The Midwest region represents nearly 20% of the land mass of Western Australia, covering over 470,000 square kilometres. It encompasses the Murchison and Gascoyne areas of Western Australia. The region forms part of the Northern and Remote Country Health Service and is within the boundaries of the Goldfields-Midwest Medicare Local. Geraldton is the only non-metropolitan town (other than Bunbury) that has both a public and private hospital.

Geraldton forms the main centre of the Midwest with other coastal communities Carnarvon, Exmouth, Kalbarri, and Dongara. Other population clusters are found in Meekatharra, Morawa and Mullewa.

Major road networks include the Great Northern Highway, Brand Highway and the North West Coastal Highway, which are heavily utilised by road trains and private vehicles. By car, the main town of Geraldton is just under a five hour drive from Perth. Rail, seaports and airports ensure Geraldton is accessible and resources are transported in and out efficiently. Major airports include Geraldton, Carnarvon and Exmouth. Charter planes also service this area.

Many industries are attracted to the Midwest including tourism, fisheries, mining and agriculture. Agriculture of cereal and legume crops, livestock, horticulture and aquaculture can be found in the region, these activities attract a strong manufacturing industry. Iron ore is the major mined resource in the region, which with the agriculture sector contributes significantly to Western Australia’s economy.

Universities located in Geraldton include Curtin University of Technology and the Combined Universities Centre for Rural Health.

**Leading causes of hospitalisation**

Overall the hospitalisation rate for Midwest residents was significantly higher than the State in 2006 to 2010. The leading causes of hospitalisation in the Midwest related to factors influencing health status and contact with health services, digestive diseases and neoplasms.

**Table 1: 2006-2010 Midwest residents - Leading causes of hospitalisation**

<table>
<thead>
<tr>
<th>Rank</th>
<th>Cause of hospitalisation</th>
<th>Number</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>31,485</td>
<td>25.7%</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Digestive diseases</td>
<td>12,589</td>
<td>10.3%</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>Neoplasms</td>
<td>9,474</td>
<td>7.7%</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>Injury and poisoning**</td>
<td>8,677</td>
<td>7.1%</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>Pregnancy and childbirth</td>
<td>8,049</td>
<td>6.6%</td>
<td>7</td>
</tr>
</tbody>
</table>

All hospitalisations 122,643

(WA Morbidity Data System)

*Health services for examination and investigation, reproduction, specific procedures, renal dialysis, potential health hazards related to communicable diseases, socioeconomic and psychosocial circumstances, family and personal history.

**Transport accidents, other external injuries, intentional self-harm, assault, complications of medical and survival care.

**Potential preventable hospitalisations**

Potential preventable hospitalisations (PPH) refers to those hospitalisations which could have been avoided with disease intervention plans and various methods of preventative care. Three categories are identified: acute, chronic and vaccine preventable.

During 2006 and 2010 the following trends were observed:

- PPH accounted for 10,437 (9%) of hospitalisations. This figure was significantly higher when compared to the rest of the State.
- Diabetes with its complications ranked number one (24% of all PPH’s).
- Aboriginal residents had a PPH rate more than three times greater than non-Aboriginal residents.

**Population**

The estimated resident population in 2010 was 65,600, the population grew at 1.5% per year over the last five years.

Most of the population resides in the towns of Geraldton (approximately 35,000) and Carnarvon. The region has a large population of fly-in-fly-out workforce and tourists who visit the region during the popular months. Shark Bay had an additional 129% of people who were non-residents during the 2006 Census night.

It is estimated that the Midwest resident population will increase to 75,175 by 2016 and to 79,115 by 2021.

The Aboriginal population represented 7,524 (11.5%) people in 2010. When compared to the non-Aboriginal population, the Aboriginal population has a higher proportion of females as well as a younger age structure.

**Measure of disadvantage**

Socio-Economic Indexes for Areas (SEIFA) measures a broad range of socio-economic indices. The baseline for SEIFA is 1,000.

A score above 1,000 indicates an area of socio-economic advantage and a score below 1,000 indicates an area of disadvantage. Research shows that a lower SEIFA correlates with a lower health status with increased risk factors to ill health.

The Midwest region has areas with differing levels of disadvantage especially in the Eastern areas.

The 2006* SEIFA scores for towns in the Midwest region are:

- Geraldton 927
- Carnarvon 934
- Exmouth 968
- Meekatharra 862
- Wiluna 718

*2006 SEIFA is the most up to date data available from ABS, 2011 statistics will be available in 2013

When planning new outreach health services focus on current gaps and using an effective team approach model.
Midwest – population and health status

Leading causes of death
During the period 2003 to 2007, the leading causes of death were neoplasms and diseases of the circulatory system.

Table 2: 2003-2007 Midwest residents - Leading causes of mortality

<table>
<thead>
<tr>
<th>Rank</th>
<th>Cause of mortality</th>
<th>Count</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Neoplasms</td>
<td>554</td>
<td>32.2%</td>
</tr>
<tr>
<td>2</td>
<td>Diseases of the circulatory system</td>
<td>497</td>
<td>28.9%</td>
</tr>
<tr>
<td>3</td>
<td>Injury and poisoning</td>
<td>150</td>
<td>8.7%</td>
</tr>
<tr>
<td>4</td>
<td>Diseases of the respiratory system</td>
<td>117</td>
<td>6.8%</td>
</tr>
<tr>
<td>5</td>
<td>Endocrine, nutritional and metabolic diseases</td>
<td>96</td>
<td>5.6%</td>
</tr>
</tbody>
</table>

(ABS Mortality Data)

There is still a discrepancy between the life expectancy of Aboriginal people when compared to non-Aboriginal people. Current estimations suggest that non-Aboriginal people live around ten years longer than Aboriginal people.

Avoidable mortality
During 1997 to 2007, more than two thirds (68.1%) of Midwest resident deaths under the age of 75 could have been avoided. More than half (55.1%) of these deaths could have potentially been avoided through the use of primary care interventions.

Figures 1 and 2 below show a count of the top five causes of avoidable mortality by gender during 1997 to 2007. Ischaemic heart disease was the leading cause of avoidable mortality for both males and females, with lung cancer and chronic obstructive pulmonary disease in the top five for both sexes. For Aboriginal residents the leading cause of avoidable mortality was ischaemic heart disease (56%). A greater number of deaths in the male non-Aboriginal population were attributed to suicide and self-inflicted injuries calling for increased mental health access.

According to the 2006 ABS Census the following trends for Midwest residents are:
- 11.6% lived in a very remote area
- 21.2% lived in a remote area
- 67.2% lived in an outer regional area

A very remote location is defined as an area which is disadvantaged in terms of location with very little access to health services and limited social interaction.

**Major health service providers**

<table>
<thead>
<tr>
<th>Hospital services</th>
<th>Community and public health services</th>
<th>Mental health and aged care services</th>
<th>Aboriginal Medical Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geraldton Hospital</td>
<td>Community Health Service – Carnarvon, Exmouth, Geraldton, Meekatharra, Morawa, Mount Magnet, Mullewa, North Midlands</td>
<td>Central West Mental Health Service – Geraldton, Carnarvon, Meekatharra</td>
<td>Geraldton Regional Aboriginal Medical Service</td>
</tr>
<tr>
<td>Meekatharra Hospital</td>
<td>Gascoyne Population Health Unit</td>
<td>Midwest Community Drug Service Team</td>
<td>Carnarvon Aboriginal Medical Service</td>
</tr>
<tr>
<td>St John of God Geraldton Hospital</td>
<td></td>
<td>Midwest Aged Care Assessment Team</td>
<td>Nganggananawill Aboriginal Health Service</td>
</tr>
<tr>
<td>Carnarvon Multi Purpose Service</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

When planning new outreach health services focus on current gaps and using an effective team approach model.
The burden of disease

Aboriginal health

Chronic, non-communicable diseases contribute to over 70% of the total burden of illness and injury in Australia\(^3\). In Western Australia, chronic disease is largely detected and managed by general practitioners and Aboriginal Medical Services, with specialist care available at WA Country Health Service Regional Resource Centres and from resident and visiting specialists.

The following information about the five chronic health conditions targeted by Medical Specialist Outreach Assistance Program – Indigenous Chronic Disease (MSOAP-ICD) and their impact has primarily been sourced from the Aboriginal Health Planning Forum Data reports prepared by the WA Health Epidemiology Branch and WA Country Health Service, November 2009.

Chronic disease amongst Aboriginal people

65% of Aboriginal people report at least one long-term health condition and approximately 27% of Aboriginal children have one or more long-term health conditions.

The demographic factors of remoteness (isolation) and socio-economic disadvantage of the Aboriginal population contribute to the significantly greater burden of disease compared to non-Aboriginal people.

The high burden of disease is also reflected in a comparison of admission rates compared to the general population:\(^4\):

- 12 x greater for renal dialysis
- 8 x greater for diabetes
- 5.62 x greater due to cellulitis
- 6.64 x greater due to respiratory infections/inflammations
- 8.2 x greater due to disorders of the pancreas.

Diabetes: Majority is type 2 diabetes. Risk factors for type 2 diabetes include being overweight, leading a sedentary lifestyle and consuming a high calorie diet.

Cardiovascular disease: The leading types are ischaemic heart disease and stroke.

Respiratory disease: The two major types being asthma and chronic obstructive pulmonary disease.

Kidney disease: Often develops as a complication of other medical conditions including diabetes, high blood pressure, urinary tract infections and drug use.

In 2006, the most common causes of cancers in Western Australia for men were prostate, melanoma, colorectal and lung. For women the most common cancers were breast, colorectal, melanoma and lung.

Mortality – chronic conditions

Between 1997 and 2006, the leading causes of mortality among Aboriginal people from the Midwest region were cancer, ischaemic heart disease and diabetes\(^5\).

Figure 3 compares the age standardised mortality rate ratios for the Midwest Aboriginal population with the State Aboriginal population, the combined State population and the combined Midwest non-Aboriginal population for the period 1998 to 2007\(^6\).

Table 3 below shows the leading causes of mortality that could have been avoided with effective medical interventions. One in five avoidable deaths for Aboriginal Midwest residents was ischaemic heart disease. Three quarters (74.4%) of Midwest Aboriginal resident deaths under the age of 75 could have been avoided.

Table 3: 1997-2007 Midwest residents 0-74 years - Leading causes of avoidable mortality by Aboriginal status

<table>
<thead>
<tr>
<th>Rank</th>
<th>Condition</th>
<th>Deaths</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ischaemic heart disease</td>
<td>56</td>
<td>17.8%</td>
</tr>
<tr>
<td>2</td>
<td>Diabetes</td>
<td>43</td>
<td>13.7%</td>
</tr>
<tr>
<td>3</td>
<td>Lung cancer</td>
<td>20</td>
<td>6.4%</td>
</tr>
<tr>
<td>4</td>
<td>Suicide and self-inflicted injuries</td>
<td>19</td>
<td>6.1%</td>
</tr>
<tr>
<td>5</td>
<td>Selective invasive bacterial and protozoal infections</td>
<td>15</td>
<td>4.8%</td>
</tr>
</tbody>
</table>

(ABS Mortality Data)

The Western Australian Hospital Morbidity Data System records all (Statewide) hospitalisations.

The following chart compares the age standardised hospital separation rate ratios for the Midwest Aboriginal population with the State Aboriginal population, the combined State population and the Midwest non-Aboriginal population for the period 2004 to 2008\(^6\).

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\(^2\) Improving Chronic Disease Services in Country WA: Priority Chronic Disease Models of Care. WA Country Health Service. Oct 2009

\(^3\) Ibid. Page 20. Data from 2006/07

\(^4\) Midwest Aboriginal Health Planning Forum Data. Page 9

\(^5\) Ibid. Pages 6-8. Based on ASR per 100,000 persons

\(^6\) Ibid. Pages 11-13. Based on ASR per 1,000 persons.
Maternity

Overview of rural maternity services

Community based pregnancy and maternity care services are provided by WA Country Health Service, private general practitioners, Aboriginal Community Controlled Health Services and a range of community based and non-government organisations.

Specialist obstetric services are mainly provided at the regional hospitals. GP obstetricians play an important role in maternity care in hospitals where specialist services are often not available. All birthing services are supported by midwives and anaesthetists. Severe workforce shortages impact across all these professions in rural areas. In Western Australia, planned birthing services are available in 19 public hospitals and at St John of God Geraldton and Bunbury Hospitals.

Midwest birthing services

Planned birthing services are available at Geraldton Regional Hospital, Carnarvon District Hospital and the St John of God Geraldton Hospital. Geraldton has level 2 neonate facilities.

Aboriginal maternity issues

There is a large body of evidence to demonstrate that Aboriginal women experience poorer maternal health outcomes, higher rates of perinatal and infant mortality and deliver babies with lower average birth weights when compared to non-Aboriginal women.

Low birth weight

A baby’s weight is a key indicator of health status. The World Health Organisation defines low birth weight as less than 2,500 grams. Babies born with a low birth weight have a greater risk of poor health and dying, and are more likely to develop significant disabilities. Statewide from 2000 to 2006, 14.1% of babies born to Aboriginal mothers were of low birth weight, compared to 5.9% of babies born to non-Aboriginal mothers.

For rural Western Australia in 2008, 6.2% of all babies were born with a low birth weight. For Aboriginal babies, the percentage with low birth weight was significantly higher at 14.6%.

Between 2004 and 2008 the percentage of low birth weight Aboriginal babies born in the Midwest ranged from 11.7% in 2006 to 17.2% in 2005.

Birth trends

In 2005, women residing in country areas of Western Australia represented 25% of the total number of women who gave birth in Western Australia while 63.9% of births by Aboriginal women were from country regions. More country women are also delivering in the metropolitan area in public and private hospitals. From 2004 to 2008 there were 34,808 births recorded in rural Western Australia, with Aboriginal births being an average of 18.96% of these births.

During the 2004 to 2008 period, there was a 3.4% average annual increase in births each year. For Midwest Aboriginal women a 6.3% average annual increase was evident over the same period.

Figure 6 identifies the number of births in the Midwest region. An increase in births between 2004 and 2007 for both the Aboriginal and non-Aboriginal population was seen, the non-Aboriginal population saw a small decline in 2008.
Midwest – population and health status

Mothers aged less than 20 years
The following trends were seen between 2004 and 2008:
- In Western Australia the proportion of births to women aged less than 20 years was 5.1%. For non-Aboriginal teenage mothers the proportion was 4% compared to 23.1% for young Aboriginal women.
- The number of Aboriginal teenagers in the Midwest giving birth increased from 20.9% in 2006 to 27.8% in 2008.
- In 2006, 7.1% of non-Aboriginal women who were under 20 years gave birth compared to 4.6% in 2005.

Figure 7: Comparison of babies born to teenage mothers by Aboriginal status of mother and region

Mothers aged less than 20 years: all WACHS 2008

Smoking and pregnancy
Risks associated with smoking during pregnancy include premature births, lower birth weights, organ malfunctions and stillbirths. Figure 8 shows a decrease in the proportion of both Aboriginal and non-Aboriginal women smoking during pregnancy.

Figure 8: Midwest women who smoked during pregnancy 2008-2010

Drinking and pregnancy
Miscarriage and stillbirth are among the consequences of drinking during pregnancy. Fetal alcohol syndrome is a common cause of medical, cognitive and behavioural problems for children including prematurity, brain damage, birth defects, growth restriction and developmental delay.

Infant mortality rate
The Statewide infant mortality rate for 1998 to 2007 was 3.8 per 1,000 live births. This compromised a non-Aboriginal rate of 3.2 deaths per 1,000 live births compared with a rate of 12.9 per 1,000 for Aboriginal women.

Mental health
In 2009 12.9% of adults 16 years and over had suffered from a mental health problem with prevalence nearly twice as high among females.

Child and adolescent health
Vaccinations
The recommended Australian vaccination coverage aims for greater than 90% coverage of children at two years of age and almost 100% coverage at school entry age.

When planning new outreach health services focus on current gaps and using an effective team approach model.

With thanks to WA Country Health Service for permission to use data from various sources including the Midwest Regional Health Profile 2012 which can be accessed at http://www.wacountry.health.wa.gov.au/fileadmin/sections/publications/Midwest_Health_Care_Profile_FINAL_24_April_2012.pdf

When planning new outreach health services focus on current gaps and using an effective team approach model.
Midwest – population and health status

Table 4 below represents the current immunity for Year 7s in the Midwest. There is low community immunity against chickenpox, Hepatitis B and cervical cancer.

Table 4: 2009 Year 7 Midwest vaccinations

<table>
<thead>
<tr>
<th></th>
<th>B1</th>
<th>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>389</td>
<td>331</td>
<td>219</td>
<td>159</td>
<td>169</td>
<td>189</td>
<td>400</td>
</tr>
<tr>
<td>%</td>
<td>60.0</td>
<td>51.1</td>
<td>67.8</td>
<td>49.2</td>
<td>52.3</td>
<td>29.2</td>
<td>61.7</td>
</tr>
</tbody>
</table>

*Cervical cancer **Chickenpox *diphtheria, pertussis and tetanus

Australian Early Development Index

The Australian Early Development Index is a measure of how children are developing upon commencing full time school for the first time.

2009 ABS data classed 23.5% of Australian children as developmentally vulnerable on one or more domains. A child ranked in the bottom 10% is classed as “developmentally vulnerable” whereas a child ranked 75% and above is classed as “on track”.

In 2009, children surveyed in the Midwest region on developmental vulnerability scored relatively high. The highest proportion of children vulnerable on one or more domains was in Meekatharra (68%) however only 25 children were surveyed. High scores were also evident in both Geraldton (41.3%) and Mullewa (42.1%). Carnarvon (23.8%) and Northampton (29.5%) reported a low proportion of children who are developmentally vulnerable on one or more domains.

Planning outreach teams

- Increase access to mental health services targeting the Aboriginal population and women
- Increase allied health professionals to assist early childhood development. Teams could include speech pathologists, occupational therapists, physiotherapists and child health nurses

Figures and tables:

- Figure 9: Childhood vaccination for Midwest residents 24 months 2004-2009
- Table 4: 2009 Year 7 Midwest vaccinations

With thanks to WA Country Health Service for permission to use data from various sources including the Midwest Regional Health Profile 2012 which can be accessed at http://www.wahealth.wa.gov.au/fileadmin/sections/publications/Midwest_Health_Care_Profile_FINAL_24_April_2012.pdf

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