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NOTE:
Unless otherwise stated within this document the term rate refers to an age standardised rate. This means that the differing age and sex structures of the populations have been taken into account enabling two different areas or time periods to be compared.
Summary
This document provides a broad overview of the health of the South West region residents and highlights areas that may need to be considered in the planning of health services within the South West region.

Population
- The South West region has an Estimated Resident Population (ERP) of 162,164 in 2010³.
- Based on WA Tomorrow, 2012 the region’s resident population is projected to grow by around 22% between 2010 and 2016⁴.
- The region has an Aboriginal population (2% in 2010) with a younger age structure than the non-Aboriginal population⁵.

Determinants of health
- Based on the 2006 census the region has areas with low SEIFA scores⁷.
- Lifestyle behaviours will need to be monitored, particularly those relating to smoking, alcohol use, diet, exercise and body mass index⁶.

Mortality
Between 2003 and 2007:
- there was no significant difference in the mortality rate of South West residents compared with all residents of the State¹⁵.
- diseases of the circulatory system and neoplasms accounted for two-thirds of the deaths of South West residents¹⁵.
Between 1997 and 2007 around two-thirds of deaths of South West residents under the age of 75 could potentially be avoided. Of these more than half could be avoided through the use of primary intervention²⁵.

Emergency Departments
- In 2010/11 two-thirds of attendances to hospitals within the South West were for semi-urgent or non-urgent cases¹⁹.

Hospitalisations
Between 2006 and 2010:
- the hospitalisation rate of South West residents was significantly lower than that of the State²⁰.
- there was no significant difference in the hospitalisation rate of potentially preventable conditions for South West residents compared with all WA residents²⁴.
- In 2010/11 83% of South West resident’s public hospitalisations occurred within the South West region²⁷.

Aged Care
- Between 2006 and 2009 a similar proportion of older South West residents reported receiving their five yearly pneumonia vaccinations compared with the State³¹.

Maternal Health
- Between 2004 and 2008 the proportion of Aboriginal South West mothers who were teenagers was higher than the proportion for Non-Aboriginal mothers³⁶.
- In 2009/10 more than two in five South West Aboriginal women smoked during pregnancy³⁶.
Child and Adolescent

- Less than 90% of South West children under the age of one were vaccinated\(^{31}\). A rate of less than 90% reduces the immunity of the whole local population.
Overview of the region

The South West Health Region extends from the coast south of Perth metropolitan area, near Yarloop, to the western boundary of the Great Southern, near Walpole, and south to Augusta on the coast. It shares its eastern boundary with Wheatbelt and Great Southern regions (see Figure 1).

The South West has 16 local government areas and covers 23,970 square kilometres and has a diverse geographic profile ranging from pristine beaches to agricultural landscapes. The economy is based around tourism, attracting 1.8 million visitors each year, and the production fields of agriculture and some mining, which are supported by the high availability of infrastructure such as water, transport and energy.

Figure 1: WACHS South West health region

Population

The South West region has the highest population of all the regions in WA, 32% of total WACHS population. The Estimated Resident Population (ERP) of the South West grew by 17% over the last five years, to 162,164 in 2010, higher than the 14% a

The ERP is produced by the Australian Bureau of Statistics and is the official population estimate of an area.
growth across the whole State\(^3\). The Department of Planning’s *WA Tomorrow, 2012* projections\(^a\) estimate the South West’s resident population will increase to 198,505 by 2016 (a 22% increase compared with 2010 ERP) and to 221,210 by 2021\(^4\).

The region has an Aboriginal and Torres Strait Islander (ATSI) population of 2% or 3,252 people in 2010\(^5\), relative to 3% in Western Australia\(^5\). The Aboriginal South West population has a much younger age structure than the non-Aboriginal population, as shown in Figure 2.

**Figure 2: WACHS South West Health Region 2010 population by Aboriginality**

![Population by Age and Aboriginality](chart)

*Source: Estimated by the Epidemiology Branch, Public Health Division, DoHWA*

**Implications for health service planning:**

The resident population of South West region has been growing steadily and is projected to increase by 22% between 2010 and 2016. This will increase need for health services and other infrastructure within the region.

The Aboriginal population of the South West has a much younger age structure than the non-Aboriginal population, with half the population aged under 20 (49% compared with 27% for non-Aboriginal). This differing age structure will need to be taken into account in the planning of primary health services and programs.

**Determinants of health**

There are many factors that influence a person’s health, including genetics, lifestyle and environmental and social factors.\(^6\)

**Socio-Economic Disadvantage**

Socio-Economic Indexes for Areas (SEIFA) Index of Relative Socio-Economic Disadvantage scores are calculated from responses to the ABS Census. It has been

\(^a\) Based on Department of Planning’s *WA Tomorrow, 2012* band D projections.
shown that more disadvantaged areas have higher proportions of reported ill health or risk factors for ill health. A score below 1000 indicates an area is relatively disadvantaged.

Based on the 2006 Census, for the South West the lowest score is 724 and the highest score is 1166, both are within the Bunbury health district. Across the South West around 15,000 people (7%) live in collection districts with scores in the lowest 10% (darkest green) in Australia. An indication of the distribution can be seen in the map below.

Figure 3: Distribution of SEIFA Index of Relative Disadvantage scores across the South West health region

Source: Australian Early Development Index website <rch.org.au/aedi>

Implications for health service planning:

The SEIFA Index of Relative Socio-Economic Disadvantage shows that there are areas within the South West with differing levels of disadvantage. Services and programs may need to be targeted to these disadvantaged areas.
Level of remoteness

The Accessibility/Remoteness Index of Australia (ARIA) is a systematic approach to the classification of areas of Australia according to level of remoteness. Within this classification system there are 5 categories ranging from Major Cities to Very Remote. Based on the 2006 ARIA the South West health region has areas classified as Inner Regional Australia, Outer Regional Australia and Remote. Furthermore, results from the 2006 census showed that the majority (85.3%) of the South West population lived in an Inner Regional area, 14.1% lived in an Outer Regional area and 0.7% lived in a remote area.

Self-reported Risk factors

Lifestyle behaviours are particularly important because of their relationship with chronic conditions that are considered to be preventable. Prevention and management of these modifiable risk factors can therefore have a substantial effect on these preventable chronic conditions.

WA conducts a continuous Health and Wellbeing Surveillance System (HWSS). This is a population survey and as such is designed to provide results and examine trends at a population level. Therefore, it is unlikely to be representative of minority groups such as Aboriginal people and the homeless.

Results from the HWSS in regards to the South West population are shown in the Appendix. In summary in 2009 for adults aged 16 years and over and children aged 15 years and under in the South West region:

- One in six adults (16.5%) smoke.
- More than four in five adults (85.6%) and more than half the children (53.0%) did not eat the recommended daily serves of vegetables.
- Nearly half (44.9%) the adults and one in four children (22.8%) did not eat the recommended daily serves of fruit.
- Nearly half the adults (45.6%) who drank alcohol drank at risk for long-term harm.
- Almost half the adults (49.2%) and nearly half the children (49.1%) did not do sufficient physical activity.
- One in five adults reported having high blood pressure.
- One in five adults reported having high cholesterol.
- One in three adults (29.0%) and 5% of children reported height and weight measurements that classified them as obese.

While there were no differences in the prevalence of lifestyle behaviours of South West residents compared with the state, the prevalence is still important because these behaviours are modifiable risk factors for chronic conditions.

Lifestyle risk factor information is not available for Aboriginal South West residents. At the national level Aboriginal people have been found to be twice as likely as non-Aboriginal people to be a current smoker (45.1% compared with 20.1%). Nearly a third (31.3%) of Aboriginal people have never smoked compared to half of non-Aboriginal people (51.7%). Furthermore, twice as many Indigenous people report poor self assessed health and report higher levels of psychological stress as non-Aboriginal people.
Self-reported chronic conditions

Chronic conditions refer to long-term conditions that last for six months or more\(^6\). Not all chronic conditions result in hospitalisations and so hospital data does not give the full picture. This type of information is usually collected by population based surveys, such as the WA HWSS.

The most prevalent chronic conditions in the South West in 2009\(^11\) were:

- One in five adults (21.3%) and children (20.5%) had an injury in the last year that required treatment from a health professional\(^12\);
- One in five adults reported arthritis (22.1%).
- More than one in ten adults reported a current mental health problem (12.2%).

Nationally, Aboriginal people report a higher prevalence of most chronic conditions compared with non-Aboriginal people. For example, at a national level, after adjusting for age, Aboriginal people were 1.6 times more likely to report asthma, and three times more likely to report diabetes.\(^14\) As the HWSS may not be representative of the Aboriginal population national levels of chronic disease among the Aboriginal population must be factored into estimates of chronic disease in the South West region.

Figures from a national survey focusing on Aboriginal populations show that hearing loss and diseases of the ear, in particular otitis media, is considerably higher among Aboriginal children aged 0-14 (10%) than non Aboriginal children (3%). This is of key concern as hearing loss resultant from otitis media has significant consequences for child language and social development, as well as on their education.\(^14\)
Self-reported service utilisation

In 2009 South West residents reported their health service utilisation in the last year:\*\(\text{11, 12}\):

- Nine in ten adults (87.3%) and seven in ten children (69.3%) reported having used a primary health care service\*\(\text{11, 12}\). The proportion of children was significantly lower than the state\*\(\text{12}\).
- Over half the adults (50.4%) and 63% of children reported having used a dental health care service\*\(\text{11, 12}\).
- One in three adults (29.2%) and one in five children (21%) reported having used a hospital based health care service\*\(\text{11}\).
- One in 18 adults (5.6%) reported having used a mental health care service (e.g. a psychiatrist, psychologist or counsellor)\*\(\text{11}\).

**Implications for health service planning:**

Primary health services are particularly important as they provide an opportunity to monitor modifiable risk factors and chronic conditions, and to implement public health programs and interventions, such as vaccinations. The significantly lower primary health service usage in South West children may be a reflection of a lack of GPs in the region.

A greater focus on ambulatory and primary health care in partnership with other private and not-for-profit health providers is recommended.

Mortality

Mortality is an important indicator of the health of the population and can help to focus primary and community care services to prevent avoidable mortality. Aboriginal people have a significantly lower life expectancy compared with their non-Aboriginal counterparts, with the gap at the national level estimated to be 11.5 years for males and 9.7 years for females\*\(\text{13}\). Between 2003 and 2007 there was no significant difference in the overall mortality rate of all South West residents (the number of deaths per 1,000 people) compared with the state or for Aboriginal residents\*\(\text{15}\).

The top five causes of mortality are shown in Table 1. Between 2003 and 2007 the leading cause of death of South West residents was diseases of the circulatory system, followed by neoplasms and diseases of the respiratory system.
Table 1: Leading cause of mortality, South West residents, 2003 - 2007

<table>
<thead>
<tr>
<th>Cause of death</th>
<th>Rank</th>
<th>No.</th>
<th>% of deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diseases of the Circulatory System</td>
<td>1</td>
<td>1,338</td>
<td>33.3</td>
</tr>
<tr>
<td>Neoplasms</td>
<td>2</td>
<td>1,268</td>
<td>31.6</td>
</tr>
<tr>
<td>Diseases of the Respiratory System</td>
<td>3</td>
<td>300</td>
<td>7.5</td>
</tr>
<tr>
<td>Injury and Poisoning*</td>
<td>4</td>
<td>259</td>
<td>6.5</td>
</tr>
<tr>
<td>Diseases of the Nervous System</td>
<td>5</td>
<td>185</td>
<td>4.6</td>
</tr>
</tbody>
</table>

Source: ABS Mortality Data

* Main categories include: Transport accidents, other external accidental injuries, intentional self-harm, assault, complications of medical and survival care. (International Classification of Disease - ICD10)

From 1998 to 2007 Aboriginal residents in the South West, Great Southern and Wheatbelt regions had a significantly higher mortality rate for cardiovascular disease and a significantly lower mortality rate for injury and poisoning compared with the State Aboriginal population. Aboriginal residents in the South West, Great Southern and Wheatbelt regions had a significantly higher mortality rate for diabetes, cardiovascular disease, respiratory disease, injury and poisoning, alcohol-related conditions and tobacco-related conditions compared with non-Aboriginal residents of the same region.

Alcohol-related mortality

Compared with the State, between 2003 and 2007 South West residents had a similar mortality rate due to alcohol consumption, tobacco consumption and other drugs.

Avoidable Mortality

Each year people die from diseases amenable to medical interventions and/or effective public health programs. These deaths are referred to as avoidable mortality and are classified into three categories related to the type of intervention.

- Primary interventions include deaths that could potentially have been avoided via effective public health measures.
- Secondary interventions include deaths that could potentially have been avoided by early intervention through primary health care services or early detection through screening.
- Tertiary interventions include deaths that could potentially have been prevented using medical or surgical techniques.

Between 1997 and 2007 around two-thirds of all South West resident deaths under the age of 75 (64%) and 73% of Aboriginal residents were classified as avoidable. As shown in Figure 4, the use of primary care interventions could potentially have avoided more than half (54.0%) these deaths, which is similar to all WA residents (54%). One in four of these deaths could potentially have been avoided through the use of secondary interventions and one in five through the use of tertiary...
A greater proportion of male than female deaths could potentially have been avoided through the use of primary interventions (57% compared with 49%). The leading causes of avoidable mortality for males and females are shown below in Table 2. Ischaemic heart disease accounted for more than one in four deaths of South West males, but only in one in seven deaths of South West females.

Table 2: Leading cause of avoidable mortality, by gender, South West residents, 0-74 years, 1997-2007

| Males | | Females | |
|-------|-----------------|---------|-----------------|---------|
| Condition | Deaths | % | Condition | Deaths | % |
| 1 Ischaemic heart disease | 320 | 24.9 | 1 Lung cancer | 108 | 14.0 |
| 2 Lung cancer | 174 | 13.5 | 2 Breast cancer (Females only) | 107 | 13.9 |
| 3 Suicide and self inflicted injuries | 119 | 9.3 | 3 Ischaemic heart disease | 106 | 13.7 |
| 4 Colorectal cancer | 103 | 8.0 | 4 Colorectal cancer | 65 | 8.4 |
| 5 Cerebrovascular diseases | 71 | 5.5 | 5 Cerebrovascular diseases | 55 | 7.1 |

Source: ABS Mortality Data

A similar proportion of non-Aboriginal and Aboriginal deaths could potentially have been avoided through the use of primary interventions (54% compared with 52%). As shown in Table 3 the leading cause of avoidable mortality for both Aboriginal and non-Aboriginal South West residents was ischaemic heart disease, which accounted for one in five deaths.
Table 3: Leading cause of avoidable mortality by Aboriginal status, South West residents, 0-74 years, 1997-2007

<table>
<thead>
<tr>
<th>Condition</th>
<th>Aboriginal</th>
<th></th>
<th>Non-Aboriginal</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Ischaemic heart disease</td>
<td>13</td>
<td>18.1</td>
<td>405</td>
<td>20.9</td>
</tr>
<tr>
<td>2 Diabetes</td>
<td>8</td>
<td>11.1</td>
<td>267</td>
<td>13.8</td>
</tr>
<tr>
<td>3 Lung cancer</td>
<td>7</td>
<td>9.7</td>
<td>163</td>
<td>8.4</td>
</tr>
<tr>
<td>4 Chronic Obstructive Pulmonary Disease</td>
<td>6</td>
<td>8.3</td>
<td>143</td>
<td>7.4</td>
</tr>
<tr>
<td>5 Suicide and self inflicted injuries</td>
<td>6</td>
<td>8.3</td>
<td>121</td>
<td>6.2</td>
</tr>
</tbody>
</table>

Source: ABS Mortality Data

Implications for health service planning:

Around two-thirds of the deaths of South West residents under the age of 75 were classified as avoidable. Of these deaths ischaemic heart disease, followed by lung cancer were the leading causes of avoidable mortality. As the majority of deaths from these conditions are avoidable through the use of primary and secondary interventions this highlights the need for primary and secondary interventions, such as public health programs and screening. In particular, smoking, physical inactivity, excess weight, excess alcohol use and poor diet are modifiable risk factors for coronary heart disease and lung cancer.

Aboriginal South West residents while having a similar proportion of deaths classified as avoidable compared with non-Aboriginal residents had differences in the causes of death. Diabetes was the in the top 5 leading causes for Aboriginal residents, suggesting the need for targeted, culturally appropriate programs and services.

Emergency Department Attendances

In regional areas where workforce shortages and challenges can mean that there are insufficient GPs many residents use the hospital services for primary care. The ED attendances at hospitals within the South West region are shown by triage category in
Figure 5. As can be seen the majority of attendances (67% in 2010/11) were classified as semi or non-urgent (triage category 4 or 5)\textsuperscript{19}, suggesting issues that could be dealt with by GPs and primary health care services.

Aboriginal and Torres Strait Islanders were over-represented in the ED attendances, accounting for 3% of all ED attendances in the region, but only 2% of the South west population\textsuperscript{19}. 
Figure 5: Emergency attendances by triage category, hospital in the South West region

![Bar Chart](chart.png)

Note: These attendances also include visitors to the region.
Source: WACHS online ED pivot, extracted 28th March, 2012.

Note: The changes in the triage categories 4 and 5 over time may also include changes to the triage categorisation of patients (this occurred in small hospitals from 2008/9 onwards) and changes to the availability of primary health care services.

The top five reasons for ED attendances to hospitals within the South West region for 2010/11 are shown in Table 4. The leading reason was for injury, poisoning & toxic drug effect, followed by skin, subcutaneous tissue & breast and then musculoskeletal & connective tissue.

Table 4: Leading cause of Emergency attendance, hospitals in the South West region, 2010/11

<table>
<thead>
<tr>
<th>Major diagnosis category</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Injury, Poison, Toxic Drug Effect</td>
<td>10.3%</td>
</tr>
<tr>
<td>Skin, Subcutaneous Tissue &amp; Breast</td>
<td>7.0%</td>
</tr>
<tr>
<td>Musculoskeletal &amp; Connective Tissue</td>
<td>6.7%</td>
</tr>
<tr>
<td>Ear, Nose, Throat</td>
<td>5.6%</td>
</tr>
<tr>
<td>Respiratory System</td>
<td>5.4%</td>
</tr>
</tbody>
</table>

Source: WACHS online ED pivot, extracted 28th March, 2012.

The leading cause of ED attendance for both Aboriginal people and non-Aboriginal people in the South West was injury, poisoning and toxic drug effect (15% & 18%).
Hospitalisations

Hospitalisations are an indicator of relatively severe conditions in the community and assist in targeting primary care resources to prevent hospitalisations. Between 2006 and 2010 the overall hospitalisation rate\(^a\) of South West residents was significantly lower than that of the state\(^b\). This means that when the different age and sex structures of the populations are taken into account South West residents are hospitalised less often than all residents of the state.

The top five causes of hospitalisation of South West residents are shown in Table 5. The leading cause of hospitalisation of South West residents was for factors influencing health status and contact with health services (predominantly renal dialysis), followed by digestive diseases and neoplasms (cancers)\(^c\).

### Table 5: Leading cause of hospitalisation, South West residents, 2006-2010

<table>
<thead>
<tr>
<th>Rank</th>
<th>Cause of hospitalisation</th>
<th>No.</th>
<th>% of total</th>
<th>State Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Factors influencing health status and contact with health services(^*)</td>
<td>57,781</td>
<td>21.4%</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Digestive diseases</td>
<td>32,195</td>
<td>11.9%</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>Musculoskeletal diseases</td>
<td>20,850</td>
<td>7.7%</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>Ill-defined conditions</td>
<td>19,467</td>
<td>7.2%</td>
<td>6</td>
</tr>
<tr>
<td>5</td>
<td>Injury and poisoning(^**)</td>
<td>18,640</td>
<td>6.9%</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>** All hospitalisations **</td>
<td><strong>270,258</strong></td>
<td><strong>---</strong></td>
<td><strong>---</strong></td>
</tr>
</tbody>
</table>

Source: WA Morbidity Data System\(^d\)

\(^*\) Includes: Health services for examination and investigation, reproduction, specific procedures, and other circumstances, and potential health hazards related to communicable diseases, socioeconomic and psychosocial circumstances, family and personal history. This also includes renal dialysis.

\(^**\) Includes: Transport accidents, other external accidental injuries, intentional self-harm, assault, complications of medical and survival care.

Between 2001 and 2010 the overall hospitalisation rate of Aboriginal South West residents was significantly lower than the Aboriginal State rate\(^e\), but was higher than the non-Aboriginal South West residents\(^f\). These higher rates highlight the health disparity between Aboriginal and non-Aboriginal residents.

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\(^a\) Age standardised rate.

---

**Implications for health service planning:**

South West hospitals have a high proportion of semi and non-urgent attendances, which indicates a need for increased primary health services. These issues will need to be taken into account in the planning of future services. An increase in the GP sector may help to alleviate some of this need but co-located and collaborative services models between GP primary care, other non government health providers (eg Silver Chain and Aboriginal organisations) and WACHS ED and population health/primary health services is strongly recommended.
**Alcohol and tobacco related hospitalisations**

Between 2006 and 2010 the hospitalisation rate due to tobacco consumption of South West residents was significantly higher compared with the State\(^29\).

**Potentially preventable hospitalisations**

Many hospitalisations result from conditions where inpatient treatment could potentially be avoided using preventive care and early disease management\(^{18}\). These hospitalisations are known as Potentially Preventable Hospitalisations (PPH) and are grouped into three major categories:

- **Acute**: This category includes dehydration and gastroenteritis, pyelonephritis, perforated/bleeding ulcer, pelvic inflammatory disease, ear, nose, throat infections, dental conditions, appendicitis, epilepsy and gangrene.

- **Chronic**: This category includes asthma, congestive heart failure, diabetes (excluding renal dialysis), chronic obstructive pulmonary disease (COPD), angina, iron deficiency anaemia, hypertension, nutritional deficiencies and rheumatic heart disease.

- **Vaccine preventable**\(^{18}\) This category includes mumps, measles, rubella, whooping cough, influenza and pneumonia.

Public health measures have the greatest influence on vaccine preventable and chronic conditions\(^{18}\).

Between 2006 and 2010 PPH accounted for 20,770 hospitalisations (21%) of South West residents. There was no significant difference in the overall hospitalisation rate of all PPH for South West residents compared with all residents of the State. However, South West residents had a significantly lower rate for acute conditions\(^{24}\). The leading PPH condition was diabetes and its complications, which accounted for 26% of the PPHs\(^{25}\). Between 2005 and 2010 the PPH rate among Aboriginal South West residents was over three times that of non-Aboriginal South West residents\(^{26}\).

**Where South West residents receive their hospital treatment**

One indicator of a region’s capacity to provide acute care close to home is known as its ‘self-sufficiency’. This refers to the proportion of hospitalisations that are able to be treated within the region. Due to the level of remoteness and availability of onsite specialists, a country health service will never achieve 100% self-sufficiency. Highly acute and complex patients will continue to be transferred to Perth or interstate where more specialised services and medical equipment are located.

As shown in Table 6 the South West region’s total self-sufficiency in 2010/11 was 53%. When only publicly funded activity is considered the region’s self-sufficiency increases to 83%. This means that 83% of the public hospitalisations of South West’s residents occur within the South West region.
Table 6: Where South West residents received their hospital treatment, 2010/11

<table>
<thead>
<tr>
<th>Type</th>
<th>Region</th>
<th>No.</th>
<th>% of all</th>
<th>% of public</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public</td>
<td>CAHS</td>
<td>953</td>
<td>1.6</td>
<td>2.5</td>
</tr>
<tr>
<td></td>
<td>Goldfields</td>
<td>25</td>
<td>0.0</td>
<td>0.1</td>
</tr>
<tr>
<td></td>
<td>Great Southern</td>
<td>204</td>
<td>0.3</td>
<td>0.5</td>
</tr>
<tr>
<td></td>
<td>Kimberley</td>
<td>28</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td></td>
<td>Midwest</td>
<td>46</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td></td>
<td>Pilbara</td>
<td>62</td>
<td>0.1</td>
<td>0.2</td>
</tr>
<tr>
<td></td>
<td>South West</td>
<td>32,070</td>
<td>52.6</td>
<td>83.1</td>
</tr>
<tr>
<td></td>
<td>Wheatbelt</td>
<td>33</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td></td>
<td>North Metro</td>
<td>2,326</td>
<td>3.8</td>
<td>6.0</td>
</tr>
<tr>
<td></td>
<td>South Metro</td>
<td>2,859</td>
<td>4.7</td>
<td>7.4</td>
</tr>
<tr>
<td></td>
<td>All</td>
<td>38,606</td>
<td>63.3</td>
<td>100.0</td>
</tr>
<tr>
<td>Private</td>
<td>Metro Private</td>
<td>9,504</td>
<td>15.6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rural Private</td>
<td>12,851</td>
<td>21.1</td>
<td></td>
</tr>
<tr>
<td>All</td>
<td></td>
<td>60,961</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Excludes Hospital in the Home, unqualified neonates, boarders, funding hospital, organ procurement, residents and Nursing Home Type patients with length of stay greater than 6 months. Includes publicly contracted renal dialysis and other activity.

Source: WA Hospital Morbidity Data System

Hospitalisations within the South West region

The activity that has occurred at hospitals within the South West region is shown in Figure 6. Between 2006/07 and 2010/11 hospital separations increased an average of 4% each year, while beddays increased an average of only 1%.

Figure 6: Hospitalisations within the South West region

Excludes Hospital in the Home, unqualified neonates, boarders, funding hospital, organ procurement, residents and Nursing Home Type patients with length of stay greater than 6 months. Includes publicly contracted activity.

Source: WA Hospital Morbidity Data System
General Practitioners

Visits to a General Practitioner (GP) not only provide necessary care to the population, but offer opportunities for the provision of public health programs, such as vaccinations, and the early intervention and management of chronic conditions. The Down South GP Network encompasses the South West area, but also includes Mandurah, Murray and Waroona SLAs. As shown in Table 7 there were more than 1,000,000 GP attendances in 2009/10, giving a rate of 4,110 per 1,000 people in the area. In comparison the State rate was 3,858 per 1,000 people.

Table 7: Medicare GP professional attendances, Greater Bunbury Division of General Practice (613) and GP Down South Division of General Practice (607), 2009/10

<table>
<thead>
<tr>
<th>No.</th>
<th>Crude rate (p/1,000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GP Attendances - total</td>
<td>1,005,356</td>
</tr>
<tr>
<td>$ benefit</td>
<td>$37,066,591</td>
</tr>
<tr>
<td>after hours</td>
<td>520</td>
</tr>
<tr>
<td>Multidisciplinary Care Plans</td>
<td>25,417</td>
</tr>
<tr>
<td>Health Assessments</td>
<td>5,363</td>
</tr>
<tr>
<td>Mental Health Treatment</td>
<td>14,606</td>
</tr>
</tbody>
</table>

Data Source: Medicare

Notifiable diseases

At the state level there are noticeable differences in the crude rate of some notifiable diseases in the Aboriginal compared with non-Aboriginal populations. In 2009/10 among Aboriginal people the crude rate of chlamydia notifications was more than six times greater, the crude rate of gonorrhea notifications was more than 53 times greater and the crude rate of hepatitis C notifications was four times greater than in...
the non-Aboriginal population.\textsuperscript{30} As the Aboriginal population is generally younger than the non-Aboriginal population age standardised rates may reduce these differences.

Notifiable disease information for South West residents is shown in Table 8. There was a slight reduction in the crude rates of notifiable diseases between 2008/09 and 2009/10. The crude rates of the STs and Hepatitis B were lower among South West residents compared with the state.

Table 8: Notifiable diseases, South West residents, 2008/09 and 2009/10

<table>
<thead>
<tr>
<th></th>
<th>2008/09</th>
<th>2009/10</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>Crude Rate (p/100,000)</td>
</tr>
<tr>
<td>Sexually Transmitted Infections (STI)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chlamydia</td>
<td>454</td>
<td>291.3</td>
</tr>
<tr>
<td>Gonorrhea</td>
<td>27</td>
<td>17.3</td>
</tr>
<tr>
<td>Blood Borne Virus (BBV)*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hepatitis B</td>
<td>18</td>
<td>11.5</td>
</tr>
<tr>
<td>Hepatitis C</td>
<td>86</td>
<td>55.2</td>
</tr>
</tbody>
</table>

* includes newly acquired and unspecified.

Data Source: Western Australian Notifiable Infectious Diseases Database\textsuperscript{30}

**Implications for health service planning:**

While the crude rate of notifiable diseases was lower for South West residents compared with the State they still need to be considered for health promotion programs and screening opportunities. The notifications of STIs point to unsafe sexual behaviour that places the individual at risk not only of these infections, but of others, such as HIV/AIDS and unplanned pregnancies. Opportunistic screening may help to reduce the spread of notifiable diseases.

As the notifications for STIs are higher in younger people and the Aboriginal population these groups may need to be targeted.

**Health Status of Older People**

**Vaccination**

Annual influenza vaccinations and five yearly pneumonia vaccinations are recommended for adults aged 65 years and over and are an important primary health intervention\textsuperscript{6}. Between 2006 and 2009, 73.4\% of South West region residents aged 65 years and over reported receiving a seasonal influenza vaccination in the last year, which was similar to the state (75.3\%)\textsuperscript{31}. Two in five older adults (42.5\%) reported receiving a pneumonia vaccination in the last year, while a significantly higher proportion (51.1\%) reported receiving a pneumonia vaccination in the last five years. There were no significant differences when compared with the state\textsuperscript{31}. 
Hospitalisations

Between 2006 and 2010 the main reason for hospitalisation of non-Aboriginal South West residents aged 65 years and over was for renal dialysis, followed by chemotherapy; diseases of the eye and adnexa, arthropathies (which includes arthritis) and ischemic heart disease.

Between 2001 and 2010 the main reason for hospitalisation of Aboriginal South West residents aged 45 years and over was also renal dialysis, followed by ischaemic heart disease; impaired glucose regulation and diabetes mellitus; symptoms and signs involving the circulatory and respiratory systems; and alcohol and drug disorders.

Implications for health service planning:

While a similar proportion of older adults in the South West compared with the State are receiving their five yearly pneumonia vaccinations, only half the residents have been vaccinated in the last year, suggesting the need for a targeted strategy.

Maternal Health Status

Births

Between 2004 and 2008 there was an average annual increase in births of 4.3% in South West women, but a decrease among Aboriginal women, as shown in Table 9. In WA the mean maternal age for Aboriginal women is generally lower than non-Aboriginal women (24.9 compared with 30.1 years in 2002 to 2006).

Table 9 Births by Aboriginal status of mother, South West residents, 2004 to 2008

<table>
<thead>
<tr>
<th></th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>Average change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aboriginal</td>
<td>67</td>
<td>57</td>
<td>64</td>
<td>52</td>
<td>53</td>
<td>-5.7%</td>
</tr>
<tr>
<td>Non-Aboriginal</td>
<td>1,657</td>
<td>1,738</td>
<td>1,882</td>
<td>1,971</td>
<td>1,991</td>
<td>4.7%</td>
</tr>
<tr>
<td>Total</td>
<td>1,724</td>
<td>1,795</td>
<td>1,946</td>
<td>2,023</td>
<td>2,044</td>
<td>4.3%</td>
</tr>
</tbody>
</table>

Source: Midwives Notification System (epi branch for Aboriginal planning)

Teenage mothers

From 2004 to 2008, the proportion of South West Aboriginal women giving birth who were less than 20 years old ranged from 15.6% in 2006 to 22.4% in 2004. Among non-Aboriginal South West women the proportion was much lower, ranging from 4.5% in 2008 to 5.4% in 2004.

Smoking in pregnancy

Smoking during pregnancy is associated with a greater risk of a premature baby and of the baby having a low birth weight. The proportion of South West mothers smoking during pregnancy decreased between 2008/09 and 2009/10, as shown in Figure 7. Aboriginal women were much more likely to report smoking during pregnancy compared with non-Aboriginal women.
**Low birth weight**

Babies born with a low birth weight (less than 2,500g) have a higher risk of health complications. Between 2004 and 2008 the proportion of Aboriginal South West babies born with a low birth weight ranged from 11.8% in 2008 to 23.1% in 2004. In each year the proportion of low birth weight babies was higher in Aboriginal than non-Aboriginal babies (the proportion of non-Aboriginal ranged from 5.0% in 2006 to 6.1% in 2004).

**Alcohol in pregnancy**

There is limited information available regarding the prevalence of drinking during pregnancy. A 1995 to 1997 survey of non-Aboriginal Western Australia women found that more than half the women (58.7%) reported drinking alcohol in at least one trimester of pregnancy. While the proportion of women drinking one to two drinks on a typical occasion did not change much during pregnancy, they did reduce the number of occasions of drinking. One in five women (19.1%) consumed more than two standard drinks in at least one trimester of pregnancy.

The WA Aboriginal Child Health Survey reported mothers drank alcohol during pregnancy in one in five (21%) Aboriginal children in the Noongar ATSIC region (which encompasses the South West, Great Southern and Wheatbelt health regions).

**Implications for health service planning:**

In the South West Aboriginal women are more likely than non-Aboriginal women to be teenage mothers, to smoke during pregnancy and to have a low birth weight baby, suggesting the need for targeted and culturally appropriate health promotion strategies and ante-natal services for these women. Strengthening partnerships with primary care providers, including local GPs and Aboriginal Medical Services is recommended.
Health Status - Child and Adolescent

Australian Early Childhood Development Index

The Australian Early Development Index (AEDI) measures how young children are developing when they first enter full time school. A teacher completes a checklist for each child and the scores of all children across Australia are ranked in each of the five areas, or domains, of early childhood development. Children ranked in the bottom 10% are classed as “developmentally vulnerable”, those in the top 75% are classed as “on track” and those in between are classed as “at risk”.

Across Australia in 2009 one in four children (23.5%) was developmentally vulnerable on one or more domain/s of the AEDI and 11.8% were developmentally vulnerable on two or more domains. The results for the South West Statistical Local Areas (SLAs) are shown below in Table 10. Within the South West the proportion of children rated as developmentally vulnerable on one or more domain ranged from 10.5% in Donnybrook-Balingup to 50% in Boddington.

Table 10: Proportion of children vulnerable on one or more domain, South West residents, 2009

<table>
<thead>
<tr>
<th>Community (SLA)</th>
<th>No. children surveyed</th>
<th>Vulnerable on one or more domain (%)</th>
<th>Vulnerable on two or more domains (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Augusta-Margaret River</td>
<td>161</td>
<td>16.1</td>
<td>7.1</td>
</tr>
<tr>
<td>Boddington</td>
<td>21</td>
<td>50.0</td>
<td>44.4</td>
</tr>
<tr>
<td>Bridgetown-Greenbushes</td>
<td>60</td>
<td>28.6</td>
<td>14.3</td>
</tr>
<tr>
<td>Bunbury</td>
<td>394</td>
<td>33.0</td>
<td>15.0</td>
</tr>
<tr>
<td>Busselton</td>
<td>350</td>
<td>19.6</td>
<td>6.7</td>
</tr>
<tr>
<td>Capel</td>
<td>219</td>
<td>16.3</td>
<td>5.4</td>
</tr>
<tr>
<td>Collie</td>
<td>122</td>
<td>20.5</td>
<td>15.4</td>
</tr>
<tr>
<td>Dardanup</td>
<td>59</td>
<td>22.6</td>
<td>10.3</td>
</tr>
<tr>
<td>Donnybrook-Balingup</td>
<td>68</td>
<td>10.5</td>
<td>3.0</td>
</tr>
<tr>
<td>Harvey</td>
<td>306</td>
<td>29.0</td>
<td>12.6</td>
</tr>
<tr>
<td>Manjimup</td>
<td>154</td>
<td>42.6</td>
<td>25.0</td>
</tr>
<tr>
<td>Murray</td>
<td>149</td>
<td>17.1</td>
<td>6.2</td>
</tr>
</tbody>
</table>

Data Source: Australian Early Development Index

Implications for health service planning:

The AEDI results indicate the need for child development services including access to multidisciplinary teams made up of medical services, child health nurses, speech pathology, physiotherapy and occupational therapy.
Vaccination

Immunisation against communicable disease is an effective public health intervention that reduces the mortality and morbidity associated with vaccine preventable conditions. Australian vaccination coverage goals of greater than 90% coverage of children at two years of age and near 100% coverage of children at school entry age are recommended. The coverage needs to exceed 90% to create the community immunity necessary to stop the ongoing transmission of these diseases.

The childhood vaccination information for the South West Region is around 90% for the 12 and 24-month age groups but decreases to around 80% for the later age groups of 60 and 72-months as shown below in Table 11. In the younger age groups a lower proportion of Aboriginal children were vaccinated than non-Aboriginal children.

Table 11: Childhood vaccinations for residents of the South West, 2004/05 – 2008/09

<table>
<thead>
<tr>
<th>Year</th>
<th>Non-Aboriginal</th>
<th>Aboriginal</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>12-Months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2004/05</td>
<td>91.4</td>
<td>71.4</td>
<td>90.5</td>
</tr>
<tr>
<td>2005/06</td>
<td>91.3</td>
<td>78.8</td>
<td>90.8</td>
</tr>
<tr>
<td>2006/07</td>
<td>89.9</td>
<td>80.6</td>
<td>89.6</td>
</tr>
<tr>
<td>2007/08</td>
<td>89.2</td>
<td>78.6</td>
<td>88.8</td>
</tr>
<tr>
<td>2008/09</td>
<td>89.8</td>
<td>85.1</td>
<td>89.6</td>
</tr>
<tr>
<td>All years</td>
<td>90.3</td>
<td>76.1</td>
<td>89.8</td>
</tr>
<tr>
<td></td>
<td>24-Months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2004/05</td>
<td>91.1</td>
<td>94.3</td>
<td>91.2</td>
</tr>
<tr>
<td>2005/06</td>
<td>93.2</td>
<td>91.0</td>
<td>93.1</td>
</tr>
<tr>
<td>2006/07</td>
<td>92.1</td>
<td>93.4</td>
<td>92.1</td>
</tr>
<tr>
<td>2007/08</td>
<td>91.7</td>
<td>91.7</td>
<td>91.7</td>
</tr>
<tr>
<td>2008/09</td>
<td>91.3</td>
<td>87.7</td>
<td>91.2</td>
</tr>
<tr>
<td>All years</td>
<td>91.9</td>
<td>91.2</td>
<td>91.9</td>
</tr>
<tr>
<td></td>
<td>60-Months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008/09</td>
<td>80.7</td>
<td>67.4</td>
<td>80.1</td>
</tr>
<tr>
<td></td>
<td>72 Months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2004/05</td>
<td>81.1</td>
<td>83.7</td>
<td>81.3</td>
</tr>
<tr>
<td>2005/06</td>
<td>81.5</td>
<td>80.3</td>
<td>81.2</td>
</tr>
<tr>
<td>2006/07</td>
<td>85.5</td>
<td>78.0</td>
<td>85.3</td>
</tr>
<tr>
<td>All years</td>
<td>82.7</td>
<td>80.3</td>
<td>82.6</td>
</tr>
</tbody>
</table>

Data Source: Australian Childhood Immunisation Register
Note: From 2008/09 onwards the reporting of national immunisation coverage changed from 72 months to 60 months.

Year 7 vaccinations are shown in Table 12. Just fewer than three-quarters of girls received the full three doses of the human papillomavirus vaccination, while a similar proportion of year 7s received the two doses of the Hepatitis B vaccination.
Table 12: Year 7 South West vaccinations, 2009

<table>
<thead>
<tr>
<th></th>
<th>Hepatitis B1</th>
<th>Hepatitis B2</th>
<th>HPV1*</th>
<th>HPV2*</th>
<th>HPV3*</th>
<th>VZV**</th>
<th>DPT #</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>1,111</td>
<td>1,039</td>
<td>534</td>
<td>516</td>
<td>467</td>
<td>397</td>
<td>1,152</td>
</tr>
<tr>
<td>%</td>
<td>80.0</td>
<td>74.9</td>
<td>82.2</td>
<td>79.4</td>
<td>71.8</td>
<td>28.6</td>
<td>83.0</td>
</tr>
</tbody>
</table>

Data Source: DoH Communicable Disease Control
* Human Pappillomavirus vaccination for cervical cancer
** Chickenpox
# Diphtheria, Pertussis & Tetanus

Implications for health service planning:

Among younger children vaccination rates are generally higher for non-Aboriginal compared with Aboriginal children, which suggests the need for a targeted approach. Opportunistic vaccinations, such as when a child is at a primary health service with its family may help to increase the uptake of vaccinations.

Around three-quarters of year 7 students received the full two doses of the Hepatitis B vaccination, while a similar proportion received the full three doses of the Human Pappillomavirus vaccination.

The strengthening of partnerships with primary care providers, including local general practitioners and Aboriginal Medical Services, school and childcare groups and health promotion providers is recommended to increase the number of children vaccinated in the region.

Mental Health

In 2009 one in ten (12.2%) South West adults aged 16 years and over reported having a current mental health problem, with the prevalence higher among females than males11. However, only 5.6% reported having used a mental health care service in the last year11.

The HWSS also collects information regarding psychological distress and perceived lack of control, which are all related to one’s mental health and can have adverse effects on health. Seven percent of South West adults reported high or very high psychological distress, while 4.3% reported lack of control over their life in general13. While this information is not available for the South West Aboriginal population, nationally the Aboriginal population has been found to report higher levels of psychological stress than their non-Aboriginal counterparts.13

Community Mental Health Activity

Between 2006 and 2010 the rate of usage of community mental health services by South West residents was significantly lower when compared with all residents of the State. South West residents used 172,480 occasions of service. Males accounted for 49% of these occasions of service41.
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8 ABS 2008. *Census of Population and Housing: Socio-Economic Indexes for Areas (SEIFA), Australia, 2006.* cat. No. 2033.0.55.001


17 DoH *Overview of the major causes of drug-related deaths for South West Health Region residents.* Epidemiology Branch (PHI) in collaboration with the Cooperative Research Centre for Spatial Information (CRC-SI). Generated using data from the WA Death Registrations which includes data from the WA Register of Births, Marriages and Deaths and Australian Bureau of Statistics. Proportion of drug and alcohol related deaths identified by aetiological fractions. Accessed Thursday, 26 April 2012.


20 DoH *Overview of the major causes of hospitalisations for South West Health Region residents.* Epidemiology Branch (PHI) in collaboration with the Cooperative Research Centre for Spatial Information (CRC-SI). Generated using data from the WA Hospital Morbidity Data Collection. Accessed Thursday, 12 April 2012.

21 DoH *Overview of the major causes of hospitalisations for South West Health Region Aboriginal residents.* Epidemiology Branch (PHI) in collaboration with the Cooperative Research Centre for Spatial Information (CRC-SI). Generated using data from the WA Hospital Morbidity Data Collection. Accessed Thursday, 12 April 2012.

22 DoH *Comparison of All-cause hospitalisations rates for Aboriginals and non-Aboriginal people who live in the South West Health Region.* Epidemiology Branch (PHI) in collaboration with the Cooperative Research Centre for Spatial Information (CRC-SI). Generated using data from the WA Hospital Morbidity Data Collection. Accessed Thursday, 12 April 2012.

23 DoH *Overview of the major causes of drug-related hospitalisations for South West Health Region residents.* Epidemiology Branch (PHI) in collaboration with the Cooperative Research Centre for Spatial Information (CRC-SI). Generated

24 DoH Overview of the major causes of Potentially preventable hospitalisations for South West Health Region residents. Epidemiology Branch (PHI) in collaboration with the Cooperative Research Centre for Spatial Information (CRC-SI). Generated using data from the WA Hospital Morbidity Data Collection. Accessed Thursday, 12 April 2012.

25 DoH Overview of Potentially preventable hospitalisations due to chronic conditions among residents of the South West Health Region. Epidemiology Branch (PHI) in collaboration with the Cooperative Research Centre for Spatial Information (CRC-SI). Generated using data from the WA Hospital Morbidity Data Collection. Accessed Thursday, 12 April 2012.

26 DoH Comparison of All-cause Potentially preventable hospitalisations rates for Aboriginals and non-Aboriginal people who live in the South West Health Region. Epidemiology Branch (PHI) in collaboration with the Cooperative Research Centre for Spatial Information (CRC-SI). Generated using data from the WA Hospital Morbidity Data Collection. Accessed Thursday, 12 April 2012.


32 DoH Top fifteen causes of hospitalisations for South West Health Region non-Aboriginal residents (aged 65-85+ years). Epidemiology Branch (PHI) in collaboration with the Cooperative Research Centre for Spatial Information (CRC-SI). Generated using data from the WA Hospital Morbidity Data Collection. Accessed Thursday, 26 April 2012.

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41 Overview of the major causes of community mental health occasions of service for South West Health Region residents. Epidemiology Branch (PHI) in collaboration with the Cooperative Research Centre for Spatial Information (CRC-SI). Generated using data from the WA Mental Health Information System ambulatory mental health occasions of service database. Accessed Thursday, 26 April 2012