997) who reported that despite a similar total lifetime consumption of alcohol, older drinkers exhibited more frontal lobe atrophy than younger drinkers.

In addition, heavy prolonged use of alcohol can have indirect effects on brain function resulting in problems such as Wernicke-Korsakoff syndrome and may also have a direct neurotoxic effect on the brain producing a form of 'alcoholic dementia' (Rota-Bartelink et al., 2011; Royal College of Psychiatrists, 2011).

2.5.4 Alcohol and depression

Depression and alcohol use disorders are strongly linked across the lifespan, and this co-morbid association persists into later life (R Atkinson, 1999; B. F. Grant & Harford, 1995). The current state of research suggests a causal link between alcohol use disorders and major depression, with increasing levels of alcohol increasing the risk for depression (Boden & Fergusson, 2011; Churchill & Farrell, 2017; Graham & Massak, 2007; Graham & Schmidt, 1999; Hassin, Goodwin, Stinson, & Grant, 2005; Rodgers, Korten, Jorm, Christensen, & Henderson, 2000). Boden and Ferguson have concluded that the presence of an alcohol use disorder doubles the risks of being diagnosed with depression and vice a versa (Boden & Fergusson, 2011).

Conversely, Haynes, Farrell, Singleton, Meltzer, Araya, Lewis and Wiles (2005) concluded that hazardous and dependent drinking were not associated with incident anxiety or depression and in Australia, Tait and colleagues (2012) reported that those who were "always abstinent" had increased odds of depression.

The relationship between alcohol and depression is therefore complex, and more research is needed that attempts to identify whether alcohol use may lead to depression, whether depression leads to alcohol use or whether those who are abstinent are more likely be depressed because they are less socially interconnected and have less social support (Lucas, Windsor, Caldwell, & Rodgers, 2010).

2.5.5 Alcohol and trauma

There is increasing evidence of a positive link between alcohol consumption and trauma (Chikritzhs et al., 2003; Deutch et al., 2004; O'Connell et al., 2003; World Health Organization, 2007). According to the WHO (2007), half of all deaths attributable to alcohol are from injuries and 20.4% of injury cases at emergency departments involve alcohol. According to Chikritzhs and Pascall (2005) alcohol-related falls were the most common condition leading to hospitalisation among 65 to 74 year old Australians. In the U.K., Mulinga (1999) reported that amongst patients aged 65 and older who had an ICD-9 diagnosis of alcohol dependence or abuse, 50% were admitted to hospital due to a fall.

Research from the U.S. (Zautcke, Coker, Morris, & Stein-Spencer, 2002) found that of older patients who screened positive for alcohol at the Emergency Department, 50% presented for a fall related injury, while 37% presented as a result of a motor vehicle related injury. Sorock et al. (2006) reported that amongst people aged 55 and over, having 12 or more drinks a year was associated with a 50-70% increase in the risk of motor vehicle crashes and falls.

There is also considerable evidence that when an older person has a fall the consequences will be much more severe as compared to a younger person. For example in a study of fall-related trauma, serious injury was recorded in 32% of patients 65 and older who had fallen compared to only 11% amongst the younger age group (Sterling, O'Conner, & Bonadies, 2001). Additionally, evidence indicates that the percentage of falls resulting in fractures increases from 5.5% amongst young people to 15.1% amongst older people (Talbot, Musiol, Witham, & Metter, 2005). Complications from a fall are also usually much more catastrophic for older patients, with a U.S. study indicating that only 22% of older people could live on their own after being released from hospital following a fall (Botek, 2017).

In a meta-analysis that included 18 prospective cohort studies, Zang, Yu, Yu and Qu (2015) reported that a non-linear relationship existed between alcohol consumption and the risk of hip fracture. Compared to non-drinkers the pooled RR of hip fractures were 0.88 for light alcohol consumption (0.01-12.5g/day), 1.00 for moderate consumption (12.6-49.9g/day) and 1.71 for heavy alcohol consumption (>50 g/day).

In Australia, Peel, McClure and Hendrikz (2006) reported that consumption of less than two standard drinks per day for older men and one standard drink per day for older women had a significant protective effect on the risk of hip fracture, but above these levels, this disappeared. While the authors do not explain alcohol's protective effect, it is possible that the use of alcohol amongst the group was a marker of general good health. The fact that never smoking, playing sport in older age and practicing a greater number of preventive medical care behaviours was also predictive of a reduced risk of hip fracture strengthens the plausibility of this explanation. However, research from Sweden found there was no statistically different rate of falls amongst older people (65+) who tended to binge drink (consumed more than one bottle of wine on an occasion) but rather it was age and a

sedentary lifestyle which were the primary predictors of falls (Helgadottir, Moller, & Laflamme, 2015).

Australian research that focused on the possible involvement of alcohol in relation to river drowning's (Peden, Franklin, Leggat, & Aitken, 2017) found that alcohol was involved in 40.8% of all cases of drowning's and over the period 2002 to 2012, the 55-64 year age group recorded the highest proportion (50.5%) of drowning cases with known alcohol involvement.

2.5.6 Alcohol and concomitant medication use

Another concern related to alcohol use and older people is the use of contraindicated medications. People over the age of 65 are the greatest consumers of prescription drugs with research from the U.S. indicating that approximately 60% of adults use medications by aged 60, nearing 90% by 80 years (Ihara et al as cited in (Zanjani et al., 2016). Australian research has also shown that amongst current drinkers aged 65 years and older, 81.2% of men and 85.2% of women were taking some form of medication and of these, approximately 20% were taking five or more medications (Wilkinson, 2008). Older people also have a high use of over-the-counter medications, the most common of which are analgesics, vitamins, antacids and laxatives (Evans, 2000).

Problems can result from the concomitant use of many prescription drugs commonly used by older people and alcohol (Korrapati & Vestal, 1995; Tanaka, 2003; Weathermon & Crabb, 1999). See Table 7 for details on commonly used medications, which may be contraindicated with alcohol use. For example, alcohol increases the sedative effects of antidepressants, antihistamines, muscle relaxants, benzodiazepines and opioids (National Institute on Alcohol Abuse and Alcoholism, 1995). This interaction can have serious consequences such as increasing the risk of falls, motor vehicle accidents and overdose (Tanaka, 2003; Weathermon & Crabb, 1999). Alcohol use in combination with non-steroidal anti-inflammatory drugs (NSAIDS) can result in stomach bleeding, gastric inflammation and liver damage (Bush, Shlotzhauer, & Imai, 1991; Dart, 2001; Kaufman et al., 1999; Korrapati & Vestal, 1995; Newgreen, 2005; Tanaka, 2003).

Alcohol-related adverse drug reactions (ADR) are an important health concern for all individuals but especially so for older people who have higher medication use.

In research from Finland (Immonen, Valvanne, & Pitkala, 2013) with people aged 65 years and older, who were categorized as at-risk drinkers (drinking more than 7 drinks per week, or 5 or more drinks on a typical drinking day or consuming 3 or more drinks several times per week) 42.2% were taking drugs which had the potential to cause significant interactions with alcohol e.g. 11% were taking Warfarin, 11% were taking hypnotics/sedatives and 13% were taking metformin (diabetes medication).

With such high levels of medication use amongst older people, it comes as no surprise that in the U.S. (Zanjani et al., 2016), between 2001 and 2012, there was an 111.5% increase in the numbers of alcohol/medication hospitalisations amongst adults aged 50-64 and an increase of 158.5% amongst those aged 64 and older. The most common medication associated with alcohol-related admissions were: 36.5% benzodiazepines, 15.6% opioids, 11.6% non-opioid analgesics, 2.1% methadone, 1.3% psychostimulants and 1.1% anticoagulants.

Table 7: Common medications used by older people contraindicated for use with alcohol.

Drug type	Purpose of medication	Interaction with alcohol
Anaesthetic	Administered prior to surgery	Alcohol increases the dose of propofol required to induce loss of consciousness. Chronic alcohol consumption increases risk of liver damage that may be caused by anaesthetic gases enflurane and halothane.
Antibiotics	Used to treat infection	Alcohol use may cause nausea, vomiting, headache and possible convulsions with furazolidone, griseofulvin, metronidazole, and quinacrine. Isoniazid and rifampin used to treat tuberculosis- especially problematic among elderly. Acute alcohol consumption decreases availability of isoniazid in the bloodstream, while chronic use increases availability of rifampin.
Anticoagulants	Prescribed to retard bloods ability to clot	Acute alcohol enhances warfarin's availability increasing risk of haemorrhaging. Chronic alcohol reduces warfarin's availability lessening protection from consequences of blood clotting.
Antidepressants	Reduce depression	Alcohol increases sedative effect of tricyclic antidepressants, impairing mental skills. Chronic alcohol use increases the availability of some tricyclics and decreases availability of others. Tyramine, found in some beers and wine interacts with some antidepressants to produce a rise in blood pressure. As little as 12g of alcohol may create a risk of an ADR.
Antidiabetic medication	Hypoglycaemic drugs are prescribed to lower blood sugar levels.	Acute alcohol consumption prolongs and chronic alcohol consumption decreases availability of tolbutamide. Alcohol can also interact to cause nausea and headache.
Antihistamine	Treat allergic symptoms	Alcohol may intensify sedation, in older persons may also cause dizziness.
Antipsychotic medication	Diminish psychotic symptoms	Acute alcohol use increases sedative effect, resulting in impaired coordination and breathing difficulties. Chronic use may result in liver damage.
Anti seizure medications	Treatment of epilepsy	Acute alcohol increases availability of phenytoin and risk of drug-related side effects. Chronic use may decrease phenytoin availability reducing protection against seizures.
Cardiovascular medications	Treat heart and circulatory system	Acute alcohol interacts with some of these drugs to cause dizziness or fainting. Chronic use decreases availability of propranolol used to treat high blood pressure.
Opiate based pain medication	Reduce moderate to severe pain	Combination of opiates and alcohol enhances sedative effect of both substances increasing risk of overdose
Non opiate based pain medication	Reduce pain	Older people commonly use Aspirin and similar medications. Some drugs can cause stomach bleeding and inhibit blood clotting- alcohol can exacerbate these effects. Risk of gastric bleeding, in addition aspirin may increase availability of alcohol heightening effects of a given dose of alcohol. Chronic alcohol use activates enzymes that transform acetaminophen into chemical that can cause liver damage.
Benzodiazepines	Anxiety and insomnia	Alcohol use may increase sedation. Combination of alcohol and lorazepam may result in decreased heart and breathing function.

(Adams, 1995; B. J. Cusack & Vestal, 1986; Dart, 2001; Dunne, 1994; Forster, Pollow, & Stoller, 1993; Katona, 2001; Korrapati & Vestal, 1995; Kurfees & Dotson, 1987; Nicholas et

al., 2015b; Patat, 2000; Pringle, Ahern, Heller, Gold, & Brown, 2005; Tanaka, 2003; Weathermon & Crabb, 1999)

2.5.7 Alcohol-related hospitalisations

Concerns about alcohol-related hospitalisations amongst older Australians, is not a new phenomenon. For example, over twenty years ago English, et al. (1995) reported that alcohol-related deaths among all age groups of Australian males peaked in the 60 to 69 year age range, while for women the peak occurred in the 80 years and older group followed by those aged 60 to 69.

Similarly, Chikritzhs and Pascal (Chikritzhs & Pascal, 2005, 2005 b, 2005 c) reported that from 1994 to 2003, over 10,000 Australians aged 65 and older died from alcohol attributable injury and disease caused by risky and high-risk drinking. More than half of these deaths (5,746) were among the 65 to 74 year age group (Chikritzhs & Pascal, 2005). More recently, Pascal, Gilmore, Broyd, Lensvelt, and Chikritzhs, (2013) reported that between 1996 and 2010 over 16,000 Australians died from alcoholic liver disease, alcohol-attributed liver cancer or colorectal cancer.

Lensvelt and Chikritzhs from the National Drug Research Institute (NDRI) conducted an analysis of alcohol-related Emergency Department (ED) presentations, for inclusion in this report. A temporal surrogate measure using primary diagnosis, time of day and day of week was applied to identify alcohol-related ED injuries. This surrogate identifies ED presentations for which alcohol is highly likely to have been a major contributor, based on time of day and day of week of the presentation. Results from this analysis indicate the rates of alcohol-related ED presentations for older men have increased from 1.39 to 2.09 per 1000 and from 1.84 to 2.62 per 1000 for women. There was also an increase in the rates of admission with increasing age and higher rates of admission amongst females compared to males. See Table 8 for more details.

Due to the small numbers it was not possible for NDRI to compare Indigenous versus non-indigenous rates of alcohol-related hospital admissions. However, previous research has consistently shown that while the proportion of non-drinkers among the Indigenous population is higher than among the non-Indigenous population, they experience alcohol-

related health and social problems at a disproportionate rate compared to non-Indigenous Australians (M. Wilson, Stearne, Gray, & Saggers, 2010).

It was also not possible to compare rural versus metropolitan results. However, previous Australian research has indicated that across all ages, rural communities show greater harm from alcohol consumption than urban populations and that hospitalisation rates for alcohol-related diseases and injury are higher for both men and women in rural compared to urban areas (P. G. Miller, Coomber, Staiger, Zinkiewicz, & Toumbourou, 2010).

Although the level of alcohol use and related harms are higher in rural areas (Australian Institute of Health and Welfare, 2017d), there remains very little research on the topic (Miller et al, 2010) and even less research specifically examining harms amongst older Australians living in rural and remote areas of Australia. This is an important gap, particularly as there are approximately half the number of general practitioners per 100,000 in regional areas when compared with metropolitan (Australian Institute of Health and Welfare, 2009).

Table 8: Alcohol-related Emergency Department presentations amongst older Australians by age and sex, 2005/06 - 2011/12

	65+ years		65-74 years		75-84 years		85+ years	
NATIONAL	Male	Female	Male	Female	Male	Female	Male	Female
2005/06	1.39	1.84	1.10	1.10	1.50	1.85	2.90	4.36
2006/07	1.54	2.04	1.25	1.25	1.61	2.02	3.15	4.79
2007/08	1.70	2.19	1.37	1.32	1.77	2.20	3.56	5.11
2008/09	1.71	2.24	1.46	1.38	1.73	2.34	3.20	4.89
2009/10	1.83	2.30	1.43	1.45	1.99	2.47	3.67	4.82
2010/11	1.92	2.45	1.57	1.48	1.94	2.58	3.96	5.40
2011/12	2.09	2.62	1.65	1.66	2.26	2.75	4.18	5.62
NSW								
2005/06	0.42	0.55	0.34	0.29	0.45	0.60	0.85	1.27
2006/07	0.48	0.65	0.41	0.44	0.43	0.71	1.08	1.21
2007/08	0.59	0.65	0.49	0.40	0.51	0.66	1.51	1.36
2008/09	0.41	0.51	0.35	0.30	0.38	0.55	0.84	1.08
2009/10	0.45	0.50	0.38	0.31	0.46	0.53	0.77	1.03
2010/11	0.61	0.68	0.59	0.45	0.56	0.68	0.83	1.40
2011/12	0.86	0.99	0.72	0.67	0.93	1.11	1.44	1.76
VIC								
2005/06	2.53	3.20	2.03	1.97	2.68	3.20	5.10	7.21
2006/07	2.60	3.38	2.04	2.02	2.77	3.40	5.41	7.67
2007/08	2.56	3.59	2.02	2.20	2.71	3.59	5.27	7.93
2008/09	2.60	3.40	2.07	2.05	2.74	3.50	5.21	7.39
2009/10	2.81	3.45	2.16	2.19	2.94	3.67	6.08	6.88
2010/11	2.77	3.64	2.09	2.12	2.86	3.85	6.32	7.89
2011/12	2.79	3.68	2.28	2.27	3.06	3.78	4.81	7.93
QLD								
2005/06	0.83	1.08	0.69	0.78	0.92	1.00	1.53	2.34
2006/07	1.28	1.48	1.05	0.95	1.40	1.38	2.47	3.58
2007/08	1.92	2.31	1.55	1.40	2.13	2.38	3.63	5.37
2008/09	2.28	2.85	2.07	2.02	2.33	2.87	3.60	5.73
2009/10	2.48	3.02	1.94	1.97	2.89	3.30	4.71	6.15
2010/11	2.73	3.04	2.35	1.98	2.59	3.26	5.77	6.43
2011/12	2.94	3.40	2.18	2.35	3.28	3.41	6.98	7.30
SA								
2005/06	1.91	2.62	1.38	1.41	2.19	2.51	3.91	6.44
2006/07	2.01	2.65	1.85	1.51	1.83	2.36	3.56	6.59
2007/08	2.02	2.78	1.66	1.51	2.10	2.84	3.66	6.19
2008/09	2.00	2.80	1.56	1.62	2.09	2.97	4.00	5.73
2009/10	2.08	2.99	1.55	1.84	2.18	3.12	4.52	5.96
2010/11	2.25	2.90	1.65	1.71	2.32	2.80	5.05	6.43
2011/12	2.38	2.97	1.78	1.70	2.57	3.14	4.92	6.30
WA	Male	Female	Male	Female	Male	Female	Male	Female
2005/06	2.11	3.07						
2006/07	2.27	3.46						
2007/08	2.37	2.87						
2008/09	2.32	3.14						
2009/10	2.43	3.20						

2010/11	2.16	3.31						
2011/12	2.39	2.97						

NOTE:[3]

2.6 Potential harms related to illicit drug use amongst older people

While much is known about the short and long-term effects of cannabis, meth/amphetamine, cocaine, ecstasy and heroin, their relative effects on older people is less well understood. To provide an overview of some of the known short and long-term effects of these drugs see Table 9.

Table 9: Risks associated with the use of cannabis, cocaine, meth/amphetamine, ecstasy and heroin

Drug	Short-term risks	Long-term risks
Cannabis	Slowed reflexes, increased heart rate, lowered blood pressure, mild anxiety and paranoia.	Memory loss, mood swings, regular colds or flu, reduced sex drive, impotence. For those with a genetic vulnerability to mental illness, cannabis may precipitate anxiety, depression and psychotic symptoms. Smoking cannabis can increase the risks of: asthma, bronchitis and cancer.
Meth/ Amphetamine	Teeth grinding, reduced appetite-loss of weight, increased heart rate, increased blood pressure, excessive sweating.	Continued weight loss, restless sleep, dry mouth and dental problems, regular colds and flues, breathing difficulties, muscle stiffness, potential for increased blood pressure, heart problems, stroke, kidney problems. The mental health risks include: depression or anxiety when coming down, anxiety, stress or other emotions caused by a lack of sleep, paranoia and psychosis.
Cocaine	Nausea and vomiting, extreme anxiety, chest pain, panic, paranoia,	Insomnia, depression, anxiety, paranoia, eating disorders, sexual dysfunction, hypertension,

[3] Estimated rates* of alcohol-related injury presentations to Emergency Departments
*Alcohol-related ED presentations per 1,000 persons, by age and gender, 2005-06 – 2011-12
NSW data includes ED presentations coded 'assault' or 'injury' in free-text field only. WA data was provided for ED presentations in the Perth metropolitan area only excluding Peel Health Campus and only for people aged 65+ due to the small number of cases. Tasmania was not included due to data access issues, NT and the ACT data was not published due to the small number of cases. Rates are affected by the coverage of ED data collection for each state and variations in data collection methods and practices may affect comparability. Reference: "Data were provided by the National Alcohol Indicators Project (NAIP) conducted by the National Drug Research Institute, supported by funding from the Australian Government Department of Health. More information about the project is available at http://ndri.curtin.edu.au/research/naip.cfm

	hallucinations, tremors, breathing irregularities, kidney failure, seizures, stroke, heart problems, coma, death. High doses can also lead to "cocaine psychosis" characterized by paranoid delusions.	hallucinations, sensitivity to light and sound, heart disease. Snorting cocaine can lead to runny noses and nose bleeds, nose infection, a deviated nasal septum, long term damage to nasal cavity and sinuses and injecting cocaine may also lead to a heightened risk of overdose, tetanus Hepatitis B, Hepatitis C, HIV
Ecstasy (MDMA)	Muscle aches and pains, nausea and reduced appetite, increased heart beat, dehydration, hyponatraemia, anxiety, irritability, paranoia and violence.	Depression, colds and flues and dependence.
Heroin	Drowsiness, confusion, slurred or slow speech, slow breathing and heart rate, reduced appetite, vomiting. Overdose and risk of death.	Constipation, intense sadness, damaged heart, lungs, liver and brain, vein damage, dependence. Heightened risk of overdose, tetanus Hepatitis B, Hepatitis C, HIV

(Australian Drug Foundation, 2017a, 2017c, 2017d, 2017e, 2017g, 2017i)

In reviewing the risks outlined in Table 9, it is not surprising that older adults are intrinsically predisposed to several of the more dangerous complications of each of the illicit drugs discussed. For example, research suggests that cocaine use amongst older adults further increases the risk of heart attack, cerebrovascular complications, delirium and stroke (Schlaerth, 2007). Whether these risk are higher for those who have used cocaine for many decades (i.e. a cumulative effects) or for late-onset users, remains unclear (M. Taylor & Grossberg, 2012).

There is also some evidence that maturation of the frontal and temporal lobe white matter between the ages of 20 to 50 may be arrested in individuals with heavy use of cocaine. Thus, the natural declines in white matter volume observed in older adults may be more dramatic in older people who continue to use cocaine than in the rest of the ageing population (Dowling et al., 2008). There are also concerns that long-term use of cocaine and amphetamines may predispose older adults to premature atherosclerosis, ventricular hypertrophy and cardiomyopathy (Dowling et al., 2008).

In addition, some animal studies suggest that susceptibility to drug-induced toxicity may also increase with age. For example, there is evidence of increased sensitivity to methamphetamine toxicity with increasing age and apparent cardiovascular sensitivity (Darke, Duflou, & Kaye, 2017; Dowling et al., 2008).

While the information available on the risks of amphetamine/ methamphetamine amongst older people is limited, it is believed that use may be associated with an increased risk of seizures, confusion, dystonia, depressed respiration, chest pain, hypertension and arrhythmias but that these drugs are less likely than cocaine to produce vascular or pulmonary problems in older people (M. Taylor & Grossberg, 2012). Concerns have also been raised about the adverse effect of methamphetamine and other amphetamine type stimulants on the orbital and medial frontal cortex of the brain in regular users (Dauman et al., 2011). Methamphetamine-induced toxicity may also involve oxidative stress, which has been implicated in many aged-related diseases (Barja, 2004).

Recent research from WA, has indicated that amphetamines were associated with significant advancement of cardiovascular-biological age amongst users (Reece, Norman, & Hulse, 2017). In other Australian research investigating methamphetamine related deaths, a significant pattern of accelerated cardiovascular disease development with increasing age was reported (Darke et al., 2017).

Research from the U.S., with a nationwide inpatient sample (n= 350,000) of 18-55 year olds indicated that the incidence of heart failure, cerebrovascular accident, coronary artery disease, sudden cardiac death and hypertension were significantly higher in patients with cannabis use (Kalla, Krishnamoorthy, Gopalakrishman, Garg, & Figueredo, 2017). For any older people with pre-existing cardiac problems, the risks are likely to be increased (Schlaerth, 2007; M. Taylor & Grossberg, 2012). There are also concerns that cannabis could significantly impair cognitive function amongst older people (Budney, Vandrey, & Fearer, 2011) and be associated with an increased risk of falls (van den Elsen et al., 2014). While there is a strong association between cannabis use and depression, bipolar disorder and schizophrenia, it is unusual for these latter two conditions to manifest for the first time in an older person (M. Taylor & Grossberg, 2012).

Conversely, there has been some research suggestive that cannabis may possibly protect against neuronal damage caused by glutamate-mediated excitotoxicity, free radical and reactive oxygen species and /or pro-inflammatory cytokines, which are associated with such ageing conditions as Parkinson's disease, Alzheimer's, ischemic stroke, and

cardiovascular disease (Grimble, 2003, Baker al, 2003, Croxford , 2003, Fowler , 2003, Grundy et al., 2001, Grundy, 2002, Hampson et al., 1998,2000, Lastres-Becker et al., 2002 as cited in Dowling et al., 2008). As cannabis is the most frequently used illicit drug amongst older Australians, research on cannabis is important as our understanding of pharmacodynamics and pharmacokinetics related to cannabis use and ageing are very poor (Ramchandani et al., 2015).

Some conditions occurring in late life may also be exacerbated by heroin use and these include: thyroid conditions, diabetes, arthritis and osteoporosis (D. Rosen, Hunsaker, Albert, Cornelius, & Reynolds, 2011). Older people with a long history of heroin use are also more likely to have high blood pressure, hyperlipidemia, abnormal pulmonary function, abnormal liver function, and hepatitis B and C (Hser et al., 2004). Apart from anecdotal reports on drug forums, there appeared to be little scientific information available on the risks associated with Ecstasy use amongst older people.

While there is much to learn about the direct health impacts from long-term illicit drug use (Higgs & Dietze, 2017), there is little doubt that engaging in long-term illicit drug use increases the window of exposure to a range of illnesses and diseases.

Australian research shows that injecting drug use is associated with an array of health conditions including blood-borne viral infections (Crofts & Aitken, 1997; Maher et al., 2006), soft tissue and vascular problems (Dwyer et al., 2009), and these illnesses are likely to be exacerbated by delayed treatment and drug use over time (McCoy, Metsch, Chitwood, & Miles, 2001; Morrison, Elliott, & Gruer, 1997). Thus, many of these conditions are associated with lasting ill health for the individual (Australian Injecting and Illicit Drug Users League, 2011).

For example, Hepatitis C, has a prevalence of up to 90% among older opiate users (Falster, Kaldor, & Maher, 2009), and other older people with long injecting careers (Hope et al., 2001). Hepatitis C is a slow progressing virus in which more severe symptoms do not manifest until 20 to 30 years post infection (Shepard, Finelli, & Alter, 2005). In addition, the pre-vaccine population of injecting drug users who acquired hepatitis B in their 20's will have passed the 20-30 year mark at which progression to serious liver damage

becomes more likely (Australian Injecting and Illicit Drug Users League, 2011). As a result, people who began injecting drugs in their 20's are at a greater risk of liver damage and medical conditions such as cirrhosis and liver cancer by the time they reach 40 and 50 years of age (Shepard et al., 2005).

In addition, poly-drug use (particularly with concomitant alcohol and tobacco use) is common amongst people who use illicit drugs (Downey, 2011) and this pattern of use increases the risk of chronic obstructive pulmonary disease and other chronic respiratory diseases (C. Beynon, Stimson, & Lawson, 2010). It is also probable that conditions such as deep vein thrombosis may become more prevalent among older people who inject drugs and who have a history of tobacco use, as injecting-related damage will be exacerbated by age-related changes. In addition, stimulant and opiate-related cardio pathology and renal disease may occur (Beynon et al, 2010). In short, as many older Australians using illicit drugs have been doing so since the 1980's or 1990's (Higgs & Dietze, 2017) the level of morbidity amongst this cohort is likely to be much greater than amongst other older people.

While OST is now recognised as the preferred course of treatment for opiate dependence, pharmacotherapy and maintenance programs did not take place in Australia until the early 1990's (Caplehorn & Batey, 1992). As a result, we are also witnessing the first generation of opioid users who have lived with maintenance pharmacotherapies for decades, with many older clients being prescribed methadone and/or buprenorphine/naltrexone for over 20 to 30 years (Australian Injecting and Illicit Drug Users League, 2011). While there is evidence that methadone is associated with dental decay (Laslett, Dietze, & Dwyer, 2008) and diminished bone density (R. Brown & Zueldorff, 2007) most of the long-term health implications of OST are yet unknown (Australian Injecting and Illicit Drug Users League, 2011).

There are also some potential adverse drug reactions that can occur when different types of illicit drugs are taken with certain medications and these are outlined in Table 10.

Table 10: Illicit drugs and commonly used medications that may cause adverse reactions

Drug	Prescription medication	Potential adverse reaction
Cannabis	Antidepressants	Mania, rapid heart rate, delirium
	Erectile dysfunction drugs	Heart attack
	Disulfiram	Hypomania
	Sedative hypnotics	Increased sedation, central nervous system depression
Heroin	Benzodiazepines	Sedation, respiratory depression
	Opiate based pain medications	Central nervous system depression, lowered blood pressure
Amphetamine type stimulants	Antidepressants	Hypertension, CNS stimulation
	Anti- seizure medications	Increased risk of seizures
	Urinary alkalinisers	Increased effect and prolonged duration of amphetamines type stimulant
Cocaine	Beta Blockers	Potentiates the effects of cocaine on coronary vasoconstriction
	Disulfiram	Increased cardiovascular effect including heart rate and systolic blood pressure
Ecstasy	Monoamine oxidase inhibitors	Risk of serotonin syndrome related deaths
	Ritonavir (used in HIV therapy)	Risk of cardiac arrest

(Lindsey, Stewart, & Childress, 2012; R. Nicholas, A. Roche, N. Lee, S. Bright, & K Walsh, 2015a)

There is also evidence of socioeconomic disparities in relation to accessing health care; with the most disadvantaged in society making the fewest demands on health services (Veuglers & Yip, 2003). In addition, stigma and discrimination (Radcliffe & Stevens, 2008) and according to Higgs and Dietze (2017) a lack of confidentiality, models that are unacceptable or inaccessible, and cultural differences in managing health problems, have all been identified as barriers that help to explain why older people with either illicit or injecting drug use problems often delay in accessing health services or avoid them completely. As a result, many older people who use illicit drugs have compromised health (Australian Injecting and Illicit Drug Users League, 2011) and much worse health than the population norms for their own age group. Consequently, they often present as biologically

much older than their chronological age (C. Beynon et al., 2010; D. Rosen et al., 2011; D. Rosen, Smith, & Reynolds, 2008). Indeed, evidence from WA indicates that patients with illicit drug use problems may have life expectancies up to 23 years shorter than the general population (Lawrence, Hancock, & Kisely, 2013).

There is also evidence indicating that many older people with a long history of illicit drug use have little or no family support (C. Beynon, Roe, Duffy, & Pickering, 2009; Roe et al., 2010), and this can also impact on health and may precipitate earlier transition into residential care.

Despite all these issues, there exists little information concerning the incidence or prevalence of long-term conditions among those who currently or previously have used illicit drugs or data on life trajectories or the care requirements of this group of Australians (Australian Injecting and Illicit Drug Users League, 2011; Higgs & Dietze, 2017).

2.7 Potential harms associated with the misuse of pharmaceutical drugs

When drugs come from a doctors prescription pad, misuse is harder to identify (Sollitto, 2016). Additionally, patients are often unaware there are risks from inappropriate use, (Mhatre & Sansgiry, 2015; Wilcox, Cryer, & Triadafipoulos, 2005) shaped by a perception that as the drugs have come from a doctor or pharmacist they are “safe”. As a result, such individuals are unlikely to see themselves as at- risk of harm, identify as a “drug user”, or attend AOD services for assistance.

However, there are potential risks associated with both prescribed and non-medical use of pharmaceuticals. See Table 11 for some potential problems associated with many commonly misused pharmaceutical drugs.

Table 11: Commonly misused pharmaceutical drugs and possible risks

Generic name	Brand name	Possible risks
Benzodiazepines • Diazepam • Oxazepam • Nitrazepam • Temazepam • Alprazolam	Ducene®, Valium® Alepam®, Murelax®, Serepax® Alodorm®, Mogadon® Euhypnos®, Normison® Xanax®, Kalma®, Alprax®	Depression Confusion Feelings of isolation Impaired thinking and memory loss Headache Drowsiness, sleepiness and fatigue Dry mouth Slurred speech or stuttering Double or blurred vision Impaired coordination, dizziness and tremors Nausea and loss of appetite Diarrhoea or constipation Overdose: coma or death
Buprenorphine	Suboxone Sublingual Film® Subutex Sublingual Tablets®	Constipation Headache Increased sweating Tiredness or drowsiness Loss of appetite, nausea and vomiting Abdominal pain Skin rashes, itching or hives Tooth decay
Fentanyl	Durogesic® Actiq®, Sublimaze®	Nausea, vomiting Constipation and/or diarrhoea Reduced appetite Wind, indigestion, cramps Drowsiness, confusion Weakness or fatigue Dizziness Headache Incoherent or slurred speech Impaired balance Slow pulse and lowered blood pressure Rash (inflammation, itch, swelling at patch site) Overdose: Chest pain Slowed breathing Bluish lips and complexion Seizure Passing out Coma Death
Ibuprofen Ibuprofen and codeine	Brufen®, Nurofen® Nurofen Plus®	Headache Dizziness Drowsiness, fatigue and restless sleep Thirst and sweating Tingling or numbness in hands and feet Ringing in the ears Blurred vision and eye irritation Fluid retention and ankle swelling

		Mild allergic reaction Abdominal pain, nausea, vomiting, heartburn, diarrhoea and constipation Bladder irritation and pain, frequent urination
Methadone	Methdaone syrup®, Biodone Forte®	Sweating Difficulty passing urine Loss of appetite, nausea and vomiting Abdominal cramps Constipation Aching muscles and joints Rashes and itching Sedation Overdose: possible seizures, coma
Paracetamol Paracetamol & codeine Paracetamol, codeine and doxylamine	Dymadon®, Lemsip®, Panadol®, Panamax®, Tylenol® Panadeine Forte®, Panamax Co® Mersyndol® and Mersyndol Forte®, Panalgesic®	Overdose: Abdominal pain, nausea, vomiting, seizures, coma and death. Long term risks include: tiredness, breathlessness, anaemia, liver and kidney damage

(Australian Drug Foundation, 2017a, 2017b, 2017f, 2017h, 2017i, 2017j, 2017k).

In addition to the risks described in the Table 11, the long-term use of OTC opioid-containing medicines in high doses can lead to gastro-intestinal disease and clotting disorders (Frei, Nielsen, Dobbin, & Tobin, 2010; Nicholas & Roche, 2014). The prescription of strong opioids (i.e. oxycodone and fentanyl) among older Australians to treat pain may also increase harms such as endocrine and sexual dysfunction, osteoporosis, hyperalgesia and dependence (Baldini, von Korff, & Lin, 2012; Nicholas & Roche, 2014; Veal, Bereznicki, Thompson, & Peterson, 2015). Another important risk of prescription opioid misuse is suicide by self-poisoning (West, Severtson, Green, & Dart, 2015) and accidental overdose (Jones, Mack, & Paulozzi, 2013). For example, Australian research indicated there were 945 prescription opioid-poisoning related hospital admissions in Victoria in 2006-2013 amongst those aged 65+ and approximately 40 deaths (Berecki-Gisolf, Hassani-Mahmooei, Clapperton, & McClure, 2016).

Additionally, medications such as benzodiazepines have serious adverse effects in older age including an increased risk of falling (Ballokova et al., 2014), self-poisoning (Ballokova et al., 2014) cognitive impairment (Barker, Greenwood, Jackson, & Crowe,

2004), depression (F. C. Blow & Barry, 2014) and both benzodiazepines, sedatives and hypnotics have been associated with increased risks of falls, confusion, and hip fractures amongst older people (Park, Satoh, Miki, Urushihara, & Sawada, 2015).

There are also concerns related to possible adverse interactions of prescription and OTC drugs with illicit drugs and/or the possibility of iatrogenic addiction to prescribed medications (Frei et al., 2010; Huizer-Pajkos et al., 2016; Islam, Conigrave, Day, Nguyen, & Haber, 2014). See Table 10 for more detail.

For example, many medications which include those used for diabetes, arthritis or cardiovascular conditions may interact with alcohol, benzodiazepines, and other psychoactive drugs increasing the risk of harm (Hunter & Lubman, 2010). However, drug-drug interactions that reduce the efficacy of prescribed medications are also equally problematic (K. Sullivan, Lynch, Artesani, & Seed, 2007).

Another potential danger can occur when pharmaceutical substances are used contrary to prescription. For example, drugs that have been manufactured to be taken orally, can pose major health risks if they are injected, including severe circulation problems. In addition, non-sterile injecting practices can, in extreme circumstances, lead to gangrene and possible amputation (Australian Injecting and Illicit Drug Users League, 2011).

Poly-pharmacy and the overuse of inappropriate medications are also common and potentially harmful (Morgan et al., 2012; Reeve, Thompson, & Farrell, 2017). For example, among older adults taking on average six prescriptions per day, adverse drug effects were the most common cause of emergency department visits and hospitalisation (K. Sullivan et al., 2007). Additionally, an Australian study provided evidence of a positive correlation between the number of medications used and the potential for medication-related harms such as toxicity, dysfunction, drug-drug interactions, dependency, insomnia and tolerance (Giummarra, Gibson, Allen, Pichler, & Arnold, 2015). Finally, based on research that included community dwelling Australian men over the age of 70, Gnjidic (2012) found that poly-pharmacy at baseline more than doubled the risk of the incidence of frailty (involving functional impairment and increased susceptibility to disease, disability, and mortality).

While the studies outlined above do highlight some of the potential risks and harms associated with the use and misuse of pharmaceuticals, there remains a dearth of high quality research (Maree, Marcum, Saghafi, Weinder, & Karp, 2016) making it difficult to draw conclusions about either the extent of use or the range and severity of associated problems that are specifically related to the misuse of pharmaceuticals amongst older people.

2.8 Physiological changes that occur with ageing

There are a number of physiological changes that occur with ageing that are also relevant to an examination of the impact of AOD on older people. These changes relate to pharmacokinetics (the way the body affects drugs) and pharmacodynamics (the way drugs affect the body).

Generally, with ageing, the percentage of water and lean tissue (mainly muscle) in the body decreases, while the percentage of fat tissue increases (Korrapati & Vestal, 1995; Schoeller, 1989; Watson, Watson, & Batt, 1980). These changes can effect the distribution and the length of time that a drug stays in the body as well as the amount that is absorbed by body tissues (Vestal et al., 1977). Although the intrinsic activity of drug-metabolizing enzymes in general does not decline with age, liver mass as a percentage of body weight and liver blood flow, do decrease with ageing (Montamat, Cusack, & Vestal, 1989). As a result, the overall capacity of the liver to convert some drugs (e.g. diazepam) to their inactive metabolites decreases with age (Lamy, 1982).

Total body water (TBW) and lean muscle mass also vary with gender with females having a lower TBW (on average) and less muscle mass than males (F.C. Blow & Barry, 2002). While both men and women lose lean muscle mass as they age, because women have less to begin with, this is further exacerbated with increasing age. In addition, the bioavailability of alcohol is much greater in women than men, as women have less gastric alcohol dehydrogenase activity than men (Frezza et al., 1990). Liver enzymes that

metabolise alcohol also become less efficient with age and CNS sensitivity increases with age for both men and women (F.C. Blow & Barry, 2002).

According to Atkinson (2002), a fasting 60 year old man will develop a peak alcohol level 20-25% higher than a 30 year old given the same amount of alcohol. This difference is even greater for women. This decreased alcohol tolerance among older people may lead to decreased consumption with no apparent reduction in intoxication. Vestal et al. (1977) reported that while older drinkers are probably at no greater risk of impairment than young drinkers at low doses (one to two standard drinks), at higher doses the older person would achieve a higher BAC. This age-related physiological change may partially explain the longitudinal and cross sectional data showing a decline in alcohol consumption with age. That is, older people drink less but the effects may still be the same as they require less alcohol to achieve a similar BAC (Mirand & Welte, 1994).

A decrease in TBW amongst older adults can also result in the prolonged duration of action for lipid-soluble medications such as benzodiazepines leading to increased psychomotor and cognitive impairment (M. Sullivan & Levin, 2016).

In addition to changes to TBW with increasing age, there is some suggestion that older adults may have reduced or altered pharmacokinetics through changes to kidney function, compromised liver function and changes to pharmacodynamics as a result of alterations in neurotransmitter function and receptor density (Jansen & Brouwers as cited in Sullivan & Levin, 2016). Such changes may be profound if an older person has a long history of drug use, which in itself may have altered the function of various neurotransmitters and systems in the brain and exacerbated declines in other structures e.g. kidney function (Dowling et al., 2008).

2.9 Potential economic costs of AOD use amongst older Australians

To date, research examining the related societal and economic impacts of AOD use amongst older Australians is sorely lacking (Hunter, 2011; National Stakeholders Group, 2015; Searby, van Swet, Maude, & McGrath, 2017; Victorian Alcohol and Drug Association, 2011). Despite the lack of detailed economic analyses, the increases in

alcohol-related hospitalisations amongst older Australians, the increased number of older clients on OST and the increased rates of pharmaceutical misuse among older Australians will inevitably lead to increased costs across the health, welfare and aged care sectors.
While it may not be possible to accurately price the entirety of costs, there is little doubt that a significant proportion of the estimated $1.6 billion (Manning et al., 2013) spent annually on alcohol-related healthcare, nursing homes, pharmaceuticals and ambulance costs are attributable to older Australians. In the absence of definitive data on the direct economic costs of AOD use amongst older Australians, the following sections provide some crude rudimentary estimates on **possible** tangible costs associated with AOD use amongst older Australians.

2.9.1 AOD treatment and Opiate Substitution Therapies (OST)

In Australia in 2011, the cost of treatment (excluding pharmacotherapy treatment alone) for illicit drug use, including amphetamines, cannabis, cocaine, ecstasy and opioids, was estimated at $298 million (Smith, Jorna, Sweeney, & Fuller, 2014). In addition to this, the cost of opioid pharmacotherapy treatment was estimated at $185 million (Australian Institute of Health and Welfare, 2016a).

Based upon data in the "Alcohol and Other drug Treatment Services in Australia 2015-16," there were 133,895 clients attending AOD treatment agencies across Australia. Of these, 95.8% were attending treatment for issues related to their own drug use (n=128,271). Of this sample, 3.8% were aged 60 and older (n=4,874) (Australian Institute Of Health and Welfare, 2017b). Of these, 9% present at AOD specialist agencies in Australia with illicit drug related problems i.e. cannabis (5%), heroin (1.5%), sedatives/hypnotics (0.4%) amphetamines (1.9%), cocaine (0.1%) other stimulants and hallucinogens (0.1%) (Australian Institute Of Health and Welfare, 2017b). Given then that 9% of older clients are likely to be attending an AOD agency for illicit drug related problems, this would equate to 438 clients (9% x 4,874). For those aged 10-59 (n=123,397), 51.86% were attending for illicit drug related problems (i.e. cannabis (27%), heroin (4.6%), sedatives/hypnotics (0.16%) amphetamines (18.5%), cocaine (0.3%), ecstasy (0.9%) other stimulants and hallucinogens (0.4%)). This equates to 63,993 clients attending for problems relating to illicit drug use. Therefore of the total number of clients (n= 64,431)

attending for illicit dug related treatment 0.68% are aged 60 or older. When this figure is apportioned to the cost of treatment for illicit drug use provided by Smith et al, this would equate to $2 Million (0.68% x $298 million) dollars being spent on illicit drug treatment for Australians aged 60 years and older. As 75% of older Australians present with alcohol as the primary presenting drug problem, the alcohol related costs of treatment would be much more than $2 million.

In June 2014, there were approximately 48,000 clients across Australia receiving pharmacotherapy treatment for their opioid dependence. From 2006 to 2014 the proportion of clients aged less than 30 more than halved (from 28% to 10%), and the proportion of clients aged 50 and over more than doubled (from 8% to 21%) (Australian Institute of Health and Welfare, 2015).

In June 2016, there were almost 34,000 clients across Australia (excluding Victoria and ACT as no data was available from these states at the time of publication) receiving pharmacotherapy treatment for their opioid dependence at 2,011 dosing points. Of these clients, 2 in 3 were male, 1 in 10 identified as Aboriginal or Torres Strait Islander and the mean age of clients was 42. In 2016, clients ranged in age from their late teens to 85 years of age and the number of clients aged 60 years and over increased to 1,874 (6% of clients). Since 2011, the median age of opioid pharmacotherapy clients has been increasing. Amongst those states and territories for which data was available, 36% of clients reported heroin as their opioid drug of dependence. The next most common drugs of dependence were: oxycodone (6%), morphine (6%) and codeine (5%). Two-thirds of clients (65%) were treated with methadone in 2016 (Australian Institute of Health and Welfare, 2017f).

In the most recent publication on the costs of drug use, from the Australian Institute of Criminology, the cost of methadone maintenance per annum was approximately $4000 per client (Australian Institute of Crimonology, 2015). Without allowing for inflation, nor including any differential cost for buprenorphine etc. (as there was no costing's provided for these forms of pharmacotherapies in the report from the Australian Institute of Criminology), and not including clients from Victoria or ACT (as no data was available), the cost of pharmacotherapy treatment for Australians (excluding those from Victoria and

ACT) aged 60 and over in 2016, could, conservatively be estimated at approximately $7.5 million.

2.9.2 Homelessness

Research suggests there is considerable overlap between people experiencing AOD related problems and those people experiencing precarious housing and/or homelessness. For example, in 2014-2015 it was estimated that 11% of clients in Specialist Homelessness Services had a current alcohol and other drug issue (Mental Health Commission, 2017). An earlier study of 125 older clients (aged over 50) newly referred to a homeless service in Melbourne found that 77% of the men and 44% of the women had significant problems with alcohol dependence (Rota-Bartelink & Lipmann, 2007). Whether homelessness precedes drug use or vice versa has often been debated with estimates that drug use preceded homelessness in 15% (Homelessness Australia, nd) to 30% of cases (Johnson, 2008).

In 2016, of those clients aged 50+ who were both homeless and attending AOD services, over two thirds (67%) were in AOD treatment for alcohol, 9% for pharmaceuticals and cannabis, 8% for heroin and 6% for amphetamines. Those who were homeless received many more days of AOD treatment (160 days) compared to those who were not homeless but attending an AOD service (108 days).

Since data collection on specialist homelessness services (SHS) began in Australia, the number of older clients receiving SHS has increased by 25% (Australian Institute of Health and Welfare, 2016b). At the time of writing, the ABS had not yet released census data on the rates of homelessness in 2016. But, on census night 2011, data indicated that 6,202 Australians aged 65 years and older were experiencing homelessness. Based on research from the University of Melbourne that examined health costs, costs of crime, individual costs, and improved social capital; homelessness was estimated to cost the government $25,615 per homeless person per year (Witte, 2017). Applying this cost to the 2011 census data and using 11% as a crude estimate of the proportion of homeless people with an AOD issue, homelessness linked to AOD use cost approximately $17.5 million dollars annually.

2.9.3 Aged care

In 2015-16, $17 billion was spent by governments on aged care, with 69% of these funds spent on residential age care (Australian Institute of Health and Welfare, 2017a). Residential age care provides permanent accommodation and care for people who can no longer live at home due to increased health needs and short-term accommodation and care for people who (or whose carers) need a break from their normal living arrangements. In 2014-15, 97% of people in either type of residential care were aged 65 and older with some 224,000 using permanent residential care and approximately 51,400 using respite residential care (Australian Institute of Health and Welfare, 2017g).

In the period 2015-16, data indicated that women outnumbered men by 2 to 1, 46% of people in permanent residential care had depression and less than 1% of people in permanent aged care were Aboriginal or Torres Strait Islander (Australian Institute of Health and Welfare, 2017a). According to Draper (ND), prescribed use of benzodiazepines and opioids is high amongst aged care clients and approximately 4.4% of aged care clients, misuse benzodiazepines or opioids (B Draper, ND). Applying this percentage to the number (214,000) of Australians entering aged care in 2015-16 (Australian Institute of Health and Welfare, 2017a) would equate to over 9,000 Australians misusing pharmaceuticals in aged care services. In addition, concerns have also been raised about clients who may have alcohol-related brain damage or cognitive impairment entering aged care. Although no data could be found on the numbers of Australians in aged care with these problems, such patients will undoubtedly require complex management plans which may require great staff involvement (B Draper, ND) and hence incur greater costs.

While no economic costing's could be found to apply to the above information, Collins and Lapsley (2008) estimated that in the 2004/05 financial year, at least 15% of all Australian nursing home admissions had AOD-related morbidities costing the Commonwealth and state and territory governments around $230 million (Collins & Lapsley, 2008).

2.9.4 Hospital costs

In 2015-16, there were 10.6 million hospitalisations (6.3 million in public hospitals and 4.3 million in private hospitals). The average length of stay was 5.7 days in public hospitals and 5.2 days in private hospitals. Amongst hospital patients: 53% were females, 5% were Indigenous and 41% were aged 65 or older and recurrent funding was approximately $61 Billion (Australian Institute of Health and Welfare, 2017c).

In an Australian first, Butler and colleagues (Butler, Reeve, Arora, et al., 2016) estimated the cost differences between emergency department patients who scored positively or negatively on the ASSIST screening tool. Results indicated that hospital costs were much higher for those who scored positively on the ASSIST, at $211.73 per ED presentation compared to those with a negative score, where costs were estimated at on average $188.00.

When patients are admitted to hospital it has been estimated that the average cost per separation is $4966 (Independent Hospital Pricing Authority, 2015). When the rates of alcohol-related ED presentations provided by NDRI i.e. 2.09/1000 for men and 2.62/1000 for women (see section 2.5.7 in this report and note the caveats) are applied to population data from 2016 (Australian Bureau of Statistics, 2017b), (where the estimated number of women aged 65 and older was 1,956,770 and the number of men was 1,716,741) they equate to 3,588 alcohol-related ED presentations amongst men aged 65 and older and 5,127 for older women. When the rate of $211.73 per ED attendance is applied, the combined total cost for men and women is in excess of $1.8 million dollars. When admission costs of $4966 are applied ($4966 x 8,715 people), this figure equates to over $43 million.

Additionally, Chikritzhs, Whetton, Daube, Pascal and Evans (2010) estimated that a 30% reduction in risky/high-risk drinkers in Australia by 2020 would avoid 7,200 deaths and approximately 94,000 in person-years-of-life lost due to premature death. The benefit to the health system was estimated to result in 330,000 fewer hospitalisations and 1.5 million associated bed days (Chikritzhs et al., 2010). The net value of these benefits was estimated

to be $1.7 billion from fewer hospital separations, and $22.7 billion from deaths avoided, equating to $24.4 billion (Chikritzhs et al., 2010)

2.9.5 Ambulance costs

Hunter, Lubman and Barratt (2011) analysed Victorian ambulance attendee data from 2004 to 2008 for people aged over 65 and found that alcohol intoxication-related attendances nearly tripled from 3.3 individuals per 10,000 in 2004, to 8.2 per 10,000 in 2008. Hunter et al. (2011) also observed an increase in attendances for intoxication related to benzodiazepines (22% of 2,966 attendances) and pain medications (14% of attendances).

Medicare does not cover ambulance costs and ambulance costs vary across the country dependent on a range of variables e.g. whether the situation is an emergency/non-emergency, mode of transport (road, helicopter, fixed wing), whether the person needing an ambulance is a resident of the state in which the ambulance was required, whether or not the person has a seniors or concession card etc. There are also differences across the country in terms of who provides ambulance services. For example, in WA and the Northern Territory, ambulance services are provided by government agencies and in 2013, the WA government increased ambulance service funding to $100 million dollars (Western Australian Auditor General, 2013). Because of the different funding models, it is difficult to estimate alcohol-related ambulance costs, but it is reasonable to assume that the increases in alcohol or other drug related callouts for older people would come at a considerable expense.

2.9.6 Over-the-counter medications

As discussed earlier in the report, the greater use of over the counter and prescription medicines among older people places them at a high risk of adverse outcomes (Frei et al., 2010; Huizer-Pajkos et al., 2016; Islam et al., 2014). While a formal estimate based on the costs of unnecessary and potentially harmful medicine use in older Australians is yet to be established (National Stakeholders Group, 2015) this cost is likely to be in the order of hundreds of millions of dollars annually (National Stakeholders Group, 2015).

Conclusion

In addition to the rudimentary costs outlined above, there will also be costs associated with mental illness and co-occurring substance use disorders among older Australians. These older Australians are likely to have complex needs distinct from their younger counterparts (Hunter, 2011; Searby, Maude, & McGrath, 2015b, 2016). Given that the annual cost of mental illness in Australia has been estimated at $20 billion (Australian Government National Commission of Audit, 2014), and that mental health problems among older people with AOD related problems are widely under diagnosed (Royal College of Psychiatrists, 2011; Searby, Maude, & McGrath, 2015a), it is probable that a significant proportion of the $20 billion relates to AOD associated mental health issues.

To accurately estimate the economic impact of AOD use amongst older Australians will require a comprehensive sophisticated analysis by health economists. Nonetheless, the elementary calculations provided above indicate there is enormous scope to save healthcare dollars through improved prevention, harm reduction, identification, support and treatment services creating better health outcomes for people with AOD problems (Butler, Reeve, Viney, & Burns, 2016).

2.10 Receptiveness of older people to health-related messages and treatment initiatives

Older people have long been ignored as the foci for health promotion activities (Golinowska, Groot, Baji, & Pavlova, 2016). One reason for this has been the assumption that it is 'too late' for older people to change behaviours. However, since 2001, when the WHO promoted the 'healthy lifestyle at every stage of life' message, the numbers of health promotion messages and strategies targeting older people have grown rapidly. In addition, there is research demonstrating the effectiveness of health promotion strategies and messages targeting physical activity, smoking, falls and nutrition amongst older people (Savage & Bailey, 2004).

Older people will often have unique motives for making lifestyle behaviour changes and

unlike younger adults – who may not see the impact of their negative behaviours until the future – older adults may see immediate and potentially life-threatening effects (World Health Organization, 2015a).

Ensuring that health related messages, including information about alcohol and other drugs, reach older people in ways they can accept is essential for changing attitudes and behaviours and subsequently the WHO (2015a see p.178) recommend:

- Use communication processes that rely on heuristics and intuition. These processes may be more effective than those that rely on large amounts of information processing and thinking.
- Make messages more relevant to older people. Targeting messages (for example, about the importance of physiological changes that occur with ageing) can make the message appear more relevant and appealing.
- Trial positive messaging for older adults. Many older adults are motivated to avoid processing negative information. Emphasizing gains to promote preventive behaviours, (such as avoiding alcohol use to decrease cancer risk), may be more effective in older adults.
- Tailor messages to specific older people. Matching information to an individual's characteristics can influence how older people think and feel about a health issue; this can be more effective especially if the message addresses how by modifying behaviour an older person may become more emotionally satisfied.
- Manage emotional distress. Emotional distress can be both a catalyst for and a saboteur of change; hence, it needs to be managed successfully to encourage behavioural change and maintenance of that change.
- Consider an older person's social support. As people age, their social networks decrease in size and the networks may be more effective at promoting stability than change. Social support can facilitate or endanger behavioural change – for example by providing emotional support and helping to manage emotional distress – or by discouraging change – for example if one person in a couple wants to stop taking illicit drugs or drinking alcohol and the other does not.

While further work is required that examines the role of different factors in motivating older adults to make and sustain positive behavioural changes, there is a body of literature that provides insight into effective settings and strategies for reducing AOD use and harms amongst older people and these will be covered below.

Given that older people are higher users of health services (Australian Institute of Health and Welfare, 2014b) and are much more likely to seek care from both primary care and specialty care providers than younger adults (F. C. Blow & Barry, 2014), community pharmacist's and general practitioners (GP's) are well placed to provide health promotion information and advice on alcohol and other drug (AOD) related information to older Australians (Ostini et al., 2009; Wilkinson et al., 2016). This is also the most common setting for research investigating the dissemination of AOD related information (Borok et al., 2013). A recent scoping review by Mowbray and Quinn (2016) concluded that overall the most well established and effective treatment for substance use problems in older adults are brief motivational interviews (BMI's) applied in primary care settings. Typically lasting from 20 minutes to hour, BMI's are used by practitioners to engage patients with a conversational style to strengthen the person's own motivation and commitment to change their substance use (Mowbray & Quinn, 2016). Whether BMI's and AOD information can be effectively delivered by other health professionals (i.e. nurses and pharmacists) outside of primary care settings and via alternate means (i.e. leaflets through the mail) remains an area for future research (Borok et al., 2013; Kelly, Olanrewaju, Cowan, Brayne, & Lafortune, 2017; Mowbray & Quinn, 2016).

Despite the effectiveness of clinical conversations between doctor and patient, the results of a recent Western Australian study indicate that both GP's and pharmacists are under-utilising opportunities to engage older clients in AOD related conversations (Wilkinson et al., 2016). In their study with men and women aged between 60 and 89, Wilkinson et al. (2016) found that only 30% of men and 20% of women reported being asked about their alcohol use by their GP in the past 12 months. Additionally, fewer than 4% of men and women recalled being asked about their use of alcohol by their pharmacist (Wilkinson et al., 2016). The research literature also highlights that the rate at which GP's and pharmacists are asking older patients about their AOD use, does not match the

receptiveness of older people to receiving such information (Qi et al., 2015; Reeve, To, et al., 2013; Wilkinson et al., 2016).

For example, Wilkinson et al. (2016) found that 94% of older men and 87% of older women believed it appropriate for their GP to ask them about their use of alcohol and 50% of men and 62% of women also believed it appropriate for their pharmacist to ask. Moreover, participants reported that they would particularly welcome receiving tailored information regarding alcohol and medication use from both the GP and pharmacist (Wilkinson et al., 2016).

Similarly, discussions about prescription medication and de-prescribing do not occur in practice as often as they should (Reeve et al., 2017). This is even though two separate Australian studies have found that almost 90% of older adults report that they would be willing to have one or more of their unnecessary medications ceased (de-prescribed) if their doctor thought it was appropriate (Qi et al., 2015; Reeve, Wiese, Hendrix, Roberts, & Shakib, 2013). These findings on medication and alcohol use suggest that older Australians are very receptive to receiving advice from the GP and to a lesser extent, their pharmacist on alcohol and prescription medicines. Unfortunately, approximately 40 to 80% of medical information is immediately forgotten after exposure (Kessels, 2003), especially by older adults (Jansen et al., 2008).

To increase the transferability of information between a doctor and patient, a number of factors related to ageing need to be taken into account (Mowbray & Quinn, 2016; Sadowski, 2011). For example, poor health literacy, or the inability to comprehend health care information, is more common in older adults and associated with decreased adherence to therapies, increased hospitalisations, healthcare costs and mortality (Sadowski, 2011).

Further, the likelihood of developing one or more chronic conditions increases with age, and communication barriers such as hearing loss, speech impairments, and slowed speed of cognitive processing can inhibit older patient's involvement in decision making (Bynum, Barre, Reed, & Passow, 2014; Czaja, 2016). At a minimum this means that health professionals may need to spend more time communicating with elderly patients to ensure that they understand the information being communicated to them (Bynum et al., 2014).

AOD related advice may be more effective when verbal counselling is delivered in conjunction with easy to read written information (Sadowski, 2011). To this end, Wilkinson and colleagues (Wilkinson, Helfgott, Kirby, & Allsop, 2015) produced an alcohol and older Australians fact sheet that is targeted at older Australians (see Appendix 2); and Ferguson, Savic, Manning and Lubman (2017) have developed an online alcohol-related health promotion tool for older Australians.

Companion involvement during medical encounters through the provision of informational support (i.e. such as asking questions, taking notes, and recalling information) has also been associated with positive consequences for older patients including improved understanding by the patient of the medical advice (Laidsaar-Powell et al., 2013).

Other barriers to older patients receiving health advice include social isolation, particularly among those who live alone and in rural areas (American Psychological Association, 2014; Czaja, 2016). In these circumstances and settings, telephone and technological based interventions may facilitate the provision of AOD information and interventions to older Australians (Chang, Compton, Almeter, & Fox, 2015; Czaja, 2016).

For example, Chang et al. (2015) tested the effects of a four week motivational interviewing (MI) intervention for prescription opioid adherence among 30 adults with chronic pain over the age of 50. While the intervention was found to reduce the risk for prescription opioid abuse in older adults, it was also effective in decreasing the risk for developing an alcohol use disorder among those who drank (Chang et al., 2015). Moreover, the participants acknowledged the convenience of weekly phone delivered MI sessions which provided them with a more flexible way to complete the intervention without having to attend a clinic (Chang et al., 2015).

There is also a range of internet-based interventions becoming increasingly available such as those delivered via computers and mobile devices (e.g. smart phones and tablets) to address the health needs of older adults (Czaja, 2016). While access to technology and the Internet needs to be taken into account, an increasing number of older adults are becoming more technologically engaged to manage their own health (Czaja, 2016; Sadowski, 2011). The use of E-Health applications, such as health websites, online health self-management

tools, online support groups and blogs to access or receive health information or support is increasing (Czaja, 2016). Health applications and links on smart phones sometimes referred to as mHealth are also on the rise (Czaja, 2016) and should be explored for the potential utility with older Australians.

A recent systematic review which investigated internet based interventions for addictive behaviours found that all 16 studies reviewed demonstrated positive treatments outcomes for their respective behaviours (smoking cessation, gambling, alcohol and alcohol dependence) (Chebli, Blaszczynski, & Gainsbury, 2016). However, as with telephone interventions, the majority of studies in the review did not report demographic characteristics making it difficult to evaluate the benefit of these interventions for older people (Chebli et al., 2016). Nonetheless, a recent study by Grindrod and Gates (2014) explored the usability and usefulness of mobile health applications installed on an Ipad for medication adherence among a sample of 35 adults aged 50 and over. The study participants found little utility for the applications above their current health management systems, but proposed future use only if cognition and health declined (Grindrod et al., 2014). Most participants also experienced difficulty when first attempting to use the applications but felt they would be able to use them with training and practice (Grindrod et al., 2014). Overall, the findings indicate that it is beneficial if older adults are educated about the utility of new technologies and provided with ample opportunities for training and learning (Czaja, 2016).

The process of making a decision with health information is also complex (Sadowski, 2011). Patients receive information and then act on it (or not) based on its source, content and their pre-existing beliefs (Sadowski, 2011). Borok et al. (2013) found that participants (aged >55) who made actual reductions in their risky alcohol use 12 months after participation in a primary care based brief motivational intervention (BMI), reported that they did so due to the information gained about the perceived health benefits. Further, the majority of respondents who were still at-risk drinkers reported that convincing medical evidence that alcohol was harming them would motivate them to change (Borok et al., 2013). It is therefore essential that health professionals assist older patients in making the best decisions by providing the highest quality AOD information concerning the effects on their personal health (Borok et al., 2013; Sadowski, 2011). The development and

dissemination of AOD related information is important, as data has indicated that more than 80% of Australians believe that they could drink alcohol every day for many years without adverse health effects (AIHW as cited in (Pettigrew & Pescud, 2016). Similarly, research by Wilkinson and colleagues (Wilkinson et al., 2016) with older West Australians indicated that 70% of men and 60% of women believed that red wine decreased health risks and 63% of men and 82% of women reported that these beliefs had influenced their decision to drink.

The available literature also highlights the importance of the patient-health professional relationship in the context of engaging older clients in AOD related discussions (Linsky, Simon, & Bokhour, 2015; Reeve, Low, & Hilmer, 2016). Pharmacy customers have expressed concerns about privacy and trust which contribute to less positive attitudes concerning their pharmacist asking about their AOD use (Sheridan, Stewart, Smart, & McCormick, 2012). Conversely, a greater amount of trust given to GP's by older clients has been found to inhibit their ability to take a more active role in decision making about their health (Linsky et al., 2015; Reeve et al., 2016). For example, some elderly patients fail to raise their concerns about taking unnecessary medications due to their perception that "doctor knows best" (Linsky et al., 2015; Reeve et al., 2016).

Greenhalgh, Macfarlane, Steed and Walton (2016) suggest that for community pharmacist's to be able to successfully deliver AOD interventions, they first need the trust of the public which may occur via the promotion of positive messages by other health professionals and the media. With regard to doctor-patient relationships with older client's, shared decision making whereby the patient is well informed and their preferences are considered in health decisions has been recommended (Linsky et al., 2015; Reeve et al., 2016; Wolff & Boyd, 2015).

These issues are more complex for clients using illicit drugs and misusing pharmaceuticals. International and Australian research has consistently shown that individuals engaged in illicit drug use are hesitant about disclosing this behaviour with health care providers due to fear of stigma and discrimination and this is more pronounced for people who inject drugs (Australian Injecting and Illicit Drug Users League, 2011; Drumm, McBride, Metsch, Neufeld, & Sawatsky, 2005; Higgs & Dietze, 2017; Islam et al., 2013; H. Wilson,

Brener, Mao, & Treloar, 2014) and most pronounced amongst those who injected pharmaceutical drugs (Islam et al., 2013).

The issue of trust in a health care provider is critical for all drug use and is an important predictor of whether or not a person will disclose their drug using behaviour (Treloar, Rance, Yates, & Mao, 2016). Unfortunately, Ostertag, Wright, Broadhead and Altice (2006) have suggested that trust in physicians is likely to be lower among older people with a history of illicit drug use, because of the increasing amount of time spent occupying a stigmatized status, great number of negative encounters and increasing opportunities to interpret other's actions and feelings through a negative lens. As a result of the long-term exposure to stigma, they are even less likely to disclose use than younger people. There have also been concerns raised that the development of electronic health records, will increase individuals concerns about privacy and confidentiality and the likelihood that they will wish to disclose illicit drug use (Campos-Castillo & Anthony, 2015).

There will also be a cohort of older people who may require more than advice or the delivery of a brief intervention. While historically, older people were often excluded from large scale randomized controlled trials into the effectiveness of different AOD treatment approaches, over the past decade and particularly in the U.S., a number of studies have investigated the efficacy of a range of interventions specifically with older patients.

Based upon this growing body of evidence, it appears that Cognitive Behaviour Therapy (CBT) approaches in relation to alcohol and benzodiazepine use with older people are effective (Kuerbis & Sacco, 2013; Morin et al., 2004; Satre, 2015). Research has also shown that pharmacotherapy and psychotherapy programs for substance use disorders and mental health problems have equivalent or more positive treatment outcomes amongst older people than their younger counterparts (Blazer, 2003: Goncalves and Byrne, 2012; Karlin et al., 2013; Kuerbis and Sacco, 2013, Weiss and Petry, 2013 as cited in (Al-Otaiba, Epstein, McCrady, & Cook, 2012; Choi et al., 2014). There is also evidence that older patients are usually more compliant with treatment than younger patients (Gossop & Moos, 2008).

Research that has examined the impact of two types of outpatient treatment ("day hospital" vs. "traditional outpatient") for alcohol use found that at five year follow up older adults were significantly more likely to report abstinence from alcohol and illicit drugs over the past year than younger adults (Satre, Mertens, Arean, & Weisner, 2004). Similar outpatient research with veterans in the US also demonstrated that older adults had significantly better outcomes than younger adults (Lemke & Moos, 2003).

In Kuerbis and Sacco's (2013) review of existing treatment for substance 'abuse' among older adults, the authors concluded that chemical aversive counterconditioning to alcohol, CBT, and relationship enhancement therapy demonstrate positive outcomes for older adults. They also concluded that treatment, whether age-specific or mixed-age, generally works, yielding rates of abstinence comparable to general populations and younger cohorts. Finally they also suggest that greater treatment exposure (higher dosage), produced a higher success rate for older adults and that age-specific treatment may potentiate treatment effects for older adults, potentially due to greater treatment engagement or retention. In Australia, one older adult specific service has been established in Victoria for people aged 50+ with alcohol-related problems (the Older Wiser Lifestyle OWL program). A recent review of effectiveness found that at six months, significant reductions were observed in the Australian Alcohol-related problems survey (A-ARPS) classification and Alcohol Use Disorders Identification Test- Consumption (AUDIT-C) scores among all clients, irrespective of the number of sessions or intervention group(S. Bright & C Williams, 2017). Further research is required on this innovative unique program, but if results are favourable then it may be possible to extend the treatment model for inclusion of older people with illicit drug problems or duplicate the service in other jurisdictions.

Case and care management models also offer distinct advantages for older adults by providing a comprehensive approach that addresses the complexity of medical and psychiatric comorbidities common amongst older people. Such approaches can also embed alcohol, illicit drug and the misuse of pharmaceuticals into a broader health care plan and this can help to reduce shame, embarrassment and stigma (Kuerbis, Sacco, Blazer, & Moore, 2014)

In conclusion, while at least half of older people report that they are willing to engage in alcohol-related discussions with their pharmacist, and the majority with their GP, they also report that these discussions do not take place very often (Wilkinson et al., 2016). More research is needed to determine the effectiveness of AOD intervention and information dissemination which occurs outside of primary care settings and via different means (Borok et al., 2013; Kelly et al., 2017; Mowbray & Quinn, 2016) and in particular for illicit drug use and the misuse of pharmaceuticals. More research is also required about which specific treatments work best for AOD related problems and what might be the crucial mechanisms of change for older people (Kuerbis & Sacco, 2013).

Thus, while more research is needed into the efficacy of utilizing various settings, there is evidence to suggest that primary heath care is an optimal setting (Bhatia, Nadkarni, Murthy, Rao, & Crome, 2015; Mowbray & Quinn, 2016) for alcohol-related discussions but more work is needed to ensure that this is also a setting in which older clients feel "safe" to disclose and openly discuss their alcohol, illicit drug use and misuse of pharmaceuticals without fear of prejudice.

2.11 Summary

Alcohol and other dug use amongst older Australians is generally lower than the rest of the population. Despite this, AOD use amongst older Australians comes at considerable bio-psycho-social-economic cost. While this literature review has focused on the current generation of older Australians, there are also concerns that the next cohort of older Australians may have higher levels of AOD use and subsequently higher levels of harm. For example, cannabis use amongst 55-64 year olds has increased from 1.2% in 2001 to 7.5% in 2017 (Australian Institute of Health and Welfare, 2017d). There is also an ageing Australian cohort of injecting opioid users and opioid substitution therapy (OST) clients (Australian Injecting and Illicit Drug Users League, 2011; Australian Institute of Health and Welfare, 2014d). The Australian Institute of Health and Welfare (2014d) reported that from 2006–2013 the proportion of OST clients aged less than 30 more than halved (from 28% to 11%), and the proportion of clients aged 50 and over more than doubled (from 8% to 19%). Estimates further indicate that there may be as many as 30,000 regular injecting

opioid users, and up to 80,000 infrequent or non-dependent injecting opioid users in Australia who are over the age of 40 (Australian Injecting and Illicit Drug Users League, 2011).

In conclusion, Australia is currently faced with a paradigm shift in terms of our views, responses and policies on "older age". AOD use amongst older Australians has typically been ignored, but this needs to change. With the spotlight on AOD use amongst older Australians as a result of the publication of the 2016 NDSHS, the issues are now in the public domain and subsequently; this presents a window of opportunity for the timely development of prevention and intervention responses.

Chapter Three: Key informant research investigating alcohol and other drug use amongst older Australians

3.1 Introduction

Key informant (KI) interviews were conducted with 18 informants from across Australia. The key informant interviews were designed to capture input on:

1. The public health implications for Australia related to AOD use and ageing.
2. How the ageing of the Australian population may influence AOD prevention and treatment initiatives.
3. The impact of AOD use in older Australians.
4. Issues for the future related to AOD use and older Australians.
5. Identification of research priorities on alcohol use amongst older Australians.

3.2 Methods

Before interviews commenced, it was necessary to develop the key informant questionnaire and identify potential key informants. The method section will provide details on each of these elements and will include information on the professional experience of each key informant interviewed.

3.2.1 Development of key informant questionnaire

The key informant questionnaire was developed with input from the expert panel reference group in July 2017.

3.2.2 Components of the key informant questionnaire

Following discussion with members of the expert reference group about the critical issues and being mindful not to overly burden key informants, the final survey included ten

questions. See Appendix 1 for the full questionnaire and see Table 12 for a list of the questions included.

Table 12: Questions included in the key informant questionnaire

1.	From your perspective what are the major public health implications for Australia related to AOD use and an ageing population?
2.	What implications does AOD use amongst older Australians have for AOD prevention and treatment initiatives? Why?
3.	From your perspective what impact is AOD use amongst older Australians having on services such as aged care, hospitals, primary health care etc.?
4.	In your opinion, what are the major direct and indirect costs associated with AOD use amongst older Australians?
5.	Are you aware of any services or organisations that have been proactive in this area? (either in developing AOD services specifically for older people, or engaged in raising awareness about the topic, or initiated workforce development programs on AOD and ageing etc.). If so, who are the organisations and in your opinion what are they doing well?
6.	How do you think we might best raise awareness about AOD issues amongst older Australians in general and amongst specific groups of older Australians?
7.	How do we best increase AOD knowledge amongst those professions who work with this age group?
8.	What would you identify as three key research priorities in this area?
9.	What do we need to do to respond more effectively to AOD use amongst older Australians- now and over the next ten years?
10.	Are you aware of any data on this topic that may be useful to include in the report?

To increase the accuracy of the interpretation of qualitative data the following procedure was adopted: (1) question was stated; (2) a matrix of response themes was developed; (3) the range of responses was described; and, (4) an interpretative discussion was provided (Windsor, Baranowski, Clark, & Cutter, 1994). A summary is provided in the results section of this chapter. To afford greater clarity, quotes from key informants are included.

3.2.3 Recruitment and interview protocol

As the focus of the survey was on AOD use and older people the decision was made to select key informants from the ageing field, the alcohol and drug field and the medical and

general health fields. At the first reference group meeting, members identified possible KIs to contact and in the round of interviews KIs were asked to nominate further possible informants. To provide flexibility for informants, they were offered the opportunity to conduct the interview over the phone or to fill out the survey and return. In the Department of Health contract, the consultant agreed to interview 10 key informants, but a total of 18 key informants participated in the project.

Initial contact with potential key informants was made via email. This email included information about the research and a copy of the key informant questionnaire. The first key informant interview was conducted on 2 August 2017 and the last interview was conducted on 25 August 2017.

3.2.4 Sample

Each key informant was given a single identifier from KI1 to KI18. Key informants resided in every State and Territory in Australia with the exception of Tasmania and the Northern Territory. The sample included: two AOD service provider Medical Directors/Professor; one Professor of Geriatric Medicine; four Associate Professors/ Professors in the discipline of health and ageing; one AOD academic/clinician; one pharmacist/Associate Professor; one Associate Professor/Elder in the discipline of AOD and Aboriginal research, one Research Fellow in the discipline of mental health and Aboriginal research; one CEO of a metropolitan AOD service; one CEO of a state-wide alcohol and other drug network, two Managers of regional/remote AOD services; one CEO from the Mental Health field; one Coordinator from a substance use peer support network; and, one peer support worker with a lived experience of injecting drug use.

3.3 Results

Results for each question included in the survey/interview will be presented. This will involve the question being stated followed by a discussion of the responses from key informants.

Q1. From your perspective what are the major public health implications for Australia related to AOD use and an ageing population?

Three KI's mentioned that we are now witnessing an increase in alcohol use amongst successive cohorts of older people, in particular amongst successive cohorts of older women. Another KI mentioned that not only are we witnessing an increased use of alcohol amongst more recent cohorts of older Australians but that there is also an increase in the size of the aged population of opiate dependent people on opiate substitution treatment (OST). A further two KIs, mentioned concerns about increasing poly-drug use amongst such cohorts, some of which was linked to pain management and some a result of the high level of comorbidity amongst older people and multiple medications commonly being prescribed. One key informant who had a lived experience of injecting drug use, commented that not only is she now experiencing the effects of a deterioration in health due to the "normal" ageing process, but she has also had to deal with living with HIV and Hep C since 1992 and hence suffers from the deleterious effects of long term drug use and these effects on her health. These issues all resonate with the latest data from NDSHS and the research literature highlighting the poor health of people who have used illicit drugs or injected drugs for many years.

The comorbidity common amongst many older Australians also means that responding to AOD use amongst older people becomes infinitely more complex. Many KI's voiced their concern that neither the primary health care, public health or the aged care sector have the capacity to respond appropriately. As two KI's commented:

"*What we are seeing is a disproportionate level of co morbid harm occurring and unfortunately many GP's are not exploring AOD issue with their patients so we see lots of misdiagnoses"* (KI1)

"*We are witnessing a complexity of co-morbidities- and responding to this requires an entirely different skillset for clinicians "* (KI2)

More than thirty per cent of the sample also commented that there was a high degree of stigma associated with AOD use amongst older people and a lack of awareness of the

issues, amongst service providers, medical staff, aged care providers and amongst older people as well. This creates a catch-22 scenario in that, until AOD issues are discussed more openly, levels of stigma will remain, and yet while the stigma exists, it is unlikely that older Australians will wish to discuss the issue. Stigma, discrimination and a hesitancy of people to discuss illicit drug using behaviour with health professionals is an issue that also appears in both the Australian and international research literature (Treloar et al., 2016).

However, there may also be another reason that health professionals do not raise the issue of alcohol, illicit drugs or the misuse of pharmaceuticals with patients/clients, and this may be that they are not aware of what might be the most appropriate advice or course of action. For example:

"*Professionals will avoid asking older people about their alcohol and other drug use if they feel they cannot competently respond to the information provided"* (KI3)

Finally, there were also concerns raised by three of the KIs, that these issues were even more acute and complex amongst some Aboriginal peoples. This is illustrated by the sentiments expressed in the following quotes:

"*Having spent 11 years in primary health in a remote area of Australia, a focus needs to be on what are the greatest unmet needs and from my perspective these are the roles of the community elders, predominantly female and how their ageing and loss of community respect is growing a sense of despair and the lost generation of fathers and mothers who through addiction to alcohol and other drugs, care little about the health and wellbeing of themselves, their families, children and communities "* (KI4)

"The intergenerational poverty cycle and associated harms. Increased vulnerability of older Aboriginal people who already may have poor health and be suffering from poverty and then may have been prescribed medication for ill health and then some are being pressured by other family members to pass on the medications (diversion) and then this further compounds their own health issues. Some of the drug use amongst elders is to cope

with and escape from racism and the systemic bias against Aboriginal people in the community, so if we want to prevent AOD harm we must also at the same time break down some of the trauma that Aboriginal people are exposed to and have been exposed to over the past 200 hundred years". (KI5)

Q2. What implications does AOD use amongst older Australians have for AOD prevention and treatment initiatives? Why?

Prevention

The consensus amongst key informants was that there were few, if any prevention initiatives targeting alcohol or other drug use amongst older Australians. This needs to change, and as poly-drug use amongst older people is common, prevention initiatives should not only focus on individual drugs but also on the specific risks of poly-drug use for older people. It was also recommended that prevention initiatives be delivered from multiple settings i.e. General Practice settings, across pharmacies and at all other settings where older Australians commonly attend. As suggested by one KI:

"*Any prevention message needs to be tailored for older Australians. The current prevention messages target young people and hence are likely to be ignored by older Australians as not relevant to them. Prevention messages could be linked to other issues e.g. falls prevention and safety in the home and /or linked to medication information and the need to be mindful of the interaction of medications and AOD use "* (KI6)

Another key informant commented that we need to develop prevention campaigns that encourage older people to "*have the talk with their GP*" (KI1) and for both the older person to feel comfortable in doing so and the GP or other health provider to feel they have the skills and knowledge about how to respond effectively.

One key informant, also mentioned that particularly among older injecting drug users, there is likely to be a degree of cynicism about any prevention messages, as this group of older people are likely to have "*heard it all before"* (KI7) and hence not find any potential health or harm minimization messages on the topic credible.

Treatment

There was consensus that there are limited treatment options available for older people and scant knowledge about what treatment options are most appropriate for older people experiencing AOD use problems. Key informants were only aware of one age-specific treatment service in Australia - The Older Wiser Lifestyle (OWL) program offered in Victoria. A number of KI's also mentioned that many existing services may not be physically suitable for older clients who may have mobility issues and other physical impairments. Such concerns have been echoed in research by Lintzeris et al, (2016) with older OST clients.

Additionally, as there are fewer general health services in rural and remote areas, the options for older people in these areas will be very, very limited:

"Very few treatment options are available in remote communities and the only residential rehab we have here, comorbid detox is the prerequisite for entry" (KI4).

These issues are further compounded for Aboriginal people who live in rural and remote areas and who are already significantly disadvantaged. As such, any initiatives will need to be more comprehensive:

"*We need a system where families look after the needs of elders and to do this we need to drill down from state to the local level and the individual level with families. We need local leaders to become champions in partnerships with other organisations."* (KI5)

Another issue that was raised was that many older people experiencing AOD related problems are also likely to be *"experiencing co-occurring co-morbid conditions and in particular cognitive impairment "* (KI8). Such clients will have complex health needs and may require assistance that neither existing AOD agencies nor aged care agencies are able to provide.

There were also concerns about an ageing cohort of opiate dependent users transitioning into aged care facilities. These clients are likely to have complex medical requirements,

necessitating an increased workload, for medical and health staff at both AOD and aged care agencies. For example:

"There are considerable difficulties related to the transition of older opiate dependent patients into aged care facilities. Aged care facilities are not well equipped yet to deal with this new patient cohort where issues of medication and in particular opiate and other pain based medication use is common. This is even more complex when a patient is also or has been on opiate substitution treatment (OST). The handover from OST to aged care facility is very time consuming and there are currently no handover strategies or policies or practices that are available that allow this process to be streamlined. So the process is on a case-by-case basis and because of the complexity of medication issues requires considerable medical practitioner involvement at both ends" (KI9)

Not only are the medication issues complex, which creates extra imposts on medical and other staff, but also from the older persons perspective, treatment is also expensive. As one KI explained:

" To have to pay approximately $40 per week just for pharmacotherapy then to have other health issues – medications such as diabetes or heart conditions the costs starts to add up" (KI7).

In some cases, this causes a significant financial burden. For some people the costs may simply be too prohibitive, meaning that prescriptions are not filled, leading to a further deterioration in health. In addition, a number of KI's mentioned that stigma and perceived discrimination were significant barriers to accessing health services amongst older clients. This issue also came across strongly in the research literature e.g. (Australian Injecting and Illicit Drug Users League, 2011; Higgs & Dietze, 2017) and is a significant cause for concern.

Q3. From your perspective what impact is AOD use amongst older Australians having on services such as aged care, hospitals, primary health care etc.?

Key informants from both the AOD and medical fields agreed that high level of AOD use amongst older people will result in increased numbers of patients moving into aged care with AOD related problems. The majority of KI's were also of the opinion that both aged care and public hospitals are currently ill equipped to deal with AOD use amongst older Australians. One key informant went on to state:

"I suspect that there is possibly some mis-diagnosis, poor management and unnecessary trauma for those experiencing AOD issues. Often when the elderly are admitted to care there is often insufficient attention paid to the assessment of their AOD use, or a lack of understanding about the implications" (KI6).

Some of these implications link to the important physiological changes that occur with ageing:

"*With changes in age there are also changes related to pharmacokinetics and pharmacodynamics and when these are overlaid with prolonged AOD use it makes admission to hospitals etc. much more complex and yet because of the time pressures it is unlikely that those admissions for falls, and drug complications are ever linked to AOD use"* (KI9)

Most key informants were of the opinion that GP's often don't screen for AOD use amongst older patients or may inadvertently misdiagnose an AOD issue for an issue that is commonly seen with advancing age. Some also voiced concerns that this practice can also lead to a "*prescribing cascade'* (KI10) which can in turn lead to drug complications and possible falls, injuries or impairment of cognitive function.

However, one key informant also made the salient point that *"moderate alcohol use is associated with fewer GP visits"* highlighting that alcohol use must be viewed across the spectrum and not only through a prism of harm. It also reinforces the research evidence e.g. Wilkinson and Dare, (2014) indicating that alcohol can act as an important social lubricant leading to increased social interaction and engagement, which is also of benefit to overall health.

Another KI, also highlighted the need for dedicated Aboriginal AOD /aged care services:

"*We don't look after older people well and there is nowhere for Aboriginal elders experiencing AOD issue to go. We only have about 90000 Aboriginals in WA so it shouldn't be too hard to develop a place for Aboriginal elders to go- somewhere that was a dedicated Aboriginal facility that ensured it was culturally safe and where there was acknowledgement of dreamtime and all that represents"* (KI5).

Finally, one KI mentioned that as injecting drug users are having significant health issues at a younger age than their non-injecting peers, they may also need to access nursing homes and residential care options at an earlier age, but may not necessarily wish to cease their drug use. While some aged care facilities may tolerate or accept alcohol, this will not be the case for illicit drug use. And according to two KI's this may lead to the older person engaging in covert drug use or facing discrimination. In addition, a KI highlighted that older people who have been using illicit drugs for many years may also have reduced social circles and are likely to be at increased risk of isolation and loneliness. This increased vulnerability of older Australians whom have a history of illicit or injecting drug use was also a significant issue in the research literature. This cohort of vulnerable older Australians are likely to have compromised health, be biologically older than their chronological age, be isolated and suffer from high degrees of stigma (Australian Injecting and Illicit Drug Users League, 2011).

Q4. In your opinion, what are the major direct and indirect costs associated with AOD use amongst older Australians?

There was agreement that the major costs associated with AOD use amongst older Australians, were AOD related falls, injuries, accidental overdoses, cognitive impairment (from poly-drug use with and without alcohol use) and prolonged hospitalisation.

In addition to the tangible costs associated with increased hospitalisation, there were also the personal costs to an individual from decades of drug use. This was highlighted by the following comment from one AOD medical specialist:

"*We are now seeing about 5 to 10 cases per year in WA of drug users dying in their 50's and 60's doing what they have always done e.g. have a few drinks, take some Benzos or have some other drug that they have often taken and then go into respiratory arrest and die"* (KI9).

The quote also echoes the work of Beynon and colleagues (C Beynon, 2009; C. Beynon et al., 2009; C. Beynon et al., 2010) who have also highlighted the compromised health of older people using drugs.

Some KI's also spoke of the reduced quality of life for older Australians with a substance use disorder and the possible link to homelessness or financial hardship. As one KI mentioned:

"Many drug users have not planned for retirement or even old age even if they had savings/super this could be spent in a very short amount of time" (KI7).

The association between homelessness and AOD use is very important particularly in light of data from the Specialist Homelessness Service suggesting that homelessness rates have increased by 25% since 2011(Australian Institute of Health and Welfare, 2016b).

Finally, two KI's spoke of the loss of culture as an indirect cost of AOD use amongst older Aboriginals. For example:

"*Loss of culture, loss of family and social connectedness and rising rates of acute and sub-acute mental illness"* (KI4) and

"*We have seen a diminishing status of elders over the past 200 hundred year and this also has a role in what we are seeing in relation to AOD use today"* (KI5).

One member of the reference group also mentioned that we are witnessing an ageing prison population and an increase in illicit drug use amongst older prisoners.

Q. 5. Are you aware of any services or organisations that have been proactive in this area? If so, who are the organisations and in your opinion what are they doing well?

The majority of KI's were unaware of services or organisations that have been proactive in this area. However, three KIs mentioned the Older Wiser Lifestyle program in Victoria, another mentioned the Department of Veterans Affairs "right mix" program which is targeted at older drinkers and two others mentioned that the Aboriginal medical service were trying to develop programs in this domain. In WA, on KI noted that an annual conference is held with opiate subscribers where advice is provided on some of the pharmacodynamics and pharmacokinetics of ageing.

A number of KI's acknowledged that the comprehensive medication reviews that are conducted by specialty trained pharmacists are beneficial for older people and can significantly reduce the 'prescription cascade' or likelihood of an ADR from poly-drug use. In addition, it was noted that in 2015 Dual Diagnosis Australia and New Zealand developed the "older Adults Dual Diagnosis Resource Guide" which is aimed at supporting those who work with clients aged 55 years and older with a dual diagnosis of substance use and mental health disorders * See: http://www.dualdiagnosis.org.au/home/index.php?option=com_content&task=view&id=123&itemid=3

In WA, the WA Substance Users Association and the WA Aids Council have written papers on HIV and ageing, have created a new "HIV and ageing" position and have commenced working with staff at an aged care facility on HIV and ageing. Also in WA, comment was made of the "Alcohol and ageing fact sheet " developed by Wilkinson and colleagues and distributed through the Mental Health Commission (See appendix 2).

The feedback from KIs on this topic highlights that professionals in both the AOD and gerontology fields are cognisant of the importance of AOD and ageing, but that to date there appear to be limited resources available.

Q6. How do you think we might best raise awareness about AOD issues amongst older Australians in general and amongst specific groups of older Australians?

The consensus on this topic was that we need to target those places where older Australians regularly go for both recreational purposes e.g. bowling clubs, senior citizen centres and for health reasons e.g. GP and hospitals. It was also recommended that we "flood" the market with age appropriate information that raises awareness about the physiological changes that occur with ageing and some of the risks for older people in relation to AOD use. It was also recommended that any message should come from a strengths rather than a deficit perspective in other words tie in any messages related to alcohol or other drug use with the concept of holistic healthy ageing. Another recommendation was to utilise peer education and peer support workers so that older people are empowered and can share their lived experiences with others. These recommendations are salient considering the scepticism that exists among many older Australians concerning the possible adverse health effects of alcohol (Wilkinson et al., 2016). Considering the reluctance of those who use illicit drugs (including those who misuse pharmaceuticals) to divulge their use with health practitioners (Australian Injecting and Illicit Drug Users League, 2011), flooding the market with age specific advice on illicit drug use is warranted.

KI's also mentioned that we should utilise GP's, pharmacists, residential aged care, and medical specialists as conduits for disseminating the "healthy holistic ageing" message.

Q7. How do we best increase AOD knowledge amongst those professions who work with this age group?

A number of KI's mentioned that advocating with professional registration bodies on the importance of the issues may be worthwhile with the aim that training is included at either the pre-service level as part of undergraduate or post graduate training or at the post service level and offering CPD points as inducement. But as one KI mentioned it is not just education and skills that need to be enhanced but also a shift in attitudes about AOD use

amongst older Australians that encourages: "*promotion of tolerance, acceptance and support"* (KI11).

There was also acknowledgment that *"how we influence professional practice is a perennial issue and we still don't know to answer to this"* (KI9). One KI concluded, "*We need 'mandatory work placements'* to influence and change practice.

The Royal College of Psychiatrists in the U.K. also recommended that training for medical professionals should commence at an under-graduate level, through specialist education and continue as part of continuing professional development (Royal College of Psychiatrists, 2011).

There was also a consensus amongst KI's that partnerships across primary health, aged care, hospitals and AOD service are vital. This is an important issue, as some professionals in the AOD field may believe that professionals in the aged care sector are not prioritising AOD and ageing, and the same views may be held by gerontology professionals about those in the AOD field. The following comments, firstly by a gerontology specialist and secondly by an AOD specialist illustrate this point:

"*We need to engage the specialist ageing services. However, I know that the current AOD services are threadbare and do not seem interested in older people"* (KI8).

"*I must say I met with the director of aged care in our local region who felt this was not a problem and not a priority- so there is resistance to be addressed too*" (KI2).

This second comment resonates with previous research by Wilkinson (2008) who also conducted a KI survey in Australia on alcohol and ageing and noted the following comment:

"*There are strong ageism attitudes amongst many professionals who think- what does it matter if an older person drinks too much- what difference will it make? This kind of attitude makes it difficult to create an impetus for change."*

Q8. What would you identify as three key research priorities in this area?

All key informants agreed that more research on alcohol and other drug use amongst different cohorts and groups of older people was required. Ten KI's specifically mentioned that research was needed examining the efficacy of different treatment options for older people. There was also acknowledgement that any research needs to recognise that older people are not a homogenous group and that "*we also need to be mindful of the important cultural differences that exist"* (KI1). According to key informants, until more was known about AOD use and ageing, it was difficult if not impossible to recommend what might be the most optimum treatment and prevention responses. There was agreement that fundamental data were required to develop an accurate picture of alcohol and other drug use amongst older people in general and from specific sub populations.

Finally, three KI's mentioned that research looking holistically at the "*big picture*" was required. In other words, "*how do we maintain social connections, inclusion and active lives strategies* "(KI12), "*reduce injuries, promote good nutrition and social wellbeing*" (KI13) and where does AOD fit in this big picture.

Q9. What do we need to do to respond more effectively to AOD use amongst older Australians- now and over the next ten years?

As indicated by at least one KI, the good news is that older Australians are now being recognised as an important population in a number of health strategies. For example, they are now included as a priority group within the draft National Drug Strategy and the past five years has seen an increase in Australian research. There also remains a window of opportunity as not all "baby boomers" have reached retirement age.

To respond more effectively, KI's were of the opinion that we need to better raise awareness of the issues with not only older people but also those who are currently aged in their 40s and 50s and with all professional groups who most commonly work and interact with older Australians. Hand in hand with this should be better screening and assessment of AOD use amongst older people using age appropriate screening and assessment tools.

For those who are identified as potentially requiring some form of treatment, whether that be on an in or out-patient basis, we need to ensure that staff are adequately trained in how to work most effectively with older people, be empathic, non-judgemental and know what are the most appropriate treatment or interventions to offer. These recommendations are also supported by both national and international research literature and work has already commenced in Australia investigating the efficacy of AOD screening instruments (see: (Bright et al., 2011; L. Cusack et al., 2015; B. Draper et al., 2017)

Four KI's recommended funding is provided so that more age specific AOD services could be developed and evaluated. Another KI recommended that rather than developing specialised AOD services for older people, resources would be better spent in up-skilling professionals in services such as silver chain. Training those staff who provide home-visit outreach services may be optimum, as some older Australians may have mobility and transportation issues that could preclude them from attending traditional treatment settings. A comprehensive intersectoral strategy and approach will be required so that:

"*We make sure that people are not getting lost in the mainstream" (KI5) and one that involves "both up-stream and down-stream approaches simultaneously*" (KI1).

Three KI's also commented that a better response to "*social inequity* " (KI14) was required and that while: "*We know that older people are not homogenous, it is also very important to acknowledge the cultural differences that exist*" (KI1).

Finally one KI also recommended that an annual forum with Aboriginal elders from across the country be instigated, where these issues could be discussed, shared and strategies developed.

Summary

Key informants were concerned that future generations of older Australians were likely (individually and collectively) to be larger consumers of alcohol and other drugs and this view has strong empirical support. Subsequently, AOD use amongst older people was

likely to become an increasingly important area that will impact on primary health care, aged care and AOD services. However, key informants also acknowledged that as there was so little comprehensive Australian data available, making recommendations about treatment and prevention strategies was difficult.

KI's also acknowledged that stigma and discrimination against older people occurs and that this is particularly the case for those older people who continue or commence to use illicit drugs or misuse pharmaceuticals. This is an important barrier to older people accessing health services and any delay in accessing health care can exacerbate declining health. In moving forward stronger intersectoral collaborations and partnerships across all sectors will be required and workforce development strategies on AOD and ageing developed. It will also be important that consumers voices are heard and subsequently that older Australians are included in developing strategies.

The development and dissemination of alcohol and other drug related health information that is specifically developed for older Australians highlighting the physiological changes that occur with ageing and the potential problems related to poly-drug use was regarded by most of the key informants as an important issue. According to key informants, the most appropriate professional group to disseminate information on alcohol guidelines to older people were GP's. However, to ensure that all older people were informed about AOD related issues, would require that all health and welfare professionals had expertise in responding appropriately to AOD issues amongst older people. However, a scoping exercise conducted in Western Australia (Woods, 2008) of the AOD curriculum included in nursing, social work, psychology, medicine, pharmacy, and justice university courses highlighted how little training in alcohol and other drug use occurs. To include specific training on alcohol, illicit and pharmaceutical misuse and gerontology while ambitious may not be pragmatic. Considering this, ongoing research and advocacy about the importance of alcohol and other drug use amongst older people is important to help produce a climate in which comprehensive responses may become realized and subsequently respond to the "collision of conundrums" that AOD use and ageing represent.

Chapter Four: Discussion and conclusion

Like many other countries, Australia is witnessing a rapid ageing of the population with our demographic profile predicted to change considerably over the next decades. This phenomenon will have an influence on the national burden of disease and mortality - some of which will arise from AOD use amongst older people. As the current cohort of older Australians have different drug-using histories than their predecessors it is also possible they will have different drug use trajectories making estimates about AOD use and possible harms difficult. This presents a challenge for public and primary health in Australia now and moving forward into the 22nd century.

Despite the ageing of the population and the increased physiological vulnerability of older people to the potential harms associated with alcohol, illicit drugs and the misuse of pharmaceutical drugs; there remains little research on AOD use amongst older Australians. Our relatively poor knowledge on alcohol has been compounded by the exclusion of older people from many large national outcome studies and limitations in the methodologies used when older people have been included. Nonetheless, even with these restrictions, there is considerably more data about alcohol use, than data associated with other drug use. As the numbers of Australians aged 65+ misusing pharmaceuticals is in excess of 170,000 and the numbers using cannabis in the last 12 months are in excess of 33,000, it is imperative that we understand more about not just alcohol, but **all** other drug use amongst older Australians.

Traditionally, older Australians have had very low levels of alcohol or other drug use and hence have not collectively presented as a high priority group from an AOD public health perspective. However, with the ageing of the 'baby boomers', we are witnessing a shift in traditional patterns of AOD use, and this is likely to have a significant impact socially and economically into the future.

To best ensure the development of evidence-based best practice prevention and treatment initiatives more research will be required to fill the many gaps that exist about AOD use and older Australians. In particular, we know little about the trajectories of AOD use and

the related bio-psycho-social harms that ensue from long-term use of alcohol. We also have insufficient data to identify what is low risk drinking for older people and it is hoped that in the NHMRC alcohol guidelines due for release in 2019 specific advice will be included for older people. There is also limited information about the risks of lifetime use of different illicit drugs and long-term use of some pharmaceuticals. There will also inevitably be challenges presented to the health system as a result of the periodic introduction of a new psychoactive substance or initiatives such as the legalization of medicinal cannabis. While it is difficult to predict the impact of these evolving changes to the AOD landscape it is important for those in the AOD field to be pre-emptive in trying to assess possible impacts, and prepare to collect relevant data to more quickly inform policy and health responses to any adverse impacts that do arise.

There is also a large gap in our understanding about the aetiology and symptomology of the early onset-late onset typology in Australia particularly as it relates to illicit drug use and the misuse of pharmaceuticals and knowledge in this area will also be important in shaping prevention and treatment responses.

We also know very little about AOD use amongst older Australians living in rural and remote communities. To address this gap, in-depth epidemiological, longitudinal and ethnographic research should be conducted into the types and patterns of AOD use and the related harms that occur in different non-urban communities. This research should be aimed at identifying different groups of communities that experience similar harms and might be amenable to similar interventions. Second, on the basis of this research, rural-specific interventions should be developed and trialed.

There is also a gap in our understanding on AOD use issues in CALD populations. This is significant as 22% of older Australians are from non-English speaking backgrounds (Australian Institute of Health and Welfare, 2014c). Despite this, little is known about the prevalence of AOD use or the impact language, customs, and culture have on AOD and ageing issues amongst this group.

There is also need for a greater focus on AOD use amongst older Aboriginals. Many Aboriginal and Torres Strait Islander people have a lifespan that is up to 17 years shorter

than other Australians and in 2016, only 4% (31,000) of the Indigenous population were aged 65 and over compared with 15% (3.7million) of the non-Indigenous population. Older Indigenous people have poorer health and higher rates of disability than other Australians, and yet in 2015 fewer than 1% of people in permanent residential aged care identified as Aboriginal and Torres Strait Islander (Australian Institute of Health and Welfare, 2017g). When lack of services, AOD use, and compromised health issues are combined, a picture of amplified vulnerability and disadvantage emerges. Highlighting the appropriateness of developing and delivering services for older Aboriginal people at 50 years of age in order to ensure that they receive equitable services consistent with their needs. There is also a need for health services for older Aboriginal people consistent with the Aboriginal Cultural Respect Framework that offer culturally appropriate models of care that promote healthy ageing, self management and access to general and specialist health care services (including grief and loss services) and residential care, as close to home as possible.

While recognizing that older Australians do represent a potentially at-risk group, it is also important to acknowledge that based on reports such as "Older Australia at a glance" older Australians are generally healthy with low levels of psychological distress. Therefore a balanced approach is required, in recognition that AOD use occurs along a continuum and that not all use will necessarily be problematic. For example, we need to ensure that older Australians are better informed about some of the potential harms associated with alcohol, while simultaneously acknowledging that for many people low levels of drinking can enhance social engagement and quality of life.

Similarly, the overwhelming majority of older Australians taking pharmaceutical drugs do so, as prescribed. Therefore any harm reduction messages will need to make a clear distinction between the potential risks from the misuse of pharmaceutical drugs as opposed to taking drugs as prescribed, so as not to inadvertently cause alarm amongst older people about prescription medications in general.

Harm reduction messages on illicit drug use are also needed and it may be necessary to investigate new and innovative ways of disseminating messages beyond traditional avenues such as primary health care. Simultaneously we need to ensure that staff who work in the health, aged and welfare sectors are knowledgeable and empathic about the

complex needs of those older Australians with a history of illicit drug use whose biological and health age are likely to be decades older than their chronological age. We also need to ensure that clinical conversations start to occur between patients and medical staff without fear of stigma and discrimination.

Healthy ageing occurs across the lifespan and therefore from a prevention perspective, information should be disseminated to those aged 50 and onwards. Specific health promotion and prevention resources will need to reflect the diversity of older people, and be mindful that some older Australians may have hearing, vision or cognitive impairment and hence traditional approaches may not be appropriate. It is also important to acknowledge that older people will have different motivations for changing behaviours than younger people and for many older people some behaviours will be deeply entrenched and part of their lives for decades. In addition, there may be some degree of scepticism about health information that relates to behaviours that a person may have been engaged in for many years without experiencing problems.

For those who are misusing pharmaceuticals it may be difficult to convince them of the potential risks because of the erroneous belief that all drugs prescribed by a doctor are "safe". For those who have been using illicit drugs for many years there is also likely to be high degrees of cynicism and a view that "we have heard it all before". Similarly, many older Australians may be sceptical about the potential adverse effects of alcohol. An issue not helped by exaggeration of the alleged health benefits of alcohol. Health promotion and prevention efforts will also need to combat the pervasive ageist attitudes of some professionals who may feel that it is not worth devoting time to older people who are towards the end of their life and so we should "just leave them to it!"

Treatment will need to be tailored to the specific needs of older people, even if little is currently known about this patient group or what forms of treatment are likely to work best, particularly for those with problems related to illicit drug use or the misuse of pharmaceuticals. This may require modifying existing forms of treatment, or developing new ones. In particular, treatment will need to be more attentive to co-morbid health conditions faced by older adults. In relation to alcohol, there is a growing body of evidence that brief interventions, assessments coupled with advice (particularly delivered by primary

health care clinicians e.g. G.P.) are effective in reducing alcohol consumption amongst older people. However, research in relation to illicit drug use and the misuse of pharmaceuticals among older people is lacking.

As 'baby boomers' age, the types of drug used by older adults may also change and facilitate a shift in the specific treatment needs of this population. A review of the scope of current addiction services and of the relationship between specialist alcohol and other drug services, elderly mental health services and general medical services is recommended to ensure that health service and support personnel become aware of, and educated in, the health considerations confronting older people when problematic AOD use is an issue. Existing services also need to ensure that they take on a holistic approach that embraces the often complex psychological, physical and social needs of older people and in particular the complex needs of those older people who have severe alcohol and other drug-related disability such as brain injury or alcohol-related brain damage. Many clinicians are already concerned about how best to meet the needs of these clients, so to ensure that the optimum strategies are developed it would be useful to bring key stakeholders together to develop a coordinated response across aged care, general health, AOD and mental health services.

Conclusion

Although more research and work is needed on all of the above issues, the ageing of the population is of such significance that provision for possible prevention and treatment strategies needs to be considered now. Striking the balance between harm reduction, health and quality of life is one of the conundrums in the field of AOD use and ageing. However, as the Australian community and populations throughout the developed world continue to age rapidly, well considered, evidence-based responses are required sooner rather than later. The first step to the development of comprehensive responses is acceptance of the fact that alcohol and other drug use has no age limits.

Glossary of terms

The following list contains a number of terms frequently used in this report. A brief explanation is provided for each term to assist the reader.

Older people	People aged 60 years and older.
Young-old	People aged 65 to 74 years of age.
Older-old	People aged 75 to 84 years of age.
Oldest-old	People aged 85 years and older
Standard drink	While this varies from country, in Australia the term refers to 10g of ethyl alcohol
Long-term risk	The level of long-term risk associated with regular daily patterns of drinking, defined by the total amount of alcohol typically consumed per week.
Short-term risk	The risk of harm (particularly injury or death) in the short-term that is associated with given levels of drinking on a single day.

Glossary of acronyms

The following list contains a number of acronyms frequently used in this report. A brief explanation is provided for each acronym to assist the reader.

ABS	Australian Bureau of Statistics
AIHW	Australian Institute of Health and Welfare
AOD	Alcohol and other drugs
NDSHS	National Drug Strategy Household Survey
NHMRC	National Health and Medical Research Council
TBW	Total body water
WHO	World Health Organization.

Appendices

Appendix 1: Key informant questionnaire

Key informant interviews on alcohol and other drug (AOD) use amongst older Australians

Key informant details

Current Position..……

Name of organisation……

What is your primary occupational role :……..……

Type of organisation

Service provider ☐ Academic institution ☐ Government Dept ☐ Other (please specify) ☐

Background

As a result of the expansion of the aged population some concerns have been raised about a potential increase in the number of older people experiencing alcohol and or other drug related problems in Australia. Results from this key informant survey will form part of a report on the trends and impacts of AOD use in older Australians and hence your assistance is much appreciated.

Key informant Questions

1. **From your perspective what are the major public health implications for Australia related to AOD use and an ageing population?**

2. **What implications does AOD use amongst older Australians have for AOD prevention and treatment initiatives? Why?**

3. **From your perspective what impact is AOD use amongst older Australians having on services such as aged care, hospitals, primary health care etc?**

4. **In your opinion, what are the major direct and indirect costs associated with AOD use amongst older Australians?**

5. **Are you aware of any services or organisations that have been proactive in this area? (either in developing AOD services specifically for older people, or engaged in raising awareness about the topic, or initiated workforce development programs on AOD and ageing etc). If so, who are the organisations and in your opinion what are they doing well?**

6. **How do you think we might best raise awareness about AOD issues amongst older Australians in general and amongst specific groups of older Australians?**

7. **How do we best increase AOD knowledge amongst those professions who work with this age group?**

8. What would you identify as three key research priorities in this area?

9. What do we need to do to respond more effectively to AOD use amongst older Australians- now and over the next ten years?

10. Are you aware of any data on this topic that may be useful to include in the report to?

That concludes our questions.
Thank you for your assistance.
If you do not want any of your identifying details included in the report to please tick this box ☐

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END OF QUESTIONNAIRE

Appendix 2: Alcohol and ageing fact sheet

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Alcohol and Older Australians

Alcohol is one of the most commonly used drugs in Australia. There are many reasons why people choose to drink alcohol. These include: to be sociable, to relax, to celebrate, and for enjoyment. Some people might drink when they feel sad, lonely, bored, isolated, in pain or to cope with problems. While Australians aged 60 years and older drink for similar reasons to younger people, their age does make them more vulnerable to the effects of alcohol.

Did you know?

- Because of physical changes that occur with ageing alcohol use has a greater impact on older people. In other words, older people may feel intoxicated or 'tipsy' even after a small amount of alcohol. This means that even a small amount of alcohol can increase the risk of accidents, including falls and fractures and car crashes.
- As you get older there is a greater risk of harm to your health from drinking alcohol. Drinking too much, even on one-off occasions, can cause problems for you at home, with your friends or with the law. You might also put other people at risk (e.g. if you are driving when intoxicated).
- The same amount of alcohol consumed by men and women results in a higher blood alcohol concentration in women. This is largely due to differences in body size (women are generally smaller), proportions of body fat and differences in the way women's bodies metabolise alcohol.
- As you age, you may be prescribed a variety of medications. Many prescription medicines, over-the-counter, or herbal remedies—can be dangerous when mixed with alcohol, so always check with your doctor or pharmacist first, whenever you take new medicines or your mix of medicines change.

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Are there health benefits from alcohol?

- The World Health Organization has concluded that research does not support encouraging drinking as a way to reduce the risk of disease and that alcohol cannot be recommended as a preventive medicine. The Cancer Council of Australia has stated that drinking any alcohol increases the risks of cancer.

Drinking is not recommended if you:

- Have a condition made worse by drinking (e.g. high blood pressure)
- Are about to engage in activities requiring a degree of skill or risk (e.g. driving)
- Are on any medication, in which case it is recommended that you speak with your doctor or pharmacist before drinking alcohol.

Drinking too much alcohol over a long time can:

- Lead to different kinds of cancer, liver damage, immune system disorders, and brain damage.
- Worsen some health conditions like osteoporosis, diabetes, high blood pressure, and ulcers.
- Mask pain and make some medical problems hard for doctors to find and treat—for example, alcohol can cause changes in the heart and blood vessels.
- Cause you to be forgetful and confused—these symptoms could be mistaken for signs of Alzheimer's disease.
- Make problems like depression and anxiety worse.
- Result in poor quality sleep—you might fall asleep faster but the sleep you have will not be as restful.

So the message is: If you don't drink, don't start! If you do choose to drink alcohol then have a chat with your doctor or pharmacist about what is best for you.

If you would like more information about alcohol and/or other drugs contact the **Alcohol and Drug Support Line** on **9442 5000** or **toll-free (country callers) 1800 198 024.**

Citation: Wilkinson, C., Helfgott, S., Kirby, G., & Allsop, S. (2015) *Alcohol and older Australians. Fact Sheet.* Perth, Western Australia: Mental Health Commission.

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