The Pilbara region represents about 20% of the land mass of Western Australia, covering over 500,000 square kilometres. It is Western Australia’s second most northern region after the Kimberley. The two major towns are Karratha and Port Hedland. Smaller towns include Roebourne, Newman, Onslow, Tom Price, Nullagine and Marble Bar.

The region forms part of the Northern and Remote Country Health Service and is within the boundaries of the Kimberley-Pilbara Medicare Local.

The Pilbara has two major road networks, the Great Northern Highway and the North West Coastal Highway with most transport by private vehicle. Major airports include Karratha, Newman and Port Hedland which service the fly-in/fly-out workforce mainly from Perth.

Rich sources of mineral deposits draw both the mining and construction industry to the region. Mining of iron ore, crude oil and natural gas has contributed to a significant amount of Western Australia’s booming economy. The boom has created inflated housing and private rental prices in the towns of Port Hedland and Karratha, which has increased demand for social and health services in the region.

With a large number of fly-in/fly-out workers and attractions such as Karijanji National Park bringing many tourists to the region, a huge demand on current health services and facilities is created.

The Pilbara health system is also impacted by the dry tropical climate of the region which experiences tropical cyclone crossings between December and April.

Leading causes of hospitalisation

Overall the hospitalisation rate for Pilbara residents was significantly higher than the State in 2006 to 2010. The leading causes of hospitalisation in the Pilbara region related to contact with health services and health status, injury and poisoning, pregnancy and childbirth.

Table 1: 2006-2010 Pilbara 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>21,536</td>
<td>28.0%</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Injury and poisoning**</td>
<td>7,873</td>
<td>10.2%</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>Pregnancy and childbirth</td>
<td>7,495</td>
<td>9.8%</td>
<td>7</td>
</tr>
<tr>
<td>4</td>
<td>Digestive diseases</td>
<td>6,630</td>
<td>8.6%</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>Respiratory diseases</td>
<td>4,574</td>
<td>6.0%</td>
<td>10</td>
</tr>
<tr>
<td>All hospitalisations</td>
<td>96,862</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Pilbara – population and health status)

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 to 2010 the following trends were observed:

- PPH accounted for 6,823 (9%) of hospitalisations. This figure was significantly high when compared to the rest of the State.
- Vaccine preventable conditions were 2.5 times higher in the Pilbara when compared to that of the State.
- Diabetes with its complications ranked number one (23% of all PPH’s).

Population

Estimated resident population in 2010 was 48,610, a 14% increase within five years. Most of the population reside in the mining towns of Karratha, Port Hedland and Newman. The region has a large transient population of fly-in/fly-out workforce and construction workers. In 2012, there were approximately 28,000 fly-in/fly-out workers and it is estimated that this figure will increase to 34,000 by 2021.

The Pilbara region has a high proportion of resident males with nearly 56% of males in the region compared to the state average of 51%.

The Aboriginal population represented 7,830 (16%) 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.

It is estimated that the resident population in the Pilbara region will increase to 62,470 by 2016 and 63,030 by 2021.

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 Pilbara region has relatively high SEIFA scores for most Statistical Local Areas in the region. The 2006* SEIFA scores for towns in the Pilbara are:

- Roebourne 1,033
- Port Hedland 996
- East Pilbara 954

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

Planning outreach teams

- Focus on increasing vaccinations region-wide
- Increase services to assist with demand for the fly-in/fly-out workforce

With thanks to WA Country Health Service for permission to use data from various sources including the Pilbara Regional Health Profile 2012 which can be accessed at http://www.wacountry.health.wa.gov.au/fileadmin/sections/publications/Pilbara_Health_Care_Profile_FINAL_12_April_2012.pdf

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

During the period 2003 to 2007, the leading causes of death were injury and poisoning, neoplasms and diseases of the circulatory system. The overall mortality rate in the Pilbara was significantly higher when compared to the rest of the State.

Table 2: 2003-2007 Pilbara 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>Injury and poisoning</td>
<td>112</td>
<td>20.3%</td>
</tr>
<tr>
<td>2</td>
<td>Neoplasms</td>
<td>106</td>
<td>19.2%</td>
</tr>
<tr>
<td>3</td>
<td>Diseases of the circulatory system</td>
<td>105</td>
<td>19.0%</td>
</tr>
<tr>
<td>4</td>
<td>Endocrine, nutritional and metabolic diseases</td>
<td>41</td>
<td>7.4%</td>
</tr>
<tr>
<td>5</td>
<td>Unknown causes of morbidity and mortality</td>
<td>41</td>
<td>7.4%</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 (67.4%) of Pilbara resident deaths under the age of 75 could have been avoided. More than half (52.4%) 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 males, followed by suicide and self inflicted injuries. In comparison, diabetes followed by ischaemic heart disease was the leading cause of avoidable mortality for females. For Aboriginal residents the leading cause of avoidable mortality was ischaemic heart disease (20.5%). A greater number of deaths in the non-Aboriginal population were attributed to suicide and self inflicted injuries calling for increased mental health access.

Australian Standard Geographical Classification – Remoteness Area

The Australian Standard Geographical Classification (ASGC) – Remoteness Area (RA) uses a five category scale to class remote areas of Australia from major cities to very remote locations.

According to the 2006 ABS Census the following trends for Pilbara residents are:

- 35.4% lived in a very remote area
- 64.6% lived in a remote 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

Planning outreach teams

- Focus on chronic conditions: cardiovascular disease, cancers and diabetes
- Need for mental health services targeting the male population increasing vaccinations region-wide

Figure 1 Leading cause of avoidable mortality for males 1997-2007

Figure 2 Leading cause of avoidable mortality for females 1997-2007

Pilbara – population and health status

<table>
<thead>
<tr>
<th>Planning outreach teams</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ Contact major health care providers and discuss how your team could collaboratively work together in service delivery and coordination</td>
</tr>
</tbody>
</table>

### The burden of disease

#### Aboriginal health

Chronic, non-communicable diseases contribute to over 70% of the total burden of illness and injury in Australia. 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:

- 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 Pilbara region were cancer, ischaemic heart disease and diabetes.

Figure 3 compares the age standardised mortality rate ratios for the Pilbara Aboriginal population with the State Aboriginal population, the combined State population and the combined Pilbara non-Aboriginal population for the period 1998 to 2007.

Table 3 below shows the leading causes of mortality that could have been avoided with effective primary interventions. One in five avoidable deaths for Aboriginal Pilbara residents was ischaemic heart disease.

Table 3: 1997-2007 Pilbara 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>71</td>
<td>20.5%</td>
</tr>
<tr>
<td>2</td>
<td>Diabetes</td>
<td>39</td>
<td>11.3%</td>
</tr>
<tr>
<td>3</td>
<td>Alcohol related disease</td>
<td>30</td>
<td>8.7%</td>
</tr>
<tr>
<td>4</td>
<td>Cerebrovascular diseases</td>
<td>24</td>
<td>6.9%</td>
</tr>
<tr>
<td>5</td>
<td>Selected invasive bacterial and protozoal infection</td>
<td>21</td>
<td>6.1%</td>
</tr>
</tbody>
</table>

(ABS Mortality Data)

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

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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 Pilbara Aboriginal Health Planning Forum Data. Page 9
5 Ibid. Pages 6-8. Based on ASR per 100,000 persons

With thanks to WA Country Health Service for permission to use data from various sources including the Pilbara Regional Health Profile 2012 which can be accessed at http://www.wacountry.health.wa.gov.au/fileadmin/sections/publications/Pilbara_Health_Care_Profile_FINAL_12_April_2012.pdf

When planning new outreach health services focus on current gaps and using an effective team approach model.
The following chart compares the age standardised hospital separation rate ratios for the Pilbara Aboriginal population with the State Aboriginal population, the combined State population and the Pilbara non-Aboriginal population for the period 2004 to 2008.

**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 St John of God Geraldton and Bunbury Hospitals.

**Pilbara birthing services**

Planned birthing services are available at Hedland Health Campus (South Hedland) and Nickol Bay District Hospital (Karratha). The South Hedland campus 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 weight 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.

**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 1.5% average annual increase in births each year. For Pilbara Aboriginal women a 4.3% average annual increase was evident over the same period.

Figure 6 identifies the number of births in the Pilbara region. An increase in births between 2005 and 2006 for both the Aboriginal and non-Aboriginal population was seen, both populations saw a decline in 2006 onwards.

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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 Pilbara giving birth decreased from 27% in 2006 to 15% in 2007.
- In 2008, 2.8% of non-Aboriginal women who were under 20 years gave birth compared to 5.3% in 2004.

Drinking and pregnancy

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

Infant mortality rate

The Statewide infant mortality rate for 1998 to 2007 was 3.8 per 1,000 live births. This comprised 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 15.6% of adults 16 years and over had suffered from a mental health problem with prevalence nearly twice as high among females. Only a slight proportion (6.5%) had accessed mental health care services within the year.

Aboriginal residents have reported higher levels of psychological stress than non-Aboriginals on a national level.

Community mental health services accessed between 2006 and 2010 were at a significantly lower rate when compared to the State.
Child and adolescent health

Vaccinations

The recommended Australian vaccination coverage aims for greater than 90% coverage of children at 2 years of age and almost 100% coverage at school entry age.

More than 90% coverage is needed to create community immunity against ongoing transmission of communicable diseases.

In the Pilbara region, childhood vaccination coverage is above 90% for the 24 month age group. Coverage is lower for Aboriginal children in this age bracket.

Table 4 below represents the current immunity for Year 7s in the Pilbara. There is low community immunity against chickenpox with less than half of the girls surveyed having the third vaccination for cervical cancer.

Table 4: 2009 Year 7 Pilbara 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>218</td>
<td>160</td>
<td>158</td>
<td>134</td>
<td>79</td>
<td>85</td>
<td>251</td>
</tr>
<tr>
<td>%</td>
<td>50.7</td>
<td>37.2</td>
<td>75.6</td>
<td>64.1</td>
<td>37.8</td>
<td>19.8</td>
<td>58.4</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 domain. 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 Pilbara region on developmental vulnerability scored relatively well. The highest proportion of children vulnerable on one or more domain was the East Pilbara (28.8%) closely followed by Port Hedland (26.6%) and Roebourne (21.9%). The area of Ashburton (9.2%) had a low proportion of children who are developmentally vulnerable.