Hospital Utilisation and Outcomes Amongst Victorian Residents Born in Refugee-source Countries

An analysis of hospital admissions between 1998/99 and 2003/04 from the Victorian Admitted Episodes Dataset

A collaborative project undertaken by:
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<th>Description</th>
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<td>ACSCs</td>
<td>Ambulatory Care Sensitive Conditions</td>
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<tr>
<td>AR-DRG</td>
<td>Australian Revised Diagnosis Related Groups</td>
</tr>
<tr>
<td>BIMPR</td>
<td>Bureau of Immigration, Multicultural and Population Research</td>
</tr>
<tr>
<td>COPD</td>
<td>Chronic Obstructive Pulmonary Disease</td>
</tr>
<tr>
<td>DIMIA</td>
<td>Department of Immigration and Multicultural and Indigenous Affairs</td>
</tr>
<tr>
<td>DRG</td>
<td>Diagnosis Related Groups</td>
</tr>
<tr>
<td>ENS</td>
<td>Employer Nomination Scheme</td>
</tr>
<tr>
<td>ENT</td>
<td>Ear, Nose and Throat infections</td>
</tr>
<tr>
<td>HIV</td>
<td>Human Immunodeficiency Virus</td>
</tr>
<tr>
<td>ICD-10-AM</td>
<td>International Statistical Classification of Diseases, Tenth Revision, Australian Modification</td>
</tr>
<tr>
<td>LSIA</td>
<td>Longitudinal Survey of Immigrants to Australia</td>
</tr>
<tr>
<td>nfd</td>
<td>not further defined</td>
</tr>
<tr>
<td>PTSD</td>
<td>Post Traumatic Stress Disorder</td>
</tr>
<tr>
<td>UNHCR</td>
<td>United Nations High Commission for Refugees</td>
</tr>
<tr>
<td>VAED</td>
<td>Victorian Admitted Episodes Dataset</td>
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<tr>
<td>WHO</td>
<td>World Health Organization</td>
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</table>
Executive summary

Background

Although Australia receives a significant number of humanitarian arrivals every year, relatively little data is available about the health needs of recently arrived refugees in Australia. The few studies that have investigated health needs report poorer health status, higher rates of long-term physical and psychological conditions, and greater number of visits to health care providers among humanitarian arrivals compared with immigrants with other visa categories. Some of the health problems identified include psychological disorders (anxiety, depression and post traumatic stress disorder), nutritional deficiencies, infectious diseases (tuberculosis, HIV/AIDS, hepatitis B and intestinal parasites), poor dental health, poorly managed chronic conditions, under-immunisation and delayed growth in children, and physical sequelae of torture.

A significant gap in knowledge is the lack of population data on acute health care service utilisation amongst refugee communities. The present report addresses this research gap by examining Victorian hospital admissions from 1998-99 and 2003-04.

Purpose

This report is one of the first to investigate acute health care service utilisation amongst a population from a refugee background in Australia. It compares hospital admissions and related outcomes between Victorian residents born in a number of refugee-source countries and those born in Australia. More specifically, the report identifies trends of hospitalisations, hospital admission and separation types, Diagnosis Related Groups (DRGs), Ambulatory Case Sensitive Conditions (ACSCs), and length of stay. Profiles of infectious/parasitic diseases and mental/behavioural conditions are also analysed. The study also identifies areas of service provision that may not be adequate in addressing the health needs of refugee communities and reducing the health inequalities in the Victorian community.

Methods

The Victorian Admitted Episodes Dataset (VAED) was used to analyse hospital admissions between 1998-99 and 2003-04. The VAED contains morbidity data on all admitted patients from the Victorian public and private acute hospitals. Given the lack of data on immigration status, the report focuses on refugee-source countries, that is, those countries whose inhabitants have been forcibly displaced due to persecution, violence, armed conflict and war. Consequently, 15 countries with a history of immigration to Victoria under the refugee and humanitarian program over the last 35 years were analysed. These countries are Afghanistan, Bosnia-Herzegovina, Burma (Myanmar), Cambodia, Chile, Croatia, El Salvador, Eritrea, Ethiopia, Former Yugoslavia (not further defined), Iran, Iraq, Somalia, Sudan, and Vietnam.

Rates of admission were age standardised to the estimated Victorian population using the direct method. For each of the six time periods of interest the specific population of each of the refugee-source countries (denominator data) was estimated by adding the number of arrivals in Victoria from that country (by age category) to the number of individuals recorded at the previous census. Standardised admission rates and rate ratios are used to compare hospital admissions and outcomes between selected refugee-source countries and the Australian-born population.

Key findings

Interpreting the results

Standardised rates are used to measure the number of new events that occur per person per unit time. For instance, the total hospital admission rate for Australia-born in 1998-99 was 358.52/1000 persons/year. In other words, 358.52 hospital admissions were recorded in Victoria amongst every 1000 Australia-born persons in 1998-99.
**Rate ratios** are used to compare admission rates amongst Victorian residents born in refugee-source countries with the admission rates amongst Victorian residents born in Australia. Rate ratio is defined as:

\[
\text{Rate ratio} = \frac{\text{Admission rate in refugee-source country-born}}{\text{Admission rate in Australia-born}}
\]

A rate ratio greater than 1.0 indicates that admissions were higher amongst those born in the refugee-source country being analysed compared with the Australia-born persons.

Key findings are described in terms of trends of rates and rate ratios over time. In other words, even though the rates for both the refugee-source country-born and the Australia-born may have for instance increased over time, when compared to each other (using rate ratios), rates for the refugee-source country-born may have been lower than the Australia-born rates. Conservative parameters were applied when comparing rate ratios. For instance, when rate ratios confidence intervals of refugee-source country-born intersected those of the Australia-born population, rate ratios were defined as similar.

**Total hospital admissions**
*Total* hospital admission rates increased over the six-year period for the Australia-born population and for 93% (14 of 15) of the refugee-source countries. When compared with the Australia-born, rate ratios of *total* admissions were lower amongst 67% (10 of 15) of the refugee-source countries.

**Elective hospital admissions**
Rates of *elective* hospital admissions increased for the Australia-born and for 87% (13 of 15) of the refugee-source countries. *Elective* admission rate ratios were lower amongst 60% (9 of 15) of the refugee-source countries compared with the Australia-born population.

**Emergency hospital admissions**
Rates of *emergency* admission increased over time for the Australia-born and for 87% (13 of 15) of the refugee-source countries. When compared with the Australia-born average, 40% (6 of 15) and 33% (5 of 15) of the refugee-source countries reported similar and lower *emergency* admission rate ratios respectively.

**Obstetric hospital admissions**
Rates of *obstetric* admission increased for 60% (9 of 15) of the refugee-source countries. In contrast, the Australia-born and 20% (3 of 15) of the refugee-source countries showed a decreasing trend over time. *Obstetric* admission rate ratios were higher amongst 60% (9 of 15) of the refugee-source countries compared with the Australia-born population.

**Medical Diagnosis Related Groups (DRG) admissions**
*Medical DRG* admission rates increased over time for the Australia-born and for 93% (14 of 15) of the refugee-source countries. When compared with the Australia-born average, *medical DRG* admission rate ratios were lower amongst 53% (8 of 15) of the refugee-source countries. Four (27%) refugee-source countries recorded higher *medical DRG* admission rate ratios.

**Surgical Diagnosis Related Groups (DRG) admissions**
*Surgical DRG* admission rates increased over the six-year period for the Australia-born and for 80% (12 of 15) of the refugee-source countries. Lower *surgical DRG* admission rate ratios were recorded amongst 73% (11 of 15) of the refugee-source countries when compared with the Australia-born population.

**Separation to private residence/accommodation**
When compared with the Australia-born, lower rate ratios of *separation to private residence/accommodation* were recorded amongst 60% (9 of 15) of the refugee-source countries.
Discharge at own risk
Rates of discharge at own risk increased over time for the Australia-born and for 67% of the refugee-source countries. Compared with the Australia-born average, 87% (13 of 15) of the refugee-source countries reported similar rate ratios of discharge at own risk.

Hospital deaths
Rates of hospital death showed and increasing trend over time for the Australia-born and for 93% (14 of 15) of the refugee-source countries. Hospital death rate ratios were similar to the Australia-born average amongst 80% (12 of 15) of the refugee-source countries.

Length of stay in hospital (bed days)
Rates of length of stay reported an increasing trend over the six-year period for the Australia-born and for 87% (13 of 15) of the refugee-source countries. Compared with the Australia-born average, 93% (14 of 15) of the refugee-source countries recorded lower length of stay rate ratios.

Total Ambulatory Case Sensitive Conditions (ACSCs) admissions
Total ACSCs admission rates showed an increasing trend over time for the Australia-born and for 93% (14 of 15) of the refugee-source countries. Rate ratios were lower amongst 40% (6 of 15) of the refugee-source countries compared with the Australia-born population. Other six (40%) refugee-source countries recorded total ACSCs admission rate ratios similar to the Australia-born.

Acute Ambulatory Case Sensitive Conditions (ACSCs) admissions
Rates of admission due to acute ACSCs increased over the six-year period for the Australia-born and for 93% (14 of 15) of the refugee-source countries. When compared with Australia-born averages, acute ACSCs admission rate ratios were lower amongst 53% (8 of 15), and similar amongst 33% (5 of 15) of the refugee-source countries.

Chronic Ambulatory Case Sensitive Conditions (ACSCs) admissions
Rates of chronic ACSCs admission reported an increasing trend over time for the Australia-born and for all of the refugee-source countries. Chronic ACSCs admission rate ratios were similar amongst 53% (8 of 15) of the refugee-source countries compared with the Australia-born population. Three (20%) refugee-source countries recorded lower rate ratios, and other three (20%) reported either lower or similar rate ratios during the six-year period.

Vaccine-preventable Ambulatory Case Sensitive Conditions (ACSCs) admissions
Rates of vaccine-preventable ACSCs admission decreased over the six-year period for the Australia-born and for 53% (8 of 15) of the refugee-source countries. Admission rates reported an increasing trend amongst 40% (6 of 15) of the refugee-source countries. When compared with the Australia-born, 60% (9 of 15) of the refugee-source countries recorded similar rate ratios, 13% (2 of 15) reported lower rate ratios, and only one (7%) refugee-source country showed a higher pattern of vaccine-preventable ACSCs admission rate ratios.

Infectious and parasitic diseases
Rates of admission due to infectious/parasitic diseases recorded an increasing trend for 67% (10 of 15) of the refugee-source countries. Admission rates remained steady over the six-year period for the Australia-born and for 20% (3 of 15) of the refugee-source countries. Compared with Australia-born averages, infectious/parasitic diseases admission rate ratios were similar amongst 60% (9 of 15) of the refugee-source countries, lower amongst 13% (2 of 15), and either lower or similar amongst other two (13%) refugee-source countries. Two refugee-source countries (13%) reported higher admission rate ratios due to infectious and parasitic diseases.

Mental and behavioural disorders
Rates of admission due to mental and behavioural disorders reported an increasing trend over time for the Australia-born and for 87% (13 of 15) of the refugee-source countries. Lower rate
ratios of admission due to these conditions were recorded amongst 93% (14 of 15) of the refugee-source countries when compared with the Australia-born population.

**Top ten Australian Revised Diagnosis Related Groups (AR-DRG) in 2003-04**

In 2003-04, renal dialysis was the top AR-DRG for the Australia-born and for 80% (12 of 15) of the refugee-source countries. Compared with the Australia-born, pregnancy and birth-related conditions, and digestive tract disorders (including diagnostic procedures), accounted for a higher proportion of hospital admissions amongst 73% (11 of 15) and 47% (7 of 15) of the refugee-source countries respectively.

**Trend over time**

When comparing rate ratios between individual refugee-source countries and Australia-born, a trend towards the Australia-born average over time was commonly observed, particularly amongst the European refugee-source countries.
1. Introduction

1.1 Background

In Australia, about 127,000 people have arrived under the Humanitarian Program over the last 10 years. Thirty percent of these arrivals have settled in Victoria. The Humanitarian Program provides protection to refugees and other people of concern who have suffered gross human rights violations.

Health problems amongst refugees may be the result of adverse pre-migration experiences, such as torture/trauma in country of origin and during flight, poor health status and lack of adequate health care in country of origin, or whilst in their country of asylum (e.g., economic hardship, unemployment and underemployment, social isolation, cultural and language barriers, changes in lifestyle, discrimination and racism). Although refugees are not a homogeneous group, the following health problems have been identified amongst recently arrived refugee communities in Australia:

- Psychological disorders such as anxiety, depression and post traumatic stress disorder (PTSD);
- Nutritional deficiencies;
- Poor dental health as a result of poor nutrition and diet, lack of fluorinated water, poor oral hygiene practices, limited dental care, and in some cases torture to the oral cavity;
- Infectious diseases, including tuberculosis, HIV/AIDS, hepatitis B and intestinal parasites;
- Chronic diseases which have been poorly managed, such as high blood pressure, diabetes, and chronic pain;
- Under-immunisation and delayed growth/development in children;
- Physical consequences of torture such as musculoskeletal pain and deafness.

Relatively little data is available about the health needs of recently arrived refugees in Australia. The few studies that have investigated health needs report poorer health status, higher rates of long-term physical and psychological conditions, and greater number of visits to health care providers among humanitarian arrivals in Australia compared with immigrants with other visa categories. Results from the Longitudinal Survey of Immigrants to Australia (LSIA) carried out by the Australian Bureau of Immigration, Multicultural and Population Research (BIMPR) showed that principal applicants in the Humanitarian Program were the least likely to rate their health as ‘very good’ (37%) compared with more than 60% of those in the Business/Employer Nomination Scheme (ENS), Concessional Family, and Independent categories. Nearly 5% of the principal humanitarian applicants reported that their health was ‘poor’ or ‘very poor’, compared with less than 1% among the other immigration categories. Long-term medical conditions were most prevalent among principal applicants in the Humanitarian category (14%), followed by those in the Preferential Family (7%), Concessional Family (3%), Business/ENS (2%) and Independent (1.4%) categories. In relation to health care use, the LSIA found that Humanitarian arrivals “were more likely to visit a health care provider within the first six months of arrival” (p. 44), and had greater number of visits to this providers than immigrants in other visa categories. Greater use of health care providers among Humanitarian entrants soon after they arrive in Australia can be explained by the health undertaking these entrants are required to take on by the immigration authorities in order to undergo assessment and treatment of any long-term medical condition they may have.

Although the small body of research on the health of recently arrived refugees in Australia is growing, no population data exist in relation to acute health services utilisation and outcomes amongst these communities, and how they compare with the Australia-born population. This report examines Victorian hospital admissions from 1998-1999 to 2003-2004. It compares
acute health care service utilisation and outcomes between people born in a number of refugee-source countries and the Australia-born population.

Data on admitted patients are gathered when “an admitted patient (a patient who undergoes a hospital’s formal admission process) completes and episode of care and ‘separates’ from the hospital (...) by being discharged, dying, transferring to another hospital or changing type of care” 10 (p. 276). Hospital admissions reflect the amount of a disease condition a group experiences and the resources they can call upon to address their health problems. A person from a small, isolated or fragmented community may experience different treatment from someone with the same condition who belongs to a community that has supportive family networks and health care professionals who understand their language and culture. Hospitalisation may occur more promptly in the first scenario, but take longer or be avoided altogether in the second scenario 11.

1.2 Relevance of the study

This report is one of the first to investigate acute health care utilisation and outcomes amongst Victorian residents born in refugee-source countries. The study addresses important research gaps in the area of refugee population health. It also identifies areas of service provision that may not be adequate in addressing the health needs of refugee communities and reducing the health inequalities in the Victorian community.

In particular, this study identifies trends in hospital admissions, admission types (i.e. elective, emergency, and obstetric), Diagnosis Related Group (DRG) types (i.e. medical or surgical), separation modes (i.e. private residence/accommodation, left against medical advice or death), and length of stay. The report also includes a trend analysis of admissions for Ambulatory Care Sensitive Conditions (ACSCs) and for two specific diagnosis categories: infectious and parasitic diseases, and mental and behavioural conditions. Infectious diseases and psychological disorders are common health problems among refugees 12.

ACSCs are those conditions "for which hospitalisation is thought to be avoidable if preventive care and early disease management are applied, usually in the ambulatory setting 13. In theory, timely and effective ambulatory care can reduce the risks of hospitalisation by: preventing the onset of an illness or condition; or managing a chronic disease or condition 13" 14 (p.6). ACSCs admission rates are a useful tool for the assessment of both access to health care and the adequacy of primary health care. Understanding access to health care as barriers to receiving care as well as the quality of the care provided 14 may help to determine "whether access-related problems can explain the relatively poorer health outcomes of specific population groups" 14, including refugee populations.

2. Methods and limitations

2.1 Hospital admission data

Hospital admission data were obtained from the Victorian Admitted Episodes Dataset (VAED). The VAED contains morbidity data on all admitted patients from the Victorian public and private acute hospitals, including acute facilities in rehabilitation and extended care institutions and day procedure centres 15. Although VAED is an administrative dataset that is collected for operational reasons, it provides useful information about acute health care use and health-related outcomes.
Clinical data are stored as ICD-10-AM codes in 25 diagnosis and procedure fields (from 1998-1999 to 2002-2003) in the VAED. The 2003-2004 VAED contains ICD-10-AM codes in 40 diagnosis and procedure fields. The ICD is a system of categories developed by the World Health Organization (WHO) to which disease conditions are assigned according to established criteria.

2.2 Refugee-source countries

Two major shortcomings of the VAED dataset are the lack of data on immigration status (e.g. visa type upon arrival) and the lack of indicators on ethnicity beyond country of birth of the patient (with the exception of Indigenous Australians). While there are a number of ethical and logistic issues in relation to the collection of this type of information, this represents a significant constraint when trying to develop a population health profile of people from refugee backgrounds. Given these limitations, the current study uses country of birth as a proxy indicator of ethnicity, and focuses on refugee-source countries rather than on refugee populations per se. Refugee-source countries are defined as those countries whose inhabitants have been forcibly displaced due to persecution, violence, armed conflict and war. Australia is one of 16 countries with a formal program of resettlement of refugees through the UNHCR.

For the purpose of the present study, 15 countries with a history of immigration to Victoria under the refugee and humanitarian program over the last 35 years were selected. The list of these countries is shown in Table 1. While for some countries the majority of its arrivals in Australia entered under the humanitarian category (e.g. Afghanistan, Iraq, Sudan, Bosnia-Herzegovina), other countries such as Chile and Croatia have had a more varied combination of arrival categories. Nevertheless, the refugee stream has contributed significantly to the overall migration of these specific communities into Australia.

Table 1: Refugee-Source Countries Included in the Analysis

<table>
<thead>
<tr>
<th>Refugee-Source Countries</th>
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<tbody>
<tr>
<td>Afghanistan</td>
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<tr>
<td>Bosnia-Herzegovina</td>
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<td>Burma (Myanmar)</td>
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<tr>
<td>Cambodia</td>
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<tr>
<td>Chile</td>
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<td>Croatia</td>
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<tr>
<td>Sudan</td>
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<tr>
<td>Vietnam</td>
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</table>

1 The lack of statistical rigour and the inconsistent classification of country of birth for the countries from former Yugoslavia in both the Australian Bureau of Statistics census and the DIMIA Settlement Database have resulted in a significant proportion of respondents identifying themselves in the category of ‘Former Yugoslavia, not further defined’

2.3 Population data

Population figures by five-year age groups were estimated using two sources. First, the Victorian resident population figures by country of birth of individuals produced by the 1996 and 2001 Australian Census. Second, the immigration data to Victoria by country of birth produced by the Department of Immigration and Multicultural and Indigenous Affairs (DIMIA). Population pyramids of Victorian residents (2001) born in Australia and in refugee-source countries are shown in Appendix 1.
2.4 Calculation of standardised admission rates

Admission rates were age-standardised (direct method)\(^\text{23}\). For each of the six time periods of interest (i.e. 1998-99, 1999-2000, 2000-01, 2001-02, 2002-03 and 2003-04) the specific population of each of the refugee-source countries was estimated by adding the number of arrivals in Victoria from that country (by age category) to the number of individuals recorded at the previous census. For instance, the population of Afghanistan-born living in Victoria in 1998-99 was 2,586, that is, 1,874 (1996 Census) plus 712 (number of arrivals in Victoria between 1 July 1996 and 30 June 1999). Similarly, the number of Afghanistan-born living in Victoria in 2003-04 was 4,061, that is, 3,217 (2001 Census) plus 844 (number of arrivals in Victoria between 1 July 2001 and 30 June 2004). For some countries, the population decreased slightly at the 2001 Census compared with the estimated figures at the previous period of 1999-2000. The calculation of refugee-source countries’ population at each time period did not take into account factors such as interstate and overseas migration and mortality figures.

For the Australia-born population, the 1996 Census figures by age category were used for the 1998-99 and 1999-2000 periods whereas the 2001 Census data were used from the 2000-01 period onwards. The estimated resident population of Victoria by age category for each of the six time periods of interest was used as the standard population\(^\text{24}\).

The Victorian female population aged 10 to 54 years by country of birth was used to calculate standardised rates for obstetric admissions.

2.5 Assessing Refugee-source country-born / Australia-born differences

Standardised admission rates and rate ratios are used throughout the report to compare hospital admissions and outcomes between selected refugee-source countries and the Australia-born population. Standardised rates are used to measure the number of new events that occur per person per unit time\(^\text{23}\). For instance, the total hospital admission rate for Australia-born in 1998-99 was 358.52/1000 persons/year. In other words, 358.52 hospital admissions were recorded in Victoria among every 1000 Australia-born persons in 1998-99.

Rate ratios are used to compare admission rates of Victorian residents born in refugee-source countries with the admission rates of Victorian residents born in Australia. Rate ratio is defined as:

\[
\text{Rate ratio} = \frac{\text{Admission rate in refugee-source country-born}}{\text{Admission rate in Australia-born}}
\]

A rate ratio greater than 1.0 indicates that admissions were higher for refugee-source country-born than for Australia-born persons.

Findings are described in terms of trends of rates and rate ratios over time. In other words, even though the admission rates for both the refugee-source country-born and the Australia-born may have for instance increased over time, when compared to each other (using rate ratios), admission rates for the refugee-source country-born may have been either lower, similar or higher than the Australia-born rates. Conservative parameters were applied when comparing rate ratios. For instance, when rate ratios confidence intervals of refugee-source country-born intersected those of the Australia-born population, rate ratios were defined as similar.

A random sample of 100,000 Australia-born admissions was taken for each time period and compared with the total number of admissions from the selected refugee-source countries. Trends of admission rates for the Australia-born population are presented in Appendix 2.
2.6 Calculation of confidence intervals

Confidence levels of 95% are used to assess and report the precision of admission rates and rate ratios. Confidence intervals for age-adjusted rates were calculated with the method based on the gamma distribution. This method has been recommended for Public Health assessments as valid confidence intervals are generated even when the number of cases is very small.

2.7 Trend analysis

Data from 1 July 1998 to 30 June 2004 were used in this analysis. The following indicators were assessed for individual refugee-source countries and compared with the Australia-born average over time:

2.7.1 Total hospital admissions

A trend analysis of the rates and rate ratios of total number of hospital admissions in Victoria over the six-year period was undertaken for each refugee-source country.

2.7.2 Admission type

The type of admission relating to the episode of care included:
- Elective (or planned) admission,
- Emergency admission, and
- Obstetric admission (maternity/birth episode).

2.7.3 Diagnosis related group (DRG) type

DRG type is derived from the Victorian adjusted AR-DRG V4.2 (Australian Revised Diagnosis Related Groups Version 4.2). Two DRG types were included in this analysis:
- Medical DRG admissions, and
- Surgical DRG admissions.

2.7.4 Separation mode

Three types of hospital separation were included in the present analysis:
- Separation to private residence/accommodation,
- Left against medical advice (discharge at own risk), and
- Death.

2.7.5 Length of stay

Trend analysis of length of stay was also included. The length of stay is calculated summing the total bed days of the patient relating to the episode of care.

2.7.6 Ambulatory care sensitive conditions (ACSCs)

The classification of ACSCs used in the Victorian Ambulatory Care Sensitive Conditions Study, which draws from the objectives of primary health care, is used here. According to this classification, there are three categories of ACSCs:

- Acute ACSCs (reducing morbidity and pain through timely and appropriate treatment): This category includes acute disease for which hospitalisation is avoidable, for example,
dehydration/gastroenteritis, kidney infection, perforated ulcer, cellulitis, pelvic inflammatory disease, ear, nose and throat infections (ENT) and dental conditions. In this category, the conditions may not be preventable but theoretically do not result in hospitalisation if adequate and timely primary care is received.

- Chronic ACSCs (reducing the effect of chronic disease and prolonging life): This category includes selected chronic diseases for which hospitalisation is avoidable, for example, diabetes, asthma, angina, hypertension, congestive heart failure, chronic obstructive pulmonary disease (COPD). In this category, the conditions may be preventable through behaviour modification and lifestyle change, but they can also be managed effectively through primary care to prevent deterioration and hospitalisation.

- Vaccine-preventable ACSCs (reducing the incidence of preventable diseases): This includes hospitalisation for influenza, bacterial pneumonia, tetanus, measles, mumps, rubella, pertussis and polio—conditions for which vaccination is available. In this category, the actual conditions are deemed to be preventable, rather than the hospitalisation. There is, however, a misclassification bias with respect to vaccine-preventable ACSCs in the context of this study. Admissions due to vaccine-preventable ACSCs cannot be assessed among children born in Australia to refugee families because they are classified as Australia-born.

2.7.7 Admissions for specific diagnosis categories

For the purpose of the present report, trend analyses of two specific diagnosis categories were included. These are:

- Infectious and parasitic diseases, which include the following ICD-10-AM blocks and codes: Intestinal infectious diseases (A00-A09), tuberculosis (A15-A19), certain zoonotic bacterial diseases (A20-A28), other bacterial diseases (A30-A49), infections with a predominantly sexual mode of transmission (A50-A64), other spirochaetal diseases (A65-A69), other diseases caused by Chlamydiae (A70-A74), rickettsioses (A75-A79), viral infections of the central nervous system (A80-A89), arthropod-borne viral fevers and viral haemorrhagic fevers (A90-A99), viral infections characterised by skin and mucous membrane lesions (B00-B09), viral hepatitis (B15-B19), human immunodeficiency virus (HIV) disease (B20-B24), other viral diseases (B25-B34), mycoses (B35-B49), protozoal diseases (B50-B64), helminthiases (B65-B83), pediculosis, acariasis and other infestations (B85-B89), sequelae of infectious and parasitic diseases (B90-B94), bacterial, viral and other infectious agents (B95-B97), and other infectious diseases (B99).

- Mental and behavioural disorders, which comprise: Organic, including symptomatic, mental disorders (F00-F09), mental and behavioural disorders due to psychoactive substance use (F10-F19), schizophrenia, schizotypal and delusional disorders (F20-F29), mood (affective) disorders (F30-F39), neurotic, stress-related and somatoform disorders (F40-F48), behavioural syndromes associated with physiological disturbances and physical factors (F50-F59), disorders of adult personality and behaviour (F60-F69), mental retardation (F70-F79), disorders of psychological development (F80-F89), behavioural and emotional disorders with onset usually occurring in childhood and adolescence (F90-F98), and unspecified mental disorders (F99).

These two diagnosis categories were included in order to assess the validity of the ‘sick refugee’ paradigm in the context of hospital use. The ‘sick refugee’ paradigm has commonly influenced the conduct of refugee health research worldwide.

2.7.8 Top ten Australian revised diagnosis related groups (AR-DRG)

A comparison of the top ten Australian Revised Diagnosis Related Groups (AR-DRG) between individual refugee-source countries and the Australia-born population for the period 2003-04 is also presented.
3. Outcomes by refugee-source country

3.1 Afghanistan

War and civil unrest have characterised Afghanistan’s recent history. After the 1979 Soviet Union’s invasion of Afghanistan, which ended ten years later, Australia accepted a small number of Afghan refugees\(^{19}\). By 1996 there were 5,824 Afghanistan-born people in Australia (1,874 of them in Victoria)\(^{21}\), the majority of whom had arrived as refugees. In 1996, the Taliban took control of Kabul and established a hardline Islamic regime, forcing many Afghans to seek refuge in other countries. In 2000-01, a number of Afghan asylum seekers arrived in Australia by boat. They were sent to immigration detention in Australia, Nauru and Papua New Guinea. Some have been given temporary refugee status and are living in the Australian community. The 2001 census reported 11,296 Afghanistan-born people living in Australia; 3,244 were in Victoria\(^{22}\).

Between 1996 and 2005, 2,914 Afghanistan-born persons arrived in Victoria\(^ {20}\). Of these, 82.5% entered under the humanitarian program, and 17.0% under the family migration stream (Figure 1). Those arriving under the family stream were also likely to have had refugee-like experiences.

**Figure 1: Afghanistan-born Arrivals in Victoria by Migration Category, 1996 to 2005**

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humanitarian</td>
<td>2405</td>
</tr>
<tr>
<td>Family</td>
<td>496</td>
</tr>
<tr>
<td>Skills</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>12</td>
</tr>
</tbody>
</table>

3.1.1 Total hospital admissions

The total number of hospital admissions in Victoria (all Victorians) increased by 26% over the six-year period, from 1,062,454 in 1998-99 to 1,339,500 in 2003-04. During this period, the total admission rate for Australia-born persons increased from 358.52 per 1000 persons [356.27 – 360.78] in 1998-99 to 444.80 per 1000 persons [442.01 – 447.61] in 2003-04.
There were 5,978 hospital admissions in Victoria for Afghanistan-born persons between 1998-99 and 2003-04. Overall, the rate of total hospital admissions for Afghanistan-born declined from 665.29 per 1000 persons [591.73 – 746.10] in 1998-99 to 448.23 per 1000 persons [409.51 – 490.08] in 2000-01, increasing afterwards to 633.02 per 1000 persons [591.03 – 677.70] in 2003-04 (Figure 2).

Afghanistan-born admission rates were compared with Australia-born rates over the six-year period. A rate ratio greater than 1.0 indicates that admission was higher for Afghanistan-born than for Australia-born persons. Consistently higher admission rate ratios were observed for Afghanistan-born persons between 1998-99 and 2003-04 (Figure 3). Overall, the admission rate ratios showed a decline, from 1.86 [1.71 – 2.01] in 1998-99 to 1.42 [1.35 – 1.50] in 2003-04.

3.1.2 Admission type

Elective admission rates amongst Australia-born increased from 245.55 per 1000 persons [243.66 – 247.45] in 1998-99 to 312.06 per 1000 persons [309.70 – 314.44] in 2003-04. The rate of elective admissions for Afghanistan-born declined from 557.87 per 1000 persons [487.35 – 636.08] in 1998-99 to 336.25 per 1000 persons [301.05 – 374.77] in 2000-01, increasing afterwards to 477.43 per 1000 persons [439.38 – 518.32] in 2003-04. Compared with Australia-born, higher elective admission rate ratios were observed for Afghanistan-born persons between 1998-99 and 2003-04 (Figure 4).
elective admission rate ratios showed a significant decline, from 2.27 [2.05 – 2.52] in 1998-99 to 1.29 [1.18 – 1.40] in 2000-01, increasing slightly afterwards. The pattern of elective admission rate ratios (Figure 4) was similar to the total admission rate ratios (Figure 3) indicating that hospital admissions among Afghanistan-born were mostly elective.

Figure 4: Elective Admission Rate Ratios
Afghanistan-born (Australia-born = 1), 1998-99 to 2003-04

Emergency admission rates amongst Australia-born increased over time from 80.14 per 1000 persons [79.09 – 81.21] in 1998-99 to 100.89 per 1000 persons [99.57 – 102.22] in 2003-04. The rate of emergency admissions for Afghanistan-born also increased from 78.71 per 1000 persons [60.31 – 103.11] in 1998-99 to 118.87 per 1000 persons [102.52 – 137.79] in 2003-04. Emergency admission rate ratios amongst Afghanistan-born were similar to Australia-born, moving slightly above Australia-born averages over time (Figure 5). The lowest rate ratio was 0.88 [0.75 – 1.03] in 1999-2000 and the highest was 1.22 [1.08 – 1.37] in 2001-02.

Figure 5: Emergency Admission Rate Ratios
Afghanistan-born (Australia-born = 1), 1998-99 to 2003-04

3.1.3 Diagnosis related group (DRG) type

Medical and surgical DRG types were analysed. Rates of medical DRG admission for Australia-born increased from 158.85 per 1000 persons [157.37 – 160.34] in 1998-99 to 270.27 per 1000 persons [268.09 – 272.46] in 2003-04. Amongst Afghanistan-born, medical admission rates decreased from 562.97 per 1000 persons [492.52 – 641.05] in 1998-99 to 348.15 per 1000 persons [312.53 – 387.08] in 2000-01, increasing subsequently to 483.12 per 1000 persons [444.82 – 524.26] in 2003-04. Medical admission rate ratios were higher among Afghanistan-born, moving towards Australia-born averages over time (Figure 7). The lowest rate ratio was 1.57 [1.44 – 1.70] recorded in 2000-01; the highest rate ratio was recorded in 1998-99 (3.54 [3.21 – 3.91]).

Rates of surgical DRG admission amongst Australia-born doubled over time from 53.07 per 1000 persons [52.21 – 53.93] in 1998-99 to 114.28 per 1000 persons [112.87 – 115.71] in 2003-04. Contrary to medical admissions, Afghanistan-born surgical DRG admission rates increased over time, from 59.27 per 1000 persons [43.69 – 80.91] in 1998-99 to 94.95 per 1000 persons [81.30 – 111.05] in 2003-04. Compared with Australian-born, surgical DRG admission rate ratios were lower except for the 1998-99 period (similar) (Figure 8). The lowest rate ratio was 0.63 [0.53 – 0.74] in 1999-2000. The pattern of medical admissions was similar to both, the total admission rate ratios (Figure 3) and the elective admission rate ratios (Figure 4), indicating that hospital admissions among Afghanistan-born persons were mostly elective/medical admissions rather than emergency/surgical admissions.
3.1.4 Separation mode

Consistently higher rate ratios of separation to private residence/accommodation were observed for Afghanistan-born between 1998-99 and 2003-04 (Figure 9) compared with Australia-born. The lowest rate ratio was 1.27 [1.19 – 1.36] in 2000-01 and the highest was 1.98 [1.82 – 2.15] in 1998-99. This pattern of separation was similar to the total hospital admissions (Figure 3), indicating that most hospital admissions for Afghanistan-born were discharged to private residence/accommodation.

The rate of discharge at own risk (i.e. left against medical advice) for Australia-born increased slightly from 0.89 per 1000 persons [0.78 – 1.01] in 1998-99 to 1.07 per 1000 persons [0.94 – 1.22] in 2003-04. Amongst Afghanistan-born, discharge at own risk rates increased from zero in 1998-99 to 1.42 per 1000 persons [0.47 – 5.87] in 2003-04. When compared with the Australia-born, rate ratios of discharge at own risk were similar among Afghanistan-born except for the year 1998-99 (lower) (Figure 10). The rate of hospital deaths among Afghanistan-born increased from zero in 1998-99 to 6.81 per 1000 persons [2.69 – 14.56] in 2003-04 (hospital death rates amongst Australia-born reported a very small increase from 4.14 per 1000 persons [3.90 – 4.40] in 1998-99 to 4.40 per 1000 persons [4.11 – 4.70] in 2003-04). Hospital death rate ratios were similar than Australia-born except for the years 1998-99 and 2000-01 (lower) (Figure 11). There was an overall increase of both left against medical advice rate ratios (from zero in 1998-99 to 1.32 [0.59 – 2.97] in 2003-04) and death rate ratios (from zero in 1998-99 to 1.55 [0.77 – 3.11] in 2003-04).
3.1.5 Length of stay

The rate of bed days for Australia-born increased from 1340.93 days per 1000 persons [1336.53 – 1345.33] in 1998-99 to 1493.21 per 1000 persons [1488.03 – 1498.40] in 2003-04. Amongst Afghanistan-born, bed days rates increased from 1045.25 days per 1000 persons [958.96 – 1138.17] in 1998-99 to 1297.52 days per 1000 persons [1237.74 – 1359.93] in 2003-04. Compared with Australia-born, length of stay rate ratios were lower among Afghanistan-born except for the years 1999-2000 (similar) and 2001-02 (higher) (Figure 12). The lowest rate ratio was 0.63 [0.60 – 0.66] in 2000-01.
### 3.1.6 Ambulatory care sensitive conditions (ACSCs) admissions

**Total ACSCs admissions**
Rates of total ACSCs admission increased for Australia-born from 31.95 per 1000 persons [31.27 – 32.63] in 1998-99 to 43.24 per 1000 persons [42.36 – 44.13] in 2003-04. Over the six-year period, total ACSCs admission rates increased for Afghanistan-born persons (from 27.26 per 1000 persons [14.34 – 48.06] to 41.58 per 1000 persons [30.56 – 55.72] respectively). Compared with Australia-born, the rate ratios for Afghanistan-born were similar overall, except for the year 2001-02 (higher). The lowest rate ratio was 0.69 [0.50 – 0.96] in 1999-2000, and the highest was 1.38 [1.10 – 1.74] in 2001-02 (Figure 13).

### Acute, chronic and vaccine preventable ACSCs admissions
except for the 1999-2000 and 2003-04 periods (lower) (Figure 14). The lowest rate ratio was 0.43 [0.30 – 0.61] recorded in 2003-04 and the highest was 1.17 [0.83 – 1.65] recorded in 2001-02.

The admission rates for chronic ACSCs amongst Australia-born increased from 17.93 per 1000 persons [17.41 – 18.45] in 1998-99 to 26.24 per 1000 persons [25.54 – 26.95] in 2003-04. Similarly, chronic ACSCs rates for Afghanistan-born increased from 20.05 per 1000 persons [9.36 – 38.73] in 1998-99 to 31.35 per 1000 persons [21.22 – 44.87] in 2003-04. Chronic ACSCs admission rate ratios were similar to Australian-born averages, except for the period 2001-02 (higher) (Figure 15).

Vaccine-preventable ACSCs admission rates for Australia-born declined over time from 1.42 per 1000 persons [1.28 – 1.57] in 1998-99 to 0.83 per 1000 persons [0.71 – 0.96] in 2003-04. In contrast, admission rates due to vaccine-preventable ACSCs amongst Afghanistan-born rose from zero in 1998-99 to 3.10 per 1000 persons [0.91 – 8.78] in 2003-04. Compared with Australia-born, vaccine-preventable admission rate ratios were similar among Afghanistan-born except for the periods 1998-99 (lower) and 2003-04 (higher) (Figure 16). There was an overall increase in rate ratios for Afghanistan-born, from zero in 1998-99 to 3.75 [1.76 – 7.97] in 2003-04 (Figure 16).
3.1.7 Admissions for specific diagnosis categories

Infectious and parasitic diseases
The admission rate for infectious and parasitic diseases remained steady for Australia-born between 1998-99 (19.87 per 1000 persons [19.35 – 20.40]) and 2003-04 (20.28 per 1000 persons [19.69 – 20.89]). Amongst Afghanistan-born persons, infectious diseases admission rates increased from 20.44 per 1000 persons [9.79 – 38.95] in 1998-99 to 25.79 per 1000 persons [19.01 – 35.19] in 2003-04. Compared with the Australia-born average, Afghanistan-born admission rate ratios for infectious and parasitic diseases were similar except for the years 2001-02 and 2003-04 (higher) (Figure 17). The lowest rate ratio was 0.73 [0.52 – 1.01] in 2000-01 and the highest was 1.39 [1.05 – 1.83] in 2001-02.

Mental and behavioural disorders
Amongst Australia-born, mental and behavioural disorders admission rates increased slightly from 32.12 per 1000 persons [31.45 – 32.81] in 1998-99 to 34.24 per 1000 persons [33.47 – 35.02] in 2003-04. The increase was higher amongst Afghanistan-born over the six-year period, from 9.38 per 1000 persons [5.49 – 20.15] in 1998-99 to 16.45 per 1000 persons [12.27 – 23.06] in 2003-04. Admission rate ratios for these conditions were consistently lower amongst Afghanistan-born compared with Australia-born averages (Figure 18). Rate ratios ranged between 0.23 [0.14 – 0.36] in 2000-01 and 0.60 [0.4 – 0.82] in 2001-02.
3.1.8 Top 10 Australian revised diagnosis related groups (AR-DRG)

Table 2 compares the top 10 AR-DRG between Afghanistan-born and Australia-born persons in 2003-04. The top 10 diagnoses accounted for 47.9% of the total hospital admissions for Afghanistan-born compared with 31.8% for Australia-born. Although renal dialysis was the most common diagnosis for both groups, it represented 21.8% of the total number of admission for Afghanistan-born compared with 8.9% for Australia-born. Pregnancy- and birth-related conditions accounted for 10% of the total number of hospital admissions amongst Afghanistan-born compared with 1.8% amongst Australia-born persons.

Table 2: Top 10 AR-DRG for Afghanistan-born and Australia-born, 2003-04

<table>
<thead>
<tr>
<th>Afghanistan-born</th>
<th>AR-DRG</th>
<th>%*</th>
<th></th>
<th></th>
<th>Australia-born</th>
<th>AR-DRG</th>
<th>%*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Renal dialysis</td>
<td>21.8</td>
<td>Renal dialysis</td>
<td>8.9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Other gastroscopy, non-major digestive disease, sameday</td>
<td>6.2</td>
<td>Chemotherapy</td>
<td>4.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Vaginal delivery no complicating diagnosis</td>
<td>5.7</td>
<td>Other colonoscopy, sameday</td>
<td>3.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Chemotherapy</td>
<td>3.6</td>
<td>Neonate &gt;2499 g without significant operating room procedure with other problem</td>
<td>3.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Abortion with dilation and curettage, aspiration curettage/Hysterotomy</td>
<td>2.3</td>
<td>Other gastroscopy, non-major digestive disease, sameday</td>
<td>2.3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Schizophrenia disorder without mental health legal status</td>
<td>2.0</td>
<td>Mental health treatment, sameday, without electro-convulsive therapy</td>
<td>2.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Other antenatal with moderate/no complicating diagnosis</td>
<td>1.9</td>
<td>Dental extractions and restorations</td>
<td>2.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Other colonoscopy, sameday</td>
<td>1.6</td>
<td>Other factors influencing health status &lt;80</td>
<td>1.9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Urinary stones and obstruction</td>
<td>1.5</td>
<td>Vaginal delivery no complicating diagnosis</td>
<td>1.8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Chest pain</td>
<td>1.3</td>
<td>Major lens procedure</td>
<td>1.5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* % of total hospital admissions
### 3.1.9 Key findings – Afghanistan-born

- Total hospital admission rates decreased between 1998-99 and 2000-01, increasing afterwards (Figure 2).

<table>
<thead>
<tr>
<th>Lower than Australia-born</th>
<th>Similar to Australia-born</th>
<th>Higher than Australia-born</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgical DRG admission rate ratios (Fig 8).</td>
<td>Emergency admission rate ratios (moving slightly above the Australia-born average over time) (Fig 5).</td>
<td>Total hospital admission rate ratios (moving towards Australia-born averages over time) (Fig 3).</td>
</tr>
<tr>
<td>Length of stay rate ratios (Fig 12).</td>
<td>Discharge at own risk rate ratios (moving above Australia-born averages over time) (Fig 10).</td>
<td>Elective admission rate ratios (moving towards Australia-born averages over time) (Fig 4).</td>
</tr>
<tr>
<td>Mental and behavioural disorders admission rate ratios were consistently lower (Fig 18).</td>
<td>Hospital death rate ratios (moving above the Australia-born average over time) (Fig 11).</td>
<td>Obstetric admission rate ratios (Fig 6).</td>
</tr>
<tr>
<td></td>
<td>Total, acute, chronic and vaccine-preventable ACSCs admission rate ratios (Figs 13, 14, 15 and 16).</td>
<td>Medical DRG admission rate ratios (moving towards the Australia-born average over time) (Fig 7).</td>
</tr>
<tr>
<td></td>
<td>Infectious/parasitic diseases admission rate ratios (Fig 17).</td>
<td>Separation to private residence/accommodation rate ratios (moving closer to Australia-born average over time) (Fig 9).</td>
</tr>
<tr>
<td></td>
<td>Renal dialysis was the top AR-DRG in 2003-04 (Table 2).</td>
<td>Pregnancy and birth-related conditions accounted for a higher proportion of hospital admissions in 2003-04 (Table 2).</td>
</tr>
</tbody>
</table>
3.2 Bosnia-Herzegovina

Bosnia-Herzegovina was a republic of the Yugoslav Federation until this disintegrated in 1992. The civil war that broke out prompted many Bosnians to seek refuge around the world; several thousands entered Australia under the humanitarian program. Bosnians were not enumerated distinctly in Australian census figures until 1996\(^\text{19}\). In that year, there were 13,610 persons in Australia who described themselves as Bosnians, 4,760 of them were living in Victoria\(^\text{21}\). By 2001, the number of Bosnians living in Australia increased to 23,848 (8,556 were living in Victoria)\(^\text{22}\).

Between July 1996 and June 2005, 2,107 persons who identified themselves as Bosnians arrived in Victoria\(^\text{20}\). Ninety one percent of these came under the humanitarian program and 8% under the family stream (Figure 19).

\[\text{Figure 19: Bosnia-Herzegovina-born Arrivals in Victoria by Migration Category, 1996 to 2005}\]

![Figure 19: Bosnia-Herzegovina-born Arrivals in Victoria by Migration Category, 1996 to 2005](image)

3.2.1 Total hospital admissions

A total of 14,027 hospital admissions in Victoria were recorded for Bosnia-Herzegovina-born persons between 1998-99 and 2003-04. Figure 20 shows the total hospital admission rate for Bosnia-Herzegovina-born and Australia-born persons for the six-year period. Overall, the rate of total admissions for Bosnia-Herzegovina-born increased from 191.54 per 1000 persons [178.18 – 205.85] in 1998-99 to 422.61 per 1000 persons [407.09 – 438.62] in 2003-04.
Compared with Australia-born averages, Bosnia-Herzegovina-born recorded lower admission rate ratios over the study period (Figure 21). Rate ratios among Bosnia-Herzegovina-born persons increased from 0.53 [0.50 – 0.57] in 1998-99 to 0.95 [0.92 – 0.98] in 2003-04, indicating that, total admission rates in this population group moved towards Australia-born averages over time.

3.2.2 Admission type

The rate of elective admission for Bosnia-Herzegovina-born increased from 126.00 per 1000 persons [115.06 – 137.89] in 1998-99 to 297.82 per 1000 persons [284.92 – 311.23] in 2003-04. When compared with Australia-born, Bosnia-Herzegovina-born reported lower elective admission rate ratios over the study period. However, the rate ratios moved towards Australia-born averages, increasing from 0.51 [0.48 – 0.55] in 1998-99 to 0.95 [0.92 – 0.99] in 2003-04 (Figure 22). Similar patterns were found between total and elective admission rate ratios (Figure 21 and Figure 22) indicating that hospital admissions for Bosnia-Herzegovina-born persons were mostly elective.
The rate of emergency admissions for Bosnia-Herzegovina-born persons doubled between 1998-99 (52.68 per 1000 persons [45.60 – 60.75]) and 2003-04 (104.84 per 1000 persons [96.89 – 113.33]). Overall, emergency admission rate ratios were similar to the Australia-born. Rate ratios were initially lower (1998-99 and 1999-2000 periods), moving towards Australia-born averages over time (Figure 23).

The rate of obstetric admissions amongst Bosnia-Herzegovina-born increased from 36.69 per 1000 women aged 10-54 years [29.76 – 44.94] in 1998-99 to 50.20 per 1000 women [42.79 – 58.56] in 2003-04. Compared with the Australia-born averages, obstetric admission rate ratios were similar among Bosnia-Herzegovina-born women, except for the year 1998-99 (lower) (Figure 24). Rate ratios ranged from 0.66 [0.54 – 0.81] in 1998-99 to 1.01 [0.86 – 1.18] in 2002-03.
3.2.3 DRG type

Medical admission rates for Bosnia-Herzegovina-born persons increased from 101.84 per 1000 persons [91.76 – 112.92] in 1998-99 to 254.43 per 1000 persons [242.26 – 267.10] in 2003-04. Rate ratios of medical admission (Figure 25) showed a similar pattern (lower than Australia-born but moving towards Australia-born averages over time) than total (Figure 21) and elective admission rate ratios (Figure 22) for Bosnia-Herzegovina-born persons over the study period.

Surgical admission rates amongst Bosnia-Herzegovina-born increased from 45.63 per 1000 persons [39.78 – 52.36] in 1998-99 to 97.69 per 1000 persons [90.40 – 105.48] in 2003-04. Compared with Australia-born, surgical admission rate ratios remained lower over time (Figure 26).
3.2.4 Separation mode

Compared with Australia-born, lower rate ratios of separation to private residence or accommodation were observed for Bosnia-Herzegovina-born except for the years 2002-03 and 2003-04 (similar). Rate ratios moved towards Australia-born averages over time (Figure 27). There were no consistent patterns in the rate of discharge at own risk for Bosnia-Herzegovina-born. The lowest rate was 0.17 per 1000 persons [0.00 – 1.80] in 1998-99 and the highest was 1.25 per 1000 persons [0.57 – 2.52] in 2002-03. When compared with Australia-born averages, left against medical advice rate ratios were similar amongst Bosnia-Herzegovina-born except for the 2001-02 period (lower) (Figure 28). Rates of hospital death ranged from 1.82 per 1000 persons [0.62 – 4.31] in 1999-2000 to 4.31 per 1000 persons [2.76 – 6.46] in 2003-04. Hospital death rate ratios were similar than the Australia-born average except for the 2001-02 and 2002-03 periods (lower) (Figure 29).
3.2.5 Length of stay

The rate of bed days for Bosnia-Herzegovina-born doubled during the study period, from 689.52 days per 1000 persons [662.62 – 717.40] in 1998-99 to 1401.99 days per 1000 persons [1372.26 – 1432.24] in 2003-04. Length of stay rate ratios were lower among Bosnia-Herzegovina-born but moved towards Australia-born averages over time (Figure 30).
3.2.6 ACSCs admissions

**Total ACSCs admissions**
Total ACSCs admission rates for Bosnia-Herzegovina-born increased from 13.27 per 1000 persons [9.96 – 17.60] in 1998-99 to 34.37 per 1000 persons [29.68 – 39.62] in 2003-04. Compared with Australia-born, rate ratios were lower among Bosnia-Herzegovina-born, moving towards Australia-born averages over time (Figure 31).

**Acute, chronic and vaccine-preventable ACSCs admissions**
Admission rates for acute ACSCs increased amongst Bosnia-Herzegovina-born from 4.90 per 1000 persons [3.28 – 7.49] in 1998-99 to 12.61 per 1000 persons [10.03 – 15.72] in 2003-04. Compared with Australia-born, acute ACSCs admission rate ratios were lower, moving towards Australia-born averages over time (Figure 32). Chronic ACSCs admission rates also increased from 7.57 per 1000 persons [4.87 – 11.42] in 1998-99 to 22.20 per 1000 persons [18.33 – 26.67] in 2003-04. Chronic ACSCs rate ratios among Bosnia-Herzegovina-born were either lower than (1998-99, 1999-2000 and 2001-02) or similar to (2000-01, 2002-03 and 2003-04) the Australia-born average (Figure 33). No consistent pattern was found for vaccine-preventable ACSCs admission rates amongst Bosnia-Herzegovina-born. The lowest rate was recorded in 2001-02 (0.39 per 1000 persons [0.06 – 1.39]) and the highest rate in 1999-2000 (1.62
per 1000 persons [0.57 – 3.89]). Compared with Australia-born, vaccine-preventable ACSCs admission rate ratios were similar over the six-year period (Figure 34).

**Figure 32: Acute ACSCs Admission Rate Ratios
Bosnia-Herzegovina-born (Australia-born = 1), 1998-99 to 2003-04**

**Figure 33: Chronic ACSCs Admission Rate Ratios
Bosnia-Herzegovina-born (Australia-born = 1), 1998-99 to 2003-04**

**Figure 34: Vaccine-preventable ACSCs Admission Rate Ratios
Bosnia-Herzegovina-born (Australia-born = 1), 1998-99 to 2003-04**
3.2.7 Admissions for specific diagnosis categories

Infectious and parasitic diseases
The admission rate for infectious and parasitic diseases amongst Bosnia-Herzegovina-born decreased between 1998-99 (17.34 per 1000 persons [13.25 – 22.50]) and 2001-02 (12.55 per 1000 persons [10.03 – 15.59]), increasing afterwards up to 22.43 per 1000 persons [19.01 – 26.37] in 2003-04. Infectious and parasitic diseases rate ratios were either lower than (1999-2000, 2000-01 and 2001-02) or similar to (1998-99, 2002-03 and 2003-04) the Australia-born average (Figure 35).

Mental and behavioural disorders
Admission rate for mental and behavioural disorders amongst Bosnia-Herzegovina-born increased over time, from 10.61 per 1000 persons [7.76 – 14.45] in 1998-99 to 25.24 per 1000 persons [21.52 – 29.50] in 2003-04. Compared with Australia-born, admission rate ratios were lower but moved slightly towards Australia-born averages over the study period (Figure 36).
### 3.2.8 Top ten AR-DRGs

A comparison of the top 10 AR-DRGs between Bosnia-Herzegovina-born and Australia-born is shown in Table 3. The top 10 AR-DRGs accounted for 43.7% of the total hospital admissions for Bosnia-Herzegovina-born compared with 31.8% for Australia-born. Renal dialysis was the most common AR-DRG for both groups, but it represented 18.3% of total hospital admissions for Bosnia-Herzegovina-born compared with 8.9% for Australia-born. Diagnostic procedures for digestive disorders (i.e. gastroscopy, colonoscopy) accounted for 10.4% of total hospital admissions amongst Bosnia-Herzegovina-born compared with 5.8% amongst Australia-born.

#### Table 3: Top 10 AR-DRG for Bosnia-Herzegovina-born and Australia-born, 2003-04

<table>
<thead>
<tr>
<th>Bosnia-Herzegovina-born</th>
<th>%*</th>
<th>Australia-born</th>
<th>AR-DRG</th>
<th>%*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Renal dialysis</td>
<td>18.3</td>
<td>Renal dialysis</td>
<td>8.9</td>
<td></td>
</tr>
<tr>
<td>2 Other gastroscopy, non-major digestive disease, sameday</td>
<td>5.9</td>
<td>Chemotherapy</td>
<td>4.7</td>
<td></td>
</tr>
<tr>
<td>3 Chemotherapy</td>
<td>5.0</td>
<td>Other colonoscopy, sameday</td>
<td>3.5</td>
<td></td>
</tr>
<tr>
<td>4 Other colonoscopy, sameday</td>
<td>4.5</td>
<td>Neonate &gt;2499 g without significant operation room procedure with other problem</td>
<td>3.2</td>
<td></td>
</tr>
<tr>
<td>5 Abortion with dilation and curettage, aspiration curettage/hysterotomy</td>
<td>2.2</td>
<td>Other gastroscopy, non-major digestive disease, sameday</td>
<td>2.3</td>
<td></td>
</tr>
<tr>
<td>6 Vaginal delivery no complicating diagnosis</td>
<td>2.0</td>
<td>Mental health treatment, sameday, without electro-convulsive therapy</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>7 Mental health treatment, sameday, without electro-convulsive therapy</td>
<td>1.7</td>
<td>Dental extractions and restorations</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>8 Chest pain</td>
<td>1.5</td>
<td>Other factors influencing health status &lt;80</td>
<td>1.9</td>
<td></td>
</tr>
<tr>
<td>9 Diagnostic curettage or hysteroscopy</td>
<td>1.4</td>
<td>Vaginal delivery no complicating diagnosis</td>
<td>1.8</td>
<td></td>
</tr>
<tr>
<td>10 Other factors influencing health status &lt;80</td>
<td>1.2</td>
<td>Major lens procedure</td>
<td>1.5</td>
<td></td>
</tr>
</tbody>
</table>

* % of total hospital admissions
### 3.2.9 Key findings – Bosnia-Herzegovina-born

- Total hospital admission rates increased over time (Fig 20).
- Chronic ACSCs admission rate ratios were either lower than or similar to the Australia-born average (Fig 33).
- Infectious/parasitic diseases admission rate ratios were either lower than or similar to the Australia-born average over time (Fig 35).
- Most indicators among Bosnia-Herzegovina-born showed a trend towards Australia-born averages over time.

<table>
<thead>
<tr>
<th>Lower than Australia-born</th>
<th>Similar to Australia-born</th>
<th>Higher than Australia-born</th>
</tr>
</thead>
<tbody>
<tr>
<td>Both total and elective admission rate ratios (moving towards the Australia-born average over time) (Figs 21-22).</td>
<td>Emergency admission rate ratios (initially lower, moving towards Australia-born averages over time) (Fig 23).</td>
<td>Diagnostic procedures for digestive disorders accounted for a higher proportion of hospital admissions in 2003-04 (Table 3).</td>
</tr>
<tr>
<td>Medical DRG admission rate ratios (moving closer to Australia-born over time) (Fig 25).</td>
<td>Obstetric admission rate ratios (initially lower, moving towards Australia-born average over time) (Fig 24).</td>
<td></td>
</tr>
<tr>
<td>Surgical DRG admission rate ratios (Fig 26).</td>
<td>Discharge at own risk rate ratios (Fig 28).</td>
<td></td>
</tr>
<tr>
<td>Separation to private residence/accommodation rate ratios (moving towards Australia-born averages over time) (Fig 27).</td>
<td>Hospital deaths rate ratios (Fig 29).</td>
<td></td>
</tr>
<tr>
<td>Length of stay rate ratios (moving closer to Australia-born over time) (Fig 30).</td>
<td>Vaccine-preventable ACSCs admission rate ratios (Fig 34).</td>
<td></td>
</tr>
<tr>
<td>Total and acute ACSCs admission rate ratios (moving towards Australia-born averages over time) (Figs 31-32).</td>
<td>Renal dialysis was the top AR-DRG in 2003-04 (Table 3).</td>
<td></td>
</tr>
<tr>
<td>Mental/behavioural disorders admission rate ratios (moving closer to Australia-born averages over time) (Fig 36).</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3.3 Burma (Myanmar)

Burma (officially known as Myanmar since 1989) was a British colony from 1824 to 1948 when it gained independence. Between 1947 and 1972, about 6,000 Anglo-Burmese (the offspring of the British and their Burmese wives) arrived in Australia. By 1996 there were 10,140 Burma-born living in Australia, mostly in Western Australia. The 1996 census recorded 1,013 Burma-born living in Victoria. Between 1994 and 1997 about 1000 Burmese were admitted in Australia under the humanitarian program. The 2001 census reported 10,973 Burma-born people in Australia, 1,191 of them were living in Victoria.

Between July 1996 and June 2005, 426 Burma-born persons settled in Victoria. Seventy six percent of these came under the humanitarian program and 18% under the family stream (Figure 37).

![Figure 37: Burma (Myanmar)-born Arrivals in Victoria by Migration Category, 1996 to 2005](image)

3.3.1 Total hospital admissions

A total of 2,909 hospital admissions in Victoria were recorded for Burma-born persons between 1998-99 and 2003-04. Overall, the rate of total admissions for Burma-born increased from 195.02 per 1000 persons [171.80 – 223.28] in 1998-99 to 420.30 per 1000 persons [387.81 – 456.24] in 2003-04 (Figure 38).

---

An increasing number of humanitarian arrivals from Burma (Myanmar) is expected in 2006 (DIMIA, Australia to welcome 680 refugees in February, Media Release 8 February 2006).
Compared with Australia-born averages, Burma-born recorded mostly lower admission rate ratios, except for the years 2001-02 and 2003-04 (lower) (Figure 39). Rate ratios among Burma-born persons increased from 0.54 [0.49 – 0.61] in 1998-99 to 0.94 [0.88 – 1.02] in 2003-04, indicating that total admission rates amongst Burma-born moved towards Australia-born averages over time.

### 3.3.2 Admission type

The rate of elective admission amongst Burma-born almost tripled over the study period, increasing from 128.75 per 1000 persons [109.96 – 152.76] in 1998-99 to 330.88 per 1000 persons [302.82 – 362.36] in 2003-04. When compared with Australia-born, Burma-born reported either lower (1998-99, 1999-2000 and 2002-03) or similar (2000-01, 2001-02 and 2003-04) elective admission rate ratios (Figure 40). The elective admission rate ratios moved towards Australian-born averages over time. Similar patterns were found between total and elective admission rate ratios (Figure 39 and Figure 40) indicating that hospital admissions for Burma-born persons were mostly elective.
The rate of emergency admissions for Burma-born persons increased from 50.76 per 1000 persons [40.04 – 67.08] in 1998-99 to 73.39 per 1000 persons [58.71 – 92.11] in 2003-04. Emergency admission rate ratios were consistently lower than Australia-born averages over time (Figure 41).

The rate of obstetric admissions amongst Burma-born remained steady during the study period, from 49.39 per 1000 women aged 10-54 years [30.08 – 80.57] in 1998-99 to 51.58 per 1000 women [33.67 – 78.76] in 2003-04. Obstetric admission rate ratios for Burma-born women over time were similar to the Australia-born average (Figure 42). The lowest rate ratio was 0.89 [0.58 – 1.36] in 1998-99 and the highest was 1.24 [0.83 – 1.86] in 2001-02.
3.3.3 DRG type

Medical DRG admission rates for Burma-born increased from 72.86 per 1000 persons [58.14 – 93.19] in 1998-99 to 292.98 per 1000 persons [266.18 – 323.26] in 2003-04. Rate ratios of medical DRG admission (Figure 43) were mostly similar to the Australia-born, except for the 1998-99 and 1999-2000 periods (lower). Rate ratios moved towards Australia-born average over time. These rate ratios showed a similar pattern than total (Figure 39) and elective admission rate ratios (Figure 40) for Burma-born persons over the study period, indicating that most hospital admissions were medical/elective rather than surgical/emergency admissions.

Surgical DRG admission rates amongst Burma-born doubled over the study period, from 41.88 per 1000 persons [31.21 – 58.45] in 1998-99 to 80.37 per 1000 persons [66.04 – 98.52] in 2003-04. Compared with Australia-born, surgical DRG admission rate ratios were lower except for the 1998-99 period (similar) (Figure 44).
3.3.4 Separation mode

Compared with Australia-born, lower rate ratios of separation to private residence or accommodation were observed for Burma-born except for the 2001-02 and 2003-04 periods (similar). Rate ratios moved towards Australia-born averages over time (Figure 45).

There were no consistent patterns in the rate of discharge at own risk for Burma-born. Rates ranged from zero in 1999-2000, 2000-01 and 2001-02 to 1.01 per 1000 persons [0.03 – 11.8] in 1998-99. When compared with Australia-born averages, no clear patterns were observed for discharge at own risk rate ratios amongst Burma-born (Figure 46).
Rates of hospital death ranged from 3.53 per 1000 persons [1.30 – 13.90] in 2000-01 to 5.41 per 1000 persons [2.47 – 14.71] in 2001-02. Hospital death rate ratios were similar to the Australia-born average over the study period (Figure 47).

### 3.3.5 Length of stay

The rate of bed days for Burma-born increased between 1998-99 (724.44 days per 1000 persons [679.70 – 773.86] and 2002-03 (1246.41 days per 1000 persons [1185.70 – 1310.94]), decreasing in the 2003-04 period (946.26 per 1000 persons [891.95 – 1004.22]). Length of stay rate ratios were lower than Australia-born average over the six-year period (Figure 48).
3.3.6 ACSCs admissions

Total ACSCs admissions
Total ACSCs admission rates for Burma-born increased from 12.28 per 1000 persons [7.67 – 23.77] in 1998-99 to 37.11 per 1000 persons [27.64 – 51.49] in 2001-02, decreasing afterwards to 19.80 per 1000 persons [12.99 – 30.95] in 2003-04. Total ACSCs admission rate ratios were lower than Australia-born averages except for the year 2001-02 (similar) (Figure 49).

Acute, chronic and vaccine-preventable ACSCs admissions
Admission rates for acute ACSCs amongst Burma-born showed a similar pattern than total ACSCs rates, increasing from 2.98 per 1000 persons [0.97 – 13.59] in 1998-99 to 12.78 per 1000 persons [6.89 – 24.52] in 2001-02, decreasing afterwards to 5.42 per 1000 persons [2.48 – 13.38] in 2003-04. Compared with Australia-born, acute ACSCs admission rate ratios were lower amongst Burma-born except for the 2001-02 period (similar) (Figure 50). Chronic ACSCs admission rates also increased from 8.85 per 1000 persons [5.03 – 19.93] in 1998-99 to 20.08 per 1000 persons [13.81 – 31.53] in 2001-02, declining to 13.05 per 1000 persons [8.07 – 22.46] in 2003-04. Chronic ACSCs admission rate ratios were either lower than (1998-99, 2002-03 and 2003-04) or similar to (1999-2000, 2000-01 and 2001-02) the Australia-born average (Figure 51). There was no consistent pattern for vaccine-preventable ACSCs admission rates amongst Burma-born. The lowest rate was zero recorded in 1999-2000 and the
highest rate in 2001-02 (4.85 per 1000 persons [2.09 – 14.08]). Vaccine-preventable ACSCs admission rate ratios showed no clear patterns when compared with Australia-born averages (Figure 52).
3.3.7 Admissions for specific diagnosis categories

**Infectious and parasitic diseases**

There was no consistent pattern of admission rates for infectious and parasitic diseases amongst Burma-born. The lowest admission rate was recorded in 2000-01 (10.87 per 1000 persons [6.44 – 22.12]) and the highest rate in 2001-02 (24.00 per 1000 persons [14.27 – 39.69]). Infectious and parasitic diseases rate ratios were similar to the Australia-born average (Figure 53).

![Figure 53: Infectious/Parasitic Diseases Admission Rate Ratios Burma (Myanmar)-born (Australia-born = 1), 1998-99 to 2003-04](image)

**Mental and behavioural disorders**

Admission rate for mental and behavioural disorders amongst Burma-born remained fairly constant between 1998-99 (13.33 per 1000 persons [7.74 – 25.82]) and 2001-02 (12.10 per 1000 persons [7.27 – 22.55]), increasing to 26.24 per 1000 persons [17.23 – 40.24] in 2002-03. Compared with Australia-born, admission rate ratios were lower except for the year 2002-03 (similar) (Figure 54).

![Figure 54: Mental/Behavioural Disorders Admission Rate Ratios Burma (Myanmar)-born (Australia-born = 1), 1998-99 to 2003-04](image)

3.3.8 Top ten AR-DRGs

Table 4 compares the top 10 AR-DRGs between Burma-born and Australia-born in 2003-04. The top 10 AR-DRGs accounted for 57.1% of the total hospital admissions for Burma-born compared with 31.8% for Australia-born. Renal dialysis was the most common AR-DRG for both groups, but it represented 33.6% of total hospital admissions for Burma-born compared with 8.9% for Australia-born. Chemotherapy and diagnostic procedures for digestive disorders (i.e. gastroscopy, colonoscopy) showed similar proportions.
across the two groups. Diseases of the blood (i.e. red blood cell disorders and lymphoma/non-acute leukaemia) were in the top ten AR-DRGs amongst Burma-born, accounting for 4.2% of total hospital admissions, but did not figure in the top ten AR-DRGs amongst Australia-born.

**Table 4: Top 10 AR-DRGs for Burma-born and Australia-born, 2003-04**

<table>
<thead>
<tr>
<th>Burma-born AR-DRG</th>
<th>%*</th>
<th>Australia-born AR-DRG</th>
<th>%*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Renal dialysis</td>
<td>33.6</td>
<td>Renal dialysis</td>
<td>8.9</td>
</tr>
<tr>
<td>2 Chemotherapy</td>
<td>5.3</td>
<td>Other colonoscopy, sameday</td>
<td>4.7</td>
</tr>
<tr>
<td>3 Other gastroscopy, non-major digestive disease, sameday</td>
<td>2.5</td>
<td>Neonate &gt;2499 g without significant operation room procedure with other problem</td>
<td>3.2</td>
</tr>
<tr>
<td>4 Other colonoscopy, sameday</td>
<td>2.4</td>
<td>Other gastroscopy, non-major digestive disease, sameday</td>
<td>2.3</td>
</tr>
<tr>
<td>5 Non surgical spinal disorders, no complication and/or comorbidity</td>
<td>2.4</td>
<td>Mental health treatment, sameday, without electro-convulsive therapy</td>
<td>2.0</td>
</tr>
<tr>
<td>6 Red blood cell disorder no catastrophic/severe complication and/or comorbidity</td>
<td>2.4</td>
<td>Dental extractions and restorations</td>
<td>2.0</td>
</tr>
<tr>
<td>7 Other factors influencing health status age&lt;80</td>
<td>2.4</td>
<td>Other factors influencing health status &lt;80</td>
<td>1.9</td>
</tr>
<tr>
<td>8 Major lens procedures</td>
<td>2.2</td>
<td>Vaginal delivery no complicating diagnosis</td>
<td>1.8</td>
</tr>
<tr>
<td>9 Abortion with dilation and curettage, aspiration curettage/hysterotomy</td>
<td>2.1</td>
<td>Major lens procedure</td>
<td>1.5</td>
</tr>
<tr>
<td>10 Lymphoma and non-acute leukaemia, sameday</td>
<td>1.8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* % of total hospital admissions

### 3.3.9 Key findings – Burma (Myanmar)-born

- Rate of total hospital admissions increased over time (Fig 38).
- Elective admission rate ratios were either lower than or similar to the Australia-born (Fig 40).
- No clear pattern of discharge at own risk rate ratios when compared with Australia-born (Fig 46).
- Chronic ACSCs admission rate ratios were either lower than or similar to the Australia-born (Fig 51).
- No clear pattern of vaccine-preventable ACSCs admission rate ratios (Fig 52).

#### Lower than Australia-born

- Total admission rate ratios (moving closer to Australia-born average over time) (Fig 39).
- Consistently lower emergency admission rate ratios (Fig 41).
- Surgical DRG admission rate ratios (Fig 44).
- Separation to private residence/accommodation rate ratios (moving closer to Australia-born over time) (Fig 45).
- Length of stay rate ratios (Fig 48).
- Total and acute ACSCs admission rate ratios (Figs 49-50).
- Mental/behavioural disorders admission rate ratios (Fig 54).

#### Similar to Australia-born

- Obstetric admission rate ratios (Fig 42).
- Medical DRG admission rate ratios (initially lower moving closer to Australia-born averages over time) (Fig 43).
- Hospital death rate ratios (Fig 47).
- Infectious/parasitic diseases admission rate ratios (Fig 53).
- Renal dialysis was the top AR-DRG in 2003-04 (Table 4).
- Chemotherapy and diagnostic procedures for digestive disorders accounted for a similar proportion of hospital admissions in 2003-04 (Table 4).

#### Higher than Australia-born

- Blood disorders accounted for a higher proportion of hospital admissions in 2003-04 (Table 4).
3.4 Cambodia

The arrival of the communist Khmer Rouge regime to power in Cambodia in 1975 forced many Cambodians to leave the country. By 1979 about 750 Cambodia-born persons had been settled in Australia. Following the evidence of the genocide during the Khmer Rouge Pol Pot regime and the invasion of Vietnamese forces in 1979, Australia increased the number of Cambodians for resettlement. More than 20,000 Cambodians were accepted into Australia between 1980 and 1996, most of them arriving under the Humanitarian Program. By 1996 there were 21,549 Cambodia-born in Australia (8,265 of them in Victoria). The 2001 census reported 9,003 Cambodia-born people living in Victoria (a total of 22,979 across Australia).

In the late 1980s and early 1990s an increasing proportion of arrivals from Cambodia entered under the family migration stream, as many of those who had arrived earlier as refugees sponsored relatives living in Cambodia. Between 1996 and 2005, 1,564 Cambodia-born persons settled in Victoria. Of these, 94.4% arrived under the family stream, and only 2.4% entered under the humanitarian category (Figure 55). However, many of those arriving under the family stream were also likely to have had refugee-like experiences.

3.4.1 Total hospital admissions

There were 15,259 hospital admissions in Victoria for Cambodia-born persons from 1998-99 to 2003-04. Overall, the rate of total hospital admissions for Cambodia-born ranged from 302.96 per 1000 persons [288.82 – 317.71] in 2000-01 to 410.11 per 1000 persons [393.03 – 427.83] in 2003-04 (Figure 56).
Cambodia-born total admission rates were compared with Australia-born rates over the six-year period. Lower admission rate ratios were observed amongst Cambodia-born persons except for the 1998-99 and 2002-03 periods (similar) (Figure 57). The lowest admission rate ratio was 0.80 [0.77 – 0.84] in 2000-01.

3.4.2 Admission type

The rate of elective admissions for Cambodia-born decreased between 1998-99 (270.36 per 1000 persons [254.68 – 286.87]) and 2000-01 (210.60 per 1000 persons [198.74 – 223.08]), increasing subsequently to 305.17 per 1000 persons [290.27 – 320.73] in 2003-04. Similar elective admission rate ratios were found between Cambodia-born and Australia-born except for the years 1998-99 (slightly higher) and 2000-01 (lower) (Figure 58). The pattern of elective admission rate ratios (Figure 58) was similar to the total admission rate ratios (Figure 57) indicating that hospital admissions among Cambodia-born were mostly elective.
The rate of emergency admissions for Cambodia-born ranged from 59.46 per 1000 persons [52.99 – 66.59] in 2000-01 to 76.57 per 1000 persons [69.12 – 84.69] in 2003-04. Emergency admission rate ratios amongst Cambodia-born were consistently lower than the Australia-born over the study period (Figure 59).

The rate of obstetric admissions amongst Cambodia-born increased from 62.46 per 1000 women aged 10-54 years [55.37 – 70.40] in 1998-99 to 78.96 per 1000 women [70.38 – 88.44] in 2000-01, declining subsequently to 65.33 per 1000 women [58.15 – 73.25] in 2003-04. Compared with the Australia-born averages, obstetric admission rate ratios were higher amongst Cambodia-born except for the 1998-99 period (similar) (Figure 60). Rate ratios ranged from 1.12 [1.00 – 1.27] in 1998-99 to 1.70 [1.52 – 1.90] in 2000-01.
3.4.3 DRG type

Medical DRG admission rates amongst Cambodia-born decreased from 269.14 per 1000 persons [253.39 – 285.72] in 1998-99 to 220.47 per 1000 persons [208.13 – 233.45] in 2000-01, increasing subsequently to 301.67 per 1000 persons [286.75 – 317.25] in 2003-04. Medical DRG admission rate ratios were higher amongst Cambodia-born except for the 2000-01 period (similar) (Figure 61).

Cambodia-born surgical admission rates increased over time, from 40.12 per 1000 persons [35.00 – 45.98] in 1998-99 to 55.90 per 1000 persons [49.93 – 62.51] in 2003-04. Compared with Australia-born, surgical admission rate ratios were consistently lower amongst Cambodia-born over the six-year period (Figure 62).
3.4.4 Separation mode

Compared with Australia-born, similar rate ratios of separation to private residence/accommodation were observed among Cambodia-born except for the 2000-01 and 2001-02 periods (lower) (Figure 63). This pattern of separation was similar to the total hospital admissions (Figure 57), indicating that most Cambodia-born persons admitted to hospitals were discharged to private residence/accommodation.

The rate of discharge at own risk (i.e. left against medical advice) for Cambodia-born remained fairly constant over time, ranging from 0.22 per 1000 persons [0.04 – 1.22] in 2000-01 to 0.58 per 1000 persons [0.18 – 1.96] in 1998-99. Compared with Australia-born averages, rate ratios of discharge at own risk were mostly similar amongst Cambodia-born, except for the 2000-01 and 2001-02 periods (lower) (Figure 64). The rate of hospital deaths for this population group decreased from 3.12 per 1000 persons [1.62 – 5.58] in 1998-99 to 1.96 per 1000 persons [0.81 – 3.97] in 2001-02, increasing afterwards to 4.51 per 1000 persons [2.63 – 7.22] in 2003-04. Hospital death rate ratios amongst Cambodia-born were similar to Australia-born except for the year 2001-02 (lower) (Figure 65).
3.4.5 Length of stay

The rate of bed days for Cambodia-born increased from 849.75 days per 1000 persons [822.65 – 877.63] in 1998-99 to 1044.62 days per 1000 persons [1016.12 – 1073.79] in 2003-04. Compared with Australia-born, length of stay rate ratios were consistently lower amongst Cambodia-born (Figure 66).
3.4.6 ACSCs admissions

Total ACSCs admissions
Between 1998-99 and 2003-04, total ACSCs admission rates increased for Cambodia-born persons (from 22.21 per 1000 persons [17.92 – 27.37] to 37.88 per 1000 persons [32.31 – 44.19] respectively). Compared with Australia-born, rate ratios amongst Cambodia-born were lower except for the 2003-04 period (similar) (Figure 67). Rate ratios moved towards Australia-born averages over time.

Acute, chronic and vaccine preventable ACSCs admissions
Admission rates for acute ACSCs amongst Cambodia-born decreased between 1998-99 (9.39 per 1000 persons [6.80 – 12.84]) and 2001-02 (6.69 per 1000 persons [4.87 – 9.14]), increasing subsequently to 11.26 per 1000 persons [8.48 – 14.76] in 2003-04. Admission rate ratios for acute ACSCs were consistently lower than the Australian-born averages (Figure 68). The admission rates for chronic ACSCs amongst Cambodia-born increased from 10.39 per 1000 persons [7.29 – 14.45] in 1998-99 to 24.15 per 1000 persons [19.54 – 29.55] in 2003-04. Chronic ACSCs admission rate ratios were lower than Australia-born averages except for the year 2003-04 (similar) (Figure 69). Chronic ACSCs admission rate ratios moved closer to Australia-born over time. Vaccine-preventable ACSCs admission rates for Cambodia-born declined between 1998-99 (4.19 per 1000 persons [2.70 – 6.49]) and 2000-01 (1.18 per 1000 persons [0.55 – 2.51]), increasing afterwards to 3.63 per 1000 persons [2.29 – 5.65] in 2003-04.
Vaccine-preventable admission rate ratios among Cambodia-born were either similar to (1999-2000, 2000-01 and 2001-02) or higher than (1998-99, 2002-03 and 2003-04) Australia-born averages (Figure 70).
3.4.7 Admissions for specific diagnosis categories

**Infectious and parasitic diseases**
The admission rate for infectious and parasitic diseases increased slightly amongst Cambodia-born persons from 18.81 per 1000 persons [15.16 – 23.26] in 1998-99 to 22.95 per 1000 persons [19.05 – 27.52] in 2003-04. Admission rate ratios for infectious and parasitic diseases among Cambodia-born were similar to the Australia-born averages (Figure 71).

![Figure 71: Infectious/Parasitic Diseases Admission Rate Ratios Cambodia-born (Australia-born = 1), 1998-99 to 2003-04](image)

**Mental and behavioural disorders**
Mental and behavioural disorders admission rates for Cambodia-born ranged between 10.69 per 1000 persons [8.33 – 13.67] in 2000-01 and 23.12 per 1000 persons [18.89- 28.07] in 2002-03. Admission rate ratios for these conditions were consistently lower amongst Cambodia-born compared with Australia-born averages (Figure 72).

![Figure 72: Mental/Behavioural Disorders Admission Rate Ratios Cambodia-born (Australia-born = 1), 1998-99 to 2003-04](image)

3.4.8 Top 10 AR-DRGs

A comparison of the top 10 AR-DRGs between Cambodia-born and Australia-born persons in 2003-04 is shown in Table 5. The top 10 diagnoses accounted for 58.3% of the total hospital admissions for Cambodia-born compared with 31.8% for Australia-born. Although renal dialysis was the most common
diagnosis for both groups, it represented about one third of the total number of admission for Cambodia-born compared with about one tenth for Australia-born. Pregnancy- and birth-related conditions accounted for 10.6% of the total number of hospital admissions amongst Cambodia-born compared with 1.8% amongst Australia-born persons.

Table 5: Top 10 AR-DRG for Cambodia-born and Australia-born, 2003-04

<table>
<thead>
<tr>
<th>Cambodia-born</th>
<th>%</th>
<th>Australia-born</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Renal dialysis</td>
<td>30.1</td>
<td>Renal dialysis</td>
<td>8.9</td>
</tr>
<tr>
<td>2 Vaginal delivery no complicating diagnosis</td>
<td>4.9</td>
<td>Chemotherapy</td>
<td>4.7</td>
</tr>
<tr>
<td>3 Other gastroscopy, non-major digestive disease, same day</td>
<td>4.8</td>
<td>Other colonoscopy, same day</td>
<td>3.5</td>
</tr>
<tr>
<td>4 Chemotherapy</td>
<td>4.3</td>
<td>Neonate &gt;2499 g without significant operation room procedure with other problem</td>
<td>3.2</td>
</tr>
<tr>
<td>5 Abortion with dilation &amp; curettage, aspiration curettage/ Hysterotomy</td>
<td>4.2</td>
<td>Other gastroscopy, non-major digestive disease, same day</td>
<td>2.3</td>
</tr>
<tr>
<td>6 Other colonoscopy, same day</td>
<td>2.9</td>
<td>Mental health treatment, same day, without electro-convulsive therapy</td>
<td>2.0</td>
</tr>
<tr>
<td>7 Other factors influencing health status &lt;80</td>
<td>2.6</td>
<td>Dental extractions and restorations</td>
<td>2.0</td>
</tr>
<tr>
<td>8 Major lens procedures</td>
<td>1.6</td>
<td>Other factors influencing health status &lt;80</td>
<td>1.9</td>
</tr>
<tr>
<td>9 Other antenatal with moderate/no complicating diagnosis</td>
<td>1.5</td>
<td>Vaginal delivery no complicating diagnosis</td>
<td>1.8</td>
</tr>
<tr>
<td>10 Red blood cell disorder no catastrophic/severe complication and/or comorbidity</td>
<td>1.4</td>
<td>Major lens procedures</td>
<td>1.5</td>
</tr>
</tbody>
</table>

* % of total hospital admissions

3.4.9 Key findings – Cambodia-born

- Rate of total hospital admissions increased from 2000-01 onwards (Fig 56).
- Vaccine-preventable ACSCs admission rate ratios were either similar to or higher than Australia-born averages over the six-year period (Fig 70).

**Lower than Australia-born**
- Total admission rate ratios (Fig 57).
- Emergency admission rate ratios were consistently lower (Fig 59).
- Surgical DRG admission rate ratios (Fig 62).
- Length of stay rate ratios (Fig 66).
- Total and chronic ACSCs admission rate ratios (moving closer to Australia-born over time) (Figs 67 and 69).
- Acute ACSCs admission rate ratios (Fig 68).
- Mental and behavioural disorders admission rate ratios were consistently lower (Fig 72).

**Similar to Australia-born**
- Elective admission rate ratios (Fig 58).
- Separation to private residence/accommodation rate ratios (Fig 63).
- Discharge at own risk rate ratios (Fig 64).
- Hospital death rate ratios (Fig 65).
- Infectious/parasitic diseases admission rate ratios (Fig 71).
- Renal dialysis was the top AR-DRG in 2003-04 (Table 5).

**Higher than Australia-born**
- Obstetric admission rate ratios (Fig 60).
- Medical DRG admission rate ratios (Fig 61).
- Pregnancy and birth-related conditions accounted for a higher proportion of hospital admissions in 2003-04 (Table 5).
3.5 Chile

Three main waves have characterised the Chilean migration to Australia. The first wave took place between 1968 and 1970 when about 1,500 Chileans, mostly from middle-class backgrounds, migrated to Australia due to economic difficulties and increasing political instability in their homeland. The second wave, between 1970 and 1973, was prompted by uncertainty about Chile's political and economic future after the election to the presidency of Salvador Allende, a leftist candidate. During this period, about 2,000 Chilean migrants settled in Australia. The third wave followed the military coup led by Augusto Pinochet in September 1973. Political persecution and serious economic crises prompted a sharp increase in the number of Chileans arriving to Australia. About 9,500 Chileans entered Australia between 1974 and 1981, a proportion of them being political refugees. The 1996 census recorded 23,820 Chile-born people living in Australia (6,799 were in Victoria). By 2001, the number of Chile-born living in Australia decreased slightly to 23,420 (6,658 were living in Victoria).

Between July 1996 and June 2005, 361 Chile-born persons settled in Victoria. Seventy one percent came under the family migration stream and 27% under the skilled migration program (Figure 73).

3.5.1 Total hospital admissions

Between 1998-99 and 2003-04, a total of 15,785 hospital admissions in Victoria were recorded for Chile-born persons. The total hospital admission rate for Chile-born and Australia-born persons from 1998-99 to 2003-04 is shown in Figure 74. Overall, the rate of total admissions for Chile-born increased from 364.67 per 1000 persons [346.52 – 383.73] in 1998-99 to 484.07 per 1000 persons [462.97 – 505.99] in 2003-04.
Compared with Australia-born averages, Chile-born recorded higher admission rate ratios except for the year 1998-99 (similar) (Figure 75). Rate ratios among Chile-born persons ranged from 1.02 [0.97 – 1.06] in 1998-99 to 1.39 [1.34 – 1.44] in 2001-02.

3.5.2 Admission type

The rate of elective admission for Chile-born increased from 255.76 per 1000 persons [240.45 – 271.99] in 1998-99 to 417.49 per 1000 persons [397.44 – 438.38] in 2001-02, decreasing subsequently to 347.59 per 1000 persons [329.53 – 366.49] in 2003-04. When compared with Australian-born, Chile-born reported higher elective admissions rate ratios except for the year 1998-99 (similar) (Figure 76). Similar patterns were found between total and elective admission rate ratios (Figure 75 and Figure 76) indicating that hospital admissions for Chile-born persons were mostly elective.
The rate of emergency admissions for Chile-born increased from 83.96 per 1000 persons \([75.16 – 93.70]\) in 1998-99 to 104.67 per 1000 persons \([95.30 – 114.84]\) in 2003-04. Emergency admission rate ratios remained steady over time and were mostly similar to Australia-born averages, except for the 1999-2000 and 2002-03 periods (higher) (Figure 77).

The rate of obstetric admissions amongst Chile-born women increased slightly during the study period, from 61.51 per 1000 women aged 10-54 years \([53.07 – 71.01]\) in 1998-99 to 70.27 per 1000 women \([59.47 – 82.69]\) in 2003-04. Compared with the Australia-born averages, obstetric admission rate ratios were higher among Chile-born women except for the 1998-99 and 2002-03 periods (similar) (Figure 78). The lowest rate ratio was 1.11 \([0.96 – 1.28]\) in 1998-99 and the highest was 1.59 \([1.38 – 1.83]\) in 2000-01.
3.5.3 DRG type

Medical admission rates for Chile-born persons increased from 197.59 per 1000 persons [183.78 – 212.34] in 1998-99 to 383.21 per 1000 persons [363.55 – 403.74] in 2001-02, declining afterwards to 309.19 per 1000 persons [291.77 – 327.47] in 2003-04. Rate ratios of medical DRG admission were higher than Australia-born averages over the six-year period (Figure 79), ranging from 1.14 [1.09 – 1.20] in 2003-04 to 1.65 [1.58 – 1.73] in 2001-02.

Surgical admission rates amongst Chile-born increased from 74.27 per 1000 persons [66.94 – 82.44] in 1998-99 to 102.84 per 1000 persons [93.68 – 112.80] in 2003-04. Surgical admission rate ratios where either similar to or lower than the Australia-born except for the year 1998-99 (higher) (Figure 80). Rate ratios moved towards Australia-born averages over time.
3.5.4 Separation mode

Compared with Australia-born, higher rate ratios of separation to private residence or accommodation were observed for Chile-born except for the year 1998-99 (similar) (Figure 81). There were no consistent patterns in the rate of discharge at own risk for Chile-born. The lowest rate was 0.29 per 1000 persons [0.06 – 1.57] in 2001-02 and the highest was 1.22 per 1000 persons [0.42 – 3.22] in 1999-2000. When compared with Australia-born averages, discharge at own risk rate ratios were similar amongst Chile-born except for the 2001-02 period (lower) (Figure 82). Hospital death rates amongst Chile-born increased from 1.21 per 1000 persons [0.30 – 3.44] in 1998-99 to 2.62 per 1000 persons [1.18 – 5.11] in 2003-04. Hospital death ratios were similar to the Australia-born average except for the year 1998-99 (lower) (Figure 83).
3.5.5 Length of stay

The rate of bed days for Chile-born increased from 1004.54 days per 1000 persons [971.51 – 1038.55] in 1998-99 to 1208.94 days per 1000 persons [1174.19 – 1244.54] in 2003-04. Length of stay rate ratios were lower than Australia-born averages over the six-year period (Figure 84).
3.5.6 ACSCs admissions

Total ACSCs admissions
Total ACSCs admission rates for Chile-born increased slightly from 28.06 per 1000 persons [22.67 – 34.50] in 1998-99 to 32.92 per 1000 persons [27.40 – 39.34] in 2003-04. Total ACSCs admission rate ratios were either similar to or lower than Australia-born averages over time (Figure 85).

Acute, chronic and vaccine-preventable ACSCs admissions
Admission rates for acute ACSCs remained steady amongst Chile-born. The 1998-99 rate was 11.77 per 1000 persons [8.57 – 16.01] and the 2003-04 rate was 13.48 per 1000 persons [10.32 – 17.47]. Compared with Australia-born, acute ACSCs admission rate ratios were similar over the six-year period (Figure 86).
Chronic ACSCs admission rates for Chile-born showed a small increase from 16.32 per 1000 persons [12.08 – 21.69] in 1998-99 to 20.60 per 1000 persons [16.04 – 26.11] in 2003-04. Chronic ACSCs rate ratios were either similar to or lower than Australia-born averages over time (Figure 87).

No consistent pattern was found for vaccine-preventable ACSCs admission rates amongst Chile-born. The lowest rate was zero recorded in 2003-04, and the highest rate was 0.90 per 1000 persons [0.19 – 2.72] recorded in 2002-03. Vaccine-preventable ACSCs admission rate ratios were similar to Australia-born averages except for the 2003-04 period (lower) (Figure 88).
3.5.7 Admissions for specific diagnosis categories

Infectious and parasitic diseases
The admission rate for infectious and parasitic diseases amongst Chile-born remained steady over time, from 21.90 per 1000 persons [17.58 – 27.18] in 1998-99 to 23.55 per 1000 persons [19.24 – 28.70] in 2003-04 (the lowest rate was 15.94 per 1000 persons [12.52 – 20.18] in 2001-02). Infectious and parasitic diseases admission rate ratios were similar to Australia-born averages over the six-year period (Figure 89).

Mental and behavioural disorders
Admission rate for mental and behavioural disorders amongst Chile-born declined from 24.11 per 1000 persons [19.20 – 30.07] in 1998-99 to 12.86 per 1000 persons [9.52 – 17.10] in 2000-01, increasing afterwards to 28.18 per 1000 persons [23.47 – 33.72] in 2003-04. Compared with Australia-born, admission rate ratios were lower amongst Chile-born over the study period (Figure 90).
3.5.8 Top ten AR-DRGs

A comparison of the top 10 AR-DRGs between Chile-born and Australia-born in 2003-04 is shown in Table 6. The top 10 AR-DRGs accounted for 37.2% of the total hospital admissions for Chile-born compared with 31.8% for Australia-born. Renal dialysis was the most common AR-DRG for both groups, representing 12.0% of total hospital admissions for Chile-born compared with 8.9% for Australia-born. Diagnostic procedures for digestive disorders (i.e. gastroscopy, colonoscopy) accounted for 10.8% of total hospital admissions amongst Chile-born compared with 5.8% amongst Australia-born. Pregnancy and birth-related conditions amongst Chile-born represented 4.1% of total admissions, compared with 1.8% amongst Australia-born.

Table 6: Top 10 AR-DRG for Chile-born and Australia-born, 2003-04

<table>
<thead>
<tr>
<th>Chile-born</th>
<th>AR-DRG</th>
<th>%*</th>
<th>Australia-born</th>
<th>AR-DRG</th>
<th>%*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Renal dialysis</td>
<td>12.0</td>
<td>Renal dialysis</td>
<td>8.9</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Other gastroscopy, non-major digestive disease, sameday</td>
<td>6.4</td>
<td>Chemotherapy</td>
<td>4.7</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Other colonoscopy, sameday</td>
<td>4.4</td>
<td>Other colonoscopy, sameday</td>
<td>3.5</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Chemotherapy</td>
<td>2.9</td>
<td>Neonate &gt;2499 g without significant operation room procedure with other problem</td>
<td>3.2</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Abortion with dilation &amp; curettage, aspiration curettage/hysterotomy</td>
<td>2.2</td>
<td>Other gastroscopy, non-major digestive disease, sameday</td>
<td>2.3</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Chest pain</td>
<td>1.9</td>
<td>Mental health treatment, sameday, without electro-convulsive therapy</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Rehabilitation, sameday</td>
<td>1.9</td>
<td>Dental extractions and restorations</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Vaginal delivery no complicating diagnosis</td>
<td>1.9</td>
<td>Other factors influencing health status &lt;80</td>
<td>1.9</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Mental health treatment, sameday, without electro-convulsive therapy</td>
<td>1.9</td>
<td>Vaginal delivery no complicating diagnosis</td>
<td>1.8</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Other factors influencing health status &lt;80</td>
<td>1.7</td>
<td>Major lens procedure</td>
<td>1.5</td>
<td></td>
</tr>
</tbody>
</table>

* % of total hospital admissions
### 3.5.9 Key findings – Chile-born

- Total hospital admission rates increased over time (Fig 74).
- Surgical DRG admission rate ratios were either similar to or lower than Australia-born averages (Fig 80).
- Total and chronic ACSCs admission rate ratios were either similar to or lower than the Australia-born average (Figs 85 and 87).

<table>
<thead>
<tr>
<th>Lower than Australia-born</th>
<th>Similar to Australia-born</th>
<th>Higher than Australia-born</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of stay rate ratios (Fig 84).</td>
<td>Emergency admission rate ratios (Fig 77).</td>
<td>Both total and elective admission rate ratios (Figs 75 and 76).</td>
</tr>
<tr>
<td>Mental and behavioural disorders admission rate ratios (Fig 90).</td>
<td>Discharge at own risk rate ratios (Fig 82).</td>
<td>Obstetric admission rate ratios (Fig 78).</td>
</tr>
<tr>
<td></td>
<td>Hospital death rate ratios (Fig 83).</td>
<td>Medical DRG admission rate ratios (Fig 79).</td>
</tr>
<tr>
<td></td>
<td>Acute ACSCs admission rate ratios (Fig 86).</td>
<td>Separation to private residence/accommodation rate ratios (Fig 81).</td>
</tr>
<tr>
<td></td>
<td>Vaccine-preventable ACSCs admission rate ratios (Fig 88).</td>
<td>Digestive disorders-related diagnostic procedures, and pregnancy and birth-related conditions accounted for a higher proportion of hospital admissions in 2003-04 (Table 6).</td>
</tr>
<tr>
<td></td>
<td>Infectious/parasitic diseases admission rate ratios (Fig 89).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Renal dialysis was the top AR-DRG in 2003-04 (Table 6).</td>
<td></td>
</tr>
</tbody>
</table>
3.6 Croatia

The Croatian immigration to Australia began in the late 1800s, but increased considerably from the mid-1920s. Four phases of post-Second World War Croatian migration to Australia have been identified. The first phase, made up mainly of members of the defeated military forces, took place between the end of the Second World War and the 1960s. The second phase followed Tito’s ‘opening of the borders’ during the 1960s when many ‘temporary workers’ resettled permanently in Australia. The third phase was predominantly through family reunion programs in the 1980s. The fourth phase, made up mainly of refugees, was prompted by Serbia’s war on Croatia and Bosnia-Herzegovina from 1991 onwards. In 1994, the number of arrivals from former Yugoslavia – many of them Croatians – reached more than 5,000. The 1996 census recorded 46,981 Croatia-born living in Australia (17,593 in Victoria). By 2001, the number of Croatia-born in Australia increased to 51,909 (18,981 in Victoria).

Between 1996 and 2005, 1,247 Croatia-born persons arrived in Victoria. Ninety two percent of these came under the humanitarian program and 7% under the family stream (Figure 91). Many of those under the family reunion program were likely to have been through refugee-like experiences.

3.6.1 Total hospital admissions

A total of 49,822 hospital admissions in Victoria were recorded for Croatia-born persons between 1998-99 and 2003-04. Overall, the rate of total admissions for Croatia-born increased from 254.47 per 1000 persons [246.33 – 263.06] in 1998-99 to 388.70 per 1000 persons [379.30 – 398.46] in 2003-04 (Figure 92).
Compared with Australia-born averages, Croatia-born recorded consistently lower admission rate ratios over the study period (Figure 93). Rate ratios increased from 0.71 [0.69 – 0.73] in 1998-99 to 0.87 [0.86 – 0.89] in 2003-04, indicating that total admission rates amongst Croatia-born moved towards Australia-born averages over time.

3.6.2 Admission type

The rate of elective admission amongst Croatia-born increased over the study period, from 182.54 per 1000 persons [175.93 – 189.59] in 1998-99 to 283.93 per 1000 persons [276.30 – 291.92] in 2003-04. When compared with Australia-born, Croatia-born reported lower elective admission rate ratios (Figure 94). The elective admission rate ratios moved towards Australian-born averages over time.
The rate of emergency admissions for Croatia-born persons increased from 57.30 per 1000 persons \[53.18 – 61.91\] in 1998-99 to 88.49 per 1000 persons \[83.87 – 93.50\] in 2003-04. Emergency admission rate ratios were consistently lower than Australia-born but moved towards Australia-born averages over time (Figure 95).

The rate of obstetric admissions amongst Croatia-born women remained stable over time, ranging from 34.84 per 1000 women aged 10-54 years \[28.05 – 43.14\] in 1999-2000 to 48.58 per 1000 women \[40.63 – 57.85\] in 2002-03. Obstetric admission rate ratios for Croatia-born women were either lower than or similar to the Australia-born average (Figure 96). The lowest rate ratio was 0.66 \[0.56 – 0.79\] in 1999-2000 and the highest was 1.05 \[0.89 – 1.23\] in 2001-02.
3.6.3 DRG type

Medical DRG admission rates for Croatia-born almost doubled during the six-year period, increasing from 129.19 per 1000 persons [123.59 – 135.25] in 1998-99 to 249.36 per 1000 persons [242.02 – 257.08] in 2003-04. Rate ratios of medical DRG admission were lower than Australia-born and moved towards Australia-born averages over time (Figure 97).

Surgical admission rates amongst Croatia-born increased from 52.22 per 1000 persons [48.44 – 56.49] in 1998-99 to 81.35 per 1000 persons [77.04 – 86.04] in 2003-04. Compared with Australia-born, surgical admission rate ratios were lower except for the year 1998-99 (similar) (Figure 98).
3.6.4 Separation mode

Compared with Australia-born, lower rate ratios of separation to private residence or accommodation were observed for Croatia-born over the six-year period. Rate ratios moved towards Australia-born averages over time (Figure 99). There was no consistent pattern in the rate of discharge at own risk for Croatia-born. The lowest rate of discharge at own risk was recorded in 1998-99 (0.41 per 1000 persons [0.18 – 1.47]) and the highest in 2003-04 (1.26 per 1000 persons [0.68 – 2.43]). When compared with Australia-born averages, rate ratios of discharge at own risk were similar amongst Croatia-born except for the 1998-99 period (lower) (Figure 100). Hospital death rates ranged from 2.51 per 1000 persons [1.99 – 3.59] in 2000-01 to 4.10 per 1000 persons [3.41 – 5.24] in 2003-04. Hospital death rate ratios were either similar to or lower than the Australia-born average over the study period (Figure 101).
3.6.5 Length of stay

The rate of bed days for Croatia-born increased over the study period, from 893.87 days per 1000 persons [879.40 – 908.77] in 1998-99 to 1204.76 days per 1000 persons [1188.56 – 1221.31] in 2003-04. Length of stay rate ratios were consistently lower than Australia-born (Figure 102), moving slightly towards Australia-born averages over time.
3.6.6 ACSCs admissions

Total ACSCs admissions
Total ACSCs admission rates for Croatia-born increased from 16.65 per 1000 persons [14.70 – 19.10] in 1998-99 to 36.25 per 1000 persons [33.81 – 39.06] in 2003-04. Total ACSCs admission rate ratios were lower than Australia-born but moved towards Australia-born averages over time (Figure 103).

Acute, chronic and vaccine-preventable ACSCs admissions
Admission rates for acute ACSCs amongst Croatia-born increased from 6.15 per 1000 persons [4.92 – 7.95] in 1998-99 to 9.06 per 1000 persons [7.51 – 11.07] in 2003-04. Compared with Australia-born, acute ACSCs admission rate ratios were consistently lower amongst Croatia-born (Figure 104). Chronic ACSCs admission rates almost tripled over time, increasing from 10.02 per 1000 persons [8.58 – 11.99] in 1998-99 to 27.58 per 1000 persons [25.72 – 29.80] in 2003-04. Chronic ACSCs rate ratios were lower than Australia-born except for the year 2002-03 and 2003-04 (similar). Rate ratios moved towards Australia-born averages over time (Figure 105). Vaccine-preventable ACSCs admission rates amongst Croatia-born declined from 0.61 per 1000 persons [0.31 – 1.70] in 1998-99 to 0.20 per 1000 persons [0.07 – 1.07] in 2003-04. Vaccine-preventable ACSCs admission rate ratios were mostly lower than Australia-born averages except for the years 2000-01 and 2002-03 (similar) (Figure 106).
Figure 104: Acute ACSCs Admission Rate Ratios
Croatia-born (Australia-born = 1), 1998-99 to 2003-04

Figure 105: Chronic ACSCs Admission Rate Ratios
Croatia-born (Australia-born = 1), 1998-99 to 2003-04

Figure 106: Vaccine-preventable ACSCs Admission Rate Ratios
Croatia-born (Australia-born = 1), 1998-99 to 2003-04
3.6.7 Admissions for specific diagnosis categories

Infectious and parasitic diseases
Admission rates for infectious and parasitic diseases amongst Croatia-born showed a small increase from 12.89 per 1000 persons [11.13 – 15.16] in 1998-99 to 15.72 per 1000 persons [13.83 – 18.03] in 2003-04. Infectious and parasitic diseases admission rate ratios were consistently below Australia-born, moving slightly towards Australia-born averages over time (Figure 107).

Mental and behavioural disorders
Admission rates for mental and behavioural disorders amongst Croatia-born increased from 16.33 per 1000 persons [14.52 – 18.63] in 1998-99 to 21.11 per 1000 persons [18.85 – 23.79] in 2003-04. Compared with Australia-born, admission rate ratios were consistently lower over the six-year period (Figure 108).
### 3.6.8 Top ten AR-DRGs

Table 7 compares the top 10 AR-DRGs between Croatia-born and Australia-born in 2003-04. The top 10 AR-DRGs accounted for 45.9% of the total hospital admissions for Croatia-born compared with 31.8% for Australia-born. Renal dialysis was the most common AR-DRG for both groups, but it represented 23.9% of total hospital admissions for Croatia-born compared with 8.9% for Australia-born. Diagnostic procedures for digestive disorders (i.e. gastroscopy, colonoscopy) represented 9.7% of total admissions amongst Croatia-born, compared with 5.8% amongst Australia-born.

#### Table 7: Top 10 AR-DRGs for Croatia-born and Australia-born, 2003-04

<table>
<thead>
<tr>
<th></th>
<th>Croatia-born</th>
<th>%*</th>
<th>Australia-born</th>
<th>%*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Renal dialysis</td>
<td></td>
<td>23.9</td>
<td>Renal dialysis</td>
<td>8.9</td>
</tr>
<tr>
<td>2 Chemotherapy</td>
<td></td>
<td>5.3</td>
<td>Chemotherapy</td>
<td>4.7</td>
</tr>
<tr>
<td>3 Other colonoscopy, sameday</td>
<td></td>
<td>4.6</td>
<td>Other colonoscopy, sameday</td>
<td>3.5</td>
</tr>
<tr>
<td>4 Other gastroscopy, non-major digestive disease, sameday</td>
<td></td>
<td>3.6</td>
<td>Neonate &gt;2499 g without significant operation room procedure with other problem</td>
<td>3.2</td>
</tr>
<tr>
<td>5 Major lens procedures</td>
<td></td>
<td>1.7</td>
<td>Other gastroscopy, non-major digestive disease, sameday</td>
<td>2.3</td>
</tr>
<tr>
<td>6 Other factors influencing health status &lt;80</td>
<td></td>
<td>1.6</td>
<td>Mental health treatment, sameday, without electro-convulsive therapy</td>
<td>2.0</td>
</tr>
<tr>
<td>7 Follow-up after completed treatment with endoscopy</td>
<td></td>
<td>1.5</td>
<td>Dental extractions and restorations</td>
<td>2.0</td>
</tr>
<tr>
<td>8 Lymphoma and non-acute leukaemia, sameday</td>
<td></td>
<td>1.4</td>
<td>Other factors influencing health status &lt;80</td>
<td>1.9</td>
</tr>
<tr>
<td>9 Chest pain</td>
<td></td>
<td>1.4</td>
<td>Vaginal delivery no complicating diagnosis</td>
<td>1.8</td>
</tr>
<tr>
<td>10 Cystourethroscopy without complication and/or comorbidity</td>
<td></td>
<td>0.9</td>
<td>Major lens procedure</td>
<td>1.5</td>
</tr>
</tbody>
</table>

* % of total hospital admissions
### 3.6.9 Key findings – Croatia-born

- Rate of total hospital admissions increased over time (Fig 92).
- Obstetric admission rate ratios were either lower than or similar to Australia-born averages (Fig 96).
- Hospital death rate ratios were either lower than or similar to Australia-born averages (Fig 101).
- Over half of the indicators among Croatia-born showed a trend towards Australia-born averages over time.

<table>
<thead>
<tr>
<th>Lower than Australia-born</th>
<th>Similar to Australia-born</th>
<th>Higher than Australia-born</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Total, elective and emergency admission rate ratios (moving towards Australia-born averages over time) (Figs 93-95).</td>
<td>- Discharge at own risk rate ratios (Fig 100).</td>
<td></td>
</tr>
<tr>
<td>- Medical and surgical DRG admission rate ratios (medical DRG rate ratios moved towards Australia-born average over time) (Figs 97-98).</td>
<td>- Renal dialysis was the top AR-DRG in 2003-04 (Table 7).</td>
<td></td>
</tr>
<tr>
<td>- Separation to private residence/accommodation rate ratios (moving closer to Australia-born over time) (Fig 99).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Length of stay rate ratios (moving towards Australia-born averages over time) (Fig 102).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Total, acute, chronic and vaccine-preventable ACSCs admission rate ratios (total and chronic moved towards Australia-born averages over time) (Figs 103 to 106).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Infectious/parasitic diseases admission rate ratios (moving closer to Australia-born over time (Fig 107).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Mental/behavioural disorders admission rate ratios (Fig 108).</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Diagnostic procedures for digestive disorders represented a higher proportion of hospital admissions in 2003-04 (Table 7).</td>
</tr>
</tbody>
</table>
3.7 El Salvador

During the 12-year civil war in El Salvador, which ended in 1992, Australia accepted around 10,000 Salvadorans under the humanitarian program. After the end of the civil war, Salvadoran migration to Australia declined considerably. The 1996 census recorded 9,865 El Salvador-born people living in Australia (3,113 in Victoria). By 2001, the numbers decreased slightly to 9,696 in Australia (3,063 in Victoria).

Between July 1996 and June 2005, 89 El Salvador-born persons settled in Victoria. Eighty-three percent came under the family migration stream and 15% under the humanitarian program (Figure 109).

3.7.1 Total hospital admissions

From 1998-99 to 2003-04, a total of 4,697 hospital admissions in Victoria were recorded for El Salvador-born persons. The total hospital admission rate for El Salvador-born and Australia-born persons from 1998-99 to 2003-04 is shown in Figure 110. Overall, the rate of total admissions for El Salvador-born increased from 260.73 per 1000 persons [234.84 – 289.44] in 1998-99 to 370.44 per 1000 persons [342.24 – 400.96] in 2003-04.
Compared with Australia-born averages, El Salvador-born recorded lower hospital admission rate ratios over the six-year period (Figure 111). The lowest rate ratio was 0.66 [0.61 – 0.71] in 2000-01 and the highest was 0.85 [0.80 – 0.90] in 2002-03.

### 3.7.2 Admission type

The rate of elective admissions for El Salvador-born increased from 140.24 per 1000 persons [121.66 – 161.65] in 1998-99 to 230.99 per 1000 persons [210.08 – 254.13] in 2003-04. When compared with Australian-born, El Salvador-born reported consistently lower elective admission rate ratios over the study period (Figure 112). Rate ratios moved closer to Australia-born averages over time.
The rate of emergency admissions for El Salvador-born decreased from 94.59 per 1000 persons [77.81 – 114.53] in 1998-99 to 78.34 per 1000 persons [65.10 – 94.09] in 2000-01, increasing afterwards to 117.43 per 1000 persons [99.58 – 138.00] in 2003-04. Emergency admission rate ratios were either similar to or slightly higher than Australia-born averages over the six-year period (Figure 113).

The rate of obstetric admissions amongst El Salvador-born women decreased from 68.85 per 1000 women aged 10-54 years [55.74 – 84.72] in 1998-99 to 47.00 per 1000 women [36.04 – 60.36] in 2001-02, increasing subsequently to 59.00 per 1000 women [46.64 – 73.71] in 2003-04. Compared with Australia-born averages, obstetric admission rate ratios were similar among El Salvador-born women except for the 1998-99 and 2002-03 periods (higher) (Figure 114). Rate ratios ranged from 1.02 [0.79 – 1.31] in 2001-02 to 1.41 [1.15 – 1.73] in 2002-03.
3.7.3 DRG type

Medical DRG admission rates for El Salvador-born persons decreased from 150.08 per 1000 persons [129.73 – 173.41] in 1998-99 to 115.84 per 1000 persons [100.43 – 133.63] in 2000-01, and then increased to 208.13 per 1000 persons [186.89 – 231.76] in 2003-04. Rate ratios of medical DRG admission were lower than Australia-born averages except for the year 1998-99 (similar) (Figure 115). Rates ratios ranged from 0.52 [0.47 – 0.58] in 2000-01 to 0.94 [0.85 – 1.05] in 1998-99.

Surgical DRG admission rates for El Salvador-born increased from 68.36 per 1000 persons [56.28 – 83.22] in 1998-99 to 86.96 per 1000 persons [74.03 – 102.25] in 2003-04. Surgical DRG admission rate ratios were lower than Australia-born except for the year 1998-99 (higher) (Figure 116).
3.7.4 Separation mode

Compared with Australia-born, lower rate ratios of separation to private residence or accommodation were observed for El Salvador-born over the six-year period (Figure 117). Rate ratios moved towards the Australia-born average over time. There was no a consistent pattern in the rate of discharge at own risk for El Salvador-born. The lowest rate was zero in 2000-01 and the highest 1.62 per 1000 persons [0.58 – 5.89] in 2003-04. When compared with Australia-born averages, discharge at own risk rate ratios were similar amongst El Salvador-born except for the year 2000-01 (lower) (Figure 118). Hospital death rates amongst El Salvador-born did not show a consistent pattern over time. The lowest hospital death rate was zero in 2000-01 and the highest was 2.59 [0.43 – 8.50] in 2002-03. Hospital death ratios were similar to the Australia-born average except for the 2000-01 and 2001-02 periods (lower) (Figure 119).
3.7.5 Length of stay

The rate of bed days for El Salvador-born decreased between 1998-99 (849.36 days per 1000 persons [796.70 – 905.09]) and 2001-02 (707.03 days per 1000 persons [666.09 – 750.37]), increasing subsequently to 958.53 days per 1000 persons [908.61 – 1010.96] in 2003-04. Length of stay rate ratios were consistently lower than Australia-born averages over the six-year period (Figure 120).
3.7.6 ACSCs admissions

Total ACSCs admissions
Total ACSCs admission rates for El Salvador-born doubled over the six-year period, increasing from 27.56 per 1000 persons [17.88 – 40.98] in 1998-99 to 50.54 per 1000 persons [37.93 – 66.25] in 2003-04. Total ACSCs admission rate ratios were similar to Australia-born averages except for the years 1999-2000 and 2000-01 (lower) (Figure 121).

Acute, chronic and vaccine-preventable ACSCs admissions
Admission rates for acute ACSCs amongst El Salvador-born doubled from 10.81 per 1000 persons [5.73 – 19.44] in 1998-99 to 22.50 per 1000 persons [15.09 – 32.82] in 2002-03, and then declined to 17.47 per 1000 persons [10.99 – 26.92] in 2003-04. Compared with Australia-born, acute ACSCs admission rate ratios were similar except for the year 2002-03 (higher) (Figure 122).
Chronic ACSCs admission rates for El Salvador-born doubled over the study period, increasing from 16.50 per 1000 persons [8.79 – 28.34] in 1998-99 to 33.07 per 1000 persons [22.66 – 46.78] in 2003-04. Chronic ACSCs rate ratios were similar to Australia-born except for the 1999-2000 period (lower) (Figure 123).

No consistent pattern was found for vaccine-preventable ACSCs admission rates amongst El Salvador-born. The lowest rate was zero recorded in 2000-01 and 2003-04, and the highest rate was 1.93 per 1000 persons [0.28 – 7.21] recorded in 2002-03. Compared with Australia-born, vaccine-preventable ACSCs admission rate ratios were similar amongst El Salvador-born except for the 2000-01 and 2003-04 periods (lower) (Figure 124).
3.7.7 Admissions for specific diagnosis categories

**Infectious and parasitic diseases**
The admission rate for infectious and parasitic diseases amongst El Salvador-born decreased from 24.84 per 1000 persons [16.81 – 36.18] in 1998-99 to 12.66 per 1000 persons [8.04 – 19.93] in 2001-02, increasing afterwards to 25.56 per 1000 persons [17.56 – 36.47] in 2003-04. Infectious and parasitic diseases admission rate ratios were similar to the Australia-born average except for the year 2002-03 (higher). The lowest rate ratio was 0.72 [0.53 – 1.00] in 1999-2000 and the highest was 1.38 [1.06 – 1.81] in 2002-03 (Figure 125).

**Mental and behavioural disorders**
Admission rate for mental and behavioural disorders amongst El Salvador-born declined from 19.05 per 1000 persons [12.34 – 29.04] in 1998-99 to 10.84 per 1000 persons [7.13 – 17.08] in 2001-02, increasing afterwards to 28.97 per 1000 persons [21.88 – 38.54] in 2003-04. Compared with Australia-born, admission rate ratios for mental and behavioural disorders were lower amongst El Salvador-born except for the 2003-04 period (similar) (Figure 126).
3.7.8 Top ten AR-DRGs

A comparison of the top 10 AR-DRGs between El Salvador-born and Australia-born in 2003-04 is shown in Table 8. The top 10 AR-DRGs accounted for 41.6% of the total hospital admissions for El Salvador-born compared with 31.8% for Australia-born. Renal dialysis was the most common AR-DRG for both groups, representing 15.0% of total hospital admissions for El Salvador-born compared with 8.9% for Australia-born. Digestive disorders (including diagnostic procedures such as gastroscopy and colonoscopy) accounted for 12.9% of total hospital admissions amongst El Salvador-born compared with 5.8% amongst Australia-born. Pregnancy and birth-related conditions amongst El Salvador-born represented 8.7% of total admissions, compared with 1.8% amongst Australia-born.

Table 8: Top 10 AR-DRG for El Salvador-born and Australia-born, 2003-04

<table>
<thead>
<tr>
<th>El Salvador-born</th>
<th>%*</th>
<th>Australia-born</th>
<th>%*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Renal dialysis</td>
<td>15.0</td>
<td>Renal dialysis</td>
<td>8.9</td>
</tr>
<tr>
<td>2 Other gastroscopy, non-major digestive disease, sameday</td>
<td>6.3</td>
<td>Chemotherapy</td>
<td>4.7</td>
</tr>
<tr>
<td>3 Other colonoscopy, sameday</td>
<td>4.6</td>
<td>Other colonoscopy, sameday</td>
<td>3.5</td>
</tr>
<tr>
<td>4 Abortion with dilation &amp; curettage, aspiration curettage/hysterotomy</td>
<td>3.7</td>
<td>Neonate &gt;2499 g without significant operation room procedure with other problem</td>
<td>3.2</td>
</tr>
<tr>
<td>5 Vaginal delivery no complicating diagnosis</td>
<td>2.8</td>
<td>Other gastroscopy, non-major digestive disease, sameday</td>
<td>2.3</td>
</tr>
<tr>
<td>6 Other antenatal w moderate/no complicating diagnosis</td>
<td>2.2</td>
<td>Mental health treatment, sameday, without electro-convulsive therapy</td>
<td>2.0</td>
</tr>
<tr>
<td>7 Follow-up after completed treatment without endoscopy</td>
<td>2.0</td>
<td>Dental extractions and restorations</td>
<td>2.0</td>
</tr>
<tr>
<td>8 Other uterine &amp; adnexa procedures for non-malignancy</td>
<td>1.8</td>
<td>Other factors influencing health status &lt;80</td>
<td>1.9</td>
</tr>
<tr>
<td>9 Abdominal pain/mesenteric adenitis no complication and/or comorbidity</td>
<td>1.6</td>
<td>Vaginal delivery no complicating diagnosis</td>
<td>1.8</td>
</tr>
<tr>
<td>10 Red blood cell disorder no catastrophic/severe complication and/or comorbidity</td>
<td>1.6</td>
<td>Major lens procedure</td>
<td>1.5</td>
</tr>
</tbody>
</table>

* % of total hospital admissions
3.7.9 Key findings – El Salvador-born

- Total hospital admission rates increased over time (Fig 110).
- Emergency admission rate ratios were either similar to or slightly higher than the Australia-born average (Fig 113).

<table>
<thead>
<tr>
<th>Lower than Australia-born</th>
<th>Similar to Australia-born</th>
<th>Higher than Australia-born</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total and elective hospital admission rate ratios (elective admission rate ratios moved towards Australia-born averages over time) (Figs 111-112).</td>
<td>Obstetric admission rate ratios (Fig 114).</td>
<td>Digestive disorders (including diagnostic procedures) and pregnancy and birth-related conditions accounted for a higher proportion of hospital admissions in 2003-04 (Table 8).</td>
</tr>
<tr>
<td>Medical DRG admission rate ratios (Fig 115).</td>
<td>Discharge at own risk rate ratios (Fig 118).</td>
<td></td>
</tr>
<tr>
<td>Surgical DRG admission rate ratios (Fig 116).</td>
<td>Hospital deaths rate ratios (Fig 119).</td>
<td></td>
</tr>
<tr>
<td>Separation to private residence/accommodation rate ratios (moving towards Australia-born over time) (Fig 117).</td>
<td>Total, acute, chronic and vaccine-preventable ACSCs admission rate ratios (Figs 121 to 124).</td>
<td></td>
</tr>
<tr>
<td>Length of stay rate ratios were significantly lower (Fig 120).</td>
<td>Infectious and parasitic diseases admission rate ratios (Fig 125).</td>
<td></td>
</tr>
<tr>
<td>Mental/behavioural disorders admission rate ratios (Fig 126).</td>
<td>Renal dialysis was the top AR-DRG in 2003-04 (Table 8).</td>
<td></td>
</tr>
</tbody>
</table>
3.8 Eritrea

Ethiopia’s annexation of Eritrea in 1962 sparked a 30-year armed struggle for independence, which ended in 1991 when Eritrean rebels finally expelled Ethiopian forces. Following a referendum, Eritrea became an independent state in 1993. The Ethiopian-Eritrean border has remained the subject of conflict ever since. Significant internal displacement in Eritrea began in May 1998 when war broke out between the two countries over disputed boundaries. A peace agreement was reached in 2000 and United Nations peacekeeping forces were deployed in 2001 to monitor the ceasefire.

Before 1983 very few Eritreans arrived in Australia as refugees. The number of arrivals increased after the Australian government gave a special quota to Eritreans and Ethiopians under a special humanitarian program. About 300 Eritrean refugees arrived in Australia between 1983 and 1986; smaller numbers have continued to come. A total of 1,162 Eritrea-born people living in Australia were recorded in the 1996 census; 742 were living in Victoria. By 2001, the number of Eritreans in Australia increased to 1,595 (992 were in Victoria). Between July 1996 and June 2005, 603 Eritrea-born persons arrived in Victoria. Seventy percent came under the humanitarian program and 32% under the family reunion stream. Many of those arriving under the family stream were likely to have been from refugee backgrounds.

3.8.1 Total hospital admissions

A total of 2,525 hospital admissions in Victoria were recorded for Eritrea-born persons between 1998-99 and 2003-04. Figure 128 shows the total hospital admission rate for Eritrea-born and Australia-born persons from 1998-99 to 2003-04. The rate of total admissions for Eritrea-born decreased slightly between 1998-99 (368.81 per 1000 persons [318.35 – 436.45]) and 2001-02 (305.07 per 1000 persons [270.18 – 345.92]), increasing to 629.40 per 1000 persons [562.02 – 703.76] in 2003-04.
Compared with Australia-born averages, Eritrea-born recorded no consistent patterns of total hospital admission rate ratios (Figure 129). Rate ratios amongst Eritrea-born markedly increased in 2002-03 (1.57 [1.44 – 1.71]) and 2003-04 (1.42 [1.30 – 1.55]).

3.8.2 Admission type

The rate of elective admission for Eritrea-born decreased from 294.57 per 1000 persons [250.04 – 356.69] in 1998-99 to 198.90 per 1000 persons [172.09 – 231.75] in 2000-01, increasing subsequently to 532.75 per 1000 persons [468.27 – 604.55] in 2003-04. Eritrea-born reported no clear patterns of elective admissions rate ratios when compared with Australia-born (Figure 130). Rate ratios showed a noticeable increase in 2002-03 and 2003-04.
The rate of emergency admissions for Eritrea-born persons increased from 42.67 per 1000 persons [23.17 – 86.17] in 1998-99 to 77.45 per 1000 persons [57.09 – 105.13] in 2001-02, decreasing afterwards to 66.32 per 1000 persons [49.75 – 89.21] in 2003-04. Emergency admission rate ratios were lower than Australia-born averages except for the 2000-01 and 2001-02 periods (similar) (Figure 131).

Rates of obstetric admissions amongst Eritrea-born women showed no clear patterns over time. The lowest obstetric admission rate was 74.83 per 1000 women aged 10-54 years [55.87 – 101.00] and the highest rate was 127.53 per 1000 women [101.26 – 160.84] in 2002-03. Compared with the Australia-born averages, obstetric admission rate ratios were higher amongst Eritrea-born women over the six-year period (Figure 132). The lowest rate ratio was 1.62 [1.24 – 2.12] in 2001-02 and the highest was 2.64 [2.13 – 3.26] in 2002-03.
3.8.3 DRG type

Medical DRG admission rates for Eritrea-born persons decreased between 1998-99 (283.46 per 1000 persons [244.34 – 339.95]) and 2001-02 (207.28 per 1000 persons [180.00 – 240.48]), increasing afterwards to 521.96 per 1000 persons [458.40 – 592.81] in 2003-04. Medical DRG admission rate ratios were either similar to or higher than Australia-born averages over the study period (Figure 133). The lowest rate ratio was 0.89 [0.80-1.00] in 2001-02 and the highest was 2.18 [1.97 – 2.40] in 2002-03.

Surgical DRG admission rates amongst Eritrea-born increased over time from 54.71 per 1000 persons [32.65 – 99.79] in 1998-99 to 75.37 per 1000 persons [56.49 – 101.27] in 2001-02, declining subsequently to 65.90 per 1000 persons [50.51 – 87.35] in 2003-04. Compared with Australia-born, surgical DRG admission rate ratios were lower except for the year 1998-99 (similar) (Figure 134).
The increase of total hospital admission rates amongst Eritrea-born reported in the years 2002-03 and 2003-04 (Figure 128) consisted mainly of elective (Figure 130), medical (Figure 133) and obstetric (Figure 132) admissions, rather than emergency (Figure 131) and/or surgical (Figure 134) admissions.

3.8.4 Separation mode

Compared with Australia-born, no consistent pattern of separation to private residence or accommodation rate ratios was observed for Eritrea-born (Figure 135). There was no consistent pattern in the rate of discharge at own risk for Eritrea-born. The lowest rate was zero in 1999-2000 and the highest was 1.15 per 1000 persons [0.03 – 13.57] in 2000-01. Discharge at own risk rate ratios were similar to Australia-born except for the 1999-2000 period (lower) (Figure 136). Hospital death rates showed a no consistent pattern amongst Eritrea-born. The lowest death rate was zero in 1998-99 and 2000-01, and the highest rate was 4.20 per 1000 persons [0.36 – 18.35] in 2002-03. Hospital death rate ratios were similar to the Australia-born average except for the years 1998-99 and 2000-01 (lower) (Figure 137).
3.8.5 Length of stay

The rate of bed days for Eritrea-born almost doubled during the six-year period, increasing from 698.41 days per 1000 persons [599.51 – 816.49] in 1998-99 to 1166.03 days per 1000 persons [1078.82 – 1259.73] in 2003-04. Length of stay rate ratios were lower than Australia-born averages except for the year 2002-03 (higher) (Figure 138).
3.8.6 ACSCs admissions

Total ACSCs admissions
Total ACSCs admission rates for Eritrea-born markedly increased from 5.37 per 1000 persons [1.54 – 40.79] in 1998-99 to 42.79 per 1000 persons [24.50 – 70.05] in 2002-03, declining to 25.10 per 1000 persons [13.55 – 44.44] in 2003-04. Rate ratios were either lower than or similar to Australia-born averages (Figure 139).

Acute, chronic and vaccine-preventable ACSCs admissions
Admission rates for acute ACSCs amongst Eritrea-born increased from 3.88 per 1000 persons [0.72 – 39.58] in 1998-99 to 13.50 per 1000 persons [7.57 – 27.35] in 2001-02, and then decreased to 5.37 per 1000 persons [2.43 – 16.39] in 2003-04. Compared with Australia-born, acute ACSCs admission rate ratios were lower except for the 2001-02 and 2002-03 periods (similar) (Figure 140). Chronic ACSCs admission rates increased sharply from 1.49 per 1000 persons [0.14 – 37.43] in 1998-99 to 37.20 per 1000 persons [19.71 – 64.12] in 2002-03, and then declined to 19.74 per 1000 persons [9.01 – 38.91] in 2003-04. Chronic ACSCs rate ratios were similar to Australia-born except for the years 1998-99 and 1999-2000 (lower) (Figure 141). No hospital admissions for vaccine-preventable ACSCs were reported amongst Eritrea-born during the study period, except for the year 2001-02 (5.70 per 1000 persons [1.78 – 20.31]).
In this year, the admission rate ratio was higher than the Australia-born average (7.23 [2.98 – 17.57]) (Figure 142).
3.8.7 Admissions for specific diagnosis categories

Infectious and parasitic diseases
There was no consistent pattern in the admission rate for infectious and parasitic diseases amongst Eritrea-born over time. The lowest rate was 9.44 per 1000 persons [4.12 – 42.18] in 1999-2000 and the highest was 27.21 per 1000 persons [13.89 – 49.21] in 2002-03. Infectious and parasitic diseases rate ratios were either similar to or lower than the Australia-born average (Figure 143).

Mental and behavioural disorders
Admission rate for mental and behavioural disorders amongst Eritrea-born decreased over time, from 14.98 per 1000 persons [2.11 – 59.17] in 1998-99 to 8.51 per 1000 persons [4.10 – 20.53] in 2003-04. Compared with Australia-born, admission rate ratios were consistently lower over the six-year period (Figure 144). The lowest rate ratio was 0.25 [0.14 – 0.43] in 2003-04 and the highest was 0.60 [0.39 – 0.93] in 2000-01.
3.8.8 Top ten AR-DRGs
A comparison of the 2003-04 top 10 AR-DRGs between Eritrea-born and Australia-born is shown in Table 9. The top 10 AR-DRGs accounted for 62.9% of the total hospital admissions for Eritrea-born compared with 31.8% for Australia-born. Renal dialysis was the most common AR-DRG for both groups, but it represented 43.9% of total hospital admissions for Eritrea-born compared with 8.9% for Australia-born. Pregnancy and birth-related conditions accounted for 11.4% of total hospital admissions for Eritrea-born compared with 1.8% for Australia-born. The proportion of digestive tract conditions, including diagnostic procedures such as gastroscopy and colonoscopy, was very similar between the two groups (5.6% for Eritrea-born, and 5.8% for Australia-born).

Table 9: Top 10 AR-DRG for Eritrea-born and Australia-born, 2003-04

<table>
<thead>
<tr>
<th>Eritrea-born</th>
<th>AR-DRG</th>
<th>%*</th>
<th>Australia-born</th>
<th>AR-DRG</th>
<th>%*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Renal dialysis</td>
<td>43.9</td>
<td>Renal dialysis</td>
<td>8.9</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Vaginal delivery no complicating diagnosis</td>
<td>3.6</td>
<td>Chemotherapy</td>
<td>4.7</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Caesarean delivery without complicating diagnosis</td>
<td>2.8</td>
<td>Other colonoscopy, sameday</td>
<td>3.5</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Other gastroscopy, non-major digestive disease, sameday</td>
<td>2.6</td>
<td>Neonate &gt;2499 g without significant operation room procedure with other problem</td>
<td>3.2</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Abortion with dilation &amp; curettage, aspiration curettage/hysterotomy</td>
<td>2.6</td>
<td>Other gastroscopy, non-major digestive disease, sameday</td>
<td>2.3</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Other antenatal with moderate/no complicating diagnosis</td>
<td>2.4</td>
<td>Mental health treatment, sameday, without electro-convulsive therapy</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Oesophagitis, gastroenteritis and miscellaneous digestive system disorder age&gt;9, no catastrophic/sever complication and/or comorbidity</td>
<td>1.6</td>
<td>Dental extractions and restorations</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Other colonoscopy, sameday</td>
<td>1.4</td>
<td>Other factors influencing health status &lt;80</td>
<td>1.9</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Anal &amp; stomal procedures without catastrophic/severe complication and/or comorbidity</td>
<td>1.0</td>
<td>Vaginal delivery no complicating diagnosis</td>
<td>1.8</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Other uterine &amp; adnexa procedures for non-malignancy</td>
<td>1.0</td>
<td>Major lens procedure</td>
<td>1.5</td>
<td></td>
</tr>
</tbody>
</table>

* % of total hospital admissions
### 3.8.9 Key findings – Eritrea-born

- Total hospital admission rates markedly increased in 2002-03 and 2003-04 (Fig 128), due mainly to an increase in elective/medical DRG admissions.
- Rate ratios for total and elective hospital admissions showed no consistent patterns when compared with Australia-born (Figs 129-130).
- Medical DRG admission rate ratios were either similar to or higher than Australia-born (Fig 133).
- Separation to private residence/accommodation rate ratios showed no clear patterns when compared with Australia-born (Fig 135).
- Total ACSCs admission rate ratios were either lower than or similar to Australia-born averages (Fig 139).
- Infectious/parasitic diseases admission rate ratios were either similar to or lower than the Australia-born average (Fig 143).
- Emergency admission rate ratios (Fig 131).
- Surgical DRG admission rate ratios (Fig 134).
- Length of stay rate ratios (Fig 138).
- Acute ACSCs admission rate ratios (Fig 140).
- Vaccine-preventable admission rate ratios (Fig 142).
- Mental/behavioural disorders admission rate ratios (Fig 144).
- Discharge at own risk rate ratios (Fig 136).
- Hospital death rate ratios (Fig 137).
- Chronic ACSCs admission rate ratios (Fig 141).
- Renal dialysis was the top AR-DRG in 2003-04 (although the proportion of hospital admissions due to this procedure was much higher amongst Eritrea-born) (Table 9).
- Digestive tract disorders (including diagnostic procedures) accounted for a similar proportion of hospital admissions in 2003-04 (Table 9).
- Obstetric admission rate ratios (Fig 132).
- Pregnancy and birth-related conditions represented a higher proportion of admissions in 2003-04 (Table 9).

<table>
<thead>
<tr>
<th>Lower than Australia-born</th>
<th>Similar to Australia-born</th>
<th>Higher than Australia-born</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency admission rate ratios (Fig 131).</td>
<td>Discharge at own risk rate ratios (Fig 136).</td>
<td>Obstetric admission rate ratios (Fig 132).</td>
</tr>
<tr>
<td>Surgical DRG admission rate ratios (Fig 134).</td>
<td>Hospital death rate ratios (Fig 137).</td>
<td>Pregnancy and birth-related conditions represented a higher proportion of admissions in 2003-04 (Table 9).</td>
</tr>
<tr>
<td>Length of stay rate ratios (Fig 138).</td>
<td>Chronic ACSCs admission rate ratios (Fig 141).</td>
<td></td>
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<tr>
<td>Acute ACSCs admission rate ratios (Fig 140).</td>
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<td></td>
</tr>
<tr>
<td>Vaccine-preventable admission rate ratios (Fig 142).</td>
<td>Digestive tract disorders (including diagnostic procedures) accounted for a similar proportion of hospital admissions in 2003-04 (Table 9).</td>
<td></td>
</tr>
</tbody>
</table>
3.9 Ethiopia

The vast majority of Ethiopia-born people living in Australia arrived after 1991. Many fled Ethiopia during the 1974-1991 Derg military regime and lived for long periods of time as refugees in Djibouti, Somalia, Kenya, Sudan and Egypt before entering Australia under the humanitarian program. Many of those who arrived in Australia after 1994 fled from political persecution under the coalition of rebel forces that toppled the Derg regime in 1991. The category ‘Ethiopian’ refers more to a birthplace than to a national identity. “The broader Ethiopian community is multiethnic, multilingual and largely divided along ethnic lines into various community organisations (…) The larger ethnic groups are Tigray, Oromo, Amhara and Harari (or Adaree)” (p.347). Most of the Ethiopia-born in Australia are from rural backgrounds.

The 1996 census recorded 2,358 Ethiopia-born persons living in Australia (1,351 in Victoria). By 2001, the number of Ethiopia-born in Australia increased to 3,544 (1,968 were living in Victoria). Between 1996 and 2005, the number of Ethiopia-born arrivals in Victoria was 1,827 (Figure 145). Those who entered under the humanitarian program represented 62% of the total number of arrivals, while the family stream accounted for 37% of total arrivals. Like the humanitarian arrivals, many of those under the family reunion program were also likely to have been through refugee-like experiences.

3.9.1 Total hospital admissions

A total of 4,613 hospital admissions in Victoria were recorded for Ethiopia-born persons from 1998-99 to 2003-04. Overall, the rate of total admissions for Ethiopia-born more than doubled during the six-year period, increasing from 230.85 per 1000 persons [197.71 – 271.29] in 1998-99 to 567.54 per 1000 persons [521.12 – 617.55] in 2003-04 (Figure 146). Compared with Australia-born, Ethiopia-born
recorded lower admission rate ratios between 1998-99 and 2001-02, moving subsequently above Australia-born averages for the 2002-03 and 2003-04 periods (Figure 147). The lowest rate ratio was 0.64 [0.59 – 0.71] in 1998-99 and the highest was 1.28 [1.21 – 1.35] in 2003-04.

3.9.2 Admission type

The rate of elective admission amongst Ethiopia-born increased considerably over the study period, from 98.23 per 1000 persons [77.93 – 126.14] in 1998-99 to 417.87 per 1000 persons [375.41 – 464.23] in 2003-04. When compared with Australia-born, Ethiopia-born reported lower elective admission rate ratios between 1998-99 and 2001-02. The elective admission rate ratios then moved above Australian-born averages during the 2002-03 and 2003-04 periods (Figure 148).
There was no consistent pattern in the rate of emergency admissions amongst Ethiopia-born persons over time. The lowest rate was 82.29 per 1000 persons [67.27 – 100.60] in 2000-01 and the highest was 122.45 [93.44 – 160.23] in 1999-2000. Emergency admission rate ratios were similar to Australia-born except for the 1999-2000 and 2002-02 periods (higher) (Figure 149).

No clear patterns were observed when analysing the rates of obstetric admissions amongst Ethiopia-born women over time. The lowest obstetric admission rate was 100.50 per 1000 women aged 10-54 years [82.54 – 128.68] in 2001-02 and the highest rate was 156.58 per 1000 women [134.99 – 186.51] in 2003-04. Obstetric admission rate ratios for Ethiopia-born over time were higher than the Australia-born average over the six-year period (Figure 150). The lowest rate ratio was 2.01 [1.71 – 2.36] in 1999-2000 and the highest was 3.35 [2.89 – 3.88] in 2000-01.
3.9.3 DRG type

Medical admission rates for Ethiopia-born markedly increased from 129.54 per 1000 persons [104.31 – 162.48] in 1998-99 to 435.24 per 1000 persons [392.55 – 481.76] in 2003-04. Rate ratios of medical admission were initially lower than Australia-born and moved above Australia-born averages from 2002-03 onwards (Figure 151).

Surgical admission rates for Ethiopia-born remained steady over the six-year period. The lowest rate was 65.49 per 1000 persons reported in 1998-99 [50.02 – 88.71] and also in 2003-04 [53.64 – 80.43]; the highest rate was 85.47 per 1000 persons [64.32 – 114.85] in 1999-2000. Compared with Australia-born, surgical admission rate ratios were lower amongst Ethiopia-born except for the year 1998-99 (higher) (Figure 152).
3.9.4 Separation mode

Compared with Australia-born, lower rate ratios of separation to private residence or accommodation were observed for Ethiopia-born between 1998-99 and 2001-02. Rate ratios moved above Australia-born averages from 2002-03 onwards (Figure 153). The rate of discharge at own risk for Ethiopia-born increased from zero in 1998-99 and 1999-2000 to 2.63 per 1000 persons [0.59 – 9.26] in 2003-04. When compared with Australia-born, discharge at own risk rate ratios for Ethiopia-born showed no consistent patterns over time (Figure 154). The highest rate ratio was 2.45 [1.16 – 5.19] in 2003-04. Hospital death rates also increased over time, from zero in 1998-99 to 5.99 per 1000 persons [1.63 – 15.47] in 2003-04. Hospital death rate ratios were similar to the Australia-born average except for the years 1998-99 and 1999-2000 (lower) (Figure 155).
3.9.5 Length of stay

The rate of bed days for Ethiopia-born increased over the study period, from 841.20 days per 1000 persons [773.12 – 916.43] in 1998-99 to 1165.60 days per 1000 persons [1102.77 – 1231.78] in 2003-04. Compared with Australia-born, length of stay rate ratios were consistently lower for Ethiopia-born but moved towards Australia-born averages over time (Figure 156).
3.9.6 ACSCs admissions

**Total ACSCs admissions**

Total ACSCs admission rates for Ethiopia-born decreased slightly over time from 27.71 per 1000 persons [13.47 – 52.65] in 1998-99 to 22.25 per 1000 persons [14.24 – 34.10] in 2003-04. Total ACSCs admission rate ratios were either similar to or lower than Australia-born, moving away from Australia-born averages over time (Figure 157).

**Acute, chronic and vaccine-preventable ACSCs admissions**

Admission rates for acute ACSCs amongst Ethiopia-born initially increased from 8.53 per 1000 persons [2.15 – 26.41] in 1998-99 to 12.41 per 1000 persons [6.88 – 21.78] in 2000-01, decreasing afterwards to 9.30 per 1000 persons [5.04 – 17.38] in 2003-04. Compared with Australia-born, acute ACSCs admission rate ratios were either similar or lower amongst Ethiopia-born over the study period (Figure 158). No consistent pattern was found for chronic ACSCs admission rates amongst Ethiopia-born. The lowest rate was 9.56 per 1000 persons [3.72 – 20.23] in 2000-01 and the highest was 22.21 per 1000 persons [12.86 – 36.05] in 2002-03. Chronic ACSCs admission rate ratios were similar to Australia-born averages except for the 2000-01 and 2003-04 periods (lower) (Figure 159). There was no consistent pattern of vaccine-preventable ACSCs admission rates for Ethiopia-born. The lowest rate was recorded in 2003-04 (0.15 per 1000 persons [0.00 – 5.82]) and the highest in 2001-02 (1.53 per 1000 persons [0.04 – 8.50]). Vaccine-preventable ACSCs admission rate ratios were similar to Australia-born averages.
over the six-year period (Figure 160). The lowest rate ratio was 0.18 [0.02 – 1.26] in 2003-04 and the highest was 1.93 [0.27 – 13.80] in 2001-02.
3.9.7 Admissions for specific diagnosis categories

**Infectious and parasitic diseases**
Admission rates for infectious and parasitic diseases amongst Ethiopia-born remained steady between 1998-99 (28.15 per 1000 persons [17.15 – 48.15]) and 2002-03 (29.22 per 1000 persons [20.75 – 41.18]), decreasing to 19.74 per 1000 persons [13.75 – 29.09] in 2003-04. Infectious and parasitic diseases admission rate ratios were above Australia-born averages except for the 2003-04 period (similar) (Figure 161). The highest rate ratio was recorded in 1999-2000 (1.53 [1.15 – 2.04]).

**Mental and behavioural disorders**
Admission rates for mental and behavioural disorders amongst Ethiopia-born increased from 14.56 per 1000 persons [10.13 – 28.52] in 1998-99 to 36.15 per 1000 persons [29.49 – 45.69] in 2002-03, declining to 27.46 per 1000 persons [21.52 – 36.42] in 2003-04. Compared with Australia-born, mental/behavioural disorders admission rate ratios for Ethiopia-born were either lower or similar (Figure 162). The lowest rate ratio was 0.45 [0.33 – 0.61] in 1998-99 and the highest 1.15 [0.95 – 1.41].
### 3.9.8 Top ten AR-DRGs

Table 10 compares the top 10 AR-DRGs between Ethiopia-born and Australia-born in 2003-04. The top 10 AR-DRGs accounted for 47.9% of the total hospital admissions for Ethiopia-born compared with 31.8% for Australia-born. Renal dialysis was the most common AR-DRG for both groups, but it represented 14.8% of total hospital admissions for Ethiopia-born compared with 8.9% for Australia-born. Pregnancy and birth-related conditions accounted for 20.4% of admissions amongst Ethiopia-born, compared with 1.8% amongst Australia-born.

<table>
<thead>
<tr>
<th>Ethiopia-born</th>
<th>AR-DRG</th>
<th>%*</th>
<th>Australia-born</th>
<th>AR-DRG</th>
<th>%*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Renal dialysis</td>
<td>14.8</td>
<td>Renal dialysis</td>
<td>8.9</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Abortion with dilation &amp; curettage, aspiration curettage/hysterotomy</td>
<td>6.1</td>
<td>Chemotherapy</td>
<td>4.7</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Vaginal delivery no complicating diagnosis</td>
<td>5.1</td>
<td>Other colonoscopy, sameday</td>
<td>3.5</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Other gastroscopy, non-major digestive disease, sameday</td>
<td>4.5</td>
<td>Neonate &gt;2499 g without significant operation procedure, with other problem</td>
<td>3.2</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Other antenatal with moderate/no complicating diagnosis</td>
<td>4.4</td>
<td>Other gastroscopy, non-major digestive disease, sameday</td>
<td>2.3</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Mental health treatment, sameday, without electro-convulsive therapy</td>
<td>3.8</td>
<td>Mental health treatment, sameday, without electro-convulsive therapy</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Caesarean delivery without complicating diagnosis</td>
<td>2.6</td>
<td>Dental extractions and restorations</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Abdominal pain/mesenteric adenitis no complication and/or comorbidity</td>
<td>2.4</td>
<td>Other factors influencing health status &lt;80</td>
<td>1.9</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Other antenatal admission with severe complicating diagnosis</td>
<td>2.2</td>
<td>Vaginal delivery no complicating diagnosis</td>
<td>1.8</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Other colonoscopy, sameday</td>
<td>2.0</td>
<td>Major lens procedure</td>
<td>1.5</td>
<td></td>
</tr>
</tbody>
</table>

* % of total hospital admissions
### 3.9.9 Key findings – Ethiopia-born

- Rates for total hospital admission markedly increased for the 2002-03 and 2003-04 periods (Fig 146), mainly due to an increase in elective/medical DRG admissions.
- Discharge at own risk rate ratios reported no consistent patterns when compared with Australia-born (Fig 154).
- Total and acute ACSCs admission rate ratios were either similar to or lower than the Australia-born average (Figs 157 and 158).
- Mental/behavioural disorders admission rate ratios were either lower than or similar to the Australia-born average (Fig 162).

<table>
<thead>
<tr>
<th>Lower than Australia-born</th>
<th>Similar to Australia-born</th>
<th>Higher than Australia-born</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total and elective admission rate ratios were initially lower, moving above Australia-born averages in 2002-03 and 2003-04 (Figs 147-148).</td>
<td>Emergency admission rate ratios (Fig 149).</td>
<td>Obstetric admission rate ratios (Fig 150).</td>
</tr>
<tr>
<td>Medical DRG admission rate ratios were initially lower, moving above the Australia-born average in 2002-03 and 2003-04 (Fig 151).</td>
<td>Hospital death rate ratios (Fig 155).</td>
<td>Infectious/parasitic diseases admission rate ratios (Fig 161).</td>
</tr>
<tr>
<td>Surgical DRG admission rate ratios (Fig 152).</td>
<td>Chronic and vaccine-preventable ACSCs admission rate ratios (Figs 159 and 160).</td>
<td>Pregnancy and birth-related conditions accounted for a higher proportion of hospital admissions in 2003-04 (Table 10).</td>
</tr>
<tr>
<td>Separation to private residence/accommodation rate ratios were initially lower, moving above Australia-born averages from 2002-03 onwards (Fig 153).</td>
<td>Renal dialysis was the top AR-DRG in 2003-04 (Table 10).</td>
<td></td>
</tr>
<tr>
<td>Length of stay rate ratios (moving slightly towards the Australia-born average over time) (Fig 156).</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
In 1929, the Kingdom of Serbs, Croats and Slovenes, which had been formed in 1918, was renamed Yugoslavia. Its ethnic diversity and cultural complexity was officially recognised in 1945 when Marshall Tito took control upon German expulsion and reorganised the country as a federal state of six republics: Bosnia and Herzegovina, Croatia, Macedonia, Montenegro, Serbia and Slovenia 19. After Tito’s death in 1980, ethnic tensions grew and the Socialist Federal Republic of Yugoslavia disintegrated in 1991 when Croatia and Slovenia declared independence, marking the beginning of a civil war. Four phases have characterised the Yugoslav migration to Australia 19. During the first phase, which took place before 1948, about 11,000 Yugoslavs (most of them male peasant farmers from Croatian background) arrived in Australia. Many of these arrivals eventually returned to their homeland. The second phase, between 1948 and 1960, saw the arrival in Australia of almost 50,000 Yugoslav nationals, most of them refugees. Although Croats still predominated, there were also many Serbs and Slovenes, and some Bosniaks (Bosnian Muslims). During the third phase, which took place between 1960 and 1990, more than 100,000 Yugoslav-born migrated to Australia primarily in response to increasing demand for semi- and unskilled labour within an expanding Australian economy. Macedonians constituted the largest group of arrivals during this period, followed by Croats, Bosniaks and Albanians. Finally, the fourth phase was prompted by the civil war which followed the fragmentation of Yugoslavia in 1991, causing the displacement of millions of Yugoslavia-born. Several thousand refugees entered Australia under the humanitarian program.

Separate data on the individual republics that were once part of the Socialist Republic of Yugoslavia began to be captured in the 1996 Australian census. However, a large proportion of persons still identified themselves as ‘Yugoslavs’. A total of 56,977 persons living in Australia gave ‘Former Yugoslavia, not further defined’ as their country of birth in 1996 21; 19,821 were living in Victoria. Although the 2001 Census did not include ‘Former Yugoslavia’ as a country of birth, this option is still included in the Department of Immigration settlement database 20. Between July 1996 and June 2005, 4,061 Former Yugoslavia-born persons arrived in Victoria 20. Eighty one percent came under the humanitarian program and 15% under the family stream (Figure 163). Many of those arriving under the family reunion category were also likely to have experienced refugee-like circumstances.
3.10.1 Total hospital admissions

A total of 50,472 hospital admissions in Victoria were recorded for Former Yugoslavia-born persons between 1998-99 and 2003-04. Figure 164 shows the total hospital admission rate for Former Yugoslavia-born and Australia-born persons from 1998-99 to 2003-04. Overall, the rate of total admissions increased from 191.24 per 1000 persons [185.15 – 197.57] in 1998-99 to 382.33 per 1000 persons [374.68 – 390.17] in 2003-04.

Compared with Australia-born averages, Former Yugoslavia-born recorded lower admission rate ratios over the study period (Figure 165). Rate ratios increased from 0.53 [0.52 – 0.55] in 1998-99 to 0.86 [0.84 – 0.88] in 2003-04, indicating that, total admission rates in this population group moved towards Australia-born averages over time.
3.10.2 Admission type

The rate of elective admission for Former Yugoslavia-born increased from 128.59 per 1000 persons [123.82 – 133.59] in 1998-99 to 262.46 per 1000 persons [256.30 – 268.80] in 2003-04. When compared with Australia-born, Former Yugoslavia-born reported consistently lower elective admissions over the study period. However, the elective admission rate ratios moved towards Australia-born averages, increasing from 0.52 [0.51 – 0.54] in 1998-99 to 0.84 [0.82 – 0.86] in 2003-04 (Figure 166).

The rate of emergency admissions for Former Yugoslavia-born persons doubled between 1998-99 (45.69 per 1000 persons [42.80 – 48.82]) and 2003-04 (98.83 per 1000 persons [94.92 – 102.93]). Emergency admission rate ratios reported no consistent patterns when compared with the Australia-born (Figure 167). Rate ratios were initially lower (1998-99 and 1999-2000) and moved towards Australia-born averages over time (similar to Australia-born in 2000-01, 2001-02 and 2003-04 and higher in 2002-03).
The rate of obstetric admissions amongst Former Yugoslavia-born women remained steady over time, from 44.68 per 1000 women aged 10-54 years [38.61 – 51.58] in 1998-99 to 50.80 per 1000 women [45.24 – 56.94] in 2003-04. Compared with the Australia-born, obstetric admission rate ratios were similar amongst Former Yugoslavia-born women except for the year 1998-99 (lower) (Figure 168). Rate ratios ranged from 0.80 [0.71 – 0.91] in 1998-99 to 1.01 [0.91 – 1.13] in 2003-04.

3.10.3 DRG type

Medical DRG admission rates for Former Yugoslavia-born persons increased from 109.51 per 1000 persons [104.89 – 114.38] in 1998-99 to 244.74 per 1000 persons [238.64 – 251.03] in 2003-04. Rate ratios of medical DRG admission were lower than Australia-born and moved towards Australia-born averages over time (Figure 169), showing a similar pattern than total (Figure 165) and elective admission rate ratios (Figure 166).
Surgical admission rates amongst Former Yugoslavia-born increased from 40.10 per 1000 persons [37.27 – 43.19] in 1998-99 to 90.92 per 1000 persons [87.16 – 94.86] in 2003-04. Compared with Australia-born, surgical admission rate ratios were consistently lower over time (Figure 170).

3.10.4 Separation mode

Compared with Australia-born, lower rate ratios of separation to private residence or accommodation were observed for Former Yugoslavia-born in the six-year period (Figure 171). Similar to total (Figure 165), elective (Figure 166) and medical admissions (Figure 169), separation to private residence or accommodation rate ratios moved towards Australia-born averages over time.
The rate of discharge at own risk for Former Yugoslavia-born initially increased from 0.21 per 1000 persons [0.07 – 0.74] in 1998-99 to 0.93 per 1000 persons [0.58 – 1.54] in 2001-02, decreasing slightly to 0.71 per 1000 persons [0.44 – 1.21] in 2003-04. When compared with Australia-born, discharge at own risk rate ratios were similar amongst Former Yugoslavia-born except for the 1998-99 and 1999-2000 periods (lower) (Figure 172).

Hospital death rates for Former Yugoslavia-born increased over time, from 1.90 per 1000 persons [1.39 - 2.69] in 1998-99 to 4.77 per 1000 persons [3.93 – 5.81] in 2003-04. Rate ratios were either lower than or similar to the Australia-born (moving towards Australia-born average over the six-year period) (Figure 173).
3.10.5 Length of stay

The rate of bed days for Former Yugoslavia-born doubled during the study period, from 573.69 days per 1000 persons [563.60 – 584.01] in 1998-99 to 1167.52 days per 1000 persons [1153.95 – 1181.28] in 2003-04. Compared with Australia-born, length of stay rate ratios were lower but moved towards Australia-born averages over time (Figure 174).

3.10.6 ACSCs admissions

Total ACSCs admissions

Total ACSCs admission rates for Former Yugoslavia-born increased from 14.79 per 1000 persons [13.20 – 16.62] in 1998-99 to 37.98 per 1000 persons [35.57 – 40.58] in 2003-04. Rate ratios were lower than the Australia-born, except for the year 2002-03 (similar), and moved towards Australia-born averages over time (Figure 175).
Acute, chronic and vaccine-preventable ACSCs admissions

Admission rates for acute ACSCs amongst Former Yugoslavia-born almost tripled over the six-year period, increasing from 4.26 per 1000 persons [3.30 – 5.53] in 1998-99 to 11.08 per 1000 persons [9.77 – 12.60] in 2003-04. Compared with Australia-born, acute ACSCs admission rate ratios were lower, moving towards Australia-born averages over time (Figure 176). Chronic ACSCs admission rates also increased from 9.92 per 1000 persons [8.73 – 11.36] in 1998-99 to 26.98 per 1000 persons [24.96 – 29.18] in 2003-04. No consistent pattern was found for chronic ACSCs rate ratios when compared with Australia-born. Rate ratios were initially lower, moving closer to Australia-born averages over time (in 2002-03 the rate ratio was higher than the Australia-born) (Figure 177). No consistent pattern was found for vaccine-preventable ACSCs admission rates amongst Former Yugoslavia-born. The lowest rate was recorded in 2002-03 (0.40 per 1000 persons [0.20 – 0.85]) and the highest rate in 2003-04 (1.07 per 1000 persons [0.75 – 1.60]). Vaccine-preventable ACSCs admission rate ratios were similar to Australia-born averages except for the 1998-99 and 1999-2000 periods (lower) (Figure 178).
3.10.7 Admissions for specific diagnosis categories

**Infectious and parasitic diseases**
The admission rate for infectious and parasitic diseases amongst Former Yugoslavia-born increased slightly from 10.79 per 1000 persons [9.43 – 12.42] in 1998-99 to 16.49 per 1000 persons [14.92 – 18.25] in 2003-04. Infectious and parasitic diseases rate ratios were lower than Australia-born, except for the year 2001-02 (similar), and moved towards Australia-born averages over time (Figure 179).
Mental and behavioural disorders
Admission rate for mental and behavioural disorders amongst Former Yugoslavia-born increased over time, from 11.49 per 1000 persons [10.14 – 13.10] in 1998-99 to 18.93 per 1000 persons [17.27 – 20.79] in 2003-04. Compared with Australia-born, admission rate ratios were consistently lower over the six-year period (Figure 180).

3.10.8 Top ten AR-DRGs
A comparison of the top 10 AR-DRGs between Former Yugoslavia-born and Australia-born is shown in Table 11. The top 10 AR-DRGs accounted for 40.5% of the total hospital admissions for Former Yugoslavia-born compared with 31.8% for Australia-born. Renal dialysis was the most common AR-DRG for both groups, but it represented 20.9% of total hospital admissions for Former Yugoslavia-born compared with 8.9% for Australia-born. Both populations showed similar percentages of diagnosis related groups such as chemotherapy, diagnostic procedures for digestive disorders (i.e. gastroscopy, colonoscopy), and pregnancy/birth related conditions.
Table 11: Top 10 AR-DRG for Former Yugoslavia nfd-born and Australia-born, 2003-04

<table>
<thead>
<tr>
<th>Former Yugoslavia nfd-born</th>
<th>AR-DRG</th>
<th>%*</th>
<th>Australia-born</th>
<th>AR-DRG</th>
<th>%*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Renal dialysis</td>
<td>20.9</td>
<td>Renal dialysis</td>
<td>8.9</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Chemotherapy</td>
<td>5.2</td>
<td>Chemotherapy</td>
<td>4.7</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Other gastroscopy, non-major digestive disease, sameday</td>
<td>3.4</td>
<td>Other colonoscopy, sameday</td>
<td>3.5</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Other colonoscopy, sameday</td>
<td>2.9</td>
<td>Neonate &gt;2499 g without significant operation room procedure with other problem</td>
<td>3.2</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Chest pain</td>
<td>1.8</td>
<td>Other gastroscopy, non-major digestive disease, sameday</td>
<td>2.3</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Other factors influencing health status &lt;80</td>
<td>1.6</td>
<td>Mental health treatment, sameday, without electro-convulsive therapy</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Major lens procedure</td>
<td>1.3</td>
<td>Dental extractions and restorations</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Vaginal delivery no complicating diagnosis</td>
<td>1.2</td>
<td>Other factors influencing health status &lt;80</td>
<td>1.9</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Cystourethroscopy without complication and/or comorbidity</td>
<td>1.2</td>
<td>Vaginal delivery no complicating diagnosis</td>
<td>1.8</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Inguinal and femoral hernia procedures &gt; 0</td>
<td>1.0</td>
<td>Major lens procedure</td>
<td>1.5</td>
<td></td>
</tr>
</tbody>
</table>

* % of total hospital admissions
### 3.10.9 Key findings – Former Yugoslavia nfd-born

- Total hospital admission rates increased over the six-year period (Fig 164).
- Emergency admission rate ratios reported no clear patterns when compared with Australia-born averages (although initially lower, moved closer to the Australia-born average; a higher rate ratio was reported in 2002-03) (Fig 167).
- Hospital deaths rate ratios were either lower than or similar to the Australia-born average (moving towards Australia-born over time) (Fig 173).
- Chronic ACSCs admission rate ratios showed no clear patterns when compared with Australia-born (although initially lower, moved closer to Australia-born averages and were higher in the 2002-03 period) (Fig 177).
- Most of the indicators among Former Yugoslavia-born showed a trend towards Australia-born averages over time.

<table>
<thead>
<tr>
<th>Lower than Australia-born</th>
<th>Similar to Australia-born</th>
<th>Higher than Australia-born</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total and elective hospital admission rate ratios (moving towards Australia-born averages over time) (Figs 165 and 166).</td>
<td>Obstetric admission rate ratios (Fig 168).</td>
<td>None</td>
</tr>
<tr>
<td>Medical and surgical DRG admission rate ratios (Figs 169-170). Medical rate ratios moved towards the Australia-born average over time.</td>
<td>Discharge at own risk rate ratios (Fig 172).</td>
<td></td>
</tr>
<tr>
<td>Separation to private residence/accommodation rate ratios (moved towards the Australia-born average over time) (Fig 171).</td>
<td>Vaccine-preventable ACSCs admission rate ratios (Fig 178).</td>
<td></td>
</tr>
<tr>
<td>Length of stay rate ratios (moving towards Australia-born over time) (Fig 174).</td>
<td>Renal dialysis was the top AR-DRG in 2003-04 (Table 11).</td>
<td></td>
</tr>
<tr>
<td>Total and acute ACSCs admission rate ratios (moving towards Australia-born averages over time) (Figs 175-176).</td>
<td>The proportion of hospital admissions attributed to chemotherapy, diagnostic procedures for digestive disorders, and pregnancy and birth-related conditions were similar in 2003-04 (Table 11).</td>
<td></td>
</tr>
<tr>
<td>Infectious/parasitic diseases admission rate ratios (moving towards Australia-born averages over time) (Fig 179).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mental/behavioural disorders admission rate ratios (Fig 180).</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3.11 Iran

Iranian migration to Australia prior to the 1979 Islamic Revolution, and subsequent establishment of the Islamic Republic of Iran, was mainly characterised by oil industry workers. In 1980, a wave of mainly young middle-class adults migrated to Australia at the beginning of the Iran-Iraq war, which lasted 8 years. In 1981, political persecution against members of the Baha’i faith in Iran prompted the Australia government to establish a special humanitarian program. Between 1981 and 1988 around 2,500 Iranian refugees arrived in Australia under this program. In the late 1980s and early 1990s, as the Islamic government in Iran hardened its position against dissidents, many professionals and political activists left Iran and arrived in Australia. In 1996, there were 16,272 Iran-born people living in Australia; 2,705 were Victorian residents. By 2001, the number of Iran-born had increased to 18,789 in Australia, and 3,182 in Victoria.

Figure 181 illustrates the number and migration categories of Iran-born arrivals in Victoria between July 1996 and June 2005. During this period, 1,262 Iran-born persons arrived in Victoria. Of these, 67% arrived under the humanitarian program, 16% within the family stream, and 15% entered under the skill migration category.

3.11.1 Total hospital admissions

There were 5,186 hospital admissions in Victoria for Iran-born persons between 1998-99 and 2003-04. Overall, the rate of total hospital admissions for Iran-born increased from 239.17 per 1000 persons [218.61 – 261.54] in 1998-99 to 330.94 per 1000 persons [308.57 – 354.79] in 2003-04 (Figure 182).
Iran-born total admission rates were compared with Australia-born rates over the six-year period. Consistent lower admission rate ratios were observed amongst Iran-born persons over time (Figure 183). The lowest admission rate ratio was 0.67 [0.62 – 0.72] in 1998-99 and the highest was 0.79 [0.75 – 0.84] in 2002-03.

3.11.2 Admission type

The rate of elective admissions for Iran-born increased between 1998-99 (152.38 per 1000 persons [136.00 – 170.59]) and 2003-04 (227.51 per 1000 persons [209.21 – 247.28]). Lower elective admission rate ratios were found amongst Iran-born when compared with Australia-born averages (Figure 184).
The rate of emergency admissions for Iran-born ranged from 64.08 per 1000 persons [53.00 – 77.16] in 1998-99 to 106.51 per 1000 persons [93.45 – 121.16] in 2002-03. No clear patterns were found for emergency admission rate ratios amongst Iran-born when compared with Australia-born averages (Figure 185).

Overall, the rate of obstetric admissions amongst Iran-born women halved over time, from 75.02 per 1000 women aged 10-54 years [60.07 – 92.82] in 1998-99 to 28.77 per 1000 women [20.56 – 39.33] in 2003-04. Compared with Australia-born averages, obstetric admission rate ratios showed no consistent patterns over time (Figure 186). The highest rate ratio was recorded in 1998-99 (1.35 [1.09 – 1.67]) and the lowest rate ratio was 0.57 [0.42 – 0.78] in 2003-04.
3.11.3 DRG type

Medical admission rates amongst Iran-born increased from 98.12 per 1000 persons [85.22 – 112.87] in 1998-99 to 167.28 per 1000 persons [151.28 – 184.79] in 2003-04. Medical admission rate ratios were consistently lower amongst Iran-born when compared with Australia-born averages (Figure 187).

Iran-born surgical admission rates increased over time, from 56.58 per 1000 persons [46.72 – 68.34] in 1998-99 to 100.52 per 1000 persons [88.47 – 114.06] in 2003-04. Compared with Australia-born, surgical admission rate ratios were either similar or lower for Iran-born over the study period (Figure 188).
3.11.4 Separation mode

Consistent lower rate ratios of separation to private residence or accommodation were observed amongst Iran-born when compared with Australia-born (Figure 189).

The rate of discharge at own risk (i.e. left against medical advice) for Iran-born showed an overall increase over time, from 0.21 per 1000 persons [0.01 – 3.29] in 1998-99 to 2.53 per 1000 persons [0.86 – 6.16] in 2003-04. Compared with Australia-born, rate ratios of discharge at own risk were similar amongst Iran-born except for the year 2003-04 (higher) (Figure 190).
The rate of hospital deaths for this population group increased from 1.34 per 1000 persons [0.18 – 5.20] in 1998-99 to 4.56 per 1000 persons [1.85 – 9.41] in 2001-02, decreasing afterwards to 3.07 per 1000 persons [1.00 – 7.27] in 2003-04. Hospital death rate ratios amongst Iran-born were similar to Australia-born averages over the six-year period (Figure 191).

3.11.5 Length of stay

The rate of bed days for Iran-born increased overall from 789.40 days per 1000 persons [748.12 – 832.65] in 1998-99 to 1010.13 days per 1000 persons [966.89 – 1054.99] in 2003-04 (the year 1999-2000 recorded a peak rate of 1444.90 days per 1000 persons [1384.74 – 1507.19]). Compared with Australia-born, length of stay rate ratios were lower amongst Iran-born except for the year 1999-2000 (similar) (Figure 192).
3.11.6 ACSCs admissions

Total ACSCs admissions
Between 1998-99 and 2003-04, total ACSCs admission rates increased for Iran-born persons, from 21.45 per 1000 persons [14.65 – 30.54] to 35.65 per 1000 persons [27.54 – 45.57] respectively. Compared with Australia-born, rate ratios amongst Iran-born were similar except for the 1998-99 and 2001-02 periods (lower) (Figure 193).

Acute, chronic and vaccine preventable ACSCs admissions
Overall, admission rates for acute ACSCs amongst Iran-born tripled over time from 3.63 per 1000 persons [1.61 – 7.86] in 1998-99 to 10.78 per 1000 persons [7.10 – 16.10] in 2003-04. Admission rate ratios for acute ACSCs were lower than the Australian-born average over the six-year period (Figure 194).
The admission rates for chronic ACSCs amongst Iran-born increased from 16.33 per 1000 persons [10.26 – 24.84] in 1998-99 to 24.89 per 1000 persons [17.81 – 33.92] in 2003-04. Chronic ACSCs admission rate ratios were similar to Australia-born averages (Figure 195). The lowest rate ratio was 0.88 [0.65 – 1.20] in 2001-02 and the highest was 1.08 [0.75 – 1.56] in 1999-2000.

No consistent pattern was found for vaccine-preventable ACSCs admission rates for Iran-born over the six-year period. The lowest rate was 0.37 per 1000 persons [0.01 – 3.02] in 2002-03 and the highest rate was 1.51 per 1000 persons [0.37 – 4.68] in 2001-02. Vaccine-preventable admission rate ratios amongst Iran-born were similar to Australia-born averages over the six-year period (Figure 196). The lowest rate ratio was recorded in 2002-03 (0.53 [0.07 – 3.78]) and the highest rate ratio was 1.91 [0.79 – 4.64] recorded in 2001-02.
3.11.7 Admissions for specific diagnosis categories

**Infectious and parasitic diseases**
The admission rate for infectious and parasitic diseases amongst Iran-born persons increased overall from 9.58 per 1000 persons [5.95 – 15.25] in 1998-99 to 23.38 per 1000 persons [17.31 – 31.17] in 2003-04. When compared with the Australia-born, admission rate ratios for infectious and parasitic diseases were similar amongst Iran-born except for the year 1998-99 (lower) (Figure 197). The lowest rate ratio was 0.48 [0.33 – 0.70] in 1998-99 and the highest was 1.15 [0.90 – 1.47] in 2003-04.

**Mental and behavioural disorders**
Mental and behavioural disorders admission rates for Iran-born remained steady over the six-year period, ranging between 12.29 per 1000 persons [8.22 – 18.05] in 2002-03 and 19.99 per 1000 persons [15.11 – 26.39] in 2001-02. Admission rate ratios for these conditions were consistently lower amongst Iran-born compared with Australia-born averages (Figure 198). The lowest rate ratio was 0.38 [0.28 – 0.53] in 2002-03 and the highest was 0.69 [0.54 – 0.87] in 2001-02.
### 3.11.8 Top 10 AR-DRGs

A comparison of the top 10 AR-DRGs between Iran-born and Australia-born persons in 2003-04 is shown in Table 12. The top 10 diagnoses accounted for 32% of the total hospital admissions for both Cambodia-born and Australia-born. Diagnostic procedures related to digestive disorders (e.g. gastroscopy and colonoscopy) represented 11.3% of total hospital admissions amongst Iran-born compared with 5.8% amongst Australia-born. Renal dialysis accounted for 6.4% of total admissions amongst Iran-born and for 8.9% amongst Australia-born. Compared with Australia-born (1.8%), the percentage of pregnancy and birth related conditions was double amongst Iran-born (4.3%). While chest pain represented 2.6% of admissions amongst Iran-born, it was not in the top 10 AR-DRGs amongst Australia-born.

### Table 12: Top 10 AR-DRG for Iran-born and Australia-born, 2003-04

<table>
<thead>
<tr>
<th>Iran-born</th>
<th>Australia-born</th>
</tr>
</thead>
<tbody>
<tr>
<td>AR-DRG</td>
<td>%*</td>
</tr>
<tr>
<td>1 Other gastroscopy, non-major digestive disease,</td>
<td>6.7</td>
</tr>
<tr>
<td>sameday</td>
<td></td>
</tr>
<tr>
<td>2 Renal dialysis</td>
<td>6.4</td>
</tr>
<tr>
<td>3 Other colonoscopy, sameday</td>
<td>4.6</td>
</tr>
<tr>
<td>4 Chest pain</td>
<td>2.6</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>5 Abortion with dilation &amp; curettage, aspiration</td>
<td>2.5</td>
</tr>
<tr>
<td>curettage/ Hysterotomy</td>
<td></td>
</tr>
<tr>
<td>6 Major lens procedures</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>7 Abdominal pain/mesenteric adenitis no</td>
<td>1.9</td>
</tr>
<tr>
<td>complication and/or comorbidity</td>
<td></td>
</tr>
<tr>
<td>8 Diagnostic curettage or hysteroscopy</td>
<td>1.9</td>
</tr>
<tr>
<td>9 Vaginal delivery no complicating diagnosis</td>
<td>1.8</td>
</tr>
<tr>
<td>10 Cranial &amp; peripheral nerve disorders no</td>
<td>1.6</td>
</tr>
<tr>
<td>complication and/or comorbidity</td>
<td></td>
</tr>
</tbody>
</table>

* % of total hospital admissions
### 3.11.9 Key findings – Iran-born

- Total hospital admission rates increased over time (Fig 182).
- No clear pattern was observed for emergency and obstetric admission rate ratios when compared with Australia-born (Figs 185 and 186).
- Surgical DRG admission rate ratios were either similar to or lower than Australia-born averages (Fig 188).

<table>
<thead>
<tr>
<th>Lower than Australia-born</th>
<th>Similar to Australia-born</th>
<th>Higher than Australia-born</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total and elective hospital admission rate ratios (Figs 183-184).</td>
<td>Discharge at own risk rate ratios (Fig 190).</td>
<td>Digestive disorders-related diagnostic procedures, and pregnancy and birth-related conditions accounted for a higher proportion of hospital admissions in 2003-04 (Table 12).</td>
</tr>
<tr>
<td>Medical DRG admission rate ratios (Fig 187).</td>
<td>Hospital deaths rate ratios (Fig 191).</td>
<td></td>
</tr>
<tr>
<td>Separation to private residence/accommodation rate ratios (Fig 189).</td>
<td>Total, chronic and vaccine-preventable ACSCs admission rate ratios (Figs 193, 195 and 196).</td>
<td></td>
</tr>
<tr>
<td>Length of stay rate ratios (Fig 192).</td>
<td>Infectious/parasitic diseases admission rate ratios (Fig 197).</td>
<td></td>
</tr>
<tr>
<td>Acute ACSCs admission rate ratios (Fig 194).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mental/behavioural disorders admission rate ratios (Fig 198).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proportion of admissions due to renal dialysis in 2003-04 (Table 12).</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3.12 Iraq

British occupation of Iraq, which started during World War I, ended in 1932 when Iraq obtained its independence as a Kingdom. Military coups, wars and instability followed the 1958 proclamation of the ‘Republic of Iraq’ \(^{29}\). In 1979, the president Hassan al-Bakr was replaced by Saddam Hussein. A year later, war broke out against Iran. The war lasted for 8 years and had a devastating effect on both countries. During this period, many Iraqis left their homeland and sought refuge in other countries, including Australia. By 1986, the total population of Iraq-born living in Australia was 4,516 \(^{30}\).

In 1990, as a result of a long-standing territorial dispute, Iraqi troops invaded Kuwait, prompting the 1991 Persian Gulf War. The Gulf War, which lasted 6 weeks, and the subsequent suppression by Saddam Hussein of the Shi’a and Kurdish’s rebellion in Iraq resulted in a substantial increase of the numbers of Iraq-born entering Australia after 1991. Between 1991 and 1992 Australia accepted about 2,000 Iraqi refugees \(^{30}\). The 1996 Australian census recorded 14,005 Iraq-born in Australia, 3,501 of them living in Victoria \(^{21}\). By 2001 the numbers of Iraq-born living in Australia had risen to 24,832 (6,093 were in Victoria) \(^{22}\). Between 1999 and 2001, a number of Iraq-born asylum seekers arrived on boats and were placed in immigration detention centres. Many of these were found to be refugees and were granted Temporary Protection Visas.

Between 1996 and 2005, 4,531 Iraq-born persons arrived in Victoria \(^{20}\). Eighty one percent entered under the humanitarian program and 17% within the family stream (Figure 199). Many of those arriving under the family category were likely to have been through refugee-like experiences.

**Figure 199: Iraq-born Arrivals in Victoria by Migration Category, 1996 to 2005**

- Humanitarian: 3,670
- Family: 792
- Skills: 39
- Other: 30

Source: The World Factbook \(^{27}\)
3.12.1 Total hospital admissions

From 1998-99 to 2003-04, 11,716 hospital admissions were recorded for Iraq-born persons in Victoria. Overall, the rate of total admissions for Iraq-born remained steady between 1998-99 (379.03 per 1000 persons [352.43 – 407.40]) and 2002-03 (366.60 per 1000 persons [347.65 – 386.64]), increasing to 537.42 per 1000 persons [511.33 – 564.72] in 2003-04 (Figure 200). Compared with Australia-born, no clear pattern was found for hospital admission rate ratios amongst Iraq-born over the six-year period (Figure 201). The lowest rate ratio was 0.82 [0.78 – 0.86] in 2001-02 and the highest was 1.21 [1.16 – 1.25] in 2003-04.

![Figure 200: Total Hospital Admission Rates for Iraq-born and Australia-born, 1998-99 to 2003-04](image1)

![Figure 201: Hospital Admission Rate Ratios Iraq-born (Australia-born = 1), 1998-99 to 2003-04](image2)

3.12.2 Admission type

The rate of elective admission amongst Iraqi-born was steady between 1998-99 and 2002-03 (237.31 per 1000 persons [214.63 – 261.93] and 225.98 per 1000 persons [210.94 – 242.14] respectively), increasing in 2003-04 to 370.13 per 1000 persons [347.47 – 394.07]. When compared with Australia-born, Iraq-born reported no clear patterns of elective admission rate ratios (Figure 202).
Emergency admissions rates amongst Iraq-born persons showed an overall increase over time, from 82.37 per 1000 persons [70.23 – 96.32] in 1998-99 to 117.65 per 1000 persons [105.82 – 130.70] in 2003-04. Compared with Australia-born, emergency admission rate ratios were similar amongst Iraq-born except for the years 1999-2000 and 2003-04 (higher) (Figure 203).

The rate of obstetric admissions amongst Iraq-born women decreased from 200.57 per 1000 women aged 10-54 years [181.51 – 222.45] in 1998-99 to 155.83 per 1000 women [142.61 – 170.46] in 2003-04. Obstetric admission rate ratios were markedly and consistently higher than the Australia-born average over the six-year period (Figure 204). The lowest rate ratio was 2.94 [2.67 – 3.23] in 2003-04 and the highest was 3.73 [3.39 – 4.10] in 1999-2000.
3.12.3 DRG type

Medical DRG admission rates for Iraq-born decreased from 263.77 per 1000 persons [240.88 – 288.51] in 1998-99 to 184.17 per 1000 persons [170.65 – 198.82] in 2001-02, increasing subsequently to 377.61 per 1000 persons [354.89 – 401.60] in 2003-04. Rate ratios of medical DRG admission reported no consistent pattern when compared with Australia-born averages (Figure 205). The lowest rate ratio was 0.87 [0.83 – 0.92] in 2002-03 and the highest was 1.66 [1.55 – 1.78] in 1998-99.

Surgical admission rates for Iraq-born increased over the six-year period, from 59.71 per 1000 persons [50.79 – 70.23] in 1998-99 to 103.81 per 1000 persons [93.67 – 115.06] in 2003-04. Compared with Australia-born, surgical admission rate ratios were lower amongst Iraq-born except for the year 1998-99 (similar) (Figure 206).
3.12.4 Separation mode

Compared with Australia-born, rate ratios of separation to private residence or accommodation for Ethiopia-born did not show a consistent pattern over the six-year period (Figure 207). The lowest rate ratio was recorded in 2001-02 (0.85 [0.81 – 0.89]) and the highest in 2003-04 (1.27 [1.22 – 1.32]). The rate of discharge at own risk for Iraq-born decreased overall from 2.06 per 1000 persons [0.48 – 6.04] in 1998-99 to 0.92 per 1000 persons [0.44 – 2.91] in 2003-04. When compared with Australia-born, discharge at own risk rate ratios for Iraq-born were mostly similar except for the year 1999-2000 (higher) (Figure 208). The highest rate ratio was 2.36 [1.32 – 4.19] in 1999-2000 and the lowest was 0.62 [0.23 – 1.66] in 2000-01.
Hospital death rates amongst Iraq-born increased from 1.29 per 1000 persons [0.17 – 4.91] in 1998-99 to 6.26 per 1000 persons [2.87 – 11.95] in 1999-2000, decreasing subsequently to 2.00 per 1000 persons [0.63 – 5.02] in 2003-04. Hospital death ratios were similar to the Australia-born average over the six-year period (Figure 209).

3.12.5 Length of stay

There was no consistent pattern in the rate of bed days for Iraq-born. The lowest rate was 894.18 days per 1000 persons [862.44 – 927.06] in 2002-03 and the highest was 1230.06 days per 1000 persons [1181.05 – 1280.81] in 1999-2000. Compared with Australia-born, length of stay rate ratios were lower for Iraq-born over the six-year period (Figure 210).
3.12.6 ACSCs admissions

Total ACSCs admissions
Total ACSCs admission rates for Iraq-born increased overall from 24.20 per 1000 persons [17.59 – 32.79] in 1998-99 to 37.59 per 1000 persons [30.59 – 45.93] in 2003-04. Total ACSCs admission rate ratios were similar to the Australia-born except for the 1998-99 and 2002-03 periods (lower) (Figure 211). The lowest rate ratio was 0.75 [0.63 – 0.90] in 2002-03 and the highest was 0.99 [0.79 – 1.24] in 1999-2000.

Acute, chronic and vaccine-preventable ACSCs admissions
Admission rates for acute ACSCs amongst Iraq-born doubled over the study period, from 7.36 per 1000 persons [4.25 – 12.41] in 1998-99 to 14.49 per 1000 persons [10.45 – 19.85] in 2003-04. Compared with Australia-born, acute ACSCs admission rate ratios were either lower or similar amongst Iraq-born over the six-year period (Figure 212).
Chronic ACSCs admission rates amongst Iraq-born increased from 16.00 per 1000 persons [10.47 – 23.64] in 1998-99 to 26.73 per 1000 persons [20.13 – 34.91] in 2000-01, decreasing afterwards to 22.90 per 1000 persons [17.36 – 29.83] in 2003-04. Chronic ACSCs admission rate ratios were similar to Australia-born averages over the study period (Figure 213). The lowest rate ratio was recorded in 2002-03 (0.86 [0.67 – 1.10]) and the highest was 1.26 [0.99 – 1.61] in 2000-01.

There was no consistent pattern of vaccine-preventable ACSCs admission rates for Iraq-born. The lowest rate was 0.12 per 1000 persons [0.00 – 2.18] in 2002-03 and the highest was 1.26 per 1000 persons [0.19 – 4.28] in 2000-01. Vaccine-preventable ACSCs admission rate ratios were similar to Australia-born averages (Figure 214).
3.12.7 Admissions for specific diagnosis categories

**Infectious and parasitic diseases**
Admission rates for infectious and parasitic diseases amongst Iraq-born did not show a consistent pattern over time. The lowest admission rate was 13.56 per 1000 persons [10.02 – 18.33] in 2003-04 and the highest was 22.77 per 1000 persons [18.05 – 28.73] in 2002-03. Infectious and parasitic diseases admission rate ratios were similar to Australia-born except for the 1998-99 and 2003-04 periods (lower) (Figure 215). The lowest rate ratio was 0.67 [0.54 – 0.83] in 2003-04 and the highest was 1.16 [0.98 – 1.39] recorded in 2002-03.

**Mental and behavioural disorders**
Admission rates for mental and behavioural disorders amongst Iraq-born showed a very small increase over time, from 12.05 per 1000 persons [8.07 – 17.85] in 1998-99 to 17.24 per 1000 persons [13.24 – 22.45] in 2003-04. Compared with Australia-born, admission rate ratios for Iraq-born were consistently lower over the six-year period (Figure 216). The lowest rate ratio was 0.37 [0.28 – 0.48] in 1999-2000 and the highest was 0.53 [0.41 – 0.68] in 2001-02.
3.12.8 Top ten AR-DRGs

Table 13 compares the top 10 AR-DRGs between Iraq-born and Australia-born in 2003-04. The top 10 AR-DRGs accounted for 50.2% of the total hospital admissions for Iraq-born compared with 31.8% for Australia-born. Renal dialysis was the most common AR-DRG for both groups, but it represented 23.1% of total hospital admissions for Iraq-born compared with 8.9% for Australia-born. Pregnancy and birth-related conditions accounted for 17.7% of admissions amongst Iraq-born, compared with 1.8% amongst Australia-born.

Table 13: Top 10 AR-DRGs for Iraq-born and Australia-born, 2003-04

<table>
<thead>
<tr>
<th></th>
<th>Iraq-born</th>
<th>%*</th>
<th></th>
<th>Australia-born</th>
<th>%*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Renal dialysis</td>
<td>23.1</td>
<td>Renal dialysis</td>
<td>8.9</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Vaginal delivery no complicating diagnosis</td>
<td>6.3</td>
<td>Chemotherapy</td>
<td>4.7</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Other gastroscopy, non-major digestive disease, sameday</td>
<td>5.0</td>
<td>Other colonoscopy, sameday</td>
<td>3.5</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Other antenatal with moderate/no complicating diagnosis</td>
<td>4.4</td>
<td>Neonate &gt;2499 g without significant operation room procedure with other problem</td>
<td>3.2</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Abortion with dilation &amp; curettage, aspiration curettage/hysterotomy</td>
<td>2.7</td>
<td>Other gastroscopy, non-major digestive disease, sameday</td>
<td>2.3</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>False labour</td>
<td>2.6</td>
<td>Mental health treatment, sameday, without electro-convulsive therapy</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Caesarean delivery without complicating diagnosis</td>
<td>1.7</td>
<td>Dental extractions and restorations</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Other colonoscopy, sameday</td>
<td>1.6</td>
<td>Other factors influencing health status &lt;80</td>
<td>1.9</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Chemotherapy</td>
<td>1.5</td>
<td>Vaginal delivery no complicating diagnosis</td>
<td>1.8</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Chest pain</td>
<td>1.3</td>
<td>Major lens procedure</td>
<td>1.5</td>
<td></td>
</tr>
</tbody>
</table>

* % of total hospital admissions
3.12.9 Key findings – Iraq-born

- Total hospital admission rates remained steady, increasing in 2003-04 (Fig 200).
- When compared with Australia-born, no clear pattern was observed for total and elective hospital admission rate ratios (Figs 201-202).
- No consistent pattern was recorded for Medical DRG admission rate ratios, when compared with the Australia-born average (Fig 205).
- Separation to private residence/accommodation rate ratios showed no clear patterns when compared with Australia-born (Fig 207).
- Acute ACSCs admission rate ratios were either lower than or similar to the Australia-born average (Fig 212).

<table>
<thead>
<tr>
<th>Lower than Australia-born</th>
<th>Similar to Australia-born</th>
<th>Higher than Australia-born</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgical DRG admission rate ratios (Fig 206).</td>
<td>Emergency admission rate ratios (Fig 203).</td>
<td>Obstetric admission rate ratios were markedly higher (Fig 204).</td>
</tr>
<tr>
<td>Length of stay rate ratios (Fig 210).</td>
<td>Discharge at own risk rate ratios (Fig 208).</td>
<td>Pregnancy and birth-related conditions represented a higher proportion of hospital admissions in 2003-04 (Table 13).</td>
</tr>
<tr>
<td>Mental and behavioural disorders admission rate ratios were consistently lower (Fig 216).</td>
<td>Hospital death rate ratios (Fig 209).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total, chronic and vaccine-preventable ACSCs admission rate ratios (Figs 211, 213 and 214).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Infectious/parasitic diseases admission rate ratios (Fig 215).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Renal dialysis was the top AR-DRG in 2003-04 (Table 13).</td>
<td></td>
</tr>
</tbody>
</table>
3.13 Somalia

The Somali Republic was created in 1960 from the Italian colony of Somalia and British Somaliland. Civil war broke out in 1991 after the collapse of the 21-year-long dictatorship of Siyad Barre. Those who had previously lived under British rule declared independence as the Republic of Somaliland from the fragile centralised authority based in Mogadishu, in the former Italian territory. United Nations intervention from 1993 to 1995 failed to resolve the conflict. In August 2000 a Transitional National Government (TNG) was created but its mandate expired in 2003. Late 2004 the new Somali President Abdullahi Yusuf Ahmed formed a Transitional Federal Government (TFG) with a 275-member parliament. However, due to ongoing factional fighting, the TFG remains resident in Nairobi (Kenya) and has been unable to move to Mogadishu.

By 1996 there were 2,055 Somalia-born in Australia, of whom the great majority (1,397) lived in Victoria. The 2001 census recorded 3,711 Somalia-born persons living in Australia (2,313 were in Victoria). Between July 1996 and June 2005, 1,550 Somalia-born arrived in Victoria. Seventy six percent came under the humanitarian program and 24% under the family reunion stream (Figure 217). Many of those arriving under the family stream were likely to have been from refugee backgrounds.

3.13.1 Total hospital admissions

A total of 6,027 hospital admissions in Victoria were recorded for Somalia-born persons between 1998-99 and 2003-04. Figure 218 shows the total hospital admission rate for Somalia-born and Australia-born persons from 1998-99 to 2003-04. The rate of total admissions for Somalia-born increased overall from 368.51 per 1000 persons [331.01 – 411.34] in 1998-99 to 500.65 per 1000 persons [460.18 – 546.09] in 2003-04.
Compared with Australia-born, Somalia-born recorded either similar or higher admission rate ratios over the six-year period (Figure 219). The lowest rate ratio was 1.03 [0.96 – 1.10] in 1998-99 and the highest was 1.31 [1.23 – 1.39] in 2001-02. Rate ratios moved away from Australia-born averages over time.

3.13.2 Admission type

The rate of elective admission for Somalia-born increased from 172.66 per 1000 persons [144.37 – 206.92] in 1998-99 to 239.89 per 1000 persons [210.99 – 274.10] in 2001-02, decreasing subsequently to 198.53 per 1000 persons [174.01 – 228.19] in 2003-04. When compared with Australia-born, Somalia-born reported lower elective admissions over the six-year period (Figure 220). The lowest rate ratio was 0.64 [0.58 -0.70] in 2003-04 and the highest was 0.89 [0.81 – 0.97] in 2001-02.
The rate of emergency admissions for Somalia-born persons doubled during the six-year period, increasing from 90.81 per 1000 persons [70.92 – 116.84] in 1998-99 to 183.43 per 1000 persons [154.57 – 218.19] in 2003-04. Emergency admission rate ratios were higher than Australia-born, except for the year 1998-99 (similar), and moved away from Australia-born averages over time (Figure 221). The lowest rate ratio was 1.13 [0.97 – 1.32] in 1998-99 and the highest was 1.81 [1.64 – 2.02] in 2003-04.

Obstetric admissions rates amongst Somalia-born women remained stable over the six-year period, from 303.87 per 1000 women aged 10-54 years [269.48 – 344.73] in 1998-99 to 323.99 per 1000 women [291.94 – 360.86] in 2003-04. Compared with the Australia-born averages, obstetric admission rate ratios were considerably higher amongst Somalia-born women over the six-year period (Figure 222). The lowest rate ratio was 5.47 [4.90 – 6.10] in 1998-99 and the highest was 6.74 [6.08 – 7.47] in 2001-02.
3.13.3 DRG type

Medical DRG admission rates for Somalia-born persons increased between 1998-99 (220.28 per 1000 persons [193.57 – 252.22]) and 2001-02 (351.01 per 1000 persons [316.00 – 391.22]), decreasing afterwards to 306.20 per 1000 persons [274.75 – 342.75] in 2003-04. Compared with Australia-born, medical DRG admission rate ratios were higher amongst Somalia-born, particularly in the 1998-99 (1.39 [1.27 – 1.51]) and 2003-04 (1.51 [1.41 – 1.62]) periods (Figure 223).

Surgical admission rates amongst Somalia-born remained stable over the six-year period. The lowest rate was 83.39 per 1000 persons [67.60 – 104.94] in 2000-01 and the highest was 107.01 per 1000 persons [84.62 – 135.63] in 1998-99. Compared with Australia-born, surgical admission rate ratios reported no consistent patterns over the study period (Figure 224).
The overall increase of total hospital admission rates amongst Somalia-born over the six-year period (Figure 219) consisted mainly of emergency (Figure 221), obstetric (Figure 222) and medical DRG (Figure 223) admissions, rather than elective (Figure 220) and/or surgical DRG (Figure 224) admissions.

### 3.13.4 Separation mode

Compared with Australia-born, higher rate ratios of separation to private residence or accommodation were observed for Somalia-born except for the year 1998-99 (similar) (Figure 225). The highest rate ratio was 1.33 [1.25 – 1.41] recorded in 2001-02.

There was no consistent pattern in the rate of discharge at own risk for Somalia-born. The lowest rate was 1.06 per 1000 persons [0.29 – 11.54] in 1998-99 and the highest was 3.00 per 1000 persons [1.02 – 13.06] in 1999-2000. Discharge at own risk rate ratios were similar to Australia-born except for the 1999-2000 and 2003-04 periods (higher) (Figure 226). The highest rate ratio was 2.79 [1.44 – 5.41] in 1999-2000.
Hospital death rates showed a no consistent pattern amongst Somalia-born. The lowest death rate was 0.24 per 1000 persons [0.01 – 10.92] in 1998-99 and the highest rate was 8.09 per 1000 persons [1.96 – 23.32] in 2001-02. Hospital death rate ratios were similar to the Australia-born average except for the 1998-99 period (lower) (Figure 227). The lowest rate ratio was 0.06 [0.01 – 0.41] in 1998-99 and the highest was 1.84 [0.83 – 4.12] in 2001-02.

3.13.5 Length of stay

The rate of bed days for Somalia-born increased from 950.82 days per 1000 persons [890.01 – 1016.80] in 1998-99 to 1601.49 days per 1000 persons [1514.96 – 1693.52] in 2002-03, decreasing subsequently to 1486.01 days per 1000 persons [1407.71 – 1569.51] in 2003-04. Length of stay rate ratios reported no consistent patterns when compared with Australia-born (Figure 228). Rate ratios were lower in 1998-99, similar in 1999-2000, 2000-01 and 2003-04, and higher in 2001-02 and 2002-03. The highest rate ratio was 1.09 [1.05 – 1.13] in 2002-03.
3.13.6 ACSCs admissions

Total ACSCs admissions
Total ACSCs admission rates for Somalia-born decreased from 1998-99 (32.34 per 1000 persons [18.46 – 54.03]) to 1999-2000 (11.99 per 1000 persons [5.44 – 25.71]), increasing subsequently to 43.92 per 1000 persons [29.73 – 64.83] in 2003-04. Rate ratios were mostly similar to Australia-born averages except for the 1999-2000 period (lower) (Figure 229). The lowest rate ratio was 0.38 [0.25 – 0.58] in 1999-2000 and the highest was 1.08 [0.80 – 1.46] in 2001-02.

Acute, chronic and vaccine-preventable ACSCs admissions
Both admission rates and rate ratios for acute ACSCs showed no consistent patterns amongst Somalia-born over time. The lowest admission rate was 7.25 per 1000 persons [2.81 – 19.08] in 1999-2000 and the highest was 23.18 per 1000 persons [12.25 – 41.79] in 2001-02. Compared with Australia-born, acute ACSCs admission rate ratios were similar except for the 1999-2000 (lower) and 2001-02 (higher) periods (Figure 230). The lowest rate ratio was 0.55 [0.33 – 0.94] in 1999-2000 and the highest was 1.61 [1.10 – 2.37] in 2001-02.
Chronic ACSCs admission rates for Somalia-born decreased sharply from 15.84 per 1000 persons [5.90 – 34.82] in 1998-99 to 1.44 per 1000 persons [0.52 – 11.21] in 1999-2000, increasing subsequently to 21.97 per 1000 persons [11.53 – 39.99] in 2003-04. Chronic ACSCs rate ratios were mostly similar to Australia-born averages except for the year 1999-2000 (lower) (Figure 231). The lowest rate ratio was 0.08 [0.04 – 0.18] in 1999-2000 and the highest was 1.24 [0.87 – 1.78] in 2000-01.

There was no consistent pattern of hospital admissions for vaccine-preventable ACSCs amongst Somalia-born during the study period. The lowest admission rate was zero in 2001-02 and the highest was 6.13 per 1000 persons [0.84 – 21.45] in 2002-03. Compared with Australia-born, vaccine-preventable ACSCs admission rate ratios were similar amongst Somalia-born except for the 2001-02 (lower) and 2002-03 (higher) periods (Figure 232).
3.13.7 Admissions for specific diagnosis categories

Infectious and parasitic diseases
There was no consistent pattern in the admission rate for infectious and parasitic diseases amongst Somalia-born over time. The lowest rate was 30.67 per 1000 persons [21.34 – 46.48] in 2000-01 and the highest was 48.77 per 1000 persons [33.33 – 71.07] in 2002-03. Infectious and parasitic diseases rate ratios were above Australian-born averages over the six-year period (Figure 233). The lowest rate ratio was 1.69 [1.36 – 2.11] in 1998-99 and the highest was 2.49 [2.01 – 3.09] in 2002-03.

Mental and behavioural disorders
Admission rates for mental and behavioural disorders amongst Somalia-born initially decreased from 19.97 per 1000 persons [12.22 – 34.44] in 1998-99 to 11.77 per 1000 persons [8.28 – 21.81] in 1999-2000, increasing subsequently to 37.13 per 1000 persons [30.50 – 49.51] in 2003-04. Compared with Australia-born, admission rate ratios were lower for Somalia-born between 1998-99 and 2003-03, moving towards Australia-born averages in 2003-04 (1.08 [0.91 – 1.29]) (Figure 234). The lowest rate ratio was 0.37 [0.27 – 0.50] in 1999-2000.
3.13.8 Top ten AR-DRGs

A comparison of the 2003-04 top 10 AR-DRGs between Somalia-born and Australia-born is shown in Table 14. The top 10 AR-DRGs accounted for 44.2% of the total hospital admissions for Somalia-born compared with 31.8% for Australia-born. Pregnancy and birth-related conditions accounted for 30.9% of total hospital admissions for Somalia-born compared with 1.8% for Australia-born. Renal dialysis was the most common AR-DRG amongst Australia-born but was not in the top 10 for Somalia-born.

Table 14: Top 10 AR-DRG for Somalia-born and Australia-born, 2003-04

<table>
<thead>
<tr>
<th>Somalia-born</th>
<th>AR-DRG</th>
<th>%*</th>
<th>Australia-born</th>
<th>AR-DRG</th>
<th>%*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Vaginal delivery no complicating diagnosis</td>
<td>8.5</td>
<td>Renal dialysis</td>
<td>8.9</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Other antenatal w moderate/no complicating diagnosis</td>
<td>8.5</td>
<td>Chemotherapy</td>
<td>4.7</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>False labour</td>
<td>5.9</td>
<td>Other colonoscopy, sameday</td>
<td>3.5</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Other gastroscopy, non-major digestive disease, sameday</td>
<td>5.5</td>
<td>Neonate &gt;2499 g without significant operation room procedure with other problem</td>
<td>3.2</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Mental health treatment, sameday with electro-convulsive therapy</td>
<td>3.6</td>
<td>Other gastroscopy, non-major digestive disease, sameday</td>
<td>2.3</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Other antenatal admission with severe complicating diagnosis</td>
<td>3.0</td>
<td>Mental health treatment, sameday, without electro-convulsive therapy</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Abortion with dilation &amp; curettage, aspiration curettage/hysterotomy</td>
<td>2.9</td>
<td>Dental extractions and restorations</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Other colonoscopy, sameday</td>
<td>2.2</td>
<td>Other factors influencing health status &lt;80</td>
<td>1.9</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Caesarean delivery without complicating diagnosis</td>
<td>2.1</td>
<td>Vaginal delivery no complicating diagnosis</td>
<td>1.8</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Abdominal pain/mesenteric adenitis no complication and/or comorbidity</td>
<td>2.0</td>
<td>Major lens procedure</td>
<td>1.5</td>
<td></td>
</tr>
</tbody>
</table>

* % of total hospital admissions
3.13.9 Key findings – Somalia-born

- Total hospital admission rates increased over the six-year period (Fig 218).
- Total hospital admission rate ratios were either similar to or higher than the Australia-born average (increasing over time) (Fig 219).
- Surgical DRG admission rate ratios reported no consistent patterns when compared with Australia-born (Fig 224).
- Length of stay rate ratios showed no clear patterns when compared with Australia-born (Fig 228).

<table>
<thead>
<tr>
<th>Lower than Australia-born</th>
<th>Similar to Australia-born</th>
<th>Higher than Australia-born</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elective admission rate ratios (Fig 220).</td>
<td>Discharge at own risk rate ratios (Fig 226).</td>
<td>Emergency admission rate ratios (increasing over time) (Fig 221).</td>
</tr>
<tr>
<td>Mental and behavioural disorders admission rate ratios (moving towards Australia-born averages over time) (Fig 234).</td>
<td>Hospital death rate ratios (Fig 227).</td>
<td>Obstetric admission rate ratios were markedly higher (Fig 222).</td>
</tr>
<tr>
<td>Proportion of hospital admissions due to renal dialysis in 2003-04 (Table 14).</td>
<td>Total, acute, chronic and vaccine-preventable ACSCs admission rate ratios (Figs 229 to 232).</td>
<td>Medical DRG admission rate ratios (Fig 223).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Separation to private residence/accommodation rate ratios (Fig 225).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Infectious/parasitic diseases admission rate ratios (increasing trend) (Fig 233).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pregnancy and birth-related conditions accounted for a higher proportion of hospital admissions in 2003-04 (Table 14).</td>
</tr>
</tbody>
</table>
3.14 Sudan

Sudan obtained independence from British-Egyptian rule in 1956. Conflict and civil unrest have prevailed ever since, fuelled by military regimes supporting Islamic-oriented governments and by the northern economic, political, and social domination of non-Muslim, non-Arab southern Sudanese. Sudan experienced relative calm between 1972 and 1983 when the South was granted some autonomy. However, following the discovery of oil in southern Sudan, the Khartoum government introduced Islamic law and took away South’s autonomy, prompting civil war. This conflict has resulted in more than two million deaths and about six million people displaced. Several peace treaties have been signed since 2002. In January 2005, a final Comprehensive Peace Agreement was reached granting a six-year autonomy period for the South, which will be followed by a referendum for independence.

Since 2003, conflict in the western region of Darfur has resulted in tens of thousands of deaths, rape, torture, abductions, forced recruitment, systematic burning of villages and over two million displaced. Drought and famine have deteriorated the humanitarian situation. These prolonged conflicts have forced many Sudanese to seek refuge in neighbouring countries such as Ethiopia, Kenya, Egypt, Congo and Uganda.

The 1996 census recorded 2,424 Sudan-born persons living in Australia (360 in Victoria). By 2001, the number of Sudan-born in Australia increased to 4,900 (985 were living in Victoria). Between 1996 and 2005, a total of 5,500 Sudan-born persons arrived in Victoria (Figure 235). Those who entered under the humanitarian program represented 98% of the total number of arrivals, while the family stream accounted for 2% of arrivals. Like the humanitarian arrivals, many of those under the family reunion program were also likely to have been trough refugee-like experiences.
3.14.1 Total hospital admissions

A total of 2,040 hospital admissions in Victoria were recorded for Sudan-born persons between 1998-99 and 2003-04. The rates of total admissions for Sudan-born over the six-year period are shown in Figure 236. The lowest admission rate was 212.28 per 1000 persons [169.20 – 266.77] in 1998-99 and the highest was 378.42 per 1000 persons [315.94 – 452.28] recorded in 2001-02. Compared with Australia-born, Sudan-born recorded lower admission rate ratios except for the 1999-2000 and 2001-02 periods (similar) (Figure 237). The lowest rate ratio was 0.59 [0.50 – 0.71] in 1998-99 and the highest was 0.96 [0.86 – 1.08] in 2001-02.

![Figure 236: Total Hospital Admission Rates for Sudan-born and Australia-born, 1998-99 to 2003-04](image)

![Figure 237: Hospital Admission Rate Ratios Sudan-born (Australia-born = 1), 1998-99 to 2003-04](image)

3.14.2 Admission type

The rate of elective admission amongst Sudan-born increased from 139.89 per 1000 persons [102.03 – 190.37] in 1998-99 to 229.02 per 1000 persons [178.97 – 291.14] in 2001-02, decreasing subsequently to 129.77 per 1000 persons [104.47 – 163.24] in 2003-04. When compared with Australia-born, Sudan-born reported lower elective admission rate ratios except for the 2001-02 period (similar) (Figure 238). The lowest rate ratio was 0.42 [0.37 – 0.46] in 2003-04 and the highest was 0.85 [0.73 – 0.99] in 2001-02.
The rate of emergency admissions amongst Sudan-born showed an overall increase over time, from 45.34 per 1000 persons [30.49 – 71.88] in 1998-99 to 108.01 per 1000 persons [79.47 – 146.16] in 2003-04. Emergency admission rate ratios were similar to the Australia-born average, except for the years 1998-99 (lower) and 2001-02 (higher) (Figure 239). The lowest rate ratio was 0.57 [0.40 – 0.80] in 1998-99 and the highest was 1.28 [1.04 – 1.56] in 2001-02.

The rate of obstetric admissions amongst Sudan-born women increased over the six-year period, from 100.06 per 1000 women aged 10-54 years [61.84 – 156.80] in 1998-99 to 136.41 per 1000 women [116.90 – 160.86] in 2003-04. Obstetric admission rate ratios were higher for Sudan-born women, moving away from Australia-born averages over time (Figure 240). The lowest rate ratio was 1.80 [1.17 – 2.76] in 1998-99 and the highest was 2.73 [2.36 – 3.15] in 2003-04.
3.14.3 DRG type

Medical DRG admission rates for Sudan-born increased from 72.83 per 1000 persons [53.98 – 102.60] in 1998-99 to 230.99 per 1000 persons [179.47 – 294.89] in 2001-02, decreasing subsequently to 172.15 per 1000 persons [138.44 – 214.62] in 2003-04. Rate ratios of medical DRG admission were mostly lower than Australia-born, except for the 1999-2000 and 2001-02 periods (similar) (Figure 241). The lowest rate ratio was 0.46 [0.35 – 0.60] in 1998-99 and the highest was 1.00 [0.85 – 1.16] in 2001-02.

Surgical admission rates for Sudan-born increased between 1998-99 (68.23 per 1000 persons [43.93 – 105.27]) and 2002-03 (102.41 per 1000 persons [75.51 – 139.62]), decreasing to 64.02 per 1000 persons [48.09 – 88.37] in 2003-04. Compared with Australia-born, surgical admission rate ratios were similar amongst Sudan-born except for the year 2003-04 (lower) (Figure 242). Rate ratios decreased over time. The lowest rate ratio was 0.56 [0.48 – 0.65] in 2003-04.
3.14.4 Separation mode

Compared with Australia-born, lower rate ratios of separation to private residence or accommodation were observed for Sudan-born except for the 1999-2000 and 2001-02 periods (similar) (Figure 243). Rate ratios ranged from 0.60 [0.50 – 0.72] in 1998-99 to 0.97 [0.87 – 1.09] in 2001-02.

No consistent pattern in the rate of discharge at own risk was seen amongst Sudan-born. The lowest discharge rate was zero in 1998-99 and 2000-01, and the highest was 4.45 per 1000 persons [0.11 – 24.80] in 1999-2000. When compared with Australia-born, discharge at own risk rate ratios for Sudan-born were similar except for the 1998-99 and 2000-01 periods (lower) (Figure 244).
Hospital death rates for Sudan-born increased from 1.59 per 1000 persons [0.04 – 21.35] in 1998-99 to 10.09 per 1000 persons [1.22 – 36.45] in 2001-02, decreasing to 4.17 per 1000 persons [0.11 – 23.23] in 2003-04. There were no hospital deaths amongst Sudan-born in 2002-03. Hospital death ratios were similar to the Australia-born average, except for the year 2002-03 (lower) (Figure 245). The lowest rate ratio was zero in 2002-03 and the highest was 2.30 [0.57 – 9.21] in 2001-02.

3.14.5 Length of stay

The rate of bed days for Sudan-born increased markedly between 1998-99 (507.84 days per 1000 persons [442.05 – 584.31]) and 1999-2000 (1381.34 days per 1000 persons [1251.07 – 1522.71]), decreasing subsequently to 994.23 days per 1000 persons [905.80 – 1091.27] in 2003-04. Compared with Australia-born, length of stay rate ratios were mostly lower for Sudan-born except for the 1999-2000 period (similar) (Figure 246). The lowest rate ratio was 0.38 [0.34 – 0.42] in 1998-99 and the highest 0.99 [0.92 – 1.08] in 1999-2000.
### 3.14.6 ACSCs admissions

**Total ACSCs admissions**

Total ACSCs admission rates for Sudan-born tripled over time, increasing from 16.64 per 1000 persons [7.44 – 39.71] in 1998-99 to 55.07 per 1000 persons [32.77 – 88.60] in 2003-04. Total ACSCs admission rate ratios were mostly similar to Australia-born, except for the 1999-2000 period (lower) (Figure 247). Rate ratios increased over time. The lowest rate ratio was 0.52 [0.28 – 0.97] in 1998-99 and the highest was 1.36 [0.98 – 1.87] in 2002-03.

**Acute, chronic and vaccine-preventable ACSCs admissions**

Admission rates for acute ACSCs amongst Sudan-born initially increased from 6.08 per 1000 persons [0.94 – 27.65] in 1998-99 to 22.96 per 1000 persons [8.72 – 51.83] in 2001-02, decreasing afterwards to 17.20 per 1000 persons [7.30 – 38.28] in 2003-04. Compared with Australia-born, acute ACSCs admission rate ratios were similar amongst Sudan-born (Figure 248). The lowest rate ratio was recorded in 1998-99 (0.47 [0.15 – 1.46]) and the highest was recorded in 2001-02 (1.60 [0.94 – 2.70]).
Chronic ACSCs admission rates amongst Sudan-born showed a five-fold increase over the six-year period, from 6.71 per 1000 persons [1.76 – 27.33] in 1998-99 to 35.84 per 1000 person [17.26 – 66.79] in 2003-04. Chronic ACSCs admission rate ratios were similar to Australia-born, except for the year 1999-2000 (lower) (Figure 249). Rate ratios increased over time.

There were no consistent patterns of vaccine-preventable ACSCs admission rates and rate ratios for Sudan-born. The lowest admission rate was zero recorded in 1999-2000 and 2000-01, and the highest rate was 5.05 per 1000 persons [0.13 – 28.11] recorded in 2001-02. When compared with Australia-born, admission rate ratios showed no consistent patterns, ranging from zero in 1999-2000 and 2000-01 to 6.40 [0.90 – 45.65] in 2001-02 (Figure 250).
3.14.7 Admissions for specific diagnosis categories

**Infectious and parasitic diseases**
Admission rates for infectious and parasitic diseases amongst Sudan-born showed a no consistent pattern over time. The lowest admission rate was 13.50 per 1000 persons [5.26 – 36.12] in 1998-99, and the highest was 31.93 per 1000 persons [15.31 – 60.97] in 1999-2000. Infectious and parasitic diseases admission rate ratios were similar to Australia-born averages except for the 2003-04 period (higher) (Figure 251).

**Mental and behavioural disorders**
Admission rates for mental and behavioural disorders amongst Sudan-born increased from 10.66 per 1000 persons [4.54 – 31.23] in 1998-99 to 20.60 per 1000 persons [10.98 – 41.77] in 2002-03, declining to 17.27 per 1000 persons [7.46 – 38.16] in 2003-04. Compared with Australia-born, admission rate ratios for Sudan-born were consistently lower over the six-year period (Figure 252). The lowest rate ratio was 0.31 [0.16 – 0.59] in 2000-01 and the highest was 0.64 [0.46 – 0.89] in 2002-03.
3.14.8 Top ten AR-DRGs
Table 15 compares the top 10 AR-DRGs between Sudan-born and Australia-born in 2003-04. The top 10 AR-DRGs accounted for 44.1% of the total hospital admissions for Sudan-born compared with 31.8% for Australia-born. Renal dialysis was the most common AR-DRG for Australia-born but was not in the top ten AR-DRGs for Sudan-born. Pregnancy and birth-related conditions accounted for 30.9% of admissions amongst Sudan-born, compared with 1.8% amongst Australia-born. Digestive system disorders, including diagnostic procedures such as gastroscopy and colonoscopy, represented 13.2% of total admissions amongst Sudan-born, compared with 5.8% amongst Australia-born.

Table 15: Top 10 AR-DRGs for Sudan-born and Australia-born, 2003-04

<table>
<thead>
<tr>
<th>Sudan-born</th>
<th>Australia-born</th>
</tr>
</thead>
<tbody>
<tr>
<td>AR-DRG</td>
<td>%*</td>
</tr>
<tr>
<td>1 Vaginal delivery no complicating diagnosis</td>
<td>10.9</td>
</tr>
<tr>
<td>2 Other antenatal with moderate/no complicating diagnosis</td>
<td>7.2</td>
</tr>
<tr>
<td>3 Other gastroscopy, non-major digestive disease, sameday</td>
<td>6.8</td>
</tr>
<tr>
<td>4 Abortion with dilation &amp; curettage, aspiration curettage/hysterotomy</td>
<td>5.7</td>
</tr>
<tr>
<td>5 Oesophagitis &amp; miscellaneous digestive system disorders &lt;10</td>
<td>4.6</td>
</tr>
<tr>
<td>6 Other antenatal admission with severe complicating diagnosis</td>
<td>2.2</td>
</tr>
<tr>
<td>7 Postpartum &amp; Post abortion without operation room procedure</td>
<td>1.9</td>
</tr>
<tr>
<td>8 Other colonoscopy, sameday</td>
<td>1.8</td>
</tr>
<tr>
<td>9 Vaginal delivery with severe complicating diagnosis</td>
<td>1.5</td>
</tr>
<tr>
<td>10 False labour</td>
<td>1.5</td>
</tr>
</tbody>
</table>

* % of total hospital admissions
3.14.9 Key findings – Sudan-born

- Overall, total hospital admission rates recorded an increasing trend over time (Fig 236).
- No consistent pattern for vaccine-preventable ACSCs rate ratios was recorded when compared with Australia-born averages (Fig 250).

<table>
<thead>
<tr>
<th>Lower than Australia-born</th>
<th>Similar to Australia-born</th>
<th>Higher than Australia-born</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total and elective hospital admission rate ratios (Figs 237-238).</td>
<td>Emergency admission rate ratios (Fig 239).</td>
<td>Obstetric admission rate ratios (increasing over time) (Fig 240).</td>
</tr>
<tr>
<td>Medical DRG admission rate ratios (Fig 241).</td>
<td>Surgical DRG admission rate ratios (decreasing trend over time) (Fig 242).</td>
<td>Pregnancy and birth-related conditions and digestive tract disorders (including diagnostic procedures) accounted for a higher proportion of hospital admissions in 2003-04 (Table 15).</td>
</tr>
<tr>
<td>Separation to private residence/accommodation rate ratios (Fig 243).</td>
<td>Discharge at own risk rate ratios (Fig 244).</td>
<td></td>
</tr>
<tr>
<td>Length of stay rate ratios (Fig 246).</td>
<td>Hospital death rate ratios (Fig 245).</td>
<td></td>
</tr>
<tr>
<td>Mental and behavioural disorders admission rate ratios (Fig 252).</td>
<td>Total, acute and chronic ACSCs admission rate ratios (Figs 247 to 249). Total and chronic admission rate ratios increased over time.</td>
<td></td>
</tr>
<tr>
<td>Proportion of hospital admissions due to renal dialysis in 2003-04 (Table 15).</td>
<td>Infectious/parasitic diseases admission rate ratios (Fig 251).</td>
<td></td>
</tr>
</tbody>
</table>
3.15 Vietnam

Vietnam became part of French Indochina in 1887. Although independence was declared after World War II, France continued ruling until 1954, when communist forces led by Ho Chi Minh took control of the North and defeated the French. In 1960, the communist forces known as Viet Cong began a guerrilla war aiming to gain control of the South. In 1965, the United States embarked on a sustained war against the North, which ended in 1973 following a cease-fire agreement. Two years later, North Vietnamese forces swept to victory, gaining control of the South and establishing a reunified ‘Socialist Republic of Vietnam’. In 1978, Vietnam invaded Cambodia in response to a series of Khmer Rouge (Cambodia’s regime) attacks on Vietnamese towns. This invasion prompted a ten-year armed conflict between Vietnam and China, which ended in 1989. The conflict during the 1970s led to a massive displacement of Vietnamese refugees to China, Hong Kong and South-East Asia. A number of these refugees were resettled in Western countries, including Australia.

In 1976 there were 2,427 Vietnam-born persons in Australia. By 1986, the number of Vietnam-born had increased to 83,056, predominantly of refugee backgrounds. The 1996 census recorded 151,053 Vietnam-born living in Australia (55,217 were in Victoria); in 2001 the total number was 154,831 in Australia and 56,664 in Victoria. Between 1996 and 2005, 7,150 Vietnam-born persons arrived in Victoria. Eighty eight percent of these came under the family migration category and only 3.5% arrived under the humanitarian program (Figure 253).
3.15.1 Total hospital admissions

A total of 89,103 hospital admissions in Victoria were recorded for Vietnam-born persons between 1998-99 and 2003-04. Overall, the rate of total admissions for Vietnam-born increased from 232.34 per 1000 persons [227.41 – 237.36] in 1998-99 to 332.15 per 1000 persons [326.43 – 337.95] in 2003-04 (Figure 254).

Compared with Australia-born averages, Vietnam-born recorded consistently lower admission rate ratios over the study period (Figure 255). Rate ratios ranged from 0.65 [0.64 – 0.66] in 1998-99 to 0.76 [0.75 – 0.78] in 2002-03.

3.15.2 Admission type

The rate of elective admission amongst Vietnam-born increased from 154.20 per 1000 persons [150.10 – 158.40] in 1998-99 to 236.62 per 1000 persons [231.73 – 241.59] in 2003-04. When compared with Australia-born, Vietnam-born reported consistently lower elective admission rate ratios (Figure 256). The lowest rate ratio was 0.63 [0.61 – 0.64] in 1998-99 and the highest was 0.76 [0.75 – 0.78] in 2002-03.
The rate of emergency admissions for Vietnam-born persons increased slightly from 53.10 per 1000 persons [50.64 – 55.67] in 1998-99 to 64.90 per 1000 persons [62.31 – 67.57] in 2003-04. Emergency admission rate ratios were consistently lower than Australia-born averages over the six-year period (Figure 257). The lowest rate ratio was 0.64 [0.62 – 0.67] in 2003-04; the highest rate ratio was 0.72 [0.69 – 0.75] in 1999-2000.

The rate of obstetric admissions amongst Vietnam-born women remained steady during the study period. The admission rates ranged from 67.18 per 1000 women aged 10-54 years [64.32 – 70.19] in 1998-99 to 82.26 per 1000 women [78.76 – 85.90] in 2000-01. Obstetric admission rate ratios for Vietnam-born women were above Australia-born average over the six-year period (Figure 258). The lowest rate ratio was 1.21 [1.15 – 1.27] in 1998-99 and the highest was 1.77 [1.68 – 1.86] in 2000-01.
3.15.3 DRG type

Medical DRG admission rates for Vietnam-born increased from 131.32 per 1000 persons [127.68 – 135.05] in 1998-99 to 219.42 per 1000 persons [214.67 – 224.26] in 2003-04. Compared with Australia-born, rate ratios of medical DRG admission were consistently lower amongst Vietnam-born over the six-year period (Figure 259). The lowest rate ratio was 0.78 [0.77 – 0.80] in 2001-02 and the highest was 0.83 [0.81 – 0.84] in 2002-03.

Surgical DRG admission rates amongst Vietnam-born increased from 45.41 per 1000 persons [43.24 – 47.68] in 1998-99 to 61.32 per 1000 persons [58.98 – 63.75] in 2003-04. Compared with Australia-born, surgical DRG admission rate ratios were lower over the study period (Figure 260). The lowest rate ratio was recorded in 2000-01 (0.53 [0.51 – 0.55]) and the highest in 1998-99 (0.86 [0.82 – 0.89]).
3.15.4 Separation mode

Compared with Australia-born, lower rate ratios of separation to private residence or accommodation were observed for Vietnam-born over the six-year period (Figure 261). The lowest rate ratio was 0.65 [0.64 – 0.66] in 1998-99; the highest was 0.78 [0.77 – 0.79] in 2002-03.

There was no consistent pattern in the rate of discharge at own risk for Vietnam-born. The rates of discharge ranged from 0.58 per 1000 persons [0.37 – 0.91] in 1998-99 to 1.13 per 1000 persons [0.82 – 1.53] in 2000-01. When compared with Australia-born averages, discharge at own risk rate ratios were similar amongst Vietnam-born except for the 1998-99 and 2002-03 periods (lower) (Figure 262). The lowest rate ratio was 0.59 [0.41 – 0.85] recorded in 2002-03.
The rate of hospital deaths amongst Vietnam-born remained steady over time. The lowest rate was 2.33 per 1000 persons [1.82 – 2.94] in 2000-01 and the highest was 2.90 per 1000 persons [2.32 – 3.58] in 2002-03. When compared with Australia-born, Vietnam-born reported consistently lower rate ratios over the six-year period (Figure 263). The lowest rate ratio was 0.58 [0.46 – 0.72] in 2000-01 and the highest was 0.73 [0.58 – 0.92] in 1999-2000.

### 3.15.5 Length of stay

The rate of bed days for Vietnam-born increased from 690.96 days per 1000 persons [681.91 – 700.11] in 1998-99 to 889.55 days per 1000 persons [879.89 – 899.29] in 2003-04. Length of stay rate ratios were markedly lower than Australia-born average over the six-year period (Figure 264). The lowest rate ratio was 0.52 [0.51 – 0.52] in 1998-99 and the highest was 0.60 [0.59 – 0.60] in 2000-01.
3.15.6 ACSCs admissions

Total ACSCs admissions
Total ACSCs admission rates for Vietnam-born doubled over time, increasing from 16.70 per 1000 persons [15.27 – 18.23] in 1998-99 to 29.49 per 1000 persons [27.65 – 31.43] in 2003-04. Total ACSCs admission rate ratios were consistently lower than Australia-born averages over the six-year period (Figure 265). Rate ratios ranged from 0.52 [0.48 – 0.57] in 1998-99 to 0.68 [0.64 – 0.72] in 2003-04.

Acute, chronic and vaccine-preventable ACSCs admissions
Admission rates for acute ACSCs amongst Vietnam-born increased slightly over time, from 6.37 per 1000 persons [5.53 – 7.31] in 1998-99 to 7.75 per 1000 persons [6.89 – 8.71] in 2003-04. Compared with Australia-born, acute ACSCs admission rate ratios were consistently lower amongst Vietnam-born (Figure 266). The lowest rate ratio was recorded in 2000-01 (0.45 [0.40 – 0.50]) and the highest in 1999-2000 (0.52 [0.47 – 0.59]).
Chronic ACSCs admission rates increased over time amongst Vietnam-born, from 6.88 per 1000 persons [5.92 – 7.96] in 1998-99 to 20.13 per 1000 persons [18.56 – 21.81] in 2003-04. Chronic ACSCs rate ratios were lower than Australia-born and moved towards Australia-born averages over time (Figure 267). The lowest rate ratio was 0.38 [0.34 – 0.44] in 1998-99 and the highest was 0.77 [0.71 – 0.83] in 2003-04.

Vaccine-preventable ACSCs admission rates amongst Vietnam-born showed an overall decline over time, from 3.80 per 1000 persons [3.17 – 4.53] in 1998-99 to 2.35 per 1000 persons [1.90 – 2.88] in 2003-04. Vaccine-preventable ACSCs admission rate ratios were higher than Australia-born averages over the six-year period (Figure 268). Rate ratios ranged from 2.54 [2.00 – 3.23] in 2001-02 to 3.55 [2.83 – 4.47] in 2000-01.
3.15.7 Admissions for specific diagnosis categories

**Infectious and parasitic diseases**
Admission rates for infectious and parasitic diseases amongst Vietnam-born decreased slightly over time, from 19.39 per 1000 persons [17.91 – 20.98] in 1998-99 to 17.70 per 1000 persons [16.39 – 19.10] in 2003-04. Infectious and parasitic diseases admission rate ratios were similar to Australia-born except for the 2002-03 and 2003-04 periods (lower) (Figure 269). The lowest rate ratio was 0.87 [0.81 – 0.94] in 2003-04 and the highest was 1.05 [0.97 – 1.12] in 2000-01.

**Mental and behavioural disorders**
Admission rate for mental and behavioural disorders amongst Vietnam-born increased slightly over the study period, from 10.91 per 1000 persons [9.33 – 11.99] in 1998-99 to 13.62 per 1000 persons [12.52 – 14.81] in 2003-04. Compared with Australia-born, admission rate ratios were markedly and consistently lower over the six-year period (Figure 270). Rate ratios ranged between 0.34 [0.31 – 0.37] in 1998-99 and 0.46 [0.43 – 0.50] in 2000-01.
3.15.8 Top ten AR-DRGs

Table 16 compares the top 10 AR-DRGs between Vietnam-born and Australia-born in 2003-04. The top 10 AR-DRGs accounted for 51.5% of the total hospital admissions for Vietnam-born compared with 31.8% for Australia-born. Renal dialysis was the most common AR-DRG for both groups, but it represented 21.0% of total hospital admissions for Vietnam-born compared with 8.9% for Australia-born. Pregnancy and birth-related conditions accounted for 13.6% of Vietnam-born total admissions, compared with 1.8% for Australia-born. Diagnostic procedures for digestive disorders (i.e. gastroscopy, colonoscopy) represented 8.7% of admissions amongst Vietnam-born compared with 5.8% amongst Australia-born. Admissions due to chemotherapy showed similar proportions across the two groups.

Table 16: Top 10 AR-DRGs for Vietnam-born and Australia-born, 2003-04

<table>
<thead>
<tr>
<th>Vietnam-born</th>
<th>%*</th>
<th>Australia-born</th>
<th>%*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Renal dialysis</td>
<td>21.0</td>
<td>Renal dialysis</td>
</tr>
<tr>
<td>2</td>
<td>Vaginal delivery no complicating diagnosis</td>
<td>5.3</td>
<td>Chemotherapy</td>
</tr>
<tr>
<td>3</td>
<td>Other gastroscopy, non-major digestive disease, sameday</td>
<td>5.2</td>
<td>Other colonoscopy, sameday</td>
</tr>
<tr>
<td>4</td>
<td>Chemotherapy</td>
<td>5.1</td>
<td>Neonate &gt;2499 g without significant operation room procedure with other problem</td>
</tr>
<tr>
<td>5</td>
<td>Abortion with dilation &amp; curettage, aspiration curettage/hysterotomy</td>
<td>4.8</td>
<td>Other gastroscopy, non-major digestive disease, sameday</td>
</tr>
<tr>
<td>6</td>
<td>Other colonoscopy, sameday</td>
<td>3.5</td>
<td>Mental health treatment, sameday, without electro-convulsive therapy</td>
</tr>
<tr>
<td>7</td>
<td>Other antenatal with moderate/no complicating diagnosis</td>
<td>2.1</td>
<td>Dental extractions and restorations</td>
</tr>
<tr>
<td>8</td>
<td>Other factors influencing health status &lt;80</td>
<td>1.7</td>
<td>Other factors influencing health status &lt;80</td>
</tr>
<tr>
<td>9</td>
<td>Major lens procedures</td>
<td>1.4</td>
<td>Vaginal delivery no complicating diagnosis</td>
</tr>
<tr>
<td>10</td>
<td>Caesarean delivery without complicating diagnosis</td>
<td>1.4</td>
<td>Major lens procedure</td>
</tr>
</tbody>
</table>

* % of total hospital admissions
3.15.9 Key findings – Vietnam-born

- Total hospital admission rates increased over the six-year period (Fig 254).

<table>
<thead>
<tr>
<th>Lower than Australia-born</th>
<th>Similar to Australia-born</th>
<th>Higher than Australia-born</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Total, elective and emergency admission rate ratios (Figs 255 to 257).</td>
<td>- Discharge at own risk rate ratios (Fig 262).</td>
<td>- Obstetric admission rate ratios (Fig 258).</td>
</tr>
<tr>
<td>- Medical DRG admission rate ratios (Fig 259).</td>
<td>- Infectious and parasitic diseases admission rate ratios (Fig 269).</td>
<td>- Vaccine-preventable ACSCs admission rate ratios (Fig 268).</td>
</tr>
<tr>
<td>- Surgical DRG admission rate ratios (Fig 260).</td>
<td>- Renal dialysis was the top AR-DRG in 2003-04 (Table 16).</td>
<td>- Pregnancy and birth-related conditions and diagnostic procedures for digestive disorders accounted for a higher proportion of hospital admissions in 2003-04 (Table 16).</td>
</tr>
<tr>
<td>- Separations to private residence/accommodation (Fig 261).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Hospital death rate ratios (Fig 263).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Length of stay rate ratios were markedly lower (Fig 264).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Total, acute and chronic ACSCs admission rate ratios (Figs 265 to 267). Total and chronic admission rate ratios moved towards the Australia-born average over time.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Mental/behavioural disorders admission rate ratios were markedly lower (Fig 270).</td>
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<td></td>
</tr>
</tbody>
</table>
4. Summary and conclusions

The findings from this research indicate caution must be exercised when making generalisations regarding refugees’ use of health care services. Although sharing a common experience of forced displacement and violence-related trauma, the refugee population is not a homogenous group. Factors such as ethnicity, gender, culture, socio-economic and educational status, health systems and services in the country of origin, and the particular contexts of displacement, flight, and resettlement play an important role in a refugee’s experience of ill health and, consequently, of health care utilization and health-related outcomes in countries of resettlement.

A number of key findings have emerged from this analysis:

- **Total hospital admissions:**
  - As for the Australia-born population, total hospital admission rates increased for 93% (14 of 15) of the refugee-source countries over the six-year period.
  - When compared with Australia-born, rate ratios of total hospital admissions were lower for 67% (10 of 15) of the refugee-source countries. Two countries reported higher rate ratios, one country reported either higher or similar rate ratios, and two others recorded no clear patterns of total hospital admissions rate ratios.

- **Admission type:**
  - Rates of elective hospital admission increased over the six-year period for Australia-born and for 87% (13 of 15) of the refugee-source countries.
  - Elective admission rate ratios were lower than the Australia-born average for 60% (9 of 15) of the refugee-source countries. Two (13%) countries reported higher elective admission rate ratios when compared with the Australia-born.
  - Rates of emergency admission increased over time for Australia-born and for 87% (13 of 15) of the refugee-source countries.
  - When compared with Australia-born averages, emergency admission rate ratios were similar for 40% (6 of 15) and lower for 33% (5 of 15) of the refugee-source countries.
  - Rates of obstetric admission decreased over time for Australia-born and three (20%) refugee-source countries. Rates increased for 60% (9 of 15) of the refugee-source countries.
  - Obstetric admission rate ratios were higher than the Australia-born average for 60% (9 of 15) and similar for 27% (4 of 15) of the refugee source-countries.

- **Diagnosis Related Groups (DRG) type:**
  - Rates of medical DRG admission increased over time for the Australia-born and for 93% (14 of 15) of the refugee-source countries.
  - Medical DRG admission rate ratios were lower than the Australia-born for 53% (8 of 15) of the refugee-source countries. Four (27%) refugee-source countries recorded higher medical DRG admission rate ratios.
  - Rates of surgical DRG admission increased over time for the Australia-born and for 80% (12 of 15) of the refugee-source countries.
  - Lower surgical DRG admission rate ratios were recorded for 73% (11 of 15) of the refugee-source countries when compared with Australia-born. No refugee-source country recorded higher surgical DRG admission rate ratios.

- **Separation mode:**
  - Lower rate ratios of separation to private residence/accommodation than the Australia-born average were recorded for 60% (9 of 15) of the selected countries. Three (20%) refugee-source countries reported higher rate ratios.
  - Rates of discharge at own risk increased over time for the Australia-born and for 67% (10 of 15) of the refugee-source countries.
Similar rate ratios of discharge at own risk were recorded for 87% (13 of 15) of the refugee-source countries when compared with the Australia-born average. The two other countries reported no clear patterns.

Rates of hospital death showed an increasing trend over time for the Australia-born and for 93% (14 of 15) of the refugee-source countries.

Hospital death rate ratios were similar to the Australia-born average for 80% (12 of 15) of the refugee-source countries. No refugee-source country reported a pattern of higher hospital death rate ratios.

**Length of stay:**
- Rates of length of stay showed an increasing trend over the six-year period for the Australia-born and for 87% (13 of 15) of the refugee-source countries.
- Rate ratios of length of stay (i.e. hospital bed days) were lower than the Australia-born average for 93% (14 of 15) of the refugee-source countries. One country reported no clear patterns over the six-year period.

**Ambulatory Care Sensitive Conditions (ACSCs):**
- Rates of total ACSCs admission showed an increasing trend over time for the Australia-born and for 93% (14 of 15) of the refugee-source countries.
- Total ACSCs admission rate ratios were lower than the Australia-born average for 40% (6 of 15) of the refugee-source countries. Equally, 40% of the refugee-source countries reported similar total ACSCs admission rate ratios when compared with the Australia-born.
- Rates of acute ACSCs admission increased over the six-year period for the Australia-born and for 93% (14 of 15) of the refugee-source countries.
- Compared with Australia-born, acute ACSCs admission rate ratios were lower for 53% (8 of 15) and similar for 33% (5 of 15) of the refugee-source countries.
- Rates of chronic ACSCs admission showed and increasing trend over time for the Australia-born and for all refugee-source countries.
- Chronic ACSCs admission rate ratios were similar to the Australia-born average for 53% (8 of 15) of the refugee-source countries. Three countries (20%) recorded lower rate ratios, three (20%) reported either lower or similar rate ratios, and one country showed no clear patterns over the six-year period.
- Rates of vaccine-preventable ACSCs admission decreased over time for the Australia-born and for 53% (8 of 15) of the refugee-source countries. Rates showed an increasing trend for six (40%) of the refugee-source countries.
- Vaccine-preventable ACSCs admission rate ratios were similar to Australia-born averages for 60% (9 of 15) of the refugee-source. Two countries (13%) recorded lower rate ratios, and only one refugee-source country (7%) showed a higher pattern of vaccine-preventable ACSCs admission rate ratios.

**Infectious and parasitic diseases:**
- Rates of admission for infectious/parasitic diseases remained steady over time for the Australia-born and for three (20%) refugee-source countries. Sixty seven percent (10 of 15) of the refugee-source countries showed an increasing trend in the infectious/parasitic diseases admission rates over time.
- Rate ratios of admission due to infectious/parasitic diseases were similar to the Australia-born average for 60% (9 of 15) of the refugee-source countries. Two countries (13%) reported lower rate ratios, two others (13%) either similar of lower rate ratios, and the two remaining countries (13%) recorded higher infectious/parasitic diseases admission rate ratios.

**Mental and behavioural disorders:**
- Rates of admission for mental/behavioural disorders reported an increasing trend over the six-year period for the Australia-born and for 87% (13 of 15) of the refugee-source countries.
- Lower rate ratios of admission due to mental/behavioural disorders were found for 93% (14 of 15) of the refugee-source countries, when compared with
Australia-born averages. No refugee-source country recorded a pattern of higher mental/behavioural disorders admission rate ratios.

- **Top ten Australian Revised Diagnosis Related Groups (AR-DRG) in 2003-04:**
  - Although **renal dialysis** was the top AR-DRG (2003-04) for Australia-born and for 80% (12 of 15) of the refugee-source countries, the proportion of total hospital admissions due to **renal dialysis** was higher amongst these refugee-source countries. Only three countries reported lower proportion of hospital admissions due to **renal dialysis** compared with the Australia-born.
  - The proportion of hospital admissions due to **pregnancy and birth-related conditions** was higher than the Australia-born for 73% (11 of 15) of the refugee-source countries.
  - **Digestive tract disorders** (including diagnostic procedures) accounted for a higher proportion of hospital admissions for 47% (7 of 15) of the refugee-source countries, when compared with the Australia-born population.

- When comparing refugee-source country versus Australia-born rate ratios, a trend towards the Australian-born average over time was commonly observed, particularly amongst the European refugee-source countries.

Although limited by the lack of baseline information on immigration status for people attending acute health care settings, this study represents a significant step towards the development of an evidence-based knowledge around refugee population health and health care utilization in Australia. Overall, the study has found that, when compared with the Australia-born population, refugee-source countries have lower hospitalisation rates, lower elective admission rates, similar/lower emergency admission rates, higher obstetric admission rates, lower admission rates due to medical and surgical diagnosis related groups, similar rates of both discharge at own risk and death in hospital, shorter length of stay, similar/lower admission rates due to total, acute, chronic and vaccine-preventable ambulatory care sensitive conditions, similar/lower hospitalisation rates due to infectious/parasitic diseases, and lower admission rates due to mental and behavioural disorders.

Hospital admissions reflect the amount of a disease condition a group experiences and the resources they can call upon to address their health problems. A person from a small, isolated or fragmented community may experience different treatment from someone with the same condition who belongs to a community that has supportive family networks and health care professionals who understand their language and culture. Hospitalisation may occur more quickly in the first scenario, but take longer or be avoided altogether in the second scenario.

The findings of this report support the need to challenge common assumptions relating to the use of health services among people born in refugee-source countries. This population under-use hospital services in Victoria. It is not clear, however, whether low levels of use reflect reduced levels of need or unrecognised barriers to hospital utilisation. Anecdotal evidence from service providers indicates that there are significant barriers to access acute health care services among people from refugee backgrounds. One way of examining whether people born in refugee-source countries face difficulties in accessing hospital services would be to assess utilisation rates by length of stay in Australia. It can be argued that recent arrivals would have less knowledge about the availability of hospital services than those who had been longer in the country. Unfortunately, this variable was not available in the hospital discharge dataset used here. Further research, in particular using a longitudinal design with the inclusion of length of residence, is needed to investigate the potential barriers people from refugee backgrounds face in both acute and ambulatory health care settings.
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Appendix 1: Population pyramids by country of birth (2001)

Victorian Population at 2001: Australia-born

Victorian Population at 2001: Afghanistan-born

Victorian Population at 2001: Bosnia-Herzegovina-born

Victorian Population at 2001: Burma (Myanmar)-born

Victorian Population at 2001: Cambodia-born

Victorian Population at 2001: Chile-born

Victorian Population at 2001: Croatia-born

Victorian Population at 2001: El Salvador-born
Appendix 2: Trends of admission rates for the Australia-born population

Total Hospital Admission Rates for Australia-born, 1998-99 to 2003-04

Elective Admission Rates for Australia-born, 1998-99 to 2003-04

Emergency Admission Rates for Australia-born, 1998-99 to 2003-04

Obstetric Admission Rates for Australia-born, 1998-99 to 2003-04

Medical DRG Admission Rates for Australia-born, 1998-99 to 2003-04

Surgical DRG Admission Rates for Australia-born, 1998-99 to 2003-04

Separation to Private Residence/Accommodation Rates for Australia-born, 1998-99 to 2003-04

Left Against Medical Advice Rates for Australia-born, 1998-99 to 2003-04