Protect, Prevent, Improve, Inform

Chief Public Health Officer’s Report

July 2014 – June 2016

A report prepared pursuant to Section 23 of the South Australian Public Health Act 2011
SA Health has made every effort to ensure that the information provided in this report is up to date at the time of publication and does not accept responsibility for any errors or omissions.

Data within this report are accurate as to the date gathered however data, comparisons and trends are subject to change over time.

As requested by the South Australian Aboriginal community, the term Aboriginal is used respectfully in this report as an all-encompassing term for Aboriginal and/or Torres Strait Islander/Indigenous people living in South Australia. The term Torres Strait Islander is specifically used in position titles and titles of publications and programs.

This report is provided for public information. Permission is granted to copy or use the information in this report without alteration on a not for profit basis for public benefit with due written acknowledgement of source(s).


ISBN Number: 978-1-74243-849-8
# Contents

Acknowledgements ........................................................................................................... 3
How the report is structured .............................................................................................. 3
Letter of Transmittal ............................................................................................................ 5
A day in your life - thanks to public health ....................................................................... 6
Message from the Chief Public Health Officer ................................................................. 8
The state of public health .................................................................................................. 10

## Part one - the determinants of health
- Understanding inequality and health outcome variation .................................................. 11
- Understanding wellbeing and quality of life .................................................................... 12
- Understanding our burden of disease and injury ............................................................. 13
- Understanding our demographic profile ........................................................................ 14
- Social connectedness ....................................................................................................... 17
- Secure, affordable housing ............................................................................................. 18
- The built environment ..................................................................................................... 19
- Safe, healthy food environments ..................................................................................... 20
- Active transport .............................................................................................................. 21
- Climate change ................................................................................................................ 21
- Understanding the risk factors causing the most disease burden .................................... 22

## Part two - Protect, Prevent, Improve, Inform
- Protecting public health .................................................................................................. 27
- Preventing illness and injury ........................................................................................... 31
- Improving health and wellbeing ....................................................................................... 42
- Informing and enabling best practice and innovation ......................................................... 46

## Part three – prevalence of preventable disease and injury
- Chronic diseases ............................................................................................................ 49
- Infectious diseases .......................................................................................................... 52
- Injury ................................................................................................................................. 53
- Oral health ....................................................................................................................... 54

## Administering the South Australian Public Health Act 2011
- The legislative framework for public health ................................................................... 55
- Regulations ....................................................................................................................... 55
- Public health policies ....................................................................................................... 56
- South Australian Public Health Council - Section 31 ........................................................ 56

## Developing the South Australian public health planning, evaluation and reporting system
- State public health plan .................................................................................................... 57
- Out of council areas ......................................................................................................... 57
- Regional public health plans ............................................................................................ 57
- Public health reporting ..................................................................................................... 58
- South Australian public health evaluation framework ....................................................... 59

## Working in partnership to improve population health and wellbeing
- Partnership with local government .................................................................................. 60
- Public Health Partner Authorities .................................................................................... 61

## References ....................................................................................................................... 62
Acknowledgements

We acknowledge and respect the traditional custodians of country throughout South Australia and acknowledge the deep feelings of attachment and relationship they have to their ancestral lands.

This report has been prepared by the Strategic Evaluation and Reporting Unit, Epidemiology Branch, SA Health. The Chief Medical Officer and Chief Public Health Officer, Professor Paddy Phillips, together with the staff from the Strategic Evaluation and Reporting Unit, wish to acknowledge that this report would not have been possible without the contribution and advice from many people from SA Health, other sectors, government departments, local councils, the Local Government Association and other organisations from across South Australia and Australia.

How the report is structured

Throughout the report you will see the following symbols. The summary below explain the symbols and how to use them.

The Chief Public Health Officer's Report 2014-16 is an interactive and linked document. It is comprised of four components. This document is a summary of the key public health trends, activities and indicators in South Australia and includes a report on the administration of the South Australian Public Health Act, 2011 for the reporting period.

Throughout this report are links to statistical tables, figures and maps which are held in the Chief Public Health Officer's Report Data Compendium. This link will take you directly to the data or alternately you can access this compendium in full on the SA Health website. The Data Compendium also provides definitions, terminology and further information on data sources and analysis.

Summaries of many case studies and feature stories are highlighted in this report. These can be accessed by clicking the link to read the story in full in the Chief Public Health Officer's Report Compendium of Public Health Action. You can also access this compendium in full on the SA Health Website.

A feature component of this report is the Chief Public Health Officer's Report Interactive Atlas. Clicking on the links throughout the report will take you to an interactive map. You can also access the Interactive Atlas in full on the SA Health Website.
Building Partnerships

by Karen Briggs – Yorta Yorta

The overall design represents the South Australian public health focus to improve health outcomes through building partnerships with Aboriginal communities across South Australia. All the circles symbolise Aboriginal communities, the top section representing the Anangu Pitjantjatjara Yankunytjatjara Lands. The circles flowing down the side represent the Riverland through to the southern region including Mt Gambier. The area along the bottom section represents the West Coast through to Adelaide.

The outside lines connect the communities’ together while the dots inside the lines represent health workers travelling between each one. The larger circle on the right along the bottom section represents Adelaide with people (horseshoe shapes) coming together and sitting down to build capacity and confidence to develop policies, strategies and programs designed to improve public health of all Aboriginal people in South Australia. The other sections showing people sitting around the communities represent health workers collaborating out in the communities.
April 2017

Hon Jack Snelling MP
Minister for Health and Ageing
Level 9, CitiCentre
11 Hindmarsh Square
ADELAIDE SA 5000

Dear Minister


Pursuant to Section 23 of the South Australian Public Health Act 2011, (the Act) I provide you with this report on the key public health trends, activities and indicators in South Australia; the implementation of the State Public Health Plan and the administration of the South Australian Public Health Act 2011.

This report describes the state of public health for South Australia including the protection of health, prevention and control of communicable and non-communicable disease, the promotion of wellbeing and risk factors to population health and wellbeing.

I acknowledge the work of the many public health practitioners contributing to the health and wellbeing of all South Australians and I commend ‘Protect, Prevent, Improve, Inform’ – The Chief Public Health Officer’s Report 2014-2016 to you.

Yours sincerely

Professor Paddy Phillips
Chief Medical Officer and Chief Public Health Officer
Presiding Member
South Australian Public Health Council
Out of bed, you head for the shower and then brush your teeth. You’re confident that your water is safe because it meets National Standards regulated by SA Health. In the kitchen, you set out milk, fruit, cereal and whole grain bread. You know that a nutritious breakfast is important and that the cereal you chose is healthy because the Health Star Rating on the packaging indicates five stars.

It’s a lovely day so you decide to cycle to work along the Linear Park trail. You are grateful for the cycle paths and lanes that provide a safe commute. Being active is important, SA Health works closely with local councils and other government and non-government agencies to build this healthy environment.

At work you enjoy a smoke-free environment, and take comfort in the knowledge that smoking rates have reduced significantly in recent years due to state government policy controlling supply and use. Your kids say they will never smoke, thanks to your example and public health messages all around them. You smile because your best friend has just succeeded in quitting, with help from the Quitline.

The sun is shining, you change into runners and join your lunchtime walking partners. You’ve learned from public health campaigns to fit at least 30 minutes of physical activity into your day. Your free Get Healthy® coach, funded through SA Health, supports you in setting achievable goals. Your walk takes you through the Park Lands, kept green by the safe reuse of wastewater, ensured through monitoring and regulation by local and state government. You stop briefly to enjoy the laughter of children on the play equipment, protected from the sun by shade provided by the local council.

For lunch you stop for a takeaway salad wrap. You feel confident that the food is safe because public health oversees the inspection and licensing of food outlets, Food Safety Rating Scheme, and investigates foodborne illness outbreaks.

The temperature is rising outside and your office’s air conditioners are buzzing. You enjoy a comfortable working environment knowing that the cooling towers are regulated to stop growth of Legionella bacteria and prevent cases of Legionnaires’ disease in the community.

You see a public service announcement on social media advising that winter will be a bad flu season and to ensure you have a flu shot. Public health promotes immunisation to protect against serious, and sometimes life threatening diseases. Local councils and SA Health work together to increase immunisation rates in the community.

A day in your life - thanks to public health
Your children are home from school, you and your partner have made a decision to limit screen time to less than two hours a day. You know children need to be active for at least 60 minutes a day so you suggest a visit to the local swimming pool. Public pools are inspected and regulated by local councils and SA Health so you are confident it is safe, clean and disinfected from nasty bugs such as Cryptosporidium, Giardia and E. coli.

Your family comes together for an outdoor dinner, on such a warm evening, you remember SA Health’s Fight the Bite campaign. You followed the advice and eliminated the stagnant water and breeding sources in your yard, so ‘mozzies’ are not a problem tonight. You tell the family to wash their hands before eating, a habit learned through public health messaging Wash, Wipe, Cover, don’t infect another.

The evening news reports a mysterious illness among visitors at a local event. Thankfully, the outbreak is under control. The Chief Public Health Officer advises that many people are involved in public health - South Australian Public Health Council members, researchers, service providers and other state, local and federal agencies.

It’s time for bed and you drift off to sleep. Public health has touched your life in countless ways today - nearly invisibly - to keep you and your family safe and healthy.

Celebrating 26 years of ‘You’ve Got What?’

The online collection covers more than 90 fact sheets which are used as part of the public health response to specific infectious diseases by SA Health public health officers and medical practitioners.

While most cover specific infectious diseases, there are also fact sheets covering ways infectious diseases are spread, preventing food poisoning at home, avoiding sexually transmitted infections, overseas travel, and recommended exclusion periods from childcare, preschool, school and work for selected infections.

> Six of the top 10 ‘hits’ for the SA Health website for the 2015-16 financial year were pages from You’ve Got What?.
> Glandular fever was the second highest hit on the SA Health website with over 200,000 page views.
> Positions six to 10 were filled by Salmonella infection, dengue fever, ways infectious diseases spread (each with around 100,000 page views), urinary tract infections (just over 90,000 page views) and malaria (just under 80,000 page views).
Most of us enjoy good health. With significant advances in medical science and technology over the last century, we are reaping the benefits of one of the best health systems in the world. Most of us are living longer than ever before and much of this gain is due to the ongoing ‘silent’ day-to-day interventions in public health.

As a result of our success, we have seen phenomenal changes in our burden of disease over the last 100 years. Many of the infectious diseases that were major public health challenges until the mid-20th century are now virtually unknown in South Australia. Chronic conditions such as heart disease and cancer, other age related diseases such as dementia and mental illness such as anxiety and depressive disorders are now dominating.

This reporting period realises some noteworthy and significant achievements for public health in South Australia:

> Our smoking prevalence continues to decline in the general community with South Australia also reporting one of the lowest daily smoking rates among Aboriginal people in Australia.
> Lifetime risky drinking has significantly decreased in males and females.
> Our children’s rates of overweight and obesity have continued to stabilise and are now lower than the Australian rate.
> We have seen a remarkable increase in the immunisation rates of South Australian Aboriginal children, up to 94.5% for children aged 60 to 63 months in 2016.
> Our participation rates in cancer screening programs are some of the highest in Australia.
> There is a substantial reduction in children’s blood lead levels in Port Pirie - from an average of 19.5 µg/dL for the population in 1984-85 to 4.3 µg/dL in the most recent full population testing at the end of 2015.

Notwithstanding our achievements and the immense gains we have made in health outcomes, preventable diseases and injuries remain a challenge. Many chronic conditions, infectious diseases and injuries are creating pressures on our hospitals.

It is of utmost concern to me that in this reporting period:

> South Australians from lower social or economic circumstances are at greater risk of poor health and have higher rates of illness and disability.
> Aboriginal people still experience the poorest health of any population group in South Australia.
> That 78% of South Australian adults aged 55 to 64 years are overweight or obese.
> Whooping cough entered into the top six diseases notified in South Australia.
> Chlamydia (a serious sexually transmitted infection) was again the second highest notified infectious disease.

A state of prevention is now critical - South Australia simply cannot afford to rely upon our past achievements and successes in public health.

If we are to make an impact on addressing the pressures facing our health system, then now, more than ever, a much stronger focus and investment is required on prevention. More than ever we need evidence-based approaches to address the environments and conditions that cause us to get sick in the first place in order to keep people healthier and out of hospital. This cannot be achieved by the health system alone.

Taking action on the full range of determinants of health and priorities in public health, including the impacts of climate change is beyond the mandate, scope and capacity of specific public health interventions. It requires the concerted action of all spheres of government in a combination of policy areas as well as community action. Strong partnerships are now required across all levels of the health system, all levels of government and communities to better respond to the needs of populations and to address complex health issues.

By working together to achieve shared goals, steps for sustainable change can be taken to **protect, prevent, improve and inform**, to optimise health and wellbeing outcomes for South Australians.

Professor Paddy Phillips
Chief Medical Officer and Chief Public Health Officer
Public Health Week 2016

You might not need hospital or medical care every day, but YOU NEED PUBLIC HEALTH EVERY DAY!

Public health is often described as a ‘silent achiever’: quietly and consistently delivering the raft of services, programs and policy measures that keep us safe and healthy, and addressing underlying determinants of health.

Information provided during Public Health Week reached over 319,000 people on Facebook and almost 16,000 people on Twitter.

Public Health Week was held from 4 to 8 April 2016, coinciding with World Health Day on 7 April 2016 and focussed on the vital public health partnership between SA Health and local councils. Public Health Week promoted the many and diverse strategies, initiatives, and actions that contribute to the wellbeing of the South Australian community. Targeting a broad audience, Public Health Week showcased the scope of public health action, and promoted excellence in public health. Activities varied from social media and website posts, to stalls and displays at council facilities, messaging on electronic sign boards, a street play event and the launch of a new walking path.
Part one - the determinants of health

Many factors combine to affect the health of individuals and communities. Whether people are healthy or not is determined by their circumstances and environment. To a large extent, factors such as where we live, the state of our environment, genetics, our income and education level, and our relationships with friends and family all have considerable impacts on health. Other factors such as access and use of health care services can also be important.

The determinants of health include the social and economic environment, the physical environment, and the person's individual characteristics and behaviours [1]. Determinants of health act through complex and multidirectional pathways.

The social conditions in which people are born, live and work are the most important determinants of good health or ill health. As factors that affect health, social determinants can be seen as ‘causes of the causes’—that is, as the foundational determinants which influence other health determinants [2].

Figure 1 - A framework for determinants of health

Source: Dahlgren and Whitehead [3]

Many South Australians experience a good to high level of health and wellbeing associated with the determinants of health. However, it is also recognised that there are disadvantages and inequities affecting the health of particular groups. Taking action on the full range of determinants of health is beyond the mandate, scope and capacity of specific public health interventions.

Actions to address complex, multi-faceted ‘wicked problems’ such as preventable chronic disease and health care expenditure require joined-up policy responses. By actively engaging and integrating with other sectors and spheres of government, health considerations and contributions will be more clearly recognised and accepted. This approach has been termed Health in All Policies [4].

The South Australian Health in All Policies initiative is an approach to working across government to better achieve public policy outcomes and deliver co-benefits for agencies involved including to improve population health and wellbeing. Established in 2007, the successful implementation of Health in All Policies in South Australia has evolved and been supported by a high level mandate from central government to work collaboratively and in partnership across agencies. The South Australian Public Health Act, 2011 provides mechanisms to systematise Health in All Policies across government and support its adoption by local government.
Understanding inequality and health outcome variation

There are many factors that can lead to inequality - such as age, sex, ethnicity, social and economic position, gender, disability, geographical area, and remoteness. Some dimensions of inequality are unavoidable and not amenable to change, such as age. Other inequalities occur as a result of differences, including differences in access to educational opportunities, material resources, safe working conditions, effective services and living conditions in early childhood [5]. This lack of opportunity can also alter expectations of what life offers in the future [6].

Many inequalities are potentially avoidable, and therefore, the fact that they occur implies a degree of unfairness, or inequity. Such inequities occur as a consequence of unjustifiable differences in opportunity, such as adequate income, employment, access to nutritious food, adequate housing, social inclusion, and safe transport [5], which result in differences in health outcomes for some.

There is clear evidence that health and illness are not distributed equally within the South Australian population. Variations in health status generally follow a gradient, with overall health tending to improve with socio-economic position. The gradient in health can also be seen in differing rates for many health risk factors; in the prevalence of many chronic diseases and conditions. In general, people from poorer social or economic circumstances are at greater risk of poor health, have higher rates of illness, disability and death, and live shorter lives than those who are more advantaged [7].

Figure 2 - Proportion of South Australian adults aged 18 years and over reporting chronic conditions by Socio-Economic Index For Areas (Jul 2014 - Jun 2016)

Data source: South Australian Monitoring and Surveillance System [8]. CVD: Cardiovascular Disease. COPD: Chronic Obstructive Pulmonary Disease. Data are self-reported.

Measuring socio-economic inequalities in health

The Index of Relative Socio-Economic Disadvantage is a general socio-economic index that summarises a range of information about the economic and social conditions of people and households within an area. A low score indicates relatively greater disadvantage in general and a high score indicates a relative lack of disadvantage in general [9]. This is not to imply that the same health outcomes (eg either high or low prevalence rates of diabetes) apply to everyone living in the named areas: clearly, the average rate for an area is comprised of a range of rates across the area. The interactive map demonstrates the variation within local government areas.
Understanding wellbeing and quality of life

Wellbeing is made up of physical, mental and social components. Good physical and mental wellbeing may include experiencing positive physical and mental health (such as feeling healthy and not suffering from disease or illness). Social wellbeing includes whether we feel like we are a part of something, if we feel connected to other people and the places where we live, and if we feel like we contribute and make a difference [10].

How wellbeing varies across population groups, and why, is fundamental to design better targeted and more effective health policies. Measuring the sustainability of wellbeing is important to ensure that improving wellbeing today will not undermine the wellbeing of people in the future.

Measuring wellbeing and quality of life

Subjective wellbeing is one aspect of measuring wellbeing. Subjective wellbeing is concerned with people's perception of their happiness and life satisfaction. In the South Australian Monitoring and Surveillance System, people were asked on a scale of 0 to 10, how they rate their life satisfaction, their life being worthwhile, how happy they felt yesterday and how anxious they felt yesterday. Their responses were then coded in three categories being good, poor, or neither well or badly.

Adults living in rural areas (57.0%) were more likely to report having good subjective wellbeing than those living in the metropolitan areas (49.5%) [8].

The 12-item Short-Form Health Survey (SF-12) [11] measures health-related quality of life using two scores; a physical component score and a mental component score. These two scores range from 0 to 100 with a designed mean score of 50 (standard deviation 10), with higher scores reflecting an above average health status, and lower scores reflecting a below average health status.

> The mean physical component score for all South Australian adults aged 18 years and over was 48.6 (±10.3) and the mean mental component score was 52.3 (±8.9) meaning South Australian’s rated their mental health status higher than their physical health status. These scores are within the expected norms for the population [12].
Understanding our burden of disease and injury

Burden of disease is the impact of a disease or injury on an individual or a population. Burden of disease analysis quantifies the gap between a population’s actual health and an ‘ideal’ level of health—that is, every individual living in full health to the maximum possible life span—for all diseases at the same time [7].

Chronic conditions, mental illness and injuries dominate our disease burden

The 2011 Australian Burden of Disease Study revealed the five disease groups causing the most burden were cancer, cardiovascular diseases, mental and substance use disorders, musculoskeletal conditions, and injuries; together accounting for 66% of the total burden in Australia, and 67% of the total burden in South Australia [13].

South Australia had a slightly higher rate of age standardised total burden of disease (201.2 p/1,000 population) than the Australian rate (189.9 p/1,000 population). Individual diseases causing the greatest burden of disease in South Australia were coronary heart disease (8.2%) followed by dementia (4.1%). The contribution of dementia to the burden of disease in South Australia was higher than for any other jurisdiction [13].

Figure 3 - Top ten diseases causing total burden for South Australia compared with Australia (2011)

Chronic diseases caused 64% of the total disease burden among Aboriginal Australians in 2011. This group includes cardiovascular disease, mental and substance use disorders, cancer, chronic kidney disease, diabetes, vision loss, hearing loss and selected musculoskeletal, respiratory, neurological and congenital disorders [14].

The disease group causing the highest burden was mental and substance use disorders (19% of the total). This group includes conditions such as anxiety and depressive disorders, alcohol use disorders, drug use disorders and autism spectrum disorders. Other leading contributors to the total burden were injuries (15%), cardiovascular disease (12%), cancer (9%) and respiratory diseases (8%) [14].
Understanding our demographic profile

Monitoring the demographics of South Australia’s population helps to understand health status across the population and to better prepare for the issues and demands of population change on health care. Indicators about our age, where we live, population growth and decline and cultural diversity have direct implications for priorities in service delivery and programs in preventing illness and improving health outcomes.

> At 30 June 2015, the estimated resident population of South Australia was 1,698,600 people, representing about 7.1% of the total Australian population (23.8 million people) [15].

> Between the years 2011 to 2015, the population in South Australia increased by 3.6% which was the second slowest growth across all States and Territories (behind Tasmania) [15].

> In 2015, it was estimated there were 40,646 Aboriginal people in South Australia accounting for 2.4% of South Australia’s total population and 5.6% of Australia’s total Aboriginal population of 779,048 [16].

The majority of South Australia is classified as very remote

> While the majority of regional and rural towns are considered to be within inner and outer regional Australia, the towns of Port Lincoln and Roxby Downs are in remote Australia and Ceduna and Coober Pedy are in very remote Australia [17].

> The population density of South Australia in 2015 was 1.7 people per square kilometre, which was the third sparsest state or territory behind Northern Territory and Western Australia [15].

> Over three-quarters of South Australians reside in the metropolitan region [15].

Where we live matters

Health outcomes tend to be poorer outside major cities. The main contributors to higher death rates in regional and remote areas are coronary heart disease, other circulatory diseases, motor vehicle accidents and chronic obstructive pulmonary disease (e.g. emphysema). These higher death rates may be associated with access to services, risk factors and the regional/remote environment [18].

Clear differences exist in health service usage between areas. The Australian Institute of Health and Welfare report that people living in regional and remote areas have lower rates of some hospital surgical procedures, lower rates of GP consultation and generally higher rates of hospital admission than people living in major cities. There are also inter-regional differences in risk factors; for example, people from regional and remote areas tend to be more likely than their major cities counterparts to smoke and drink alcohol in harmful or hazardous quantities [18].

> At 30 June 2015, South Australia had the second oldest median age (40 years) of all states and territories (following Tasmania at 42 years) [19].

> Did you know - the City of Victor Harbor had the highest rate of people aged 65 years and over (37.9%) and was the highest median age of any Australian region in 2014, at 57.4 years.

> The age profile of the Aboriginal population in South Australia was substantially different from that for the state’s population overall. The median age for Aboriginal people was 22 years [20].

We are getting older
We are living longer

> The life expectancy of South Australian females and males at birth in 2013 to 2015 was 84.4 years and 80.3 years respectively. This is an increase of 1.0 year (females) and 2.2 years (males) over the past 10 years [19].

> The life expectancy of South Australian Aboriginal people are not reported by the Australian Bureau of Statistics due to insufficient numbers for analysis, however national rates indicate females and males to have a life expectancy of 73.7 years and 69.1 years respectively [21].

Our death rates have decreased and what we are dying from is changing

In 2015, there were 13,647 deaths in South Australia contributing to 8.6% of all deaths in Australia. The age standardised death rate (deaths per 1,000 standard population) decreased from 6.3 deaths in 2010 to 5.6 deaths in 2015 [22].

> Malignant neoplasms (cancer) were the most common cause of death in South Australia accounting for 28% of all deaths.

> The number of deaths due to ischaemic heart disease, cerebrovascular disease, influenza and pneumonia has decreased over the past 10-year period.

> The number of deaths due to degenerative diseases of the nervous system and organic, including symptomatic, mental disorders more than doubled over the past 10 years [23].

An ageing population presents us with opportunities and challenges

Ageing is a triumph of modern life and indeed, public health intervention. However, the reality is that there are challenges of meeting the health needs of an ageing population; the growing costs to the state budget for hospitals and health care, and the need to balance preventative health measures to name a few. The challenge is to be innovative so as to enable older people to experience higher levels of health and wellbeing and to ensure all South Australians have a fulfilling, active and enjoyable life at every stage.
> In 2015, there were 19,587 births in South Australia which is a 3.9% decrease from 2014 and the lowest number of births recorded since 2006.
> The majority of births were to mothers aged 30 to 34 years and births in this age group have increased over time.
> In 2015, the fertility rate (number of babies per woman) for all South Australian women was 1.76 which was the lowest rate over the past 10 years [24].

> Conversely, there were 976 Aboriginal births, which is the equal highest number of births in the past 10 years (also recorded in 2008) and represent five per cent of all births in South Australia.
> In 2015, the fertility rate for South Australian Aboriginal women was 2.01 [24].

We have more people living alone

The number of residents living in South Australia's homes provides key insights for the planning and delivery of services, as well as levels of social connectedness, isolation, mental health and wellbeing.

Data collected during the 2011 census show that South Australia has a higher proportion of lone households, and households with two residents compared with Australia as a whole [25].

> 27.9% of South Australian dwellings have one resident compared with 24.3% across Australia.
> 35.3% of South Australian dwellings have two residents compared with 34.0% across Australia.

Household and family structure are important demographic indicators

Household and family size and all the diversity they comprise has changed in profound ways across the years. These trends result from the interaction of many factors; for example, the increasing size and ageing of the population, along with an extended period of ‘healthy ageing’; technological advances; immigration patterns and cultural changes and increased family mobility and dispersion [26].

An understanding of these changes is an important policy issue, given that lifestyles, needs and resources are affected by the circumstances of living alone or with others, in a family or non-family setting. Such changes may have wide repercussions extending not only to immediate family members living elsewhere, but also to neighbourhoods and communities.

We are home to people from more than 200 culturally diverse backgrounds

> South Australia is home to people from more than 200 culturally, linguistically and religiously diverse backgrounds. Around 350,000 South Australians were born overseas and around 220,000 speak a language other than English at home [25].
> The main languages other than English spoken at home in South Australia are Italian, Greek, Mandarin, Vietnamese and Cantonese.
> The fastest growing languages other than English, representing more recent arrivals to South Australia, are Nepali, Karen (Karen people originate from Myanmar [formally Burma] and Thailand), Burmese, Oromo (Oromo people originate from Ethiopia, Kenya, Somalia and Egypt) and Gujarati (native to India and Pakistan) [27].
Social connectedness

Social connections comprise the people we know, the friends we confide in, the family we belong to and the community we live in. Each contributes to our physical and mental health in a variety of ways. Being socially isolated carries the same health impact as smoking 15 cigarettes or drinking six standard drinks of alcohol per day and is more predictive of mortality than being physically inactive or obese. Social isolation and exclusion are associated with increased rates of premature death and poorer chances of survival after a heart attack [28].

Volunteers

Volunteering plays a key role in enabling social connections and contributes significantly to the quality and vibrancy of our society. Volunteering time and effort is a significant way of exercising active citizenship as well as reflecting a high level of social capital. There are also health benefits. For instance, the retired and retiring population alone contains an immense wealth of skills and experience and keeping those skills and experience in play may help people live longer, healthier lives [29].

In South Australia, the volunteering effort is valued at $5 billion annually

Despite the crucial role played by volunteers, local councils have reported increasing difficulties in recruiting and retaining volunteers. Many services and activities provided by councils are dependent on a reliable volunteer base, including passenger transport networks, community programs aimed at increasing social connection and participation as well as support in many major community events. In many cases local councils have raised the ongoing need for volunteers in the context of the increasing health care needs of ageing populations.

South Australians reported the lowest rate of formal volunteering since 2006

> In 2016, 68% of South Australians volunteered in some capacity in the previous 12 months, which is significantly lower when compared to 2006 and 2008.
> Forty-two per cent engaged in formal volunteering, the lowest rate since 2006. Formal volunteering rates were significantly higher among females, regional respondents and those aged 35 to 54 years [30].

Libraries supporting social connections and lifelong learning

Libraries support health and wellbeing, while promoting greater social connectedness and lifelong learning. Library use has been positively associated with primary benefits to individual subjective wellbeing, greater life satisfaction, greater happiness and sense of purpose in life.

Broader social benefits may occur through reductions in primary care service usage due to better health, and access to services including community development, education, and training.

There are more than 130 public libraries, which collaborate to provide a service to all South Australians.

Local government provides approximately 75% of the funds for public libraries and over 90 public libraries in South Australia are owned and operated by local councils. All local councils report on the significance that libraries play for providing opportunity for education, social interaction, places to meet, digital learning opportunities, enabling healthy lifestyles, as well as a place of community safety in extreme weather events.

South Australia's public libraries work collaboratively which has resulted in the development of the ‘one card’ system where customers can now use any public library across South Australia with a single card, and have access to over four million items.
Secure, affordable housing

Secure and affordable housing provides a platform for a range of benefits, including stable employment, connection to the community and a sense of home. It is generally accepted that households, particularly those with low incomes, which are using more than 30% of their gross income on housing (rent or mortgages) will experience housing stress. In such circumstances, households may find it difficult to afford other expenses including food, power, water, health services and education. It was reported that households with the lowest incomes generally experience greater housing stress, especially for people living alone [31].

The Rental Affordability Index (RAI) tracks rental affordability relative to household income, but specifically on very low and low income households. Rental unaffordability can be categorised from extremely unaffordable rents (index <50) to affordable rents (index of 150+). At June 2016 the RAI for Greater Adelaide was 119 which is considered moderately unaffordable, and for the rest of South Australia the RAI was 135 which is deemed acceptable [31].

> Greater Adelaide had lower index scores than the rest of South Australia, indicating the rents in the Greater Adelaide area were less affordable than the rest of South Australia.

> The RAI for people living in low and very low income areas ranged from unaffordable to extremely unaffordable, and those living in a lone household (non-family) were more likely to have lower scores compared with families of the same income category.

Homelessness

On the most basic level homelessness is the state or condition of having no home. Homelessness has many causes, including the shortage of affordable housing, long-term unemployment, mental health issues, substance abuse as well as family and relationship breakdown.

Homelessness has devastating effects on the health and wellbeing of a significant number of adults, families, young people and children. Those living without access to safe, sustainable housing represent the most disadvantaged and marginalised people in Australian society.

> Every night in South Australia, there are nearly 6,000 homeless people and this is likely to be a conservative number [32].

> Sixty-six per cent of the homeless population in South Australia is under 34 years of age, with around 27% being teenagers (mainly on their own) [33].

Homelessness and Oral Health Program

Mainstream oral health programs have traditionally posed access issues to people who are homeless or at risk of homelessness, often resulting in sporadic patterns of attendance and higher risk of oral disease. Untreated oral disease is painful, disfiguring and frequently affects an individual’s self-esteem, ability to eat, socialise and sleep. Poor oral health is also linked to general health conditions including diabetes, nutritional disorders, cardiovascular and respiratory disease [34].

Improving oral health of people experiencing homelessness benefits their quality of life and general health, and can realise positive advantages for the wider health sector by reducing oral health related chronic disease impacts and the incidence of avoidable hospital admissions [34].

The Homelessness and Oral Health Program (the Program) is the result of an ongoing partnership between the South Australian Dental Service and homelessness sector agencies; providing treatment tailored to the specific needs of vulnerable people. The initial approach to establish the Program came jointly from the Homelessness Support Program, Department for Communities and Social Inclusion, and a city-based medical practice, which identified significant oral health needs amongst their clients.

Since its inception the Program has successfully connected with over 50 key homelessness sector agencies which remain committed to a program they see as making a real difference for their clients.

This year over 600 marginalised, vulnerable people will receive dental care as a result of this program which successfully removes actual and perceived barriers to oral health care for people experiencing homelessness in South Australia.
The built environment

Good urban design leads to quality public places that in turn have the capacity to revitalise neighbourhoods and reinforce a sense of place. Urban design provides a comprehensive approach to rebuilding the physical assets of communities and boosting community self-image. Designed improvement to urban fabric can positively impact on the extent of social networks, cooperation, trust and safety within communities to enhance social wellbeing. A public sector committed to good urban design can also support local businesses and economic activity [35].

Healthy, walkable neighbourhoods are places where people can afford to live, learn, work and play. They offer a wide range of services that can easily be reached on foot or by bicycle, including schools, health care, shops, parks, sports facilities and public transport. They also provide streets and public spaces which support diverse and vibrant public life, biodiversity and physical activity opportunities [36].

The Draft 30-Year Plan for Greater Adelaide 2016 Update creates further opportunities for enhancing healthy planning

The long standing relationship between SA Health and the Department of Planning, Transport and Infrastructure (DPTI) in South Australia is based on our mutual commitment to building healthy environments. The updated plan outlines DPTI's land use planning policy, which is inclusive of healthy neighbourhoods, proposes more walkable neighbourhoods and active transport modes among its six targets for measuring progress, and proposes to deliver on the State Public Health Plan through collaborative action between state and local government. DPTI is also a Public Health Partner Authority under the South Australian Public Health Act, 2011.

Public open spaces and places to play

Exposure to natural green spaces, such as parks and reserves, has the potential to provide significant benefits for physical and mental health, particularly places that are easy to access, have multiple uses and can be accessed for little or no cost. Fostering and enabling direct and meaningful experiences with nature is transformative in many ways. Through the planning and provision of public open space, local councils provide a significant investment in infrastructure for active leisure and transport, especially and notably cycling trails, boulevards and footpaths. In addition, there is significant council led activity in maintaining community gardens, dog parks and ‘greening’ strategies, including some councils exploring urban food production within street scape designs. Most councils have biodiversity and environment sustainability plans in place.

Healthy Parks Healthy People SA

Healthy Parks Healthy People SA Framework is a nature-based health approach for population health. Fostering and enabling direct and meaningful experiences with nature is transformative for our physical and mental health, the development of our children, strengthening our personal relationships with family, building safer and better connected neighbourhoods, developing a strong economy, and nurturing environmental attitudes and values that encourage a continued conservation ethic in South Australia.

Healthy Parks Healthy People SA enables park and health authorities to work together towards implementing innovative approaches to health and wellbeing. The framework builds relationships and cooperation between stakeholders who understand the vital role of nature and parks in our daily lives, enriching our physical, psychological, social and spiritual wellbeing. It is supported by a Public Health Partner Authority agreement between the Department of Environment, Water and Natural Resources and SA Health.
Population diets requires a comprehensive government response at both federal and state levels. A major influence on Australians’ food and beverage choices and nutritional status. Addressing obesity and improving food environments are required to make sure the food for sale in South Australia is safe and suitable. In addition, unhealthy food environments are a shared responsibility and we all have a role to play. Food businesses are required to make sure the food they sell is safe and suitable to eat. Consumers need to ensure that safe food handling practices are applied from the time food is purchased until it is served, and state and local government work together to ensure that the food for sale in South Australia is safe and suitable. In addition, unhealthy food environments are a major influence on Australians’ food and beverage choices and nutritional status. Addressing obesity and improving population diets requires a comprehensive government response at both federal and state levels.

### Safe, healthy food environments

Food safety and access to healthy food is a shared responsibility and we all have a role to play. Food businesses are required to make sure the food they sell is safe and suitable to eat. Consumers need to ensure that safe food handling practices are applied from the time food is purchased until it is served, and state and local government work together to ensure that the food for sale in South Australia is safe and suitable. In addition, unhealthy food environments are a major influence on Australians’ food and beverage choices and nutritional status. Addressing obesity and improving population diets requires a comprehensive government response at both federal and state levels.

### Food Safety Rating Scheme

Food regulation in South Australia is a partnership between state and local government. Food safety is an important aspect of public health and there is broad community expectation for government intervention to secure a safe food supply.

The Food Safety Rating Scheme (the Scheme) is an initiative by SA Health under the Food Act 2001 (South Australia) in partnership with local councils and the food industry with the aim of improving food safety and providing consumers with a recognisable indication of the food safety compliance of a business. The Scheme was developed by SA Health in collaboration with the 10 councils that participated in the 2014 pilot of the scheme and with the input of a reference group of food industry representatives.

The Scheme is a quick and easy way for consumers to find information about food safety at places they eat out or buy take away meals. It shows consumers how well a food business complies with the Food Safety Standards, in particular how it manages direct risks to food safety, by featuring a star rating with a simple, easy to recognise ranking of five, four or three stars.

The Scheme covers medium and high-risk food service business such as restaurants, cafés, takeaway shops, pubs and some bakeries in local councils that choose to participate. A star rating is calculated after a routine food safety inspection by the local council. Food businesses within participating councils are awarded stars if they achieve a high degree of compliance with the Food Safety Standards. The star rating is displayed at the food service businesses. It is voluntary for businesses to display the star rating.

Certificates are only awarded once a routine inspection is undertaken which may be once every 12 months. Just because a business is not displaying a certificate does not mean they are unsafe.

Look for the star rating at the places you eat.
Active transport

It is recognised that how and where we live, work and play is fundamentally linked with how and why we move around. A connected public transport, walking and cycling network enables more active travel. Public transport use also increases incidental physical activity because people often walk to and from stations and stops. Transport network enhancements that enable cycling and walking will support the vitality and sustainability of communities, adding to the state’s liveability, as well as boosting economic growth and attracting new residents, businesses and investors [37].

Climate change

Climate change is one of the key priority areas of the State Public Health Plan. It represents one of the greatest global challenges and potentially one of the major future contributors to the burden of disease and preventable deaths in South Australia. Climate change has implications for the immediate and long-term health of the public, public health infrastructure, biodiversity, natural resources and the health of the environment.

Climate change projections for South Australia indicate warmer and drier conditions across most of the State, with an increased risk of extreme events such as flooding, drought and bushfires, with variable impacts on the lives of all South Australians and on our natural environment [38]. Climate change impacts upon multiple determinants of health including direct risks to health and safety, threats to natural and built environments and will have profound longer term effects on population food and water security.

Beating the heat: significantly improving health outcomes in extreme heat events

The ravages of the millennium drought ended with the devastating heatwave of 2009 which has been well reported. Research conducted by SA Health in partnership with the School of Public Health, University of Adelaide provided sufficient information for the Hazard Manager, State Emergency Services, to put in place a heat warning system.

An evaluation of the South Australian heatwave warning system reports a significant improvement in morbidity especially for cardiac, renal and heat-related diagnoses.

Research into the 2009 heat event indicated a number of factors that either increased the risk of death or hospitalisation (pre-existing chronic disease and living alone) or were protective (air conditioner in bedroom, increased social interaction and education level).

Large increases in hospital/emergency admissions and ambulance call outs during extreme heat events demonstrated that older people are vulnerable and in particular those with chronic disease, restricted mobility and reduced social interaction are less resilient during extreme heat. It was also found that language barriers exacerbated the vulnerability of culturally and linguistically diverse communities to extreme events, including heat.

Working alongside the South Australian State Emergency Service, Department for Education and Child Development, Department for Communities and Social Inclusion, University of Adelaide and other stakeholders, various issues were identified, researched and tools developed to better identify who to target and provide evidence-based strategies.

SA Health recently presented findings of the efficacy of messaging during extreme heat events especially in those older than 65 years of age. Using simple tools (Beat the Heat) behaviours were modified and significantly fewer heat stress episodes occurred.
Many factors influence how healthy we are. Modifying risk factors can reduce the risk of developing a disease and result in large population health gains by reducing illness and rates of death [7]. Risk factors may include behavioural risks, metabolic risks, environmental risks and dietary risks. The 2011 Australian Burden of Disease Study identified the five risk factors contributing the most burden to Australians were [13]:

- tobacco use (9.0%)
- high body mass index (5.5%)
- alcohol use (5.1%)
- physical inactivity (5.0%)
- and high blood pressure (4.9%).

Table 1 - Proportion (%) of burden attributable* to selected risk factors for each disease group, 2011 presents the proportion of burden attributable to each of these selected risk factors for each disease group.

<table>
<thead>
<tr>
<th>Disease group</th>
<th>Tobacco Use (%)</th>
<th>High body mass index (%)</th>
<th>High alcohol use (%)</th>
<th>Physical inactivity (%)</th>
<th>High blood pressure (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cancer</td>
<td>22.0</td>
<td>4.5</td>
<td>3.3</td>
<td>6.4</td>
<td>...</td>
</tr>
<tr>
<td>Cardiovascular</td>
<td>12.0</td>
<td>21.1</td>
<td>4.8</td>
<td>21.1</td>
<td>31.7</td>
</tr>
<tr>
<td>Mental</td>
<td>...</td>
<td>...</td>
<td>12.2</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>Musculoskeletal</td>
<td>...</td>
<td>0.2</td>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>Injuries</td>
<td>...</td>
<td>...</td>
<td>20.6</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>Respiratory</td>
<td>36.2</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>Neurological</td>
<td>...</td>
<td>...</td>
<td>1.9</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>Gastrointestinal</td>
<td>...</td>
<td>...</td>
<td>8.2</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>Endocrine</td>
<td>3.5</td>
<td>49.4</td>
<td>2.0</td>
<td>29.7</td>
<td>...</td>
</tr>
<tr>
<td>Infections</td>
<td>0.5</td>
<td>...</td>
<td>2.7</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>Kidney</td>
<td>...</td>
<td>27.5</td>
<td>...</td>
<td>...</td>
<td>21.5</td>
</tr>
</tbody>
</table>

*While there are known associations between these risk factors and many diseases and conditions, burden was only attributed to a risk factor where there is sufficient evidence that the risk factor causes the disease and its contribution can be measured.


One risk factor can have an impact on many different diseases and ultimately health outcomes. Many diseases have common risk factors, and can also be risk factors for each other. Understanding the diversity of these complex relationships is important. The graphic below shows how much five risk factors contributing the most burden, contribute to various diseases.


In South Australia we monitor these five important risk factors using various statewide surveys and national reports. For other behavioural, metabolic and dietary risk factors not reported here, refer to the [Data Compendium](http://www.health.sa.gov.au).
Tobacco smoking

In 2015, 15.7% of the South Australian population reported that they smoke which is the equal lowest smoking prevalence recorded in the general community [12].

> In South Australia, smoking is more prevalent among Aboriginal people, people experiencing socio-economic disadvantage, country residents, people with mental illness and prisoners. Smoking contributes to lowered life expectancy and increased levels of chronic disease in these population groups.

South Australia has one of the lowest daily smoking rates among Aboriginal people in Australia

After a period of minimal change in smoking prevalence among Aboriginal people from 2002 to 2008, a significant reduction in daily smoking prevalence was observed from 48.9% in 2008 to 38.2% in 2014-15 [39]. South Australia experienced the largest percentage point decrease over time of all the states and territories in Australia, and currently has one of the lowest daily smoking rates among Aboriginal people in Australia [39].

Figure 4 - Proportion of Aboriginal people reporting daily smoking, by state and territories (2014-15)

<table>
<thead>
<tr>
<th>State</th>
<th>Proportion (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSW</td>
<td>39.6</td>
</tr>
<tr>
<td>VIC</td>
<td>39.8</td>
</tr>
<tr>
<td>QLD</td>
<td>40.5</td>
</tr>
<tr>
<td>SA</td>
<td>38.2</td>
</tr>
<tr>
<td>WA</td>
<td>43.1</td>
</tr>
<tr>
<td>TAS</td>
<td>37.6</td>
</tr>
<tr>
<td>NT</td>
<td>43.9</td>
</tr>
<tr>
<td>ACT</td>
<td>35.7</td>
</tr>
<tr>
<td>AUST</td>
<td>40.6</td>
</tr>
</tbody>
</table>

Data Source: Australian Bureau of Statistics [39]. Data are age standardised
Overweight and obesity

The proportion of South Australian adults who were overweight or obese in 2014-15 was 65.8%, which has decreased from 67.1% in 2011-12 [40].

Figure 5 - Proportion of South Australian adults aged 18 years and over with body mass index measured as underweight/normal and overweight/obese by age (2014-15)

Data source: Australian Bureau of Statistics [40]. Data are measured.

In 2014-15, the proportion of South Australian children aged five to 17 years who were measured to be overweight or obese was 23.7%, which is below the average Australian rate of 27.4% and similar to 2011-12 [40].

Figure 6 - Proportion of children aged five to 17 years who were overweight or obese, by state or territory (2014-15)

Data Source: Australian Bureau of Statistics [40]. Data are measured.
Alcohol

Alcohol is one of the most important risk factors for injury. The link between alcohol consumption and injury risk has been well established in several settings, notably in road accidents and violence related injuries.

In 2015, 17.7% of South Australians aged 15 years and over reported drinking at levels that put them at risk of injury on a single occasion at least monthly, and this has not changed since 2011 [41].

> Those aged 20 to 29 years were most likely to report drinking at risky levels from a single occasion at least monthly (41%).
> Lifetime risky drinking significantly decreased for males between 2011 (29%) and 2015 (27%). Lifetime risky drinking significantly decreased for females between 2014 (12%) and 2015 (9%).
> In 2015, adults aged 50 to 59 years were most likely to report drinking at risky levels over a lifetime (24%) but this has not always been the case. In 2014 it was those aged 40 to 49 years (25%) while from 2011 to 2013 it was those aged 20 to 29 years (range 24-31%).

Physical activity

The proportion of South Australian adults aged 18 years and over who reported engaging in at least 150 minutes of moderate intensity physical activity per week for the period July 2014 to June 2016 was 47.5%. This proportion has remained steady over time [8].

Those adults who were more likely to report engaging in 150 minutes of moderate intensity physical activity than their counterparts include:

> males (52.8%)
> adults living in the metropolitan areas (49.4%)
> adults aged 18 to 29 years (67.3%) and 30 to 49 years (49.5%)
> and adults living in the high (49.8%) and highest (56.0%) Socio-Economic Indexes for Areas (SEIFA) quintiles.
Children’s physical activity

It is recommended children engage in at least 60 minutes of moderate intensity physical activity every day. The proportion of South Australian children aged 5 to 17 years engaging in at least 60 minutes of moderate intensity physical activity every day for the period July 2014 to June 2016 was 35.1% and this has remained stable over time [8].

> Boys (38.9%) were more likely to report engaging in 60 minutes of moderate intensity physical activity every day than girls (30.7%).

Table 2 - Proportion of South Australian children aged five to 17 years reporting at least 60 minutes of moderate intensity physical activity every day (Jul 2014-Jun 2016)

<table>
<thead>
<tr>
<th></th>
<th>n/N</th>
<th>%</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>844/2406</td>
<td>35.1</td>
<td>33.2 - 37.0</td>
</tr>
<tr>
<td>Boys</td>
<td>502/1291</td>
<td>38.9</td>
<td>36.2 - 41.6*</td>
</tr>
<tr>
<td>Girls</td>
<td>342/1115</td>
<td>30.7</td>
<td>28.1 - 33.5*</td>
</tr>
</tbody>
</table>

CI: Confidence Interval. Data Source: South Australian Monitoring and Surveillance System [8]

Note: The weighting of the data can result in rounding discrepancies or totals not adding

*Statistically significantly different to all other categories (p<0.05)

Hypertension

Hypertension (also known as high blood pressure) is a major risk factor for coronary heart disease, stroke, heart failure, peripheral vascular disease and renal failure. The risk of disease increases as the level of blood pressure increases. Hypertension is also associated with other risk factors.

From questions asking about the diagnosis of high blood pressure and the use of antihypertensive treatment, the proportion of South Australian adults aged 18 years and over reporting a diagnosis of hypertension for the period July 2014 to June 2016 was 22.3% [8].

> Males (23.4%) were more likely to report a diagnosis of hypertension than females (21.3%).
> The proportion of adults reporting a diagnosis of hypertension increased with age.
> Those living in the lowest SEIFA quintile (27.5%) were more likely to report a diagnosis of hypertension.
Part two - Protect, Prevent, Improve, Inform

There is a wide spectrum of actions that impact on public health - from taking action on the determinants of health at the earliest level of prevention through to dealing with the presence of the preventable burden of diseases and injuries once they have occurred. No one agency or sphere of government has responsibility for the whole spectrum. Given this, it is impossible to report on all public health action in the reporting period in this report.

This part of the report highlights some examples of action and achievements in public health for the reporting period. They focus on the successful partnerships required to impact on our health and wellbeing. More examples and case studies can be accessed in full in the Compendium of Public Health Action.

Protecting public health

Our communities function because of fundamental and enduring public health protection services and strategies. If these were absent or weakened, our health would be severely challenged due to, for example, the dangers of poor water quality, unsafe food, ineffective waste disposal, falling immunisation rates and the spread of more virulent infectious diseases. Other potential implications could be on poorly designed or unsafe dwellings, and inadequate community infrastructure.

Immunisation

Immunisation is one of the most effective strategies to protect children and adults against certain diseases with various programs and multiple vaccines available in South Australia. Immunisation not only protects individuals, but also others in our community by increasing the level of immunity and minimising the spread of disease.

Over 90% of South Australian children are fully immunised [42]

For the period December 2015 to September 2016:

> 93.1% of one year old South Australian children were fully immunised compared to the national average of 91.3%.
> 91.2% of two year old South Australian children were fully immunised compared to the national average of 91.1%.
> 92.7% of four year old South Australian children were fully immunised compared to the national average of 93.1%.

Closing the Gap in Aboriginal children’s immunisation coverage

In 2011, immunisation coverage rates for South Australia’s Aboriginal children were significantly lower than the rate for non-Aboriginal children. They were below the target immunisation rates and the lowest in Australia. Many Aboriginal children did not receive their vaccines at the recommended schedule points, leaving them vulnerable to serious diseases during the periods they are most at risk.

In 2013, funding received from the state Closing the Gap strategy addressed the ongoing issue of low and/or delayed immunisation uptake amongst Aboriginal Children in South Australia. The key findings of the evaluation of the program include the improved immunisation coverage rates for the 12 to 15 month and 60 to 63 month age groups.

> The proportion of fully immunised South Australian Aboriginal children aged 12 to 15 months increased from 77.8% in 2012 to 92.1% in 2016.
> The proportion of fully immunised South Australian Aboriginal children aged 24 to 27 months decreased from 86.9% in 2012 to 85.2% in 2016.
> The proportion of fully immunised South Australian Aboriginal children aged 60 to 63 months increased from 83.3% in 2012 to 94.5% in 2016.

The different outcome for the 24 to 27 month age group is thought to be due to a change to the national assessment requirements for ‘fully immunised’, this was reflected nationally for both Aboriginal and non-Aboriginal children and will improve in time.
Controlling the supply and use of tobacco

The supply and use of tobacco requires control to ensure that the risk of uptake of smoking by younger people is reduced and that smoking is ‘de-normalised’ in the broader community, supporting existing smokers to quit. The SA Health Tobacco Control Unit:

- Inspects tobacco retailers to ensure that sales to minors and display restrictions are observed.
- Supports local government to implement smoke-free areas through the authorisation of council officers to enforce requirements.
- In conjunction with South Australian Police, SA Health monitors and implements measures to control emergent trends in smoking such as shisha bars, particularly ensuring smoking does not occur in enclosed spaces.

In 2014 to 2016:

- Of the 2,158 licenced retailers in South Australia 1,166 inspections were conducted.
- Fifty-five local government officers were authorised in South Australia to enforce smoking bans in seven council areas including major hospitality and retail precincts in the Adelaide CBD and Holdfast Bay.
- Ninety-seven per cent of tobacco retailers complied with sales to minors laws.
- Sixteen shisha bars were inspected 53 times between 2014 to 2016, resulting in 12 expiation notices being issued and multiple directives to make changes to reduce the incidence of smoking in enclosed areas.
- In March 2016, the Adelaide Remand Centre became the first correctional facility in South Australia to become completely smoke-free.
- There has been an increase in regulated smoke-free areas, such as covered transport waiting areas and near children's playgrounds. Local communities have been empowered to create designated smoke-free areas and events, which have included the Royal Adelaide Show and Moseley Square, Glenelg.
- Following the implementation of a comprehensive smoke-free policy in all SA Health facilities, smoke-free policies are now in place across most South Australian Government departments.

Wastewater treatment systems

As climate drying trends continue, there has been an increase in measures seeking to increase water security, including the reuse of wastewater (sewage) of human origin which carries with it the risk of disease if not properly treated. Local government and SA Water are leading the drive to recycle and reuse wastewater.

Systems designed to provide recycled wastewater for a range of uses in public spaces and inside people's homes must be approved by SA Health under the South Australian Public Health (Wastewater) Regulations, 2013.

Over 8GL (that’s 3,200 Olympic sized pools!) of recycled water is being reused safely.

These systems are subject to detailed technical assessment to ensure that they effectively treat wastewater to remove disease causing organisms so that the water can be reused safely. SA Health also imposes risk management plans to ensure that the system’s performance is effectively monitored and there are plans in place to prevent human contact with insufficiently treated water.

- Thirty-eight systems or existing scheme upgrades have been approved in the 2014 to 2016 reporting period. These systems service over 400,000 South Australians in total.
- Forty-five councils operate systems that are subject to SA Health approval and oversight.
- Subject to government funding, it is likely that more township schemes will be implemented with a total possible recycled water production of 12GL state-wide.
Reducing lead exposure in South Australia

The Port Pirie environment is contaminated with lead from more than 120 years of smelting activities in the city. It is well known that blood levels above 10 µg/dL (micrograms of lead per deciliter of blood) can have adverse effects on a person’s health. In light of new evidence, the National Health and Medical Research Council (NHMRC) revised the national statement for managing lead exposure in May 2015; emphasising that there is no ‘safe’ level of lead exposure. This revision lowered the recommended exposure investigation level from 10 µg/dL to 5 µg/dL. Children and pregnant women are most at risk.

> The average blood lead level of children aged 24 months tested in 2015 was 5.9 µg/dL which is an increase of 0.4 µg/dL from 2014. The geometric mean blood lead level for 24 month old children is considered to be a robust indicator of trends in lead exposure for the whole population [43].

> The average blood lead levels of pregnant women tested in 2015 was 1.5 µg/dL which has decreased from 2.5 µg/dL in 2006 [43].

A person’s blood lead level indicates whether they have been exposed to lead in their environment or as a consequence of their work or other activities. Following decades of tightening restrictions on lead in paint, petrol and other consumer goods (eg toys), the average blood lead level among Australians is now estimated by the NHMRC to be less than five micrograms per deciliter (µg/dL). However, there remain some Australians at an unacceptable risk of lead exposure due to the presence of legacy lead paint in and around their homes or to lead mining and smelting operations in their communities, such as Port Pirie residents.

Table 3 - Geometric mean of children tested under five years and aged 24 months* (2006-2015)

<table>
<thead>
<tr>
<th>Year</th>
<th>Total number of children tested</th>
<th>Geometric mean of children tested (µg/dL)</th>
<th>Number of children aged 24 months tested</th>
<th>Geometric mean of children aged 24 months tested (µg/dL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>723</td>
<td>8.2</td>
<td>159</td>
<td>11.2</td>
</tr>
<tr>
<td>2007</td>
<td>767</td>
<td>6.9</td>
<td>154</td>
<td>8.8</td>
</tr>
<tr>
<td>2008</td>
<td>749</td>
<td>6.0</td>
<td>136</td>
<td>8.4</td>
</tr>
<tr>
<td>2009</td>
<td>755</td>
<td>5.5</td>
<td>149</td>
<td>7.4</td>
</tr>
<tr>
<td>2010</td>
<td>705</td>
<td>5.4</td>
<td>121</td>
<td>7.1</td>
</tr>
<tr>
<td>2011</td>
<td>657</td>
<td>4.9</td>
<td>141</td>
<td>6.1</td>
</tr>
<tr>
<td>2012</td>
<td>634</td>
<td>4.4</td>
<td>107</td>
<td>6.3</td>
</tr>
<tr>
<td>2013</td>
<td>633</td>
<td>4.8</td>
<td>118</td>
<td>6.1</td>
</tr>
<tr>
<td>2014</td>
<td>629</td>
<td>4.5</td>
<td>135</td>
<td>5.5</td>
</tr>
<tr>
<td>2015</td>
<td>623</td>
<td>4.3</td>
<td>119</td>
<td>5.9</td>
</tr>
</tbody>
</table>

Data Source: Scientific Services Branch, SA Health [43]. *Results are reported with surrogates where surrogate data represents a child’s blood lead level at birth, estimated using the mother’s blood lead level. Note: not representative of the whole Port Pirie population as not all children were tested.
Targeted Lead Abatement Program - reducing lead exposure in Port Pirie

Since 1984, SA Health has delivered a community lead abatement program to the Port Pirie community to reduce the risk of harm to young children and unborn babies as a result of exposure to lead in their environment.

This program has successfully contributed to a substantial reduction in children’s blood lead levels from an average of 19.5 µg/dL for the population in 1984-85 to 4.3 µg/dL in the most recent full population testing at the end of 2015.

In 2015, around 58% of the population of children under five years of age (264 children) had a reported result higher than the NHMRC exposure investigation level of 5 µg/dL; highlighting the need for continuing targeted efforts to investigate each child’s living environment to ensure that every opportunity to minimise their lead exposure is taken.

New resources have been developed for the community and a major ongoing review has been initiated to align lead abatement program guidelines for the management of blood lead levels and exposure-reduction protocols and work practices with the revised NHMRC recommendation.

The Targeted Lead Abatement Program (TLAP), a joint initiative between the Nyrstar smelter and the South Australian government to support the major re-development of the Port Pirie smelter’s technology, has provided significant investment to strengthen SA Health’s lead abatement program.

Over the past two years, this investment has provided additional caseworkers to investigate children’s lead exposure risks and support families to help give children the best possible start in life. In addition, TLAP investment has increased SA Health’s capacity to temporarily relocate young children at high risk of lead exposure out of highly contaminated living environments through subsidised childcare and relocation homes, and to reduce contamination in their living environments through home repairs.

In light of the persistence of legacy lead contamination from imported consumer goods, old lead-based paint and historical leaded petrol, and the revised NHMRC recommendation about exposure investigation, SA Health will review the lead control program. This includes examining the way it is notified about elevated blood lead levels and determining the best way forward to raise public awareness, educate clinicians, and manage lead exposure risks for all South Australians.
Preventing illness and injury

Prevention is a fundamental principle under the South Australian Public Health Act, 2011 with a particular application to public health planning. A focus on prevention means a focus on identifying and intervening in perceived threats to public health. It also means identifying those strengths and opportunities within communities that, when reinforced and built up, can increase our potential to resist and recover from threats. It can improve the conditions that promote health. A focus on prevention is best understood when both these elements are included.

Population-based cancer screening

Population-based cancer screening is an organised, systematic and integrated process of testing for signs of cancer or pre-cancerous conditions in populations without obvious symptoms. In Australia, there are national population-based screening programs for cervical, breast and bowel cancer. The programs target particular populations and age groups where evidence shows screening is most effective at reducing cancer-related morbidity and mortality.

Cervical screening program

South Australia’s participation rate in the Cervical Screening Program was higher than the national rate for all age groups [44]

For the period January 2013 to December 2014, South Australia's participation rate in the screening program was 59.4%, which is above the national rate of 57.8%, and the second highest of all states and territories.

Figure 7 - South Australia’s participation in the National Cervical Screening Program by age (Jan 2013 - Dec 2014)

<table>
<thead>
<tr>
<th>Age Group</th>
<th>South Australia</th>
<th>Australia</th>
</tr>
</thead>
<tbody>
<tr>
<td>20–24</td>
<td>45.6</td>
<td>42.3</td>
</tr>
<tr>
<td>25–29</td>
<td>54.0</td>
<td>51.4</td>
</tr>
<tr>
<td>30–34</td>
<td>59.9</td>
<td>57.4</td>
</tr>
<tr>
<td>35–39</td>
<td>61.9</td>
<td>60.4</td>
</tr>
<tr>
<td>40–44</td>
<td>62.9</td>
<td>62.1</td>
</tr>
<tr>
<td>45–49</td>
<td>64.7</td>
<td>64.1</td>
</tr>
<tr>
<td>50–54</td>
<td>64.6</td>
<td>63.9</td>
</tr>
<tr>
<td>55–59</td>
<td>62.3</td>
<td>61.8</td>
</tr>
<tr>
<td>60–64</td>
<td>62.3</td>
<td>60.3</td>
</tr>
<tr>
<td>65–69</td>
<td>54.8</td>
<td>53.5</td>
</tr>
</tbody>
</table>

Data Source: National Cervical Screening Program [44]
Breast screening program

> For the period January 2014 to December 2015, 167,868 South Australian women had a screening mammogram administered by BreastScreen SA.

> The breast screening rate for women living in South Australia aged 50 to 74 years (BreastScreen Australia’s target age group) was 57.6%, which is above the national rate of 53.2% and was the highest of all states and territories [45].

**Figure 8 - South Australia’s participation in the Breast Cancer Screening Program by age (Jan 2014 - Dec 2015)**

<table>
<thead>
<tr>
<th>Age Group</th>
<th>South Australia</th>
<th>Australia</th>
</tr>
</thead>
<tbody>
<tr>
<td>40–44</td>
<td>9.5</td>
<td>11.2</td>
</tr>
<tr>
<td>45–49</td>
<td>19.7</td>
<td>18.5</td>
</tr>
<tr>
<td>50–54</td>
<td>52.5</td>
<td>48.9</td>
</tr>
<tr>
<td>55–59</td>
<td>57.6</td>
<td>53.1</td>
</tr>
<tr>
<td>60–64</td>
<td>63.6</td>
<td>58.6</td>
</tr>
<tr>
<td>65–69</td>
<td>65.2</td>
<td>59.5</td>
</tr>
<tr>
<td>70–74</td>
<td>51.9</td>
<td>48.7</td>
</tr>
<tr>
<td>75–79</td>
<td>18.1</td>
<td>13.8</td>
</tr>
<tr>
<td>80–84</td>
<td>7.5</td>
<td>4.8</td>
</tr>
<tr>
<td>85+</td>
<td>1.7</td>
<td>1.1</td>
</tr>
</tbody>
</table>

Data Source: BreastScreen Australia [45].

National bowel screening program

43.9% of South Australians aged 50 to 74 years participated in the National Bowel Cancer Screening Program, which was the highest participation rate of all states and territories [46].

For the period January 2013 to December 2014, the National Bowel Cancer Screening Program reported:

> The screening positivity rate for South Australians was 7.4% compared with national rate of 7.0%.

> The diagnostic assessment rate (colonoscopy) for South Australians was 76.1%, compared with a national rate of 73.4%.

> The median time between a positive screen and diagnostic assessment for South Australians was 64 days, compared with a national median of 55 days.

> The age standardised incidence rate of bowel cancer for South Australians was 62.6 compared with a national incidence rate of 63.0.

**Figure 9 - Participation in the National Bowel Screening Program, by state and territory (Jan 2013 - Dec 2014)**

<table>
<thead>
<tr>
<th>State</th>
<th>Proportion (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSW</td>
<td>34.5</td>
</tr>
<tr>
<td>VIC</td>
<td>38.4</td>
</tr>
<tr>
<td>QLD</td>
<td>36.6</td>
</tr>
<tr>
<td>WA</td>
<td>39.9</td>
</tr>
<tr>
<td>SA</td>
<td>43.9</td>
</tr>
<tr>
<td>TAS</td>
<td>42.5</td>
</tr>
<tr>
<td>ACT</td>
<td>40.4</td>
</tr>
<tr>
<td>NT</td>
<td>27.6</td>
</tr>
<tr>
<td>AUST</td>
<td>37.3</td>
</tr>
</tbody>
</table>

Data Source: National Bowel Cancer Screening Program [46]
Preventing infectious diseases

Infectious diseases are illnesses caused by the spread of microorganisms (bacteria, viruses, fungi or parasites) or prions to humans from other humans, animals or the environment, including food and water. Infectious diseases and other conditions of concern still occur frequently throughout the world. Constant vigilance is required to prevent the reappearance of diseases and conditions thought to have been conquered.

Changes in lifestyle have also led to the emergence of new threats to public health from infection. Health authorities depend on both medical practitioners and laboratories for information on the incidence of these conditions.

Responding to a global public health emergency: Ebola virus

On 7 August 2014 the World Health Organization (WHO) declared an outbreak of Ebola virus disease (EVD) in West Africa to be a Public Health Emergency of International Concern. The first case in this EVD epidemic was believed to have occurred in December 2013 in Guinea, West Africa. This outbreak turned out to be the largest and most widespread EVD outbreak in history, resulting in 28,646 recorded cases with 11,323 deaths, and causing major socio-economic disruption in West Africa and beyond.

The response to this global public health emergency through 2014, 2015 and into early 2016 required a significant input of time and expertise from a wide range of individuals and organisations, including the whole of the Communicable Disease Control Branch (CDCB). The Chief Public Health Officer and the Director of CDCB participated in regular national teleconferences coordinating the Australian response, as well as with all Local Health Networks, the Emergency Management Unit, and the South Australian Ambulance Service. Non–government participants included the main industrial groups representing health care workers.

CDCB provided education about EVD and training in infection control and use of personal protective equipment to emergency department and other hospital staff as well as frontline workers at the Adelaide Airport. In coordination with the Australian government Department of Health and Department of Immigration and Border Protection, it was decided that travellers returning to Australia from countries impacted by EVD would be screened on arrival. Decisions were made in relation to border control, with resultant activities based on evidence-based epidemiological and infection control knowledge.

Forty people with potential exposure to EVD in the affected west African countries were notified to CDCB, including five from Liberia, 19 from Guinea, nine from Sierra Leone, and another 16 with less likely but plausible exposures. Three people with symptoms were hospitalised and tested for EVD, while 19 people were isolated at home and monitored by CDCB with twice daily temperature recording for 21 days. People arriving from EVD affected countries included refugees, family members returning for funerals, miners and security workers, a variety of aid workers, and health care workers. Cases of EVD had occurred in other health workers returning to their home countries, and in the United States and the United Kingdom in particular, this generated significant public concern.

No cases of EVD were confirmed in Australia during the outbreak, but the intense public health response also provided an opportunity to test a variety of emergency management procedures in a real situation, and lessons learned from these experiences have better prepared South Australia to respond to future global public health emergencies.


**2016 Salmonella Saintpaul Outbreak - Demonstrating successful partnerships**

*Salmonella* Saintpaul is a strain of *Salmonella* rarely seen in South Australia.

Between December 2015 and August 2016, 292 cases were notified to SA Health, which was the State’s largest foodborne illness outbreak in 17 years. Other jurisdictions, particularly New South Wales, also noticed an increase of cases above average. Consequently, it was a multi-jurisdictional outbreak investigation.

In April 2016, an epidemiological investigation into the sharp increase in *Salmonella* Saintpaul cases in South Australia identified that cases were eating out at the same type of restaurants.

![Figure 10 - Notifications of Salmonella Saintpaul by week of illness onset (1 Dec 2015 - 20 Aug 2016)](chart)

In April 2016, an investigation into a sharp increase in *Salmonella* Saintpaul cases in South Australia identified that affected people (cases) were eating out at the same type of restaurants. Trace back investigation by local council environmental health officers (EHOs) from food service businesses identified mung bean sprouts as a frequently used ingredient in meals consumed by cases. Further trace back and sampling was also completed by local council EHOs from food service businesses and retail grocers.

*Data Source: Communicable Disease Control Branch*
In South Australia sprout producers, such as producers of mung bean sprouts, are regulated by Biosecurity SA of Primary Industries and Regions South Australia (PIRSA). SA Health and PIRSA conducted joint investigations at the four South Australian mung bean sprout producers and collected samples and environmental swabs. Samples of mung bean sprouts collected from fruit and vegetable shops and an environmental swab from a mung bean sprout producer tested positive for *Salmonella Saintpaul*.

The ongoing epidemiological investigation supported mung bean sprouts as the most likely source of the outbreak. Whole genome sequencing of human isolates and food samples identified that the genetic sequences in humans and the food samples were highly related, which supported the findings of the epidemiological and food supply investigations. SA Health determined that there was a significant risk to public health which warranted the recall of particular mung bean sprout brands.

Various communication methods were utilised to inform the public about the public health risk. SA Health media releases and social media initially advised the public to cook mung bean sprouts before eating and later informed the public about the recall. An innovation in public communication was the use of an infographic of food safety tips about the handling and storage of bean sprouts.

The outbreak investigation was successfully managed as a result of pre-existing partnerships within SA Health teams, both locally and nationally. Within SA Health the teams involved were Food and Controlled Drugs Branch, Communicable Disease Control Branch, Food and Environmental Laboratory in SA Pathology, *Salmonella* Reference Laboratory in SA Pathology, Media and Communications Branch and Legal Governance and Insurance Services. Partnerships within South Australia between SA Health and local councils as well as SA Health and PIRSA were also important to the success of the investigation.
Hepatitis C is a significant public health issue in Australia, where it is estimated that over 230,000 people have chronic hepatitis C infection at the end of 2014 [47]. Most new hepatitis C infections are related to the sharing of injecting equipment among people who inject drugs, with 90% of newly acquired hepatitis C infections, and 80% of prevalent cases in Australia, resulting from unsafe injecting drug use [47].

Within the population of people who inject drugs, Aboriginal people are at particularly elevated risk of hepatitis C [48], with the rate of hepatitis C diagnosis increasing among the Aboriginal population.

Recognising that leadership from the Aboriginal community controlled sector in the planning, implementation and delivery of programs is important for success, Drug and Alcohol Services South Australia (DASSA) has developed a collaborative partnership with the Aboriginal Health Council of South Australia (AHCSA) to expand access to the statewide Clean Needle Program in order to address the elevated risk of hepatitis C among Aboriginal people who inject drugs by increasing access to sterile injecting equipment and improving awareness of blood borne virus testing and treatment.

The project focuses on Aboriginal health services and other local community services (including pharmacies and local government) in regional communities including Mount Gambier, Port Augusta, Whyalla, Port Pirie, Ceduna, Coober Pedy and Murray Bridge.

Australia-wide, Clean Needle Programs are estimated to have saved $1.28 billion in downstream health care costs during the 10-year period 2000 to 2009. Cost savings include the prevention of approximately 32,000 new HIV infections and over 96,000 new hepatitis C infections Australia-wide during this 10-year period [49].

Through extensive engagement with a range of agencies and networks, and the provision of workforce development, the project has contributed to the expansion of Clean Needle Program sites targeting Aboriginal people who inject drugs, with nine of the 85 free community Clean Needle Program sites in South Australia being delivered by Aboriginal health services (as at June 2016).

The focus of the project in 2016-17 is to:

> Continue to build the capacity of Aboriginal health services and mainstream health services that engage Aboriginal people who inject drugs to prevent blood borne viruses.

> Increase hepatitis C treatment uptake.

> Increase access to and uptake of hepatitis B vaccination.

> Prevent other drug related harms including opioid overdose (via the promotion of overdose awareness and response including naloxone).

The project will have a regional focus on Whyalla, Coober Pedy, Port Pirie, Port Augusta and Ceduna, as well as the Adelaide metropolitan area.
Statewide mosquito control and arbovirus prevention program

In partnership with local government and the University of South Australia, SA Health supports a statewide program to manage mosquito-borne disease risks across South Australia.

In order to effectively protect public health, indicators of mosquito-borne disease risk are monitored and responded to through the use of targeted mosquito control activities, public health warnings and health promotion activities.

This requires:

- Meteorological data collection and analysis.
- Monitoring of mosquito populations to identify levels of mosquito activity and presence of viruses of human health significance.
- Mapping and treatment of mosquito breeding sites.
- Effective community engagement to encourage personal and household protection measures.
- Monitoring mosquito-borne infections in people.
- A plan detailing trigger events for and associated public health responses to outbreaks of mosquito-borne disease.

<table>
<thead>
<tr>
<th>RISKS</th>
<th>PREVENTION</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Mosquitoes can spread serious disease</em></td>
<td><strong>1</strong> WAY TO PROTECT YOURSELF AND YOUR FAMILY: AVOID BEING BIT TEN</td>
</tr>
<tr>
<td>20+ <em>Species of mozzie found in SA</em></td>
<td><strong>COVER UP:</strong> WEAR LONG, LOOSE FITTING CLOTHING</td>
</tr>
<tr>
<td>2 <em>Mosquito-borne diseases common in SA</em></td>
<td><strong>REPEL:</strong> USE INSECT REPELLENT</td>
</tr>
<tr>
<td>0 <em>Cures or vaccines for Ross River and Barmah Forest virus</em></td>
<td><strong>ELIMINATE:</strong> THE WATER THEY BREED IN</td>
</tr>
</tbody>
</table>
Aboriginal Environmental Health programs deliver a variety of essential health services that target everyday living conditions that can cause disease or injury in the home and the community. These programs are an important part of a holistic approach to preventing disease as they tackle the conditions that make people sick.

The benefits of these programs have been demonstrated across Australia. A 2014 review of Aboriginal Health programs in Western Australia showed that Aboriginal Environmental Health programs represent good to outstanding value for money in terms of an Aboriginal health service investment [50].

In 2009, SA Health secured funding as part of the Council of Australian Government’s Closing the Gap in Indigenous Health Outcomes program to establish an Aboriginal Environmental Health Program in rural and remote Aboriginal communities across South Australia. Further funding was provided to continue the program in 2013 and 2016.

This program operates across South Australia in Aboriginal communities and involves either the employment of Aboriginal Environmental Health Workers (AEHW) or the conduct of environmental health improvement projects. The program is based on the Uwankara Palyanku Kanyintjaku Report developed by the Nganampa Health Council (1987) that identifies nine healthy living practices for improved health and reduced illness in Aboriginal communities:

1. Washing people
2. Washing clothes/bedding
3. Removing waste
4. Improving nutrition
5. Reducing crowding
6. Separating dogs and children
7. Controlling dust
8. Temperature control
9. Reducing trauma

The program has been going from strength to strength and the commitment of the Aboriginal Environmental Health Workers, Aboriginal Community Controlled Organisations and SA Health to the program is the key to its ongoing success. Partner organisations include:

- Nganampa Health Council (Anangu Pitjantjatjara Yankunytjatjara Lands)
- Pika Wiya Health Service Aboriginal Corporation (Mid and Far North)
- Umoona Tjutagku Health Service Aboriginal Corporation (Far North)
- Scotdesco Tjilkaba Incorporated (Far West)
- Ceduna Koonibba Aboriginal Health Service Aboriginal Corporation (Far West)
- Point Pearce Aboriginal Community (Yorke Peninsula)
- Gerard Aboriginal Community Council (Riverland)
- Murray Bridge Aboriginal Community (Riverland)
- Port Power and Adelaide Crows AFL Football Clubs
Preventing Injury

Injury is a major cause of preventable death and disability in South Australia. Whether intended or accidental, most physical injuries can be prevented by identifying their causes and removing these, or reducing people’s exposure to them.

Reducing the risk of falls in the community

In Australia, over the past 10 years, significant increases in age-standardised rates of hospitalised injury have occurred due to falls (a 2.4% increase p/year) [7].

Falls are one of the largest causes of harm in health care and are a national safety and quality priority. Falls-related injury is one of the leading causes of morbidity and mortality in older Australians with more than 80% of injury-related hospital admissions in people aged 65 years and over due to falls and falls-related injuries [52]. Falls can occur at all ages, but the frequency and severity of falls-related injury increases with age [53].

> In 2015, 19,175 people were admitted to South Australian public hospitals injured after a fall.
> Over 65% of these people were aged over 65 years of age.
> The average length of stay in hospital for older people was 7.4 days.
> Three-hundred and eighty people died in hospital as a result of injuries from a fall.

Understanding the risks for falling

Surveys conducted in 2008 and 2015 in a sample of South Australians aged 50 years and over demonstrated a greater understanding of fall risk across the community [54]. Respondents with varying histories of falls in the previous 12 months (no falls, one fall, two or more falls) were asked from a list of actions what would reduce the risk of having a fall. In 2015, the most common responses were:

> Taking more care or paying more attention.
> Modifying your home (eg rails, ramps, non-slip surfaces installed).
> Removing obstacles such as electric cords.

The table below lists the actions provided to all respondents, with an asterisk denoting those which significantly increased between 2008 and 2015 highlighting an increased awareness of falls prevention.

Table 4 - Actions which respondents thought would reduce the risk of falls (2008 and 2015)

<table>
<thead>
<tr>
<th>Action</th>
<th>No fall</th>
<th>One Fall</th>
<th>≥2 Falls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modifying your home (eg rails, ramps, non-slip surfaces installed)</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Taking more care or paying more attention</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Changing medication</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Using a walking aid</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Having a medical check-up</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Limiting activity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Having assessment of balance, walking and/or muscle strength</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Doing balance exercises</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Having eyesight/glasses checked</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increasing physical activity levels</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Removing obstacles such as electric cords</td>
<td></td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>

Data Source: Health Monitor [54] * denotes a significant increase from 2008 to 2015
Button battery safety campaign

Following the tragic deaths of two young girls in June 2013 and February 2015 caused by swallowing lithium button batteries (also known as coin and disc batteries), an intensive national campaign has been established to address recommendations from the Coroner.

It is estimated that one adult or child presents at the emergency department around the nation every day following harmful exposure to lithium button batteries.

Preventing injuries associated with household products requires behavioural change supported by enforcement of legislative controls to provide safer physical and social environments for children. Ensuring that changes in behaviour are effective and sustained requires evidence-based prevention strategies and strong partnerships and engagement to effectively respond to community needs.

Working closely alongside Kidsafe SA on poisoning prevention strategies will improve child safety outcomes and provide new opportunities for both organisations through new and improved evidence-based child injury prevention strategies;

> Strengthening responses to emerging risks and trends through better data surveillance and analysis.
> Building the capacity of partners through sharing networks, poisoning information, and clinical and toxicological expertise.
> Achieving wider public understanding and health professional awareness of child injury risk factors, exposure consequences and the appropriate actions to provide safer environments for children.

Reducing the burden of injury from dog bites in South Australia

Over the past four years the frequency of hospital admissions following a dog bite has increased 41%, with an increase of over 18% in the last year alone [55].

For the period July 2014 to June 2016, there were:

> Five hundred and fifty-one hospital admissions following a dog bite, with annual rates increasing steadily over the past four years.

Despite an initial decreasing trend in hospital admissions for children aged zero to nine years, 2015-16 saw the highest figure recorded over four years, a 50% increase from the previous year [55].

Table 5 - Hospital admissions following a dog bite in South Australia, by age (Jul 2012 to Jun 2016)

<table>
<thead>
<tr>
<th>Year</th>
<th>All Ages</th>
<th>0-9 years</th>
<th>70+ years</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012-13</td>
<td>211</td>
<td>65</td>
<td>20</td>
</tr>
<tr>
<td>2013-14</td>
<td>237</td>
<td>51</td>
<td>23</td>
</tr>
<tr>
<td>2014-15</td>
<td>252</td>
<td>56</td>
<td>34</td>
</tr>
<tr>
<td>2015-16</td>
<td>299</td>
<td>84</td>
<td>28</td>
</tr>
</tbody>
</table>

Data Source: Dog and Cat Management Board [55]. Note: Admission data are for all public hospitals only.

In 2015-16 there were 340 hospital admissions for dog related incidents. Dog related incidents include dog bites and also other contact with dogs that result in an injury (ie falling after being knocked over by a dog), resulting in 930 days in hospital [55].
Children aged zero to nine years were more likely to be admitted to hospital for a dog related incident than any other age group (20.0%) and spent a total of 96 days in hospital.

South Australians aged 70 years and over contributed 13.8% of hospital admissions, however recorded 227 days in hospital - nearly one quarter of all days in hospital (24.4%).

Table 6 - Admission to hospital for dog related incidents and length of stay in South Australia, by age (2015-16)

<table>
<thead>
<tr>
<th>Age</th>
<th>Number of incidents</th>
<th>%</th>
<th>Length of stay in hospital (days)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-9</td>
<td>68</td>
<td>20.0</td>
<td>96</td>
<td>10.3</td>
</tr>
<tr>
<td>10-19</td>
<td>21</td>
<td>6.2</td>
<td>34</td>
<td>3.7</td>
</tr>
<tr>
<td>20-29</td>
<td>43</td>
<td>12.7</td>
<td>75</td>
<td>8.1</td>
</tr>
<tr>
<td>30-39</td>
<td>35</td>
<td>10.3</td>
<td>99</td>
<td>10.6</td>
</tr>
<tr>
<td>40-49</td>
<td>53</td>
<td>15.6</td>
<td>123</td>
<td>13.2</td>
</tr>
<tr>
<td>50-59</td>
<td>43</td>
<td>12.7</td>
<td>175</td>
<td>18.8</td>
</tr>
<tr>
<td>60-69</td>
<td>30</td>
<td>8.8</td>
<td>101</td>
<td>10.9</td>
</tr>
<tr>
<td>70+</td>
<td>47</td>
<td>13.8</td>
<td>227</td>
<td>24.4</td>
</tr>
<tr>
<td>Total</td>
<td>340</td>
<td>100.0</td>
<td>930</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Data Source: Dog and Cat Management Board [55]. Note: Admission data are for all public hospitals only.

The events leading to dog bites are a complex interplay of innate and behavioural features of dogs, of the victims and aspects of the environment, in the classic injury triad [56].

Factors such as dog temperament, gender and neuter status have been suggested to influence the risk of a bite, while victim age, gender, safety knowledge, risk perception and behaviour around dogs are thought to increase the risk of a dog bite [57]. A dog’s living conditions, including opportunity for social interaction, is also thought to affect the risk of dog bite [58].

Given the increasing burden of injury from dog bites in South Australia, despite a suite of educational and other health promotion programs, it was clear that a new approach was required to reduce the risk of dogs biting.

A review of the literature found that dogs that are entire (not desexed) had a greater likelihood of biting and possibly more likely to cause serious injury than dogs that are desexed. Using this evidence, the Dog and Cat Management Board in partnership with the Local Government Association recommended a policy that desexing of dogs become mandatory in legislation.

The feasibility and acceptability of mandatory desexing was tested with a wide consultation of key stakeholders and also with a Citizen’s Jury that examined desexing of dogs in relation to ‘reducing unwanted dogs and cats’. This work was recognised with the Dog and Cat Management Board winning the 2016 International Association for Public Participation award for stakeholder engagement and Citizen’s Jury process.

The Dog and Cat Management Amendment Bill was passed in Parliament in July 2016, with the inclusion for the first time of a provision for mandatory desexing of dogs (with exceptions). Details of how the desexing provision will be implemented will be outlined in regulations.
The process of enabling people to increase control over their health and its determinants, and thereby improve their health is known as health promotion [59]. Health promotion not only embraces actions directed at strengthening the skills and capabilities of individuals, it enables people to increase control over and improve their health and involves the population as a whole in the context of their everyday lives.

Premier’s Healthy Kids Menu Initiative

Creating a dining environment that is supportive of, and makes it easier for, families and children to make healthy choices.

In 2015 the Office of the Premier launched a co-design process engaging the restaurant, café, hotel and club industries, parents, and public health experts in developing solutions to increase the availability of healthy children’s menus.

An Executive Taskforce, chaired by Ms Leesa Vlahos, (former) Parliamentary Secretary to the Minister for Health on behalf of the Premier of South Australia, included membership from the food industry (Restaurant and Catering Association, Australian Hotels Association, and Clubs SA); public health experts (including representatives from CSIRO, Heart Foundation, SAHMRI, and Sprout); and parents, supported by the Public Health Partnerships Branch, Department for Health and Ageing.

The high level political mandate and strong participation of key industry partners helped drive this important social change process, which was reinforced when the Premier of South Australia launched the final report and recommendations at the end of 2015. Implementation of the recommendations commenced in early 2016, with Taskforce members committing to a two year working together agreement to establish and implement the recommendations.

Partnerships continue to underpin the delivery of the Healthy Kids Menu Initiative.

Working with venues to pilot the Code of Practice and Guide for Business will form the next stage to determine what systems and processes need to be established, and what supports venues require to successfully implement and promote a healthy kids menu.
The South Australian OPAL Network

The Obesity Prevention and Lifestyle (OPAL) program was designed using the world’s best evidence on community based childhood obesity prevention, adopted from the successful EPODE program in France. Using a combination of social marketing, community development and socio-ecological approaches, OPAL engaged almost a third of all local councils in South Australia, in rural and metropolitan contexts.

The community development approach of OPAL proactively engaged participants and bought together coalitions of people and agencies with a view to forming a combined and interconnected suite of interventions designed to impact behaviours at individual and institutional level.

OPAL used a comprehensive suite of interventions that combined research and evaluation with policy reform, targeted program delivery, education and training, tailored messaging and environmental change. The portfolio of projects were planned, implemented and evaluated in unison involving all partners.

The OPAL Network emerged as a result of enquiries from councils interested in strengthening the partnership between SA Health and local government.

Award winners for excellence in public health - the Mannum Netball and Football Club’s healthy eating initiatives

The Mid Murray Council has been rewarded for healthy initiatives and was the inaugural regional winner of the 2016 Minister for Health, Excellence in Public Health Award 2016.

Being recognised as regional winners has not only showcased the healthy ethos of the partnership between Council and the sporting clubs, but also rewarded the community with $3,000 to reinvest back into public health initiatives for the region.

The introduction of grainy breads, leaner cuts of meat, free drinking water and minimising sugary foods/confectionery plus menu boards identifying the healthy choice, occasional and sometimes foods are continuing to educate and encourage the community to make a healthy choice.
Healthy Workers - Healthy Futures

Healthier workplaces are not only good for workers’ health, but also good for business. Healthier workers mean better staff retention, less sick leave and greater productivity - good news for businesses and our economy.

The Healthy Workers - Healthy Futures initiative is a state government election commitment under the men’s health strategy (2014-18) which contributes to the prevention of chronic disease by making it easier for South Australian workers to choose healthy behaviours including healthy eating, physical activity, reducing harmful alcohol consumption and quitting smoking.

The initiative uses a partnership approach across government, non-government and business organisations and aligns with the World Health Organization’s advice that the workplace is a key setting for chronic disease prevention. By building the capacity of key peak industry bodies we have achieved an industry-led approach to support workplace health. The industries targeted include manufacturing, defence enterprises, construction and farming industries as well as apprentices, which have higher rates of chronic disease risk factors and large number of male workers.

Achievements to date include:

> Industry change agents work with businesses to make it easier for workers to adopt healthy lifestyles through initiatives such as healthier vending machines, group exercise programs and smoke-free workplace policies.

> A workplace health and wellbeing clause has been incorporated into all construction Enterprise Bargaining Agreements.

> Partnering with SafeWork SA to include a health and wellbeing topic in the state Health and Safety Representative training guidelines.

> Newly developed workplace health and wellbeing training materials have been distributed to key Registered Training Organisations who will embed these into relevant vocational qualifications such as Certificate IV and Diploma courses.

> A new online brief health check that allows workers to find out how their health stacks up and receive individualised tips. The health check also refers them to the SA Health funded Get Healthy Information and Coaching Service® which offers telephone-based personal support from qualified health coaches and suggests workers discuss the online check with their GP.

A strategic partnership with the Department of State Development to manage the evaluation links worker health to productivity and aligns health goals with the Department of State Development’s High Performing Workplace Index.
The Get Healthy Information and Coaching Service® - partnerships to improve health

SA Health introduced Get Healthy in January 2014 to help South Australians make healthy changes to their lifestyles and reduce their risk of developing, or to better manage, chronic diseases such as type 2 diabetes, cardiovascular disease and some cancers.

Get Healthy provides two levels of service:

1. A coaching service with up to 10 telephone coaching calls over six months. A personal coach helps participants identify goals and practical actions to achieve them, monitor progress and help maintain motivation. All participants receive a helpful information booklet as well as a ‘Journey’ booklet to plan and monitor their healthy changes.

2. An information service with a single phone call and provision of a printed information booklet.

Get Healthy has demonstrated statistically significant outcomes for people participating in the program including weight loss; reduced waist circumference; decreased body mass index (BMI), increased physical activity and increased vegetable consumption [60].

Nature Play SA

Nature Play SA’s charter is to address a worldwide trend that is seeing an entire generation of children growing up indoors, without the time or freedom to access free and unstructured play outdoors in nature.

In South Australia, our children are spending less time in nature than at any other time in our history, leading to increasing rates of childhood obesity, depression and behavioural disorders.

Spending time in unstructured play in nature (nature play) is not just good for us, it is fundamental to children’s health, wellbeing and development. Nature Play SA, an independent, not-for-profit incorporated association funded by the State Government until 2018-19, work with partner organisations to spread the message about the importance of making nature play an everyday activity for children. Nature Play SA provides events, free resources, products, programs, workshops, conferences and presentations to assist families, schools and communities. Successes include:

> Hosting several major annual events attracting over 30,000 people, participating in outdoor activities like cubby building, mud play and kite flying.

> Distributing 150,000 free nature play passports to SA children incorporating outdoor activities.

> Developing solid partnerships with Omo (laundry detergents), Department of Environment, Water and Natural Resources, Department for Education and Child Development, SA Health, Natural Resources Management Education, local government, Stratco and more.

> Building the nature play movement through a strong social media following:
  - 20,900 Facebook followers
  - 2,400 Instagram followers
  - 103,165 website users
  - 3,470 e-news subscribers
Informing and enabling best practice and innovation

Public health actions to improve coordination, collaboration, planning, monitoring and evaluation processes are critical underpinnings to enable improvements in health and wellbeing. These actions include better collection, use of sharing of data.

Rheumatic heart disease and the Nganampa Health Council

In February 2016, rheumatic fever and rheumatic heart disease became notifiable diseases. Rheumatic heart disease (RHD) results from one or more episodes of rheumatic fever (RF). RF is an illness caused by a reaction to a bacterial infection with group A streptococcus. RHD can be prevented through regular long term antibiotic prophylaxis for those with a previous history of RF and RHD.

The RHD Register aims to improve the management of patients with acute RF and RHD by assisting clinics with monitoring patient movements, identifying individuals requiring assistance to maintain secondary prophylaxis regime and providing education and training.

In 2015, 208 South Australians were on the RHD Register which has increased over time. Of these 208 enrolled 67% are female; 69% are under 35 years of age and 95% are Aboriginal people. Aboriginal people have one of the highest rates of diagnosed rheumatic fever and rheumatic heart disease in the world.

Figure 11 - Number of patients on the Rheumatic Heart Disease Register (Dec 2012 - Dec 2015)

Data Source: SA RHD Register

Because of the higher number of people with RF and RHD in the Anangu Pitjantjatjara Yankunytjatjara (APY) Lands, SA Health through the SA Rheumatic Heart Disease Control Program partnered with the Nganampa Health Council (NHC) in July 2014 to support RHD control activities in NHC Clinics.

This partnership has resulted in significant achievements including:

- Improved control and management of RHD within the APY lands community.
- Improved case detection and routine care planning for all patients.
- Improved continuity of care for people who move intra and interstate.

Most notable, is the increase in adherence to secondary prophylaxis as a result of changes to the recall process within the NHC clinical information management systems.
The proportion of people receiving 100% of their scheduled doses of secondary prophylaxis has increased from 7.5% in December 2013, to 45% at December 2015.

Figure 12 - Proportion of scheduled secondary prophylaxis doses delivered to Nganampa Health Council (Dec 2013 - Dec 2015)

Local councils lead the way in addressing the impacts of climate change

Local governments are closest to local communities where the effects of climate change will be felt the most. The State Public Health Plan asks councils to consider public health impacts in reviewing their climate change preparedness planning, to ensure community resilience.

Regional Public Health Plans, prepared by local councils, articulate complicated challenges of climate change for individual health and wellbeing. These plans link council actions on climate change to broader issues of social, environmental, and economic sustainability, as well as community wellbeing issues focussing on partnerships that can protect the community and give benefit across a range of policy concerns.

A range of partnerships are in place acting on an extensive array of actions which include:

> Protecting community safety, building resilience and adaptive capacity through responses to food and water safety issues and other projected disease outbreaks related to increased temperatures and flooding; provision of community infrastructure, providing locally relevant information, fostering support networks, executing emergency planning and event responses;

> Integrating adaptive capacity into asset planning and management including transport networks, waterways, open space and community facilities. For example policy and infrastructure investment in safe, affordable and accessible use of active transport – cycling and walking – supports reduced chronic disease risk and health improvement gain, as well as contributing to climate change mitigation and environmental protection;

> Integrating climate change adaptation into planning decisions, for example planning controls and inputs in greenfield and infill development addressing urban heat island effects, future stormwater management and flood mitigation needs, energy sustainability and associated implementation of required infrastructure, across development growth areas;

> Ecosystems and natural resources stewardship, mitigating climate change impacts such as sustainable greening, rain-farming, and biodiversity corridor planning; natural resource husbandry partnerships to address projected increases in drought events, salinity and soil acidification, loss of habitat and species diversity – all of which are factors in environmental, economic and social sustainability.

Regional Public Health Plans acknowledge climate change related policy frameworks (including integrated vulnerability assessments and climate change adaptation plans) as key policy and planning instruments for public health planning.
Drug and Alcohol Services South Australia collects information on excreted drug metabolites in wastewater as an alternative non-intrusive, anonymous method of monitoring the use of drugs in the population. Bi-monthly sampling and analysis of wastewater occurs at Christies Beach, Bolivar Aquifer Storage and Recovery, Bolivar High Salinity and Glenelg wastewater treatment plants for metabolites of a variety of stimulants, opioids, and for cannabis and nicotine.

Data collected from 2012 to June 2016 show that methamphetamine consumption has increased over time. Average consumption is measured as the number of doses per week, per 1,000 people. Bi-monthly reporting commenced February 2015.

> The average consumption of methamphetamine has increased from 156 doses/week/1000 people in 2012, to 324 doses/week/1000 people in June 2016 [61].

**Figure 13 - Average consumption of methamphetamine as measured using wastewater analysis in South Australia (Jan 2012 - Jun 2016)**

Data collected also provide information on consumption over an average week, with methamphetamine consumption increasing slightly on weekends.

**Figure 14 - Average daily consumption of methamphetamine as measured using wastewater analysis in South Australia (Dec 2011 - Oct 2016)**
Part three - prevalence of preventable disease and injury

Chronic diseases

Chronic diseases are the leading cause of ill health, disability and death, and have a significant impact on the health sector. The term ‘chronic disease’ refers to a wide group of conditions, illnesses and diseases. Chronic diseases result from the complex interaction of external factors and biological causes, usually over a long period, and can lead to functional limitations and disability [7].

Chronic disease comorbidity

Comorbidity refers to the occurrence of two or more diseases in a person at one time. While the existence of these multiple health conditions may be unrelated, in many instances—and particularly in relation to chronic diseases—there is some association between them. Many chronic conditions share common risk factors and can also be risk factors for each other. Understanding more about comorbidities can provide vital information for prevention, management and treatment of chronic diseases [7].

Prevalence of selected chronic diseases

Although chronic diseases cover a diverse group of conditions, the analyses presented in this report focus on the following diseases: cancer, cardiovascular disease (CVD) such as coronary heart disease and stroke, diabetes, asthma, chronic obstructive pulmonary disease (COPD), mental health conditions (such as depression), arthritis and osteoporosis. These diseases were selected because they are common, pose significant health problems, have been the focus of ongoing state surveillance efforts, and action can be taken to prevent them.

Cancer

Cancer is a diverse group of several hundred diseases which has a significant social and economic impact on individuals, families and the community in terms of premature mortality, absence from work and disability.

Lung cancer remains the leading cause of cancer death for males and females [62].

Cardiovascular disease (CVD)

CVD covers all disease of the heart and blood vessels. The most common and serious types of CVD in Australia are coronary heart disease and stroke. A number of factors are known to increase the risk of developing CVD. These include overweight and obesity, tobacco smoking, high blood pressure, high blood cholesterol, insufficient physical activity, poor nutrition and diabetes.

30.4% of adults aged 70 years and over reported having cardiovascular disease [8].

Cardiovascular diseases represent the most frequent cause of death for Aboriginal South Australians (26%). Aboriginal people experience heart disease and stroke at significantly younger ages than non-Aboriginal South Australians, peaking between 45 and 59 years of age, compared to 85 years of age for non-Aboriginal people [63].
**Diabetes**

Diabetes has become one of the most common non-communicable diseases in the world, representing one of the most challenging public health problems of the 21st century. People with diabetes are at a greater risk of a range of chronic health conditions including cardiovascular disease, blindness, amputation, kidney disease and depression than people without diabetes. Diabetes leads to a two-fold increased risk for cardiovascular disease, and diabetic retinopathy is the leading cause of preventable sight loss [64].

The proportion of South Australian adults aged 18 years and over reporting diabetes has increased from 6.6% in 2002-03 to 8.5% in 2015-16 [8].

The prevalence of Type 2 diabetes is significantly greater in the Aboriginal population compared to the non-Aboriginal population and remains a leading cause of disability and premature death for Aboriginal people in South Australia. In 2012-13, the prevalence of Type 2 diabetes among Aboriginal people aged 18 or over in South Australia was 12.8% [65]. The total diabetes rates (Types 1, 2 and gestational) for South Australia were 20% among Aboriginal people [66].

**Chronic obstructive pulmonary disease (COPD)**

COPD is a term used to describe a number of lung conditions that are long-term, gradually worsen, and cause shortness of breath by reducing the normal flow of air through the airways. The most common are emphysema and chronic bronchitis. Each of these conditions can occur on its own, although many people have a combination of conditions.

The proportion of South Australian adults aged 18 years and over reporting COPD decreased from 6.1% in 2004-05 to 3.6% in 2012-13, before rising to 5.4% in 2015-16 [8].

**Asthma**

While the underlying causes of asthma are still not fully understood, there are a number of factors that may increase the risk of developing asthma. Asthma episodes may be triggered by viral respiratory infections, exercise, exposure to allergens, tobacco smoke and other air pollutants and dietary triggers.

Adults living in the low Socio-Economic Indexes for Areas (SEIFA) quintile (15.6%) were more likely to report a diagnosis of asthma [8].
Mental illness
Mental illness refers to a clinically diagnosable disorder that significantly interferes with an individual’s cognitive, emotional or social abilities. The term comprises a spectrum of disorders that vary in severity and duration [67]. Mental illness can have damaging effects on individuals and families affected and its influence is far-reaching for society as a whole. Social problems commonly associated with mental illness include poverty, unemployment or reduced productivity and homelessness. Those with mental illness often experience problems such as isolation, discrimination and stigma [68].

> Mental and Behavioural disorders as defined by the ICD-10 were responsible for 44,909 hospital separations (3.0% of all separations) in South Australia for the period July 2014 to June 2016 [69]. This represents a 15% increase in hospital separations due to mental and behavioural disorders from the previous two year reporting period.

Psychological distress
In South Australia, psychological distress is measured using the Kessler 10 Psychological Distress Scale [70] with scores categorised as low, moderate, high and very high psychological distress. People with a score of 22 or above (high or very high) are considered to have psychological distress.

Arthritis
Arthritis is an umbrella term for more than 100 medical conditions that affect the musculoskeletal system, specifically joints where two or more bones meet. Arthritis-related problems include pain, stiffness, joint weakness, instability and deformities that can interfere with the most basic daily tasks such as walking, driving a car and preparing food.

Osteoporosis
Osteoporosis is a common disease affecting over one million Australians. This disease makes bones become brittle, leading to a higher risk of breaks than in normal bone. Osteoporosis occurs when bones lose minerals, such as calcium, more quickly than the body can replace them, causing a loss of bone density.
Infectious diseases

Infectious diseases are illnesses caused by the spread of bacteria (e.g., school sores), viruses (e.g., chickenpox), fungi (e.g., thrush), parasites (e.g., worms, malaria) and prions (the infectious agent responsible for some neurodegenerative diseases e.g., Creutzfeldt-Jakob disease). These can be spread to humans from other humans, animals or the environment, including food and water.

Ten diseases made up 96% of all infectious diseases notified in South Australia.

<table>
<thead>
<tr>
<th>Disease</th>
<th>Notifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza</td>
<td>26666</td>
</tr>
<tr>
<td>Chlamydia (genital)</td>
<td>10696</td>
</tr>
<tr>
<td>Campylobacteriosis</td>
<td>7637</td>
</tr>
<tr>
<td>Varicella infection</td>
<td>5487</td>
</tr>
<tr>
<td>Salmonellosis</td>
<td>2731</td>
</tr>
<tr>
<td>Pertussis</td>
<td>2156</td>
</tr>
<tr>
<td>Rotavirus infection</td>
<td>1706</td>
</tr>
<tr>
<td>Gonorrhoea</td>
<td>1693</td>
</tr>
<tr>
<td>Hepatitis C (unspecified)</td>
<td>964</td>
</tr>
<tr>
<td>Cryptosporidosis</td>
<td>840</td>
</tr>
</tbody>
</table>

Data Source: Communicable Disease Control Branch, SA Health

> For the period July 2014 to June 2016 there were 63,037 notifiable infectious diseases recorded in South Australia.
> In February 2016, the following diseases became notifiable under the South Australian Public Health Act, 2011: rheumatic fever, rheumatic heart disease, chancroid, Vibrio parahaemolyticus and Hendra virus infection.

2015 saw the highest numbers of influenza notifications reported to date.

> Influenza, commonly known as the flu, is a highly contagious infection of the nose, throat and lungs caused by the influenza A or B (or rarely C) viruses.
> In South Australia, influenza is most common in the winter months.
> Influenza causes a spectrum of illness from asymptomatic infection to fatal pneumonia (primary viral or secondary bacterial). Severe disease is more common in pregnancy, people aged over 65 years and in people with underlying chronic disease.
> Vaccination against influenza has the primary aim of reducing severe influenza. The influenza vaccine is recommended for any person six months of age and over who wishes to reduce the likelihood of becoming ill with seasonal influenza. Due to changes in circulating strains and waning immunity, and to minimise the chance of developing influenza, vaccination is required each year.
Injury is a leading cause of mortality, morbidity and permanent disability that affects the quality of life of injured people and their families. Injury has a major, but often preventable, impact on South Australia's health. It affects South Australians of all ages and leaves many with serious disability or long-term conditions.

Most injuries requiring hospitalisation happen as a result of road accidents, falls, interpersonal violence, sporting and recreational activities, and in work settings [71].

Of the 1.5 million hospital separations in South Australia for the period July 2014 to June 2016, 13% were for an injury, and nearly half of those were accidents.

The South Australian Trauma Registry
The South Australian Trauma Registry collects data from the South Australia's three major trauma hospitals; the Royal Adelaide Hospital, Flinders Medical Centre and the Women’s and Children’s Hospital.

The majority of all trauma cases were due to a transport accident or a fall.

For the period July 2014 to June 2015, there were 2,230 trauma cases treated in the three major trauma centres in South Australia

- The majority of trauma cases were male (67.5%).
- 71.8% of trauma cases occurred in the metropolitan area.
- A quarter of all cases occurred in those aged zero to 17 years (26.1%) and 30 to 49 years (24.8%).
- The majority of trauma cases were due to a transport accident (57.0%) followed by falls (26.5%).

Of the 2,230 cases reported for the period July 2014 to June 2015, 489 were deemed a major trauma.

When comparing major trauma to all trauma cases:
- More major trauma occurred in rural areas (39.1%) compared with all trauma cases (28.2%).
- Less children aged zero to 17 years reported major trauma (10.0%) compared with all trauma (26.1%).
- More adults aged 70 years and over reported major trauma (17.8%) compared with all trauma (10.5%).

Road crashes in South Australia
The Road Crashes in South Australia: Statistical Summary of Road Crashes and Casualties in 2015 is prepared by the Safe Systems and Crash Investigation Unit, Department of Planning, Transport and Infrastructure and presents information compiled from police reported crashes in South Australia for 2015 [72].

- A total of 15,432 crashes were processed for South Australia in 2015 - 96 fatal crashes, 657 serious injury crashes, 4,616 minor injury crashes and 10,063 property damage crashes. This resulted in 102 fatalities, 759 serious injuries and 5,800 minor injuries.
- The number of persons seriously injured in 2015 has increased by 48 from 711 in 2014 to 759 in 2015.
- Of drivers and passengers killed, 28% were not wearing a seatbelt at the time of the crash and two per cent of vehicle occupants injured were recorded as not wearing a seatbelt.
- Those aged 70 years and over accounted for 23% of total fatalities, 11% of serious injuries and 8% of minor injuries in 2015. Ten out of 18 pedestrian fatalities and 18% of pedestrian serious injuries were in people aged 70 years and over.
- Twenty-two per cent of drivers and motorcycle riders killed had a blood alcohol concentration (BAC) over 0.05g/100ml. Of the drivers and motorcycle riders tested and where a result was known, 15% of drivers and riders seriously injured recorded a BAC over 0.05g/100ml.
- Twenty-four per cent of drivers and riders killed tested positive for one or a combination of THC (cannabis), MDMA (ecstasy) or methamphetamine.
- Forty-eight per cent of fatal crashes and 31% of serious injury crashes in 2015 occurred on roads with a speed limit of 100km/h or above.
Oral health

Oral health is influenced by a range of factors but the fundamental determinants are socio-economic, environmental, lifestyle and individual factors such as genetics. In addition, access to care and services, attendance patterns, health literacy and attitudes towards oral health and disease all impact on oral health.

The oral health of children improved significantly in the mid-1970s to the mid-1990s, most likely due to the introduction of water fluoridation, use of fluoride toothpastes, preventive oral health services and improved oral hygiene practices. Since then the rate of tooth decay has started to increase, potentially due to the increased consumption of sugary food and drinks and the increased consumption of bottled non-fluoridated water.

The South Australian Dental Service works with the community to achieve better oral health and wellbeing through health promotion, timely dental treatment with a focus on prevention and early intervention, and support for education and research.

For the period July 2014 to June 2016, separations of dental conditions from South Australian hospitals remain the highest potentially preventable acute condition [69].
Administering the South Australian Public Health Act 2011

The legislative framework for public health

The *South Australian Public Health Act, 2011* (the Act) was passed by the South Australian Parliament on 16 June 2011, and proclaimed by His Excellency the Governor in Executive Council on 23 February 2012, coming into full operation on 16 June 2013.

The Act and its Regulations are part of a range of public health legislation designed to protect and promote the health of South Australians. Many pieces of legislation in this state have specific provisions designed to ensure that human health is protected, and these are administered across the whole public sector. Other relevant Acts assigned to the Minister for Health which have the closest relationship with the Act and its Regulations include:

- Health Care Act 2008
- South Australian Food Act 2001
- Safe Drinking Water Act 2011
- Controlled Substances Act 1984
- Tobacco Products Regulation Act 1997
- Transplantation and Anatomy Act 1983
- Gene Technology Act 2001 (South Australia)

In addition to the Acts assigned to the Minister for Health there is a wide range of other legislation which has implications for public health or human health at a national and state level. Other Acts having implications for public health include:

- Local Government Act 1999 (South Australia)
- Planning, Development and Infrastructure Act 2016
- National Health Security Act 2007
- National Quarantine Act 1908
- Environmental Protection Act 1993 (South Australia)
- Radiation Protection and Control Act 1982 (South Australia)
- Emergency Management Act 2004 (South Australia)

**Regulations**

On the same day the Act came into full operation, the *South Australian Public Health (General) Regulations 2013* (the General Regulations) and the *South Australian Public Health (Legionella) Regulations 2013* (the Legionella Regulations) commenced, replacing the equivalent regulations under the revoked Act. The requirements of the new regulations were largely unchanged from the regulations they replaced.

**Cost recovery regulations**

Section 92 of the Act, provides for persons to be served with a notice to remove and/or remEDIATE identified public health risks at their own cost, and is supported by a graded scheme of penalties for failure to comply. Action on non-compliance with notices can include responses to insanitary conditions (such as severe domestic squalor and vermin infestation) and environmental contamination (such as that arising from clandestine drug laboratory activity or wastewater).

Consultation with the Local Government Association was undertaken by SA Health in late 2013 and mid 2014 in order to shape the cost recovery scheme early in its development and draft variations to the General Regulations and *Local Government (General) Regulations 2013*, to enable the mitigation of financial burden experienced by local councils that act on notices under section 92 of the Act.
Public health policies

South Australian Public Health (Severe Domestic Squalor) Policy 2013

The South Australian Public Health (Severe Domestic Squalor) Policy 2013 (the Policy) and associated guideline *A Foot in the Door - Stepping Towards solutions to resolve incidents of severe domestic squalor in South Australia* (the Guidelines) were released in 2013 and provide a framework for the assessment and management of cases of severe domestic squalor in South Australia.

The Guidelines were developed at the recommendation of the Public and Environmental Health Council (antecedent body to the South Australian Public Health Council) and are intended to support authorised officers deal with cases of severe domestic squalor. The Guidelines promote the consistent and objective assessment of properties of concern and interventions in individual cases that focus on identifying and addressing root causes of severe domestic squalor as well as the effective management of associated risks to public health and safety.

As part of the original Ministerial approval process for the Policy, an undertaking was provided that SA Health would conduct a review of the Policy and Guidelines two years after their commencement. The review process commenced during the reporting period and was completed in late 2016. Recommendations from the review process will be provided to the South Australian Public Health Council for consideration.

South Australian Public Health (Clandestine Drug Laboratories) Policy 2016

Clandestine Laboratories (clan labs) are used for the manufacture of illicit drugs such as methamphetamine and can generate toxic chemicals during the drug manufacturing processes that present a serious risk of harm to human and environmental health.

During the reporting period, the development of the South Australian Public Health (Clandestine Drug Laboratories) Policy 2016 and accompanying *Practice Guideline for the Management of Clandestine Drug Laboratories under the Act* was completed. The Policy declares clan labs to be a risk to health for the purposes of the Act and sets out a framework for requiring their assessment and remediation. The Policy will assist public health authorities to effectively manage the serious risks to public health associated with clan labs in South Australia. The Policy was endorsed by the Minister for Health and implemented in late 2016.

South Australian Public Health Council - Section 31

The South Australian Public Health Council (SAPHC) is established under Division 3, Section 26 of the Act to consist of nominees from the Local Government Association of South Australia, Environmental Health Australia (South Australia) Incorporated, the Environment Protection Authority, and nominees on the recommendation of the Minister who have experience or expertise in public health, health promotion, communicable disease and the non-government sector.

The SAPHC is comprised of the Presiding Member and members and deputies. Professor Paddy Phillips was appointed as the Chief Public Health Officer by His Excellency the Governor in Executive Council. The Chief Public Health Officer is also the Presiding Member of the SAPHC as provided for in section 27 of the Act.

A summary of the SAPHC meetings are posted on the SA Health website (www.sahealth.sa.gov.au) to facilitate the improvement of transparency and the development of an understanding of its role in the intent of the Act which is to promote and provide for the protection of the health of the public of South Australia and to reduce the incidence of preventable illness, injury and disability.
Developing the South Australian public health planning, evaluation and reporting system

The South Australian Public Health Act, 2011 (the Act) and its Regulations address both contemporary public health issues as well as the fundamental and enduring public health concerns and is part of a range of public health legislation designed to protect and promote the health of South Australians. Sections 50, 51 and 52 of the Act describe a system for public health planning and reporting comprised of the state public health plan and Regional public Health plans (RPHP).

State public health plan

South Australia a Better Place to Live is the first state public health plan prepared under the Act and was launched November 2013. It lays out the framework for action to protect and improve the health and wellbeing of South Australians, including action by local councils and describes the following four priorities for action as well as a priority focus on building and supporting a system for public health planning (for example data sets, indicator development, evaluation frameworks).

1. Stronger and healthier communities and neighbourhoods for all generations
2. Increasing opportunities for healthy living, healthy eating and being active
3. Preparing for climate change
4. Sustaining and improving public and environmental health protection

Out of council areas

Out of council areas make up around 85% of the geographic area of the State and include Aboriginal lands and outback communities, key tourist attractions and transport corridors. There are many food and accommodation businesses and industry activities in these areas that must be operated and maintained in accordance with relevant standards and regulations to ensure that public health is maintained and disease is prevented.

SA Health protects the health of residents, tourists and workers by maintaining safe and acceptable standards in public health through:

> Administration of Public Health Legislation on behalf of the Minister for Health and the Minister for Mental Health and Substance Abuse.

> Delivery of health promotion and education materials relevant to remote communities, including:
  > ‘No Germs on Me’ personal hygiene and disease prevention program for Aboriginal children (relevance: trachoma, gastrointestinal viral/bacterial infections, rheumatic heart disease, scabies).
  > ‘Fight the Bite’ arbovirus prevention campaign.

> Coliform and E. coli testing of drinking water supplies in communities and hospitality/accommodation providers.

In the future, key areas of work will include:

> Focusing education and compliance resources to improve safety issues in areas identified through enforcement activities.

> Monitoring changes in population and workforce demographics in remote areas (e.g. mining expansion/reduction, tourist conditions/Lake Eyre etc) to tailor public health activities to address public health risks affecting these groups.

> Actively adopting and optimising use of new and emerging technologies to reduce the challenges of distance and improve service delivery, efficiency and health outcomes in remote areas.

Regional public health plans

Throughout 2014 to June 2016, 31 RPHPs were developed by local councils. These plans, like the State Public Health Plan, are the first developed under the Act and also mark the starting point to building a state-wide public health planning system.

Every RPHP, although consistent with the state public health plan, emphasises and reflects a critical focus on understanding the needs of the local communities each local council serves. Therefore, no RPHP is the same, each is tailored to reflect the public health needs of very different communities and each is implemented differently, with different governance structures and processes. This brings about unique opportunities and approaches in planning. It also brings new challenges.
Public health reporting

Under Section 52 of the Act, councils responsible for regional public health planning for their areas are required to prepare a report that comprehensively assesses the extent to which they have succeeded in implementing their regional public health plans (RPHPs) over the reporting period.

Reports in the first planning cycle necessarily focused on the development of RPHP. The 2014-16 reports are the first for which councils have been able to report fulsomely on RPHP implementation. They highlight achievements, implementation status, key local partnerships, and emerging issues for future iterations of the State Public Health Plan and Chief Public Health Officer’s Report.

By virtue of its mandated local area approach, local government is in the business of addressing determinants of health. Collectively, the reports give the Chief Public Health Officer a statewide picture of councils addressing social, economic and environmental determinants, taking a wellbeing approach, and their strategies for addressing equity and community vulnerabilities. The broad focus of the 2014-2016 RPHP reports on:

> Work supporting strong communities
> Built environment and healthy public realm
> Climate change, resource protection and sustainability
> Chronic disease prevention and management
> Community safety
> The economy
> Extensive health protection action mandated by the suite of public health legislation
> System building, focusing on building capacity to administer local council responsibilities under the Act.

The reports show encouragingly high alignment between the four State Public Health Plan strategic priorities and the local area public health focus of councils and emerging issues for councils in implementing their plans. Emerging issues are summarised by geographic location in the Compendium of Public Health Action. Partnerships and other forms of collaboration are in place or developing, though not consistently across all councils.

SA Health and the Local Government Association Public Health Program will continue to work in partnership with local councils to support their vital role in regional public health planning in an effort to build a dynamic sustainable and responsive public health system.
South Australian public health evaluation framework

The development of a public health evaluation framework is expected to be completed in early 2017. The major focus of work to date has been the identification of a meaningful set of public health indicators which represent the scope of Public Health represented in the Act.

Scoping of potential indicators has included a process of examination of Public Health and related indicator sets both across Australia, and internationally. This has been complemented by consultations with local councils, within the Public Health areas of the Department for Health and Ageing, and with related agencies with a role in public health. The intention is to ensure that the indicators are consistent with the focus and current reporting approaches taken across the Government of South Australia.

The indicators under consideration include a mix of process, impact and outcome indicators. These will span:

- ‘Contextual’ indicators which provide information on the South Australian population and the circumstances in which they live - determinants of health;
- Promotion of healthy built, natural and social environments;
- Protection against environmental hazards - including indicators such as air quality, water quality and food safety;
- Prevention of chronic and communicable disease - including indicators for protective as well as risk behaviours; and
- Health outcomes - incidence of communicable disease, chronic conditions, injury and disability which are amenable to prevention.

It is intended that the indicators will to contribute to an improved understanding of the South Australian public health system and will assist with planning, reporting and identifying potential priorities for future public health programs, services and research.
Working in partnership to improve population health and wellbeing

Partnership with local councils and the Local Government Association (LGA)

Local government are key strategic partners in delivering good public health and building a robust, sustainable public health planning system. The mandated public health role of local government as prescribed in the South Australian Public Health Act, 2011 (the Act) acknowledges and seeks to strengthen our existing partnership through greater cooperation and improved coordination of effort across the broad remit of public health action.

The Act recognises local councils as Public Health Authorities for their local areas, leading regional public health planning for their communities. For public health actions to be successful, they need to connect with, and be integrated into, many other areas of policy and action. Local councils are not responsible for every public health issue identified in their regional public health plan (RPHP) but their capacity to influence and advocate on behalf of their communities is recognised as a core asset for engagement, collaboration and partnership with SA Health, other relevant state government agencies and non-government organisations.

SA Health has an ongoing role in supporting local government in building the public health planning system through:

> Funding of the LGA public health program, and partnered negotiation of the associated work plan through dynamic needs analyses, capacity and evidence building, strategic communication, guidance and tools supporting the Act administration at a local level.

> Supporting councils and planning clusters in the development, implementation, reporting and review of RHPs.

> Development and/or revision of Act regulations, its policies, and guidelines, to local government needs.

> Building stronger relationships, through systematic contact with individual councils and planning clusters, and being responsive to the RPHP implementation issues they raise.

> The development and implementation of Public Health Week, to assist councils to raise awareness about the significant but unseen role councils play in keeping the community safe and well.

The continuing liaison and partnership between SA Health and local government, and ongoing monitoring of needs, will guide the support provided into the future.
**Public Health Partner Authorities**

The establishment of Public Health Partner Authorities under the Act that provides for formalised partnerships between the Department for Health and Ageing and partnering entities to enable joint action across sectors, levels of government and community to achieve mutually beneficially outcomes, and protect and promote public health. The partnership approach also addresses the needs of the partnering entity, through a focus on the achievement of shared goals by working on areas of mutual interest.

Public Health Partner Authorities are formally declared in the South Australian Government Gazette, as per Section 51 (23)(b) of the Act. To date, seven Public Health Partner Authorities have been formally gazetted.

**Table 7 – Public Health Partner Authorities 2014 - 2016**

<table>
<thead>
<tr>
<th>Partnering entity</th>
<th>Focus area of agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Department of Planning, Transport and Infrastructure</td>
<td>Influencing the built environment through the implementation of the SA Government’s Planning Reform</td>
</tr>
<tr>
<td>2. South Australian Council of Social Service</td>
<td>Working together to strengthen strategic action for community health and wellbeing, and address equity issues</td>
</tr>
<tr>
<td>3. Department of Environment, Water and Natural Resources</td>
<td>Impacts of the natural environment on population health, including climate change, open and green space, and biodiversity</td>
</tr>
<tr>
<td>4. Biosecurity SA</td>
<td>Interface between human, animal and environmental health</td>
</tr>
<tr>
<td>5. The University of South Australia (Division of Education, Arts and Social Sciences)</td>
<td>Social and economic participation of older people</td>
</tr>
<tr>
<td>6. Department for Communities and Social Inclusion</td>
<td>Contributing to a whole of government position and strategy on wellbeing, improving food security, and supporting thriving communities</td>
</tr>
<tr>
<td>7. South Australian Health and Medical Research Institute (Wellbeing and Resilience Centre)</td>
<td>Contributing to a whole of government position and strategy on wellbeing (linked with DCSI agreement and with Obesity Prevention and Lifestyle – OPAL program); building resilience of communities</td>
</tr>
</tbody>
</table>
References


42. Australian Childhood Immunisation Register, *National, State and Territory Immunisation Coverage Reports*. 2016, Department of Health: Canberra.


51. Aboriginal Environmental Health Unit, *Closing the Gap: 10 years of housing for health in NSW - an evaluation of a healthy housing intervention*. 2010, NSW Department of Health: Sydney.


